

Disseminating Digital Scholarly Editions of Textual Cultural Heritage

Dissertation for the degree of Doctor in Literature
at the University of Antwerp to be defended by

Aodhán Kelly



Promotor
Prof. Dr. Dirk Van Hulle

Faculteit Letteren en Wijsbegeerte
Departement Taal- en Letterkunde
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De Disseminatie van Digitale Tekstedities van Cultureel Erfgoed

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For Ma, Da, Róisín and Ilse

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Table of Contents

ACKNOWLEDGEMENTS	9
INTRODUCTION	13
i) Dissemination and the digital paradigm shift	14
ii) Research questions	22
iii) Overview and methodology	22
CHAPTER ONE	27
Users and editions	
1.1. Introduction	28
1.2. Users and devices	29
1.2.1. User study objectives	30
1.2.2. User study methodology	32
1.2.3. User study demographics	34
1.2.4. Digital habits	37
1.2.5. Tablet usage	42
1.2.6. User study conclusion	47
1.3. Digital editions: the status quo	51
1.3.1. Quantifying the edition	51
1.3.2. Existing guidelines for publishing digital editions	57
1.3.3. Publication and dissemination formats	60
1.3.4. Dissemination strategies and successes	64
1.4. Use and purpose	66
1.4.1. Use and features of digital editions	66
1.4.2. What's in a name?	70
1.4.3. Purposes of digital editions	73

CHAPTER TWO

75

Publishing digital editions: an exploration of alternative approaches to financial sustainability for digital scholarly editions

2.1. New approaches to finance and sustainability	76
2.2. Economic paradigm shift	78
2.3. Sustainability of digital scholarly editing projects	82
2.4. Value and price of scholarship	87
2.5. Monetisation methods	91
2.5.1. Digital subscription	93
2.5.2. Publication spin-offs	99
2.5.3. Advertisement	103
2.5.4. Donation and Crowdfunding	106
2.5.5. Service spin-offs	110
2.6. Conclusion	111

CHAPTER THREE

115

Towards a framework for the dissemination of digital scholarly editions: Engagement, Discoverability, Usability and Accessibility (EDUA)

3.1. Introduction	116
3.2. Communication theories for dissemination	118
3.3. Knowledge of texts	121
3.4. Re-shaping dissemination	124
3.5. Forming the EDUA framework	130
3.6. Engagement	134
3.6.1. Engaging the user	134
3.6.2. Reading as engagement: modes and forms	136
3.6.3. Gamification	137
3.6.4. Pedagogy	142
3.6.5. Social approaches to engagement	143
3.6.6. Textual scholars as Wikipedians?	146

3.6.7. Physical spaces	147
3.7. Discoverability	148
3.7.1. Discovery and information retrieval	148
3.7.2. Libraries, cataloguing and recognition	151
3.7.3. Web Portals and content aggregation	154
3.7.4. Searchability	156
3.8. Usability	157
3.8.1. The user and the interface	157
3.8.2. User and Usability Studies	158
3.8.3. Interfaces of the edition	161
3.8.4. Usage analytics	164
3.9. Accessibility	164
3.9.1. Accessibility fundamentals	164
3.9.2. Global Outlook: addressing digital divides	167
3.9.3. Access and re-use: making editions as open as possible	170
3.9.4. Sustainability and access	173
3.10. Conclusion	175

CHAPTER FOUR **179**

Dissemination in practice: exhibiting literary genesis

4.1. Introduction	180
4.2. The genesis of Brulez' <i>Sheherazade</i>	183
4.2.1. The writer and the work	184
4.2.2. Exogenesis	185
4.2.3. An evolving plan	189
4.2.4. The revolt of the footnotes	192
4.2.5. Presenting genesis	196
4.3. Creating the exhibit	198
4.3.1. Background	198
4.3.2. An experiment in collaboration	198
4.3.3. The build process	202
4.3.4. Curating content	203

4.3.5. Delivery	205
4.4. Interface design	206
4.4.1. Concept	206
4.4.2. Structure	207
4.4.3. Navigation	208
4.4.4. Animation	209
4.4.5. Screenshots	210
4.5. Reflections	213
4.5.1. EDUA framework: outcomes and findings	213
4.5.2. What's in a name? Revisited	215
CONCLUSION	219
BIBLIOGRAPHY	223
APPENDICES	259
Appendix 1: Survey questionnaire for tablet user study	260
Appendix 2: Survey results data for tablet user study	271
Appendix 3: 'Concept brief' for <i>Brulez Digital Exhibit</i>	272
Appendix 4: Functional analysis documentation for the <i>Brulez Digital Exhibit</i>	276
Appendix 5: <i>Brulez Digital Exhibit</i>	288

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Introduction

i) Dissemination and the digital paradigm shift

The term 'dissemination', in the context of scholarly editing, can refer to any undertakings that seek to make an edition more widely known or more effectively used. The traditional channels of dissemination for scholarship in the humanities remain relevant today, such as articles, conference papers, workshops and integration into university curricula, which target more academically orientated audiences, or newspaper articles and popular publications, which target a more general public. Scholarly editing has undergone significant changes in the shift of medium from print to digital, and as a consequence, the ways in which scholarship is to be disseminated is being transformed. The research presented in this dissertation endeavours to explicate the challenges and opportunities for the dissemination of scholarly editions in a digital context and to make the dissemination process, as a whole, more manageable on a conceptual level. The research is performed from the perspective of a scholarly editor or editorial team that is engaged in the creation and publication of digital scholarly editions. As a result of this orientation the findings of the research are primarily of relevance to editors, as opposed to other interested parties in digital scholarly editions (DSEs) such as users, publishers or libraries.

The difficulty of establishing consensus on a definition of digital scholarly editions is an indication of the diverse set of traditional editorial schools and theories that are adapting to a change in medium from print to digital. It is also an indication of the vast potential of that new medium to enable new and experimental approaches to how an edition should be composed. When the Digital Scholarly Editing Initial Training Network (DiXiT) advertised for candidates to apply for fellowships with the newly formed network, each position had quite clearly defined research questions and goals. But what the project's website did not provide was a clear explanation of the very object of the research: the digital scholarly edition. This definitional ambiguity is both a challenge and a strength for those working in the field. On the one hand, scholars face the daunting challenge of learning to master technologies in which many have not been traditionally trained and the requirement to make

decisions on approaches to their work in the absence of standardised procedures. While on the other hand the scholars find themselves with the technological potential to experiment with the form and method of their scholarly outputs. Digital scholarly editing cannot be considered to be new since it has already been practiced for more than two decades and is a founding pillar of the Digital Humanities, but its experimental nature means that it is in a constant state of development and redefinition (Peter Boot et al. 2017, 1).

In order to understand digital scholarly editing it is crucial to position it in context to scholarly editing, the print predecessor from which it was born, a field of scholarly endeavour with a long and diverse history. David Greetham goes so far as to describe the history of textual scholarship as the “history of history” (2013, 17). He highlights that prior to the beginning of the nineteenth century the focus of scholarly editing was on classical and medieval texts at which time the emphasis switched to vernacular languages and national canons. Within the modern context there are a number of different editorial schools, which can generally count among continental editorial theory or Anglo-American editorial theory. In reality the diversity of theory within each of these renders them largely to be geographic terms of convenience. While the latter has the benefit of having a common language of communication, this is not the case for continental editorial theory whose individual practitioners are not consistently able to discuss their different opinions (Lernout 2013, 61). Peter Shillingsburg’s decades-long work to define different ‘orientations’ to text offers a view on textual criticism that breaks away from and offers an alternative to the divisions of the competing editorial schools. This has most recently culminated in his collaborative work with Dirk Van Hulle in *Orientations to Text, Revisited* in 2015. In this paper they propose six different orientations to text: *material, causal, temporal, genetic, performance and aesthetic/commercial* (Van Hulle and Shillingsburg 2015). They further argue that the divisions between the traditional editorial schools has softened with the introduction of the digital medium which “removes some of the narrow bands constraining a scholar’s use of orientations: combinations are now possible that before tended to confuse the work” (2015, 44).

Still the question remains: what is the fundamental difference between editing for the print medium and editing for the digital medium? In ‘What is a Digital Scholarly Edition’ Patrick Sahle argues that it is a matter of paradigms (2016). There he defines a scholarly edition as “the critical representation of historic documents” (23) while digital scholarly editions are defined as “scholarly editions that are guided by a digital paradigm in their theory, method and practice” (28). According to Sahle’s argumentation a digitised edition is not a digital edition; a digital edition could not be represented in print form without a “significant loss of content and functionality” (27). The approach to digital scholarly editions taken in this thesis follows Sahle’s concept of a digital paradigm, and much of the following discussion will centre around the challenges scholarly editors face in adapting to the shift from print to digital paradigms. Franz Fischer perhaps puts it best when he says that:

Ideally, a scholarly edition that is “truly digital” should be an edition that aims at covering all or, at least, as many of the textual aspects as possible of a particular work in the best possible way, by exploiting the full potential of the digital medium while maintaining the highest possible academic standards.
(Fischer 2012)

There was an optimistic expectation that the adoption of digital technologies to publish editions would bring with it a corresponding increase in the size of the audience that the scholarship might reach. However as Edward Vanhoutte has argued “digital editions do not provide a quantitative higher accessibility than printed editions but a qualitative different accessibility” (Vanhoutte 2013). He furthermore suggests that different audiences with different intents require different types of editions (2013). The digital paradigm shift has introduced a degree of ambiguity regarding the different ways in which text-based scholarship presents itself. Kenneth Price addressed this question specifically with regard to the terms: *edition*, *project*, *database*, *archive*, and *thematic research collection* (Price 2009). The *Walt Whitman Archive*,¹ as the main case study of Price’s discussion in this article

¹ *Walt Whitman Archive*: <http://whitmanarchive.org/>.

demonstrates the ambiguity of these terms, that the type of digital scholarly output can be positioned at point on a spectrum. For example a digital product may sit somewhere between being classified as an ‘archive’ or an ‘edition’. The *Beckett Digital Manuscript Project (BDMP)* demonstrates this terminological challenge with its URI: www.beckettarchive.org. The *BDMP* can certainly be described as a digital archive due to the breadth of the textual materials it makes available in the form of facsimiles and transcriptions. But the collation tools provided by the *BDMP* allow users to visualise the way the texts were transmitted from version to version, which means that the project can be considered to be an edition as well. In addition to this the *BDMP* also publishes a series of print-form monographs on the research into the textual genesis of the selected works, which then further justifies the use of the term ‘project’ in order to encapsulate this array of outputs.

Both Shillingsburg (2006) and Price (2009) have argued that a new term needs to be introduced in order to emphasise how digital scholarship sites are different, with the two scholars suggesting ‘knowledge site’ and ‘arsenal’ respectively. Neither of these suggested terms, nor any others for that matter, have successfully taken root in the field. This difficulty with terminology further problematises how the scholarly community might approach dissemination activities, which will be discussed in Chapter 3. While I tend to agree that a reconsideration of terminology could improve the perception and understanding of our digital scholarship I am conscious that my research relates specifically to the enterprise of scholarly editing and as a result I will continue with the term ‘digital scholarly edition’.

It is almost impossible to write anything on the topic of digital scholarly editing without making reference to the work done by Elena Pierazzo, in particular her recent monograph *Digital Scholarly Editing: Theories, Models and Methods* (2015). Her broad angled study of the discipline as a whole means that she has covered a huge range of concerns. Two chapters in particular (on publishing and using digital editions) provide what is probably the most comprehensive approach to discussing dissemination that has emerged from the field to date, and her work has been drawn upon frequently throughout this research, including matters of audiences and interfaces. Peter

Shillingsburg's concept of a 'knowledge site' (2006) has not quite been widely adopted by scholarly editors, however, the concept is one that makes itself very amenable to modelling dissemination in multiple forms or outputs, and has therefore been utilised to develop the conceptual framework in the third chapter of this thesis.

So what is the fundamental role of the digital scholarly editor and the purpose of editing itself? For certain scholars the purpose of editing is to enable further research in the humanities using the edited text(s). For Sahle it is the "basic goals of providing reliable, trustworthy and useful representations of our textual and documentary heritage as the basis for further research in the humanities" (Sahle 2016, 38). Dino Buzetti and Jerome McGann have said that "scholarly editing is the source and test of every type of investigative and interpretational activity that critical minds may choose to undertake" (2006). I would argue that editing should augment (often digitised) textual cultural heritage with layers of analysis, insight and argumentation, in a way that can benefit both researchers and society at large. Editors also assume a certain role and responsibility in the transmission of important textual materials through time and often act as gatekeepers for the texts themselves through recording and analysing textual variation. However, I would like to take this one step further, and view editing not only as a means to create a tool for other humanities scholars to perform research but also to communicate knowledge of texts with society on a broader level. Within the digital paradigm the responsibilities of this role are changing and perhaps expanding, as will be discussed the sections below.

An 'edition' is defined in the *Oxford English Dictionary* as "one of the differing forms in which a literary work (or a collection of works) is published, either by the author himself, or by subsequent editors".² This is a definition to which we can still relate in a modern context. The word 'edition' entered the English language from the French *édition* which in turn came from the Latin *editio* which itself came from the Latin verb *edere* meaning 'to put forth' or 'publish'. In this respect, it is useful to recall that Latin and modern Romance

² *edition*, n. as listed on Oxford English Dictionary online (accessed 5 February 2017).

languages make no linguistic distinction between the word for editor and that for publisher, both are *editor* in Latin (*editore* in Italian, *éditeur* in French and *editor* in Spanish). And that in Dutch the word for publisher is perhaps more clearly connected to the notion of putting forth, the word *uitgever* which comes from the separable verb *uitgeven* comprised of the words *geven* (to give) and *uit* (out). With these etymological links between ‘editing’ and ‘putting forth’ of works, it seems quite apt that the first use of the word ‘edition’ listed in OED was in 1551 by the mathematician (and incidentally the man credited with inventing the equals sign =) Robert Record who after writing *The Pathway to Knowledge, Containing the First Principles of Geometrie* requested the King to look favourably upon the edition (in the sense of putting forth) of his work. The putting forth of editions as a sort of ‘pathway to knowledge’ is precisely what this research intends to explore.

Traditionally in scholarly editing there was quite a clear distinction between the role of the editor who focussed primarily on the *text*, which they edited according their chosen school of editorial theory, and that of the publisher, who focussed on the material object, the *book*, and how that object should be produced and disseminated. Shillingsburg, for example, described the tasks involved in ‘editing’ as “collecting, selecting, and preparing texts for publication” (1996, 2) a definition that focusses entirely on the preparation for publication but not on the act of publishing itself nor on any activities that might be involved in the distribution or dissemination of those publications. While I have shown earlier that the introduction of the digital medium is softening the boundaries between editorial schools, in the case of the distinction between editor and publisher the lines have blurred almost completely. Indeed, the production of scholarly editions in digital form does not require a publisher in the traditional sense. Instead, scholarly editors at the current time typically either learn the digital skills required to produce digital publications themselves or recruit people to perform this activity as part of a collaborative team effort. Thus editors are now also publishers, simultaneously, in a sort of dual role.

As the distinction between these two roles begins to fade, the original definition of the word ‘edition’ is beginning to become more appropriate

once again. A publishers role, however, is not finished at the end of the production phase, when the books are printed and bound. Rather, the role extends to disseminating those books to the appropriate venues, libraries and booksellers, for consumption by readers. In a digital paradigm the activity of dissemination becomes much more ambiguous and complex. Publishers in the print paradigm had more well established processes in place for marketing, distributing and selling books that maximised the chances of reaching the intended audience, even if that audience was rather small in the case of more specialist publications like scholarly editions.

Scholars have made great advances in the *production* of editions in digital form over recent decades and there has been a corresponding and understandable focus of experimentation, discussion and research on this aspect from within the field. The initial optimism regarding the potential of the web to allow for reaching much wider audiences has, by now, somewhat faded, with little evidence to show that it this has taken place at all.³ The web may be a democratising force but it can also be a rather unwieldy one. This thesis will argue that we as editors now need to place a greater emphasis on the second part of the publishers role, the rather precarious business of *dissemination*. More than a decade ago the LARIAH report noted that the best used digital scholarly resources had put a lot of work into dissemination plans (2006). In their view at the time dissemination plans focussed primarily on conference presentations, workshops and email newsletters as part of a drive to advocate for better recognition of digital resources as scholarly outputs (Warwick et al. 2006, 40). While this type of communication remains important for disseminating all types of scholarship, there are also numerous other ways which may improve the reach in a digital paradigm, which will be explored here. By investigating how scholarly editions fit into the increasingly complex digital ecosystem of scholarship and the patterns of information retrieval and consumption by both scholarly and amateur consumers of scholarly textual information this research hopes to elucidate methods for reaching the maximal audience for editions. As production and dissemination are,

³ Some 30-35% of digital resources reviewed by LARIAH in 2006 were shown to have been completely unused (Warwick et al. 2006, 5).

however, not entirely separable activities, editors need to consider various elements of both in conjunction with each other, such as the impact of interface design on the use of a digital edition. Nor are the roles of ‘editor’ and ‘user’ mutually exclusive in the digital paradigm as we see the rise of ‘social editions’, as described by Siemens et al. (2012), and participatory approaches to parts of the editing process such as can be seen with crowdsourced transcription projects.

In a paper titled ‘Electronic Editions for Everyone’, Peter Robinson recalled a scene in the National Library of Ireland in 2001 where he observed Hans Walter Gabler and Danis Rose vigorously debate a draft page from *Ulysses* on display, which, resulted in attracting a large interested crowd of onlookers. From this anecdote Robinson concluded that since these people were fascinated by the discussion but were unlikely to ever read a scholarly edition created by Gabler or Rose, printed editions may not be the best way to communicate knowledge of texts (Robinson 2010, 152-3). He also asserted that we have become so familiar with receiving knowledge of texts through printed scholarly editions that we have come to confuse the making of editions with textual scholarship itself: “[t]extual scholarship precedes print editions, as what textual scholars know and do” (153). This perspective complements the position taken in this research, namely that the creation of an edition is not the sole objective of textual scholarship nor should it be the only way to receive and communicate knowledge of texts. To better understand the new ways we can use digital media to communicate textual knowledge, we need to be mindful of two opposing pitfalls: simply replicating what was possible in print form; or presenting a reader with absolutely everything available in connection with a work (all existing images, transcriptions, collations etc) simply because the technology allows it. This research instead intends to explore how we can use digital media to communicate textual knowledge in selective and insightful ways.

ii) Research questions

Each of the four chapters in this thesis addresses distinct research questions which can be described as follows:

1. What are the user's needs and expectations for scholarly editions in the digital paradigm and to what extent does the existing corpus of digital editions meet those needs and expectations?
2. Where do digital scholarly editions fit within the digital publishing landscape, as a type of publication with both a social and a material value, and how can its value be sustained financially?
3. What concerns and activities are encompassed in the dissemination of digital scholarly editions to broader audiences and how can this process be conceptualised by editions' creators?
4. How can this conceptual approach to dissemination be put into practice with an existing scholarly editing project? Should the creation of public-facing outreach publications be treated as a critical process?

iii) Overview and methodology

Due to the heterogeneity of the research questions a number of different research methods have been employed for this dissertation.

Chapter 1 is the outcome of qualitative research both into editions as a type of publication and the expectations of their users. The research on user expectations is based on a major user study I conducted while on secondment at King's College London in 2014. The user study was comprised of an online survey and a series of semi-structured interviews for a small cross-section of the chosen demographic. The intention of the study was to capture the opinions and digital habits of a considerable sample of the different types of users of DSEs. While my approach to dissemination targets both academically orientated audiences and a more general public, the user survey on digital editions was primarily used to measure the opinions of the former

group which included scholarly researchers, university lecturers, university students and high school teachers. This user study was conducted under the supervision of Elena Pierazzo and with support from a King's College London (KCL) MA student Manuela Vastolo. The methodology for the user study will be described in greater detail in section 1.3.2. The results of the study shed some light on the digital habits of users of DSEs including their preferences in terms of hardware with a focus on the potential role for tablet computers in dissemination. The chapter will also analyse digital scholarly editions on a macro level by assessing a publicly accessible dataset of a corpus of digital editions created by Greta Franzini.⁴ This will allow for an investigation into both the publication formats in which editions are made available, and the functionalities they tend to offer, which can then be compared against the needs and purposes of the users investigated in the survey.

The second chapter is the outcome the study of existing publishing practices both within digital scholarship but also from the non-academic digital publishing sector. This chapter draws to a large extent on exploratory research I conducted together with Anna-Maria Sichani, my DiXiT colleague at the Huygens Instituut, on the potential use of monetisation as a way to improve the financial sustainability of digital scholarly editing projects. The chapter discusses the changing role of editors and publishers as agents involved in the production and distribution of digital scholarly editions and discusses the challenges faced by scholarly editors in assuming some of the functions and responsibilities previously carried out by the publisher. Scholarly editions in digital form now face a difficult landscape in which users and institutions often expect these publications to be made available on an open-access basis despite uncertain access to funding to ensure sustainability in terms of maintenance and access. This chapter draws on literature in economics and examines the extent to which monetisation methods that are currently in use with digital content in the web economy could be applicable to digital scholarly editions.

⁴ Franzini, Greta. *Catalogue of Digital Editions*: <https://dig-ed-cat.eos.arz.oeaw.ac.at/>.

In Chapter 3 I set out to create a conceptual framework through which editors can conceptualise the multidimensional process of dissemination for digital editions. This framework was conceived through combining textual scholarship theory with a number of other relevant disciplines such as communication theory, library and information science, design theory, critical theory, human-computer interaction and digital humanities. In this chapter I lay out a specific definition for ‘dissemination’ in relation to digital scholarly editing, and theorise on how editors might adapt to the communicative affordances and barriers that arise from the shift to the digital medium. A visual model is proposed for envisioning the dissemination process alongside the framework which consists of four dimensions of concern in relation to the digital communication of textual scholarship.

The fourth chapter describes the process and outcomes of creating a digital publication for the purposes of public outreach in the form of a digital exhibit of a work by Flemish writer Raymond Brulez who is the subject of scholarly research at the Centre for Manuscript Genetics (CMG) at the University of Antwerp. The *Brulez Digital Exhibit* was created in partnership with a digital design agency and the Letterenhuis in Antwerp, the largest literary archive in Flanders, which houses Brulez’ manuscripts and has provided the physical space for the digital installation in their exhibition area. This experiment can be viewed as a test case to demonstrate the practical application of the conceptual framework proposed in the preceding chapter. The development of the digital exhibit for a touchscreen device was also a continuation of the research discussed in Chapter 1 in relation to the potential role of tablet computers for dissemination. Developing this exhibit also involved conducting usability tests in the form of user observations, the results of which were utilised to change the design and content selections within the development phase.

This final chapter can also be seen as a study in the effectiveness of multi-party collaborations and the importance of this type of approach in the digital age. Collaboration is becoming a mainstay of scholarly editing conducted in digital form. Kenneth Price argues that collaborative project teams would include an extensive set of interested parties such as “librarians, archivists,

graduate students, undergraduate students, academic administrators, funding agencies, and private donors” (2009, 437). Elena Pierazzo sees collaboration as both a necessity and opportunity for digital scholarly editing (2015, 124). The research conveyed in this thesis will also act as evidence that collaboration is not only crucial in the creation of digital scholarly editions but also in the ways in which we disseminate those publications and the knowledge that they embody to society at large.

Chapter One

Users and editions

1.1. Introduction

This opening chapter intends to perform a surveyance of the field of digital scholarly editing from a macro perspective, both of the landscape of DSEs and of user attitudes towards them. The intention is to gain a better understanding of the types of digital editions that exist at present, what their components and purposes are, as well as to ask the users how they work with these editions, what features they are looking for and for what purposes. Furthermore, this chapter also aims to examine what methods and guidelines currently exist that may allow scholarly editors to disseminate their scholarship and to engage with their users. This chapter provides quantitative information on the current status quo of editions and their users that then informs the conceptual model for dissemination that is proposed in the third chapter. In this respect it should be pointed out that the scholarly community currently creates digital editions in the absence of substantial data on their users and on the usage of this type of publication. Elena Pierazzo has said that scholars are simply expected to operate using their best judgement in this area:

very few studies have been undertaken to test whether our intuition about the use of digital and analogue objects is actually supported by evidence. Even more crucial is the fact that there seems to be only a vague notion of who we are preparing our editions for: are they editors, scholars, students or the general public? And what are the requirements of these groups of users? Are they the same or does each of them approach the edition with different purposes?

(Pierazzo 2015, 147)

In response to this lacuna in editorial theory it is one of the main ambitions of this research to improve the understanding of the users of DSEs. Theories and models in the social sciences are normally rooted in certain sets of stated assumptions but there is no clear consensus regarding the parameters of digital scholarly editing to allow for this type of theorising. Instead we see scholars who work in the field long enough to have earned the right to make assertions about the discipline as a whole, and construct theoretical models that are not backed up by any statistical data. This is why one of the main

aims in this chapter is to ask questions that may challenge any assumptions that underly the editorial process and its effect on dissemination. While scholars are inundated with lists of tools that can help editors to create digital editions (or perform digital humanities research in general), such as the DiRT Directory⁵, there is conspicuously less information on how to actually reach an intended audience or to even understand these users. This chapter intends to bridge some of these informational gaps through the use of empirically gathered data as the basis of the discussion. These data are drawn primarily from two main sources. One dataset is a catalogue of existing digital scholarly editions which has been assembled by Greta Franzini and made openly available for usage and exploration.⁶ The other body of data comes from a comprehensive user study I conducted while on secondment at King's College London on the potential use of tablet computers for the dissemination of digital editions. The latter dataset also brings together a broad range of information that is relevant to my overall research and goes far beyond what the title of the study might suggest.

1.2. Users and devices

In 2014 I undertook a user study in which the principal aim was to explore the potential role of tablet computers for the dissemination of digital scholarly editions. The study comprised an online survey as well as more in-depth interviews from a cross-section of participants. A principal aim of the user study was to identify user needs, purposes and interactions with scholarly editions while also gathering data on their working habits and digital technology usage patterns. As someone with no specific previous background in scholarly editing I also decided to employ this user study as a means to satisfy some of my own initial curiosities about the field. Having been

⁵ DiRT (Digital Research Tools) Directory: <http://dirtdirectory.org/>.

⁶ The analysis in this chapter is based on the dataset as it existed in July 2015, it has since then evolved and more editions have been catalogued which can be seen on the current site. The catalogue has recently been added and syndicated to the German Databank-Infosystem (DBIS) http://rzblx10.uni-regensburg.de/dbinfo/detail.php?bib_id=allefreien&colors=&ocolors=&lett=k&tid=0&titel_id=102043.

academically trained as a historian and worked professionally for a number of years as an editor creating digitised collections of archival materials for a commercial publisher I needed to clarify some things regarding the world of scholarly editing. Consequently, I included numerous questions that were not specifically related to the investigation on tablets but rather to the field as a whole. This section of the thesis will explore those results - analysing the data both for the purposes of exploring this potential role for tablets and other handheld devices while at the same time establishing some descriptive data on the users of digital editions. The full dataset is made available online as a digital appendix (see Appendix 2).

1.2.1. User Study Objectives

The academic community has identified the exciting possibilities offered by the advent of touchscreen handheld devices for the dissemination of digital scholarly editions (Pierazzo 2015, 163), and yet there remains little advancement into this area by scholarly editors. If tablets can be utilised successfully as a platform for editions it is crucial to first identify the preferences and habits of the user base. The main aim of this study was to establish a body of data that could aid the scholarly community in designing effective tablet interfaces and to posit some suggestions as to their role in the dissemination of scholarly editions.

In an age in which people increasingly expect to be able to digitally access relevant information on almost any device few digital editions are responsively designed or specifically designed for tablets or smartphones. In several countries mobile access to the web has now surpassed desktop usage and trends suggest that this will become a global picture in the near future (StatCounter 2014a). If such devices can reach a large audience then it would be logical to consider how to employ them to disseminate knowledge from scholarly editions of texts, be that in the shape of an entire edition or just certain components of it for particular purposes. Could a tablet-based edition fit into the workflow of a researcher and would students and teachers use one

in the classroom? To answer these kinds of questions it is absolutely crucial to try and understand the users. Claire Warwick said of humanities users that “despite the popular image of the luddite humanities scholar who does not know what they need or how to use it, we have found that users have very complex models of their information needs and environment; they are thoughtful and critical about the affordances of physical and digital resources” (2012, 6).

The overwhelming majority of digital editions that I have trialled on a tablet are not responsively designed. Those that were responsive to the smaller screen size were still difficult to use from a touchscreen user’s perspective. Beyond browser-based editions there are few apps specifically designed for handheld TUI (touch user interface) devices, with some notable exceptions, such as the *CantApp*⁷ edition of the *Canterbury Tales* that is under construction and also an iPad edition of the *Exeter Book*⁸ aimed at high school students. A digital edition of *The Waste Land*⁹ that was developed by a commercial publisher, TouchPress, has proven to be highly popular but would probably not be deemed to be a ‘scholarly edition’ by the academic community. Commercially there are also some instances of print editions being adapted into interactive e-books, for example Random House’s *The Annotated Pride and Prejudice*,¹⁰ which comprises an annotated text integrated with an audiobook, interactive maps and timelines as well as video. Such examples are well-made and pleasant to use but scholarly editors have not really embraced these publishing formats thus far.

⁷ This prototype app is available on Google Play: https://play.google.com/store/apps/details?id=com.sdeditions.CantAppTest&referrer=utm_source%3Dappbrain%26utm_medium%3Dappbrain_web%26utm_campaign%3Dappbrain_web

⁸ More information on the Exeter Manuscripts Project can be found on their website: <http://humanities.exeter.ac.uk/research/react/projects/exetermanuscripts/>

⁹ Available from iTunes: <https://itunes.apple.com/gb/app/the-waste-land/id427434046?mt=8>

¹⁰ Also available from iTunes: <https://itunes.apple.com/us/book/annotated-pride-prejudice/id908755506?mt=11>

Kathleen Fitzpatrick in *Planned Obsolescence: Publishing Technology and the Future of the Academy* pleads for scholars to open to “the possibility that new modes of publishing might enable, not just more texts, but better texts, not just an evasion of obsolescence, but a new life for scholarship” (2011, 14). The proliferation of portable handheld TUI devices marks a rather significant shift in how we engage with information in many aspects of our lives. This begs the question as to whether such hardware could become a channel that would provide some form of new life for digital scholarly editions of texts. Can they provide something a little different than web browser based editions?

1.2.2. User Study Methodology

I performed the user study while on secondment at King’s College London with DiXiT supervisor Elena Pierazzo and with support from an MA student, Manuela Vastolo. I also received support in the construction of the survey from another DiXiT supervisor, Mats Dahlström, from the University of Borås.

As it was our intention to reach a broad and international respondent base, it was decided to carry out an online survey using SurveyMonkey. The survey contained primarily quantitative questions but also some qualitative open text questions where we believed they would be necessary or useful. Respondents were also asked if they would like to be invited for follow-up studies, and from this pool we selected a cross section of seven respondents for interviews that were carried out in person or over Skype. The purpose of the interview was to supplement the data gathered in the survey with a more open sort of discussion. The interviews were semi-structured, and all interviewees were asked roughly the same set of questions but were given space to lead the direction of the discussion to suit their own interests. The idea was to give people the opportunity to raise ideas or clarify issues that they could not express in the survey, and also for us to ask some questions regarding some of the results we had seen.

One of the challenges with the study was to identify the user groups and, furthermore, once identified, how to reach those groups. Given that many editions are web-based and open access they have the potential to reach all sorts of *unexpected* users. However, for the purposes of this study we could only legitimately target *expected* users. So we gathered respondents from all those engaged in humanities subjects academically, beginning from high school students from age 16 right up to experienced scholars and university lecturers. Due to a very low response rate of only two high school students we removed this demographic from the final results. It is difficult to know if this was caused by a lack of interest in the subject matter, the length of the survey, or bad timing (it was during school summer holidays). This is a user demographic that I would like to revisit at some point in the future, but it would probably require a separate dedicated investigation to see where the use of digital editions could fit into a school curriculum.

The survey was distributed through mailing lists, such as the Humanist Listserv, and social media channels, such as Twitter, without sharing restrictions and was conducted over a seven-week period in June and July 2014. One piece of logic or streaming was used in the survey design that created two potential pathways, which allowed us to filter the respondents. They were asked if they had ever used a digital scholarly edition before as defined in the introduction. The 81% of respondents who had used such an edition were then required to answer all survey sections. The remaining 19% who answered that they had not used a digital edition, or were unsure if they had, were then channelled to answer only the section on digital habits and nothing specifically relating to digital scholarly editions. This was done to avoid generating data from respondents who were not familiar with editions that could reduce the validity of the results.

The matter of defining a digital scholarly edition in the survey introduction was quite a challenge, given that such definitions are often contentious and rather complex. In the end it was decided to provide a very broad explanation that was primarily aimed at high school students who had probably never considered the term before:

A scholarly edition is a publication that provides an important work of literature or historical document that has been prepared by experts in the field. These can be in print or digital forms (or a combination of the two). An example of a scholarly edition in print would be a volume of a play by Shakespeare that includes a long introduction, lots of footnotes or endnotes and variants of the text. Scholarly editions in digital form generally serve the same purpose as the print editions but can provide other features such as including digitised images of original manuscript documents, a search functionality and it can have interactive elements such as maps and videos. Digital editions have less restrictions in terms of space, so they can sometimes include a large collection of texts at which point it may be called a digital archive.

1.2.3. User Study Demographics

Excluding the two high school students that were removed from the results, the survey was started by 263 people, of whom 222 completed it. With a completion rate of 84% and many positive comments sent by email and in the feedback section, it was quite clear that there is a real interest in this subject area. Realistically it would be beyond the scope of such a small-scale study to get a sufficiently large sample of global digital edition users to be statistically representative (if we could even estimate how large that population might be). Therefore, the statistics provided from this study are a descriptive analysis of this particular respondent group. The sample had a reasonably good spread in terms in gender, age, country, occupation and academic discipline, so the descriptive information furnished here is enough to provide us with some useful indications that will be built upon later with other methods.

Gender and Age (Q39, Q40)

The gender distribution was 49% female, 46% male, 5% “other/prefer not to say”. Respondents ranged from the 16-19 to the 70+ categories. 86% of those were between 20 and 50 years old and 54% were between 25 and 40.

Country of residence (Q42)

The survey received quite a global response with submissions from 22 different countries, although this admittedly came primarily from the global north and other highly developed countries. The United Kingdom was the largest respondent group followed by Italy, Belgium and the USA. There was also a high representation from Canada, France, Germany, Netherlands, Ireland, Norway and Spain. The remaining respondents came from Sweden, Austria, Japan, Australia, New Zealand, Poland, Greece, Denmark, Portugal, Columbia and Serbia.

Occupation or position (Q41)

The survey respondents came from a wide distribution of backgrounds, as can be seen in Figure 1.1. PhD students were the largest group (24%) and high school teachers the smallest (6%). Although only 13 respondents were high school teachers, this demographic still constituted a diverse group. One of the high school teachers was also interviewed, so the data for this demographic is hopefully broadly representative. The 'Other' group encompassed many kinds of researchers, editors, librarians and technical staff.

Q41 Occupation or position

Answered: 222 Skipped: 0

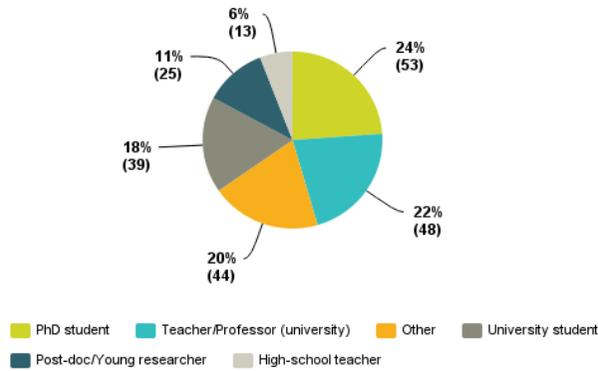


Figure 1.1: User survey - Occupation or position.

Academic disciplines and familiarity with digital editions (Q29, Q44)

All respondents had backgrounds in the humanities and several of them were involved in more than one academic discipline. Digital Humanities, Literature and History made up the three largest categories, while there still was a large representation from philology, medieval studies, classics, textual studies and information science as well. English was the most frequently listed language in this list of disciplines. The work of 60% of the respondents related to the modern historical period from 1500AD to the present, that of 24% related to the medieval era and 9% worked on subjects related to the classical periods. This percentage breakdown of time periods is remarkably similar to what will be discussed in section 1.3.1. of this thesis, which analyses Franzini's *Catalogue of Digital Editions*. That the percentage from the classical period is lower in this particular study than in Franzini's *Catalogue* may be accounted for from the fact that Franzini's interest and area of expertise is in

that particular period, which may result in a proportional overrepresentation in the catalogue. Finally our survey showed that within the 81% (179) of respondents who had used a digital edition before, 44% were both users and creators of editions, while 29% were frequent users and 27% occasional users - which provided the survey with a good distribution of experience levels.

1.2.4. Digital Habits

Electronic device usage (Q4)

A crucial element of this methodological research was to consider the devices and interfaces by which users access and consume the content of scholarly editions. Before asking any other questions about the respondents' digital working and reading habits it was important to establish which electronic devices they use for both working and reading. Interestingly, laptops were almost universally used for these tasks, at 99% of the respondents, with smartphones being the next most commonly used devices at 69%. Tablet usage was reported among 58% of the respondents - this is perhaps a slightly higher figure than might be considered average among these types of groups, owing to the fact that tablet owners were more likely to have taken an interest in a survey about tablet usage than non-owners would. Figures for dedicated e-readers were notably lower than other reading devices on this list.

Q4 Which of the following electronic devices do you use? (Please select all that apply.)

Answered: 222 Skipped: 0

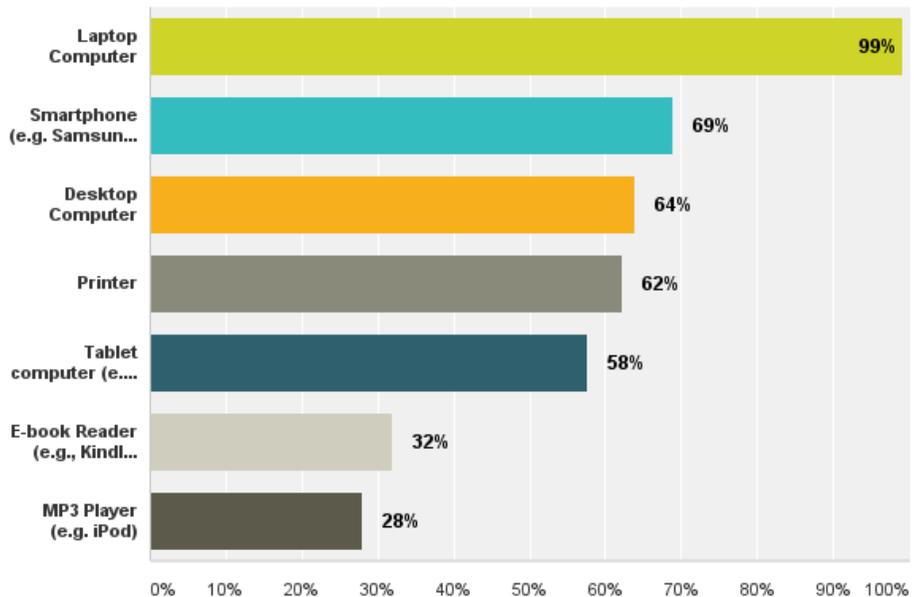


Figure 1.2: User survey - Device usage.

Reading software (Q8)

PDF reading software was almost universally used among respondents for work or study reading. While this is not surprising, whether it is a reflection of user preferences or rather an indication of the prevalence and ubiquity of the PDF as an output format cannot be ascertained from this result. Other types of dedicated reading software score much lower, while web browser reading and cloud-based reading in the form of Google Docs score quite high.

Q8 Which software have you used for work/study reading?

Answered: 222 Skipped: 0

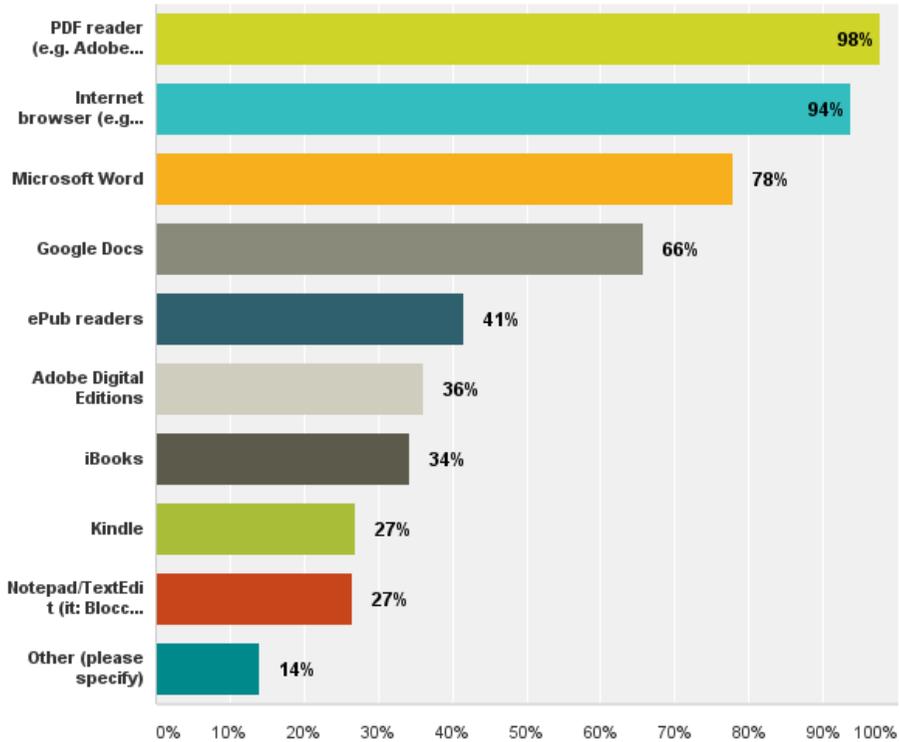


Figure 1.3: User survey - Reading software.

Sources of e-books (Q9)

Surveyed e-reader owners tended to source their e-books via cost-free distribution channels. Free e-book stores and databases were the most commonly reported distribution channel with 57% of respondents that had used this method, and another 32% used libraries. Amazon was the most common commercial distributor in our list with 38%, which is much more than the use of iBooks (23%) and Barnes & Noble (9%). The relatively high

percentage of Amazon users could be more of an indication of the popularity of the Kindle as a piece of hardware than of user willingness to pay for their e-books.

Paper versus digital (Q10)

Respondents were also asked how often they read digitally versus reading on printed paper, and also how often they take notes digitally versus with a pen and paper. There was a negligible divide between reading digitally and on paper. However, when it comes to taking notes there was a relative preference towards pen and paper, with a difference of 18% between those respondents who always take notes with a pen (23%) and those who take notes digitally (5%), while those who claim to never or seldom use a pen were at 7%. In retrospect, it would be interesting to survey how many would be interested in using a stylus or smartpen with a tablet.

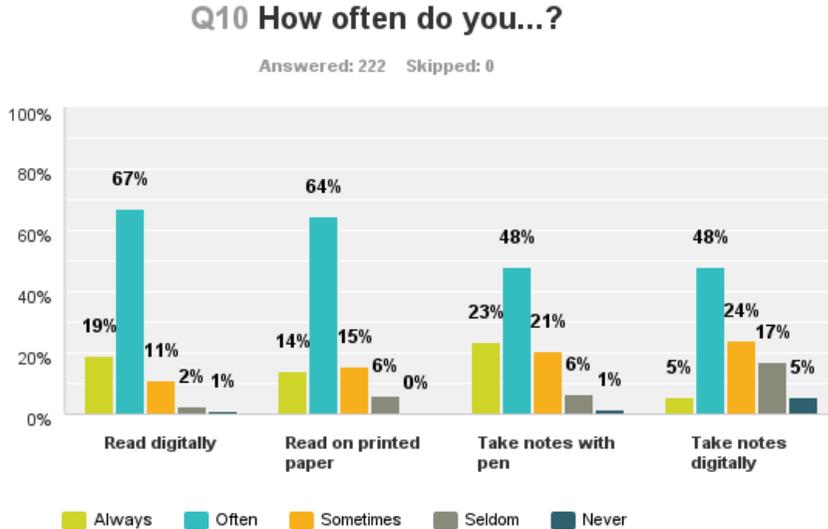


Figure 1.4: User survey - Reading and notetaking.

Digital note taking (Q11)

Among the respondents who use digital media for taking notes, the most popular software package was Microsoft Word (which also featured as the third most popular reading software in Q8). Google Docs and Evernote were then the next most popular, both cloud-based services that are designed to work on almost any device.

E-learning (Q12)

To help get a sense of how and why people use online services for any kind of learning we asked quite generally what websites or apps they use without steering the responses in any particular direction or providing a specific definition of the term. The most frequently listed service was MOOC (Massive Open Online Course) provider Coursera. Online learning platform Moodle was the next most common and its rival, Blackboard, was also high in the rankings. Learning digital skills and languages were among the most popular subjects for e-learning, with many respondents listing services such as Google Academy, CodeAcademy and Duolingo.

Print versus Digital Editions (Q21)

There was a relatively even split in usage of print and digital editions among the respondents who had used editions before, as can be seen in Figure 1.5 below. Here we see 39% leaning towards print (36% + 3%) and 32% leaning towards digital (28% + 4%), while 29% used both forms equally. In total 93% of respondents had used some combination of print and digital, which perhaps reflects both the persisting relevance of print as a medium and the perceived status and value that the digital form has now attained.

Q21 Are the editions that you use mostly print or mostly digital?

Answered: 179 Skipped: 43

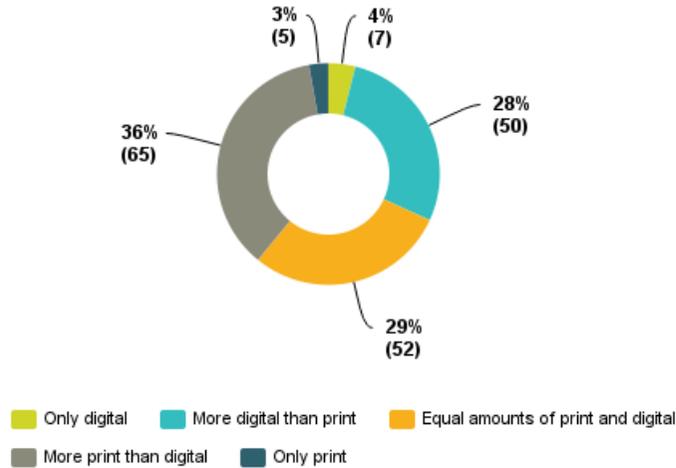


Figure 1.5: User survey - Print versus digital editions.

1.2.5. Tablet usage

Note: In this section, the responses for respondents that were non-tablet users have not been included, and the figures have been recalculated to represent only the respondents that had some experience using tablets.

Operating systems and brands (Q14)

Respondents were asked to name the brand of tablet that they use. In principle, this question intended more to establish the operating systems of their devices; but since less advanced users may not know the answer to this question, we hoped it would be easier to extrapolate that information from the brands. The top brand was the iPad with 68% of respondents and Samsung the second most commonly used brand with 11%. All the other brands had significantly lower user numbers. This statistic is very close to the

numbers StatCounter provides for global tablet usage statistics, which also places iPads at 67% and Samsung slightly higher at 16% (StatCounter 2014b). These results seem to suggest that we acquired a reasonably fair sample of the global user base for this study. Looking at the brands used and the app stores used by our respondents, the operating system split was 67% for iOS, while approximately 40% owned an Android and approximately 6% owned a Windows based tablet. In this respect it is also important to note that 14% of our respondents checked more than one box on the questionnaire for operating systems, which suggests that at least 14% owned more than one tablet device. For developers it may be useful to note that over the last two years StatCounter showed a steady increase in Android users worldwide and a corresponding decrease in iOS market share (see Figure 1.6). Furthermore, if we group ‘mobile’ and ‘tablet’ operating systems together, we see that Android is already a dominant force with 54% of the market share and iOS holding 31%, as displayed in the chart below (StatCounter 2015a).

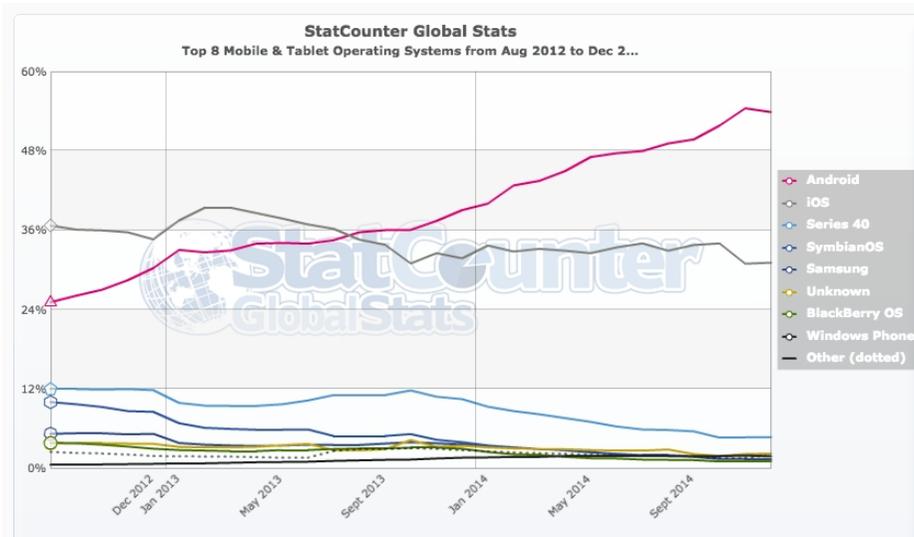


Figure 1.6: Tablet operating systems trends (StatCounter 2015b).

Learning, teaching and gaming (Q13, Q15, Q16)

From the group of respondents who were tablet users, 44% had used them in the classroom for teaching or learning, while 80% had used tablets for some form of learning. Among the interview respondents some had ideas for teaching exercises they would like to conduct with a tablet and hand out to students to work in groups. We also explored if gamification might be a worthwhile avenue for dissemination of knowledge and engagement as play can be a useful form of learning, and discovered that 57% had used tablets for gaming. Among the games that respondents listed as most preferred, the top two were Candy Crush and Angry Birds, both games developed specifically for touchscreen interaction. Several more classic games also had a high representation, such as Solitaire, Chess, Tetris and a number of word play games such as Scrabble.

Apps, browsers or both (Q17, Q18, Q32, Q33, Q36)

For our study, we wanted to know whether users would prefer to interact with digital editions in the form of native tablet applications designed for specific operating systems or in the form of a responsively designed website. In the survey, the tablet users had experience using a diverse range of native apps including social media, reading apps for books or news and also several work-related apps for file storage and note-taking.

Only 30% of all respondents had previously attempted to use a digital edition on a tablet and even among the tablet users only 44% had made an attempt. Our interviews suggested that this low attempt rate may be due to a combination of an expectation that the user interface wouldn't work well and the need for access to other software while using the edition that is only available to them on their desktop machines. Currently, tablet usage in general fits better with users' leisure/reading activities than with their working/research patterns.¹¹ When our tablet-using survey respondents were asked which format they prefer to use in general, 55% favoured native apps

¹¹ A study by ComScore in the UK has shown that tablets are the most popular devices after daytime work hours peaking between 8 and 9pm, while PCs dominate daytime traffic (Radwanick 2013).

while 45% favoured browsers. When answering the same question specifically about digital editions, 37% remained undecided on which they would prefer; 40% preferred the idea of using editions in the tablet browser, with the remaining 23% opted for native applications. From the large percentage of undecided answers and a number of comments written it appears that several respondents believe that their answer would depend on the type of digital edition. Of those that had a clear preference, it is interesting to see that a larger number preferred the idea of editions designed for browsers over apps, even though 55% of the sample preferred using apps for general purposes.

The survey revealed that 88% of tablet-using respondents would prefer for the edition on a tablet to be available offline, i.e. locally stored and accessible without a data connection. While this would certainly be possible using a native application (an app developed for one specific platform) depending on data storage requirements, it seems to conflict with the respondents' general preference for editions to function as responsive sites - which, being web-based, are naturally not available offline. After raising this issue with the participants in the follow-up interviews, it became clear that the desire for responsive website editions and the desire for them to be available offline are not in principle incompatible with each other, but rather a reality that results from the technology that is now available to us. Interview respondents suggested that while on the one hand they would prefer not to be tied to an internet connection, on the other hand they still want its materials to be presented in an environment that they understand (i.e. the web). Contemporary users may imagine digital editions as existing exclusively in the form of websites, so they may have less experience of how they might work outside of that model. A majority of the interview respondents suggested that editions should ideally be presented in the form of a responsive website but with a stripped-down version of the edition in app form to be used mainly for reading, teaching or public engagement.

Desired features of editions for tablets (Q34, Q35, Q37, Q38)

Among tablet-using respondents the most desired features for a tablet-based edition were note-taking and annotating functionalities. This result certainly adds weight to the idea that a tablet could be an excellent platform for a

reader's edition to perform close-reading. Social features scored quite low in this case, with only 23% selecting the option. This feels a little disappointing, given the potential of tablets for collaborative work or for social editions, but perhaps it is a fair reflection of the current standing of that type of technology at present. In a later question 26% of the sample said they would not use any of the social features listed. Respondents also emphasised in their comments that stable URLs were an important feature for them for sharing and citation purposes. Among a list of dynamic features suggested to respondents the most popular was a dynamic image viewer for facsimiles. The majority of the sample favoured this idea of interactive features such as timelines and maps, perhaps due to their potential to contextualise materials in terms of space and time and provide alternative pathways into the content. Audio and video features were only selected by 29% of respondents. These are features perhaps best suited to editions of texts for performances such as music and theatre.

Q35 What types of functionalities do you wish you had in a digital edition on a tablet?

Answered: 124 Skipped: 31

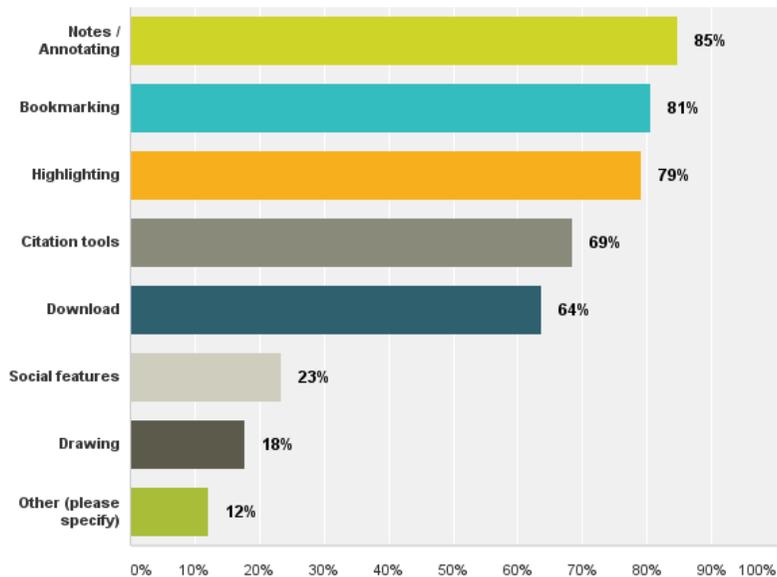


Figure 1.7: User survey - Desired functionalities for editions on a tablet.

1.2.6. User Study Conclusion

One of the most difficult challenges with creating the survey and interpreting its results is that our respondents have used diverse types of digital editions. In the open feedback question we provided at the end of the survey, a number of respondents explained that they found it difficult to answer some of our questions because their answer would “depend on the edition”. Acknowledging that there can be no one-size-fits-all editorial guideline for edition design, I still believe the survey aggregated enough data to propose some general recommendations. Before going into these findings, however, I would like to start off with a general remark on the survey itself. Namely, that if I was to conduct a similar survey again I would not restrict the study to tablet computers alone, disincluding smartphones and the diverse spectrum of devices that are somewhere in between. Instead, I would focus the study more on the use of mobile haptic devices in general. At the time that the survey was carried out we anticipated that a smartphone was probably too small to be a realistic platform for a digital edition, but that may not be the case.¹² Furthermore, it is quite probable that a number of the respondents did not make a black-and-white distinction between tablets and smartphones when considering their responses. Indeed, in the feedback section some of the respondents expressed that they were more interested in smartphones than tablets and some of them even reported to have completed the survey itself on their smartphones.

The user study data clearly suggests that tablet computers can play a very useful role in the dissemination in a number of ways. The three main areas that tablets can be beneficial in this area are for:

¹² The Society of Swedish Literature in Finland are currently developing a platform for mobile-friendly editions called ‘Digital Edition 2’ which may soon find the answer to this question (Köhler 2017).

- Reading editions¹³
- Teaching and learning applications
- Engagement and outreach

The survey feedback and interviews strongly indicate that the respondents desire a better reading experience than what they typically encounter in an edition that is presented in a web browser. A tablet could offer an environment more suited to close reading and extended reading by offering a more distraction-free experience. The survey indicates that users would like such an edition to have integrated functionalities for taking notes, highlighting, bookmarking and citation. The format for reading editions would need to be decided on a case-by-case basis depending on the audience. However, it is clear that there is a demand for both editions to be presented with rich interactive features, but also a simultaneous demand for a stripped-down version in a simple format such as a basic ePub that can be used offline. Given that 74% of all respondents had used tablets for some form of learning, combined with the fact that 72% of second and third level teachers use editions in their teaching, it is evident that tablets can provide some interesting possibilities in that area. Specific exercises for particular learning outcomes could be designed as apps by repurposing materials from the full edition. Performing a user experience study or an investigation of the more popular learning apps would be a valuable contribution to design in this area. As Alyssa Arbuckle (2014) has argued, tablets can provide an excellent platform for the public digital edition, one that is aimed at a general rather than specialist audience. Creating such public editions, learning apps or games could help disseminate valuable knowledge beyond the walls of academia in an enjoyable and meaningful way. It could potentially provide a form of exposure that would make the digital scholarly edition project more discoverable and also offer alternative pathways into the texts and materials, an idea that will be explored in Chapters 3 and 4.

¹³ Reading editions that possibly include notetaking/annotating functionalities.

These suggested forms of publication are all things that could be derived from a browser-based digital edition aimed at scholars. This indicates that there is a demand for a diversification of the channels by which its content can reach users with varying needs and requirements. The user study has also clearly shown that users would like to see more responsive design approaches to building digital editions on the web so that they function better across devices. The typical convention in responsive design is to take a mobile-first approach and then expand as interface size increases. It is important to consider that some technologies that work on a desktop do not always work with tablets and mobiles, such as Flash, which is used by several image viewers for facsimiles in digital editions. Furthermore, it would perhaps be valuable to build responsive digital scholarly editions for the browser and then also make that website a hub from which all the other formats like apps and reading editions can be downloaded. Such an approach might help find a solution for the demand for offline versions of digital editions. It would also be similar to how Peter Shillingsburg envisions his knowledge site where a “heterogeneous readership wanting a variety of different things which can be accessed from a single but complex knowledge site providing access to a range of specific texts of a work and the tools to use them variously” (2006, 100) and will be explored in more detail in section 3.4 of this thesis.

To produce digital scholarly editions that exist exclusively as tablet applications would not be very effective, as it creates a significant limitation for access. But if we develop a native app as one of the additional modes for dissemination of an edition then it is important to give careful consideration to the choice of operating system. In an ideal world we would like to build applications that work on all major operating systems, but the extra resources required to achieve that may be out of scope. If we choose to build for just one OS and want to reach the largest audience possible, then it would almost certainly be best to build in iOS in the present climate (although we have seen that Android is gaining ground). However, there are two significant drawbacks to committing to building solely within the Apple environment. Firstly, iPads, although abundant, are expensive and therefore beyond the reach of a large percentage of potential users. Ring-fencing academic output

within such an environment would potentially augment society's digital divide.¹⁴ Android dominates the developing world markets almost entirely, mainly because it is not tied to a specific piece of hardware so it can be used on low-cost devices. The second issue with developing for iOS is that Apple has control over what is or is not accepted for release on the AppStore. Independent downloads of apps are possible only on 'jailbroken' iPads, which puts this channel outside of the reach of the average user.

The survey sample did not express a great deal of interest towards social features for tablet-based digital editions. However, industry statistics show that social media is second only to gaming in terms of time spent per app category (SmartInsights 2015), and we have seen already that tablet usage peaks during leisure periods. So there is probably good potential for using tablets as a social reading platform such as the ones developed at *Digital Thoreau*¹⁵ and *Candide 2.0*¹⁶ using social tools CommentPress and Commons in a Box. If online collaborative reading communities are truly beginning to flourish as David Dowling (2014) suggests, then perhaps the usage of tablets for social editions is also a potential area for consideration. If social reading proved to be successful on the device, then it could also be utilized as a platform to create social editions. Ray Siemens et al. state that: "with the facilitation of social media, there is a growing movement in humanities knowledge building communities to expand the scope of community membership beyond academics, and into the interested and engaged public" (2012, 454). As highly social platforms, tablets have the potential to play an important role at this intersection of an engaged public and the scholarly community.

The user study indicates that tablets can certainly play a valuable role in dissemination. More generally, however, it also suggests that users would like to be able to consume digital editions in more diverse forms. As editions cannot do all possible things at once, their editors need to decide which

¹⁴ Digital divides are discussed in section 3.9.2.

¹⁵ *Digital Thoreau*: <http://www.digitalthoreau.org/>.

¹⁶ *Candide 2.0*: <http://candide.nypl.org/text/>.

parameters and forms in which to present in their content, a decision they would ideally make in some sort of consultation or collaboration with their targeted users. Based on the results of our survey, I would suggest that editors would at least need to consider the development of their editions with device multiplicity in mind, and then - when the choice of the edition's dissemination technologies has been made - to consider their potential alternative uses in order to bring more content and better value to their users.

1.3. Digital editions: the status quo

1.3.1. Quantifying digital scholarly editions

Trying to understand the form and composition of existing digital editions, as a corpus, in a quantifiable way is extremely difficult because of the fragmented and rapidly evolving nature of the field it is probably not possible for anyone to fully achieve a macro level analysis of DSEs as a corpus. A number of attempts have been made to compile lists of editions relevant to specific sets of criteria. Perhaps the best known publicly available list is Patrick Sahle's website *A catalog of Digital Scholarly Editions*.¹⁷ With 412 catalogued items (as of March 2017), it is probably also the most extensive list available online. While Sahle has created some basic bibliographic data for the editions in his list, the data is not made available in a way that could be readily utilised for statistical analysis nor is there a sufficient diversity of data fields to make such analysis worthwhile. There are other catalogue resources in existence such as the *List of Project's Using TEI*,¹⁸ this lists a diverse range of digital projects using the TEI's text encoding standard, including projects that are not specifically 'editions'. Again, as with Sahle's list, it does not contain data that is granular enough for some useful analysis. Numerous lists of editions centred around particular areas of scholarship also exist, such as with

¹⁷ Sahle, Patrick. *A Catalog of Digital Scholarly Editions*: <http://www.digitale-edition.de/vlet-about.html>.

¹⁸ TEI. 'Projects Using TEI': <http://www.tei-c.org/Activities/Projects/index.xml>.

the *Digital Classicist Wiki*¹⁹ or the *Renaissance Knowledge Network Communities*²⁰, but similarly, these do not represent workable datasets.

Greta Franzini, a PhD candidate at UCL and researcher at Göttingen, has taken this extra step by attempting to create a catalogue of existing digital editions with very granular information regarding their structures. This dataset initially began as a research exercise in which she hoped to discover why there is such a shortage of digital editions of ancient texts - and, granted some of the *Catalogue's* focus remains weighted towards that research field. Franzini later realised that this exercise was a useful tool in itself for gathering information about broader trends in digital editing and that she could use this information to inform her decision making while constructing her own edition. It has since developed into a publicly available dataset and has recently been added to the Databank-Infosystem (DBIS) ensuring its sustainable availability to German Universities. Her methodology involved contacting each individual editorial team to gather some background information on the project using a questionnaire which she then followed with an analysis of the edition itself, in which very detailed data has been collected.

The list is, and will perhaps always remain to be, a work in progress - or rather a work that will continue to grow and evolve. In a chapter published about the catalogue, Franzini et al. concede that it is not a comprehensive survey as it does not contain editions in languages that use Chinese or Cyrillic characters for example (2016, 172). It does, however, represent the best available open dataset of its kind in the field working of European language editions, in the Latin alphabet, which is why I selected it to use for analysis in my own research. I chose to work with this dataset rather than attempting to duplicate the work of a well-regarded scholar. The focus of the analysis was specifically on the data fields that are most relevant to matters of the dissemination of digital editions

¹⁹ *Digital Classicist Wiki*. 'Projects': <https://wiki.digitalclassicist.org/Category:Projects>.

²⁰ *Renaissance Knowledge Network (ReKN)*:
http://rekn.itercommunity.org/car/editions?items_per_page=All.

Number of digital editions

At the time of research (in July 2015) the catalogue contained 196 editions in total, while Patrick Sahle's catalogue then contained 364 editions. Keeping in mind that Franzini's cataloguing efforts are more rigorous (and therefore more time-consuming), her resource may eventually still expand to a similar scale as Sahle's - even if we account for the possibility that some of the editions on Sahle's list may no longer be extant - which would categorically exclude them from the criteria of Franzini's catalogue. As far as can be ascertained from the available data, the total number of existing digital editions in European languages using the Latin alphabet number only in the low hundreds. Developing this catalogue information further could help future researchers and editors gain greater insights into the nature and status quo of what is currently a rather fragmented corpus of editions.

Period

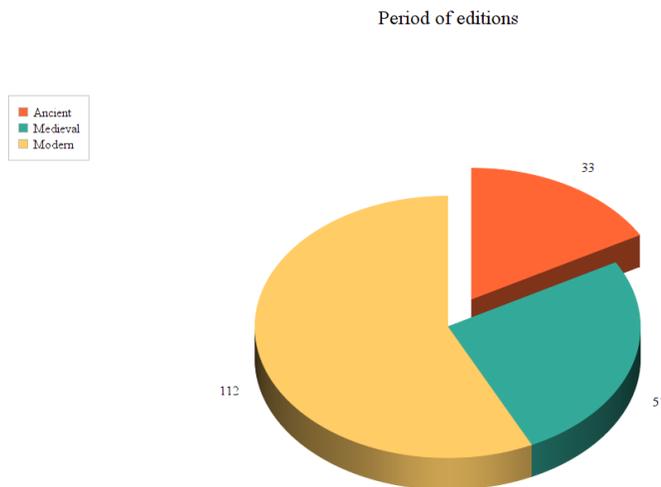


Figure 1.8: Period of editions in Franzini's *Catalogue of Digital Editions*
Ancient (pre 5thC) = 33 (17%); Medieval (6th to 14thC) = 51 (26%); Modern (15thC onwards) = 112 (57%).

There is a clear disparity between the time periods of editions, particularly the gulf between the number of classical texts and modern texts. There are many practical and indeed sociological reasons for this type of disparity, the latter can be seen in the vastly greater numbers of students who enrol in modern history programmes at university compared to those on classical studies courses. But on a more practical level there are inequalities in availability and access to materials, where modern materials are inevitably more abundant, in addition to the fact that the skills and tools required to make an edition of a classical text are also perhaps less commonplace. Mats Dahlström already highlighted this apparent dearth of classical editions in 2000 and argued that it was probably due to the a general shortage of time, resources and expertise but also to the fact that the software at that time was insufficient to encode, store and represent the complexity of classical texts (Dahlström 2000).

Language and location

English and Latin are by far the predominant languages in the catalogue. They are also the most common languages of the editions that have used TEI encoding on the TEI list of projects. Franzini et al. suggest three potential reasons for the predominance of these two languages among that TEI encoded corpus: “English and Latin texts are more likely to be encoded in XML because both are Latin-script languages; XML is not yet easily implementable for non-Latin scripts (e.g. Cyrillic or Arabic); or the XML (and TEI) penetration is higher in academic environment where English and Latin are studied” (2016, 177). But it is likely that this bias also reflects the periods that are most prevalent in this catalogue: where Latin was the *lingua franca* of the medieval period, English has taken on that role in modern times.

In addition, this divide may also be indicative of the locations where these digital editing projects are hosted. The USA is host to the largest number of editions at 66, followed closely by the United Kingdom with 63. The remaining countries combined also amounts to 63 - most of which are in Europe, but including a small number from Canada, Australia and New Zealand. The only geographic outliers in the list are a single edition from

India, and another from Israel. This kind of heavy imbalance suggests that the reason these edition projects are being undertaken in this part of the world is not solely due to academic or socio-cultural interest but also points to the possibility that a global digital divide causes this disparity, or at least implies a lack of global dialogue on the topic.

TEI

The catalogue indicates that 139 of the 196 editions used text encoding: 86 used TEI (44%); 16 custom XML (8%); 37 Other (19%); 57 Unclear (29%).

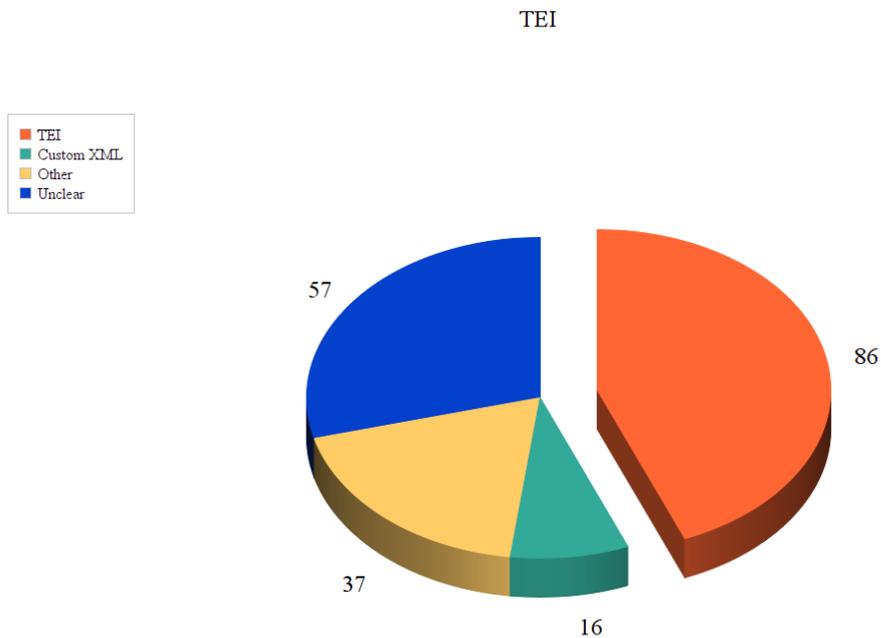


Figure 1.9: Editions using TEI in Franzini's *Catalogue of Digital Editions*.

While TEI is the most commonly used standard (as the only significantly large standardised encoding method that is endorsed and organised by the textual scholarship community), a slight majority of editions do not adhere to it. In the responses to Franzini's study two reasons were given why editors did not use TEI encoding: "TEI has to be learnt and some projects feel they do

not have the time to develop and apply this skill effectively; the second reason is editorial in that custom XML can be designed to better fit the nature and features of the source text” (Franzini et al. 2016).

Audience

There is little explicit information regarding the audiences for whom editions are actually intended. Franzini found this information for only 13 of the editions: 5 of these claimed to target a general public as at least one of their audiences; 9 of which targeting some kind of scholarly audience; 4 mentioned targeting some kind of students.

Creative Commons Licence

Only 32 of the editions had a Creative Commons license, representing a mere 16% of this list. This is a rather disappointingly low number, given that CC licenses are intended to make explicit the ways in which users can share, use and build upon the existing publication and its data. It is probable that there are many instances in which the creators of editions would be pleased for their work to be used and re-used in these ways but by failing to make it explicit the users may be deterred or discouraged.²¹

Crowdsourcing

Only three projects in the catalogue had used crowdsourcing as a method in their edition projects. This is a surprisingly low result given how often this methodology is discussed in Digital Humanities gatherings.²² However, at least two well-known editions using this method which are still works in progress do not feature on this list, the *Letters of 1916*²³ and *Transcribe Bentham Project*.²⁴

²¹ The use of the Creative Commons licenses are discussed later in section 3.9.3 of this thesis.

²² For example a quick look at the book of abstracts for DH2014 in Lausanne shows the term crowdsourcing appearing 94 times (in its various spelling forms).

²³ *Letters of 1916*: <http://dh.tcd.ie/letters1916/>.

²⁴ *Transcribe Bentham Project*: <http://www.ucl.ac.uk/Bentham-Project>.

Mobile friendly

Franzini set up a category to show which editions were designed to work well on mobile devices and only one edition met this criteria Pietro Monelli's *Inventory in Verse, 1681*²⁵ which is still not highly mobile friendly. There are some other projects, however, which have some basic responsive design features, such as the *Beckett Digital Manuscript Project*, which at least allows the website to adapt to the screen size, this at least makes it usable even if it is not completely user-friendly in that form.

Funding

Franzini's attempt to gather information from editors on the financial aspects of these projects suggests that this may be a taboo subject, as most respondents were not comfortable providing this information. This anxiety may arise from a certain amount of self-protectionism from within an academic field that often struggles to secure adequate funding. However, without openness in this area it becomes extremely difficult for the community as a whole to gain a practical understanding of the financial requirements for the projects they undertake in order to be planned and executed in a successful manner. The reality of the situation may be further distorted if there are misconceptions surrounding open access, that information could and should be free to all. However, the reality is that nothing is for free, even on the web, and if the user does not incur costs then it is the sole responsibility of the custodians of the project to ensure that there is a funding method for hosting and maintenance of their edition.²⁶

1.3.2. Existing guidelines for publishing digital editions

Editors of scholarly texts have access to some guiding information on methods and considerations for publishing their editions, but to what extent does this body of information provide practical information on the end

²⁵ *Pietro Monelli's Inventory in Verse, 1681*: <http://www.getty.edu/research/mellini/>.

²⁶ The topic of financial sustainability is covered in detail in Chapter 2 of this thesis.

output format, the interface by which users will engage with the edition? In this section, I will share and examine two prominent examples of such guidelines.

MLA Guidelines for Editors of Scholarly Editions

Medium (or Media) in Which the Edition Will Be Published

The decision to publish in print, electronically, or both will have an impact on a number of aspects of the edition, on its fortunes, and on the fortunes of its editor. Some questions an editor should consider in choosing the medium of publication:

- Is the source material itself manuscript, printed, electronic, or a combination of formats?
- What is the desired or potential audience for the work? Is there more than one audience? Will one medium reach the desired audience more effectively than another?
- What rights and permissions are required for publication, and do the terms differ by medium?
- What kind of apparatus can the edition have, and what kind should it have?
- Are there standard symbols or methods in a given medium for representing the typography, punctuation, or other textual features of the material being edited (Peirce's symbols, Shelley's punctuation, size-of-letter problems, spacing problems)?
- What is the importance of facsimile material, color reproductions, multiple versions, multiple states, interactive tools in this edition?
- Working with and from originals is of utmost importance; but some photographic, digitized reproductions make visible certain marks that have deteriorated and are no longer visible to the naked eye, even in the best light. If legibility has been enabled by the photographic or digitizing process, has that fact been explicitly noted to readers?
- How important is permanence or fixity? How can these qualities be attained?
- Alternatively, is there a possible benefit to openness and fluidity (for example, the certainty that new material will come to light)?
- Is there a publisher willing to publish in the medium you choose?
- How important is peer review (and if it is important, how will it be provided)?

(MLA 2011)

The Modern Language Association (MLA) produced the above checklist as part of their guidelines for editors of scholarly editions to help them select

appropriate media format(s). Although this page was last updated in 2011, the questions it highlights still remain relevant and indeed important areas for editors to consider when selecting their media formats. These guidelines suggest that there is a very black and white dichotomous relationship between a print edition and an electronic edition, whereby you can have one or the other or both. This still remains true; you can indeed have print or digital or both. And while this essentially remains true today, it creates the false impression that the so-called ‘electronic edition’ is a homogenous type of entity, when instead there are multitudes of options for publishing in the digital medium. Nevertheless, the MLA guidelines could still be used as an aid to help the editor decide on publication formats, provided that they keep an open mind towards this potential for digital media heterogeneity. In this respect, it is worth mentioning that in 2016 the MLA’s Committee on Scholarly Editing released a statement on digital scholarly editing in order to “broaden the scope [...] to include different editorial modalities” (MLA 2016, 1).

- it must note its technological choices and be aware of their implications, ideally
- using technologies appropriate to the goals of the edition, in recognition of the fact that technologies and methods are interrelated in that no technical decisions are innocent of methodological implications and vice versa
- it should be created and presented in ways ensuring the greatest chance of longevity - addressing this challenge involves infrastructural, financial, and data representation issues (such as the use of widely accepted, open standards);
- it should readily respond to the challenge of maintaining the scholarly ability to be referenced in view of the ways that interfaces change over time; and
- where possible, it should attend to possibilities of sampling, reuse, and remix, supporting approaches to the formation and curation of the edition such as reconstructing and documenting instances of texts and textual change over time, like algorithmic construction and reconstruction (with possible extensibility, including external data); in doing so, it should attempt to balance considerations for intellectual property and labor with the goals of achieving open access and reusability.

(MLA 2016, 1)

In the *Cambridge Companion to Textual Scholarship* editors Neil Fraistat and Julia Flanders lay out their set of ‘desiderata’ for editions in the digital age:

1. interoperable with each other and with other texts, objects tools, maps, user-driven annotation, exhibits, mashups; to make this possible, they should be based on scholarly and technical standards.
 2. layered and modular, so that content is separate from interface and so that interfaces can be designed and redesigned over time for multiple purposes and audiences
 3. multimodal, providing strong analysis not only of text but of spatial, temporal, topical, and material information
 4. dynamic, designed to encourage interaction and manipulation
 5. scalable, to permit meaningful inquiry at both macroscopic and microscopic levels
 6. everted and interconnected, so that data from scholarly resources and editions can be remixed in other contexts, in both the scholarly community and by the general public
 7. sustainable, through publishers, repositories, community will, community access to content, and community expertise.
- (Fraistat and Flanders, 2013, 13-14)

This particular set of desiderata, much like the MLA's guidelines, provides a list of noble characteristics for the edition, but without articulating anything specific about the actual medium of transmission for these publications. In the next section I will attempt to explore this topic of publication medium or format, both focussing on the options already commonly utilised by digital edition projects as well as on potential areas of opportunity. Despite this, the list of 'desiderata' touches upon several key areas in relation to dissemination that I hope to elucidate fully in Chapter 3. In particular, this idea that the content should be made available for multiple purposes and audiences is something that my research further supports, as I argue that these editions need to consider both the scholarly community and the general public.

1.3.3. Publication and dissemination formats: breaking it down

By combining an analysis of the above corpus of digital editions with my own observations of the activities within the field of digital editing this section will identify both the end publication formats (the interface through which the user engages with the edition) as well as the range of secondary communicative formats by which editions are currently disseminated in the

digital realm. This will be done without delving into various scholarly editing traditions such as critical, documentary or genetic approaches, as that is an entire discussion in itself. This might seem like an exercise in stating the obvious, but without clarifying the topography of the field it is impossible to suggest methods for improvement. Mats Dahlström highlights the complexity of this area when he says that the scholarly edition “is, and has been for a long time, a complex and diverse family of document types. Many technologies, professional practices and academic areas converge in it” (Dahlström 2009, 28).

Print Editions

While this research focusses specifically on digital formats, it is nonetheless important to note that print is still a popular medium and will probably continue to be for quite some time, if not indefinitely. The era of doom-mongering regarding the continued future existence of the printed book as a medium is now subsiding.²⁷ We should also take into account that there is also a whole range of hybrid relationships between the digital and the print medium. For instance, this category includes cases where the print medium is the principal output, but one that is complimented by a digital environment that is used to build the data and/or to act as a digital repository of materials such as facsimiles. Moreover, there are digital editing projects that may produce printed scholarly editions as an additional output format, in order to either provide a stable-text edition for reading, or simply because the publication of print volumes remains an important part of the system of requirements for those working in academic institutions. There are also projects such as Oxford Scholarly Editions Online²⁸ that provide digital versions of historically published printed scholarly editions of texts, which could be considered to be a dual or hybrid approach.

²⁷ Statistics for 2016 in the UK show print book sales are now increasing while e-book sales are declining (The Guardian, 2017).

²⁸ *Oxford Scholarly Editions Online*: <http://www.oxfordscholarlyeditions.com/>.

CD-ROM

Produced from the late 1980s into the early 2000s, the CD-ROM was the favoured format for digital editions during a period prior to the rapid proliferation of the web. It was pioneered by textual scholars such as Peter Robinson who envisioned that electronic media could offer a way past the separation of the scholarly editor and the ordinary reader (Robinson 2009, 16). The majority of these actually used the same principal technologies as the more modern web-based editions such as XML and HTML, albeit in a self-contained format. This medium was often proprietary rather than open access and would have had no real added advantage over printed editions in terms of expanding the reach of the publication to greater audiences. However, they do represent the first form of edition that could take advantage of digital technology's ability to store greater amounts of data, display multiple variants of text and provide a critical apparatus which is hyperlinked.

Web Edition

The overwhelming majority of digital scholarly editions publication are now presented as websites, in line with the increasing predominance of the web in all spheres of life over the last decade or two. Looking at Franzini's catalogue of editions that is a remarkable 92% of digital editions in this corpus, and this rises to 100% during the last few years as the CD-ROM has become superseded by newer technologies. It makes perfect sense that the web is the most popular choice, as it fulfils so many needs for scholars: it is open, editable and has the potential to reach vast audiences. The shift from physically isolated formats such as books and CD-ROMS to the World Wide Web signaled a significant shift towards democratisation of scholarly texts and has provided the space for diverse experimentation with modes of engagement. There is a vast spectrum of types of web editions in terms of what features they offer and what their overall purpose is. This includes a growing trend towards social editions and social knowledge creation environments whereby users are participants in the editing process or

whereby the website acts as a venue for community of interested users to engage with the materials as well as each other.²⁹

E-books and Apps

As desktop computers have never been a popular option for close reading there has been a lot of research and discussion into the role that handheld devices could play. Both e-books and apps are self-contained, interactive, handheld/portable, searchable and capable of multimedia functionalities. The INKE research group in Canada has led a great deal of research in this area as a medium for the edition.³⁰ A number of commercial publishers have been successful in developing editions of text which are designed as native applications for handheld haptic devices such as tablets and mobile phones using the Android or iOS operating systems or as interactive iBooks. This publication format is also a potential avenue for gamification of pedagogical exercises. The only application developed by the scholarly community that I am aware of is the aforementioned *CantApp*³¹ interactive reading edition of a section of the *Canterbury Tales* by Peter Robinson and Barbara Bordalejo. Despite so much discussion among scholars about the potential for new avenues opened by the advent of e-readers, tablet computers and smartphones (Pierazzo 2015, 137) there is little evidence of the scholarly community embracing these technologies for the purpose of publishing and disseminating editions.

Data

Data is a broad term and indeed it plays a broad role both in the field as being fundamental to the representation of the publication at the point of interface and also as being crucial for secondary communicative acts of

²⁹ An example of a social edition would be *A Social Edition of the Devonshire Manuscript* https://en.wikibooks.org/wiki/The_Devonshire_Manuscript or for social knowledge networks see Iter <http://www.itercommunity.org/> and *ReKN* <http://rekn.itercommunity.org/>.

³⁰ Implementing New Knowledge Environments (INKE), "Contexts for Electronic Book Research": <http://inke.ca/projects/contexts-for-electronic-book-research/>.

³¹ *CantApp*: <http://www.appbrain.com/app/cantapptest/com.sdeditions.CantAppTest>

dissemination. Although data may not be seen as a publication format per se, it is the very bedrock of all transmission activities and will be discussed further in Chapter 3. Among these types of data we see many examples such as fully downloadable XML datasets for editions being published as well as metadata and also in some cases APIs³² for integration with other resources.

1.3.4. Dissemination strategies and successes

While devising practical strategies for the dissemination of digital editions may not be high on the list of priorities for scholarly editors, it is nevertheless an area which deserves a full investigation. If scholarly editors have indeed put time into devising such strategies then they have rarely made these intentions known, as I have found a scarcity of information in this area. This is not necessarily a criticism of the scholars, it might be unfair to ask editors to hold expertise in the creation of editions of scholarly standards with a full mastery of a wide range of digital tools and methods while at the same time executing promotional activities to engage and inform potential users. And indeed, how often do even commercial enterprises in this field make their marketing strategies known to the general public?

Perhaps we need to reconsider where the digital edition fits within a broader institutional framework. Should the promotional activities be a function carried out by the host institution or university, or perhaps by an affiliated institutional library? University librarians play an invaluable role in introducing library users to the various digital resources that are available to them. Scholarly editing could move towards greater cooperation with their institutional libraries to help with these issues, not to mention the other often discussed benefits of these partnerships relating to longer term sustainability of these digital scholarly outputs. Librarians have the capacity to

³² Application Programming Interfaces (APIs) have been developed such as New Radial as part of the INKE research <http://inke.acadiau.ca/newradial/>. Europeana have created a API standard for all European cultural heritage digital objects to be aggregated <http://www.europeana.eu/portal/api-introduction.html>.

be much more than custodians of artefacts, they can be the champions of scholarship and knowledge.³³

Reporting on the *Shelley-Godwin Archive*³⁴ at the MLA2015 in Vancouver during a panel on “Critical editions in the digital age” Neil Freistat stated that during the first 24 hours after the site’s launch it had already received 60,000 visits, which came disproportionately from Latin America and Eastern Europe. These results made their editing team re-think about the audiences that they might reach. It highlights the fact that while the majority of digital editing projects are taking place in Western Europe and North America, the end users of these editions can be much more diverse. During the same MLA session Kenneth Price, also on the panel, declared that the *Walt Whitman Archive* typically receives 30,000 hits per month (Pierazzo 2015, 153).

Kenneth Price previously published some statistics from 2006 on user numbers when discussing electronic editions capacity to reach much larger audiences than were possible with print editions. He claimed that at peak points during that year *The Willa Cather Archive*³⁵ averaged about 7,700 hits per day or 230,000 per month and *The Journals of the Lewis and Clark Expedition*³⁶ had 6,300 hits per day or 188,000 hits per month and an average of 10,413 unique visitors a month (Price, 2008). Some social reading editions have made their basic user statistics available, including *Readers’ Thoreau*³⁷ and *Infinite Ulysses*³⁸ which will be discussed in more detail later in this thesis. It is possible the *Walt Whitman Archive* is the digital edition that could claim the highest traffic flow at this point in time, as it ranked highest in our user survey when respondents were asked to name editions which they had used and it is hard to imagine that any other resource out there is sustaining an average of 40,000 hits per month on a regular basis.

³³ The role of libraries for disseminating digital editions is discussed in detail in section 3.7.2.

³⁴ *Shelley-Godwin Archive*: <http://shelleygodwinarchive.org/>.

³⁵ *Willa Cather Archive*: <http://cather.unl.edu/>.

³⁶ *The Journals of the Lewis and Clarke Expeditions*: <http://lewisandclarkjournals.unl.edu>.

³⁷ *Readers’ Thoreau* is a social reading edition that is one part of *Digital Thoreau*: <http://www.digitalthoreau.org/>.

³⁸ *Infinite Ulysses*: <http://www.infiniteulysses.com/>.

While it is difficult to assemble a consistent body of usage data across a range of editions in a meaningful way for analysis, it remains clear that statistics like those referenced above for editions receiving tens of thousands of visits in short spaces of time is evidence enough that it is at least achievable for digital scholarly editions to generate substantial audiences. At the other end of the spectrum it might shed some light to see some user statistics from unsuccessful editions who receive infrequent visitors despite relating to interesting subject matter and to identify specifically what causes such failings.

1.4. Use and purpose

This section intends to draw together both the user study and catalogue datasets to clarify what individual features and components of which digital editions are comprised. It will further explore the actual purposes of digital editions and user opinions in that area.

1.4.1. Uses and features of digital editions

In the user survey respondents were asked several questions to identify which features of editions they find important and useful, as well as their purposes and the tasks they perform.

Uses of editions (Q26, Q27)

The primary purpose that users access digital editions is for academic research at 91%, personal browsing was second at 44% and students accessing for study and assignments was third at 36%. The top task typically performed by this sample while using a digital scholarly edition was to look at the digitised image of the manuscript, ahead of text analysis in second place. Teaching was the lowest ranking option here from the full sample, but it is worth noting that among the respondents who were teachers at universities or high schools this was actually the highest ranking usage task.

Q26 What types of tasks do you typically perform with a scholarly edition? (print, digital or both)

Answered: 179 Skipped: 43

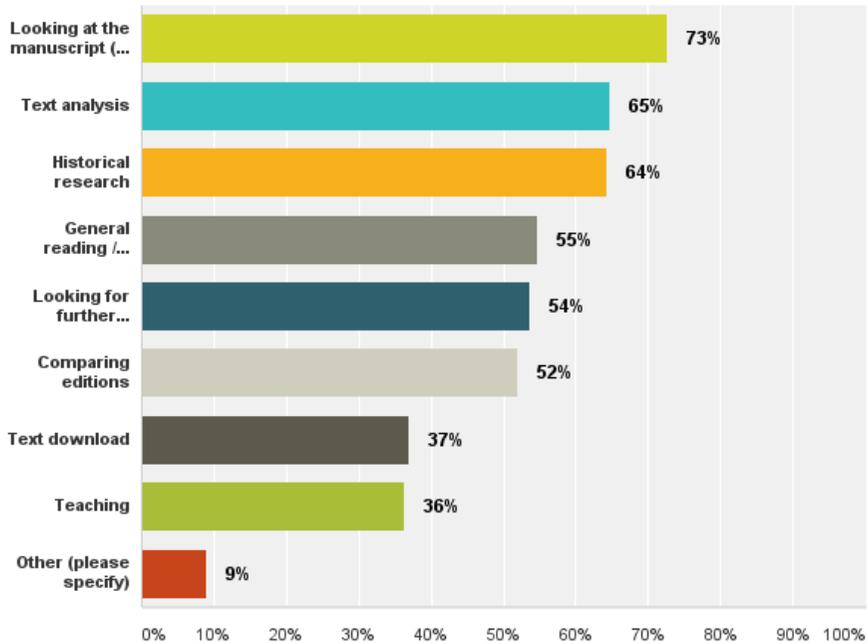


Figure 1.10: User survey - Tasks performed with digital editions.

Features of editions (Q27, Q28, Q31)

For both print and digital editions it should be some relief to scholarly editors to know that the respondents believed that the ‘text’ was the most important feature. Search functionality was deemed to be equally important in digital editions. In their 2012 study of interfaces for digital collections, the INKE group made the assertion that despite a constantly broadening range of innovative features, “search tools still rule” (Sondheim et al. 2012), and from this result it appears that it is also the case for digital editions. The availability of digital images (or facsimiles) of original manuscripts was important to 75%

of the sample in this question, and later on 79% said that they were an important or very important feature.

Answer Choices	Responses	
Text	77%	137
Search functions	77%	137
Digitised images of documents (facsimiles)	75%	135
Transcriptions	64%	115
Collation/comparison of versions	61%	110
Critical apparatus	60%	107
Bibliography	58%	104
Information on academic credibility	53%	95
Links to external sources/resources	53%	95
Visualisations	50%	89
Essays & articles (internal to the website)	49%	88
Access to XML encoding	46%	83
Translations	40%	71
Maps	35%	62
Discussion and comment features	31%	55
Contact details	26%	47
Audio	11%	20
Video	9%	16
Don't know	3%	6
Total Respondents: 179		

Figure 1.11: User survey - Important features of digital editions.

Diversity of features

In Franzini et al's study (2016) of the data in the *Catalogue* they note that there is a remarkable variety in the features of digital editions despite the fact that the majority of them share the same goal of disseminating new knowledge about a text. They argue that: "Identifying and listing the features editions provide in a detailed and methodical fashion can help us refine our thoughts about digital editions" (2016, 173). Using the dataset, the authors created a list of important features that they suggest makes a good edition, one which is both comprehensive and widely used. These features include:

- Descriptive information about the project
- Digital images of the manuscripts
- Technical documentation
- Detailed transcriptions in XML
- Searchability
- Critical apparatus
- Links to external resources
- Multiple views of the text
 - XML for analysis
 - XHTML for consultation on screen
 - PDF for printing a reading version
- Metadata for all file types
- Text-image linking
- Variant readings if extant
- Content license information

(Franzini et al. 2016, 180-181)

The recommendations they have provided from this study reinforce the findings of our user study, and confirm the importance to users of primary features such as transcriptions, facsimiles and search functionality. It also

highlights some features which I did not explore in the user study, such as the importance of transparency in relation to content licensing. One of the most interesting recommendations from this list, in light of my particular area of research, is this idea that the text should be provided in multiple views for different purposes. These three purposes they suggest are: analysis, consultation and reading. XML is understandably recommended as the format for indepth analysis as it is effectively the field's industry standard, although it is worth noting that only 46% of our user study respondents considered access to XML encoding to be an important feature. The suggestion of XHTML for on-screen reading is also logical given the near universality of this format for digital editions, as is the suggestion of PDF which our user study showed remains the leading format for reading software. While text should be made available for multiple purposes in multiple formats it is important to look beyond these long-established technologies, particularly in relation to serving the purposes of 'reading' or 'consultation' where the research on tablets has shown there are vast opportunities for diversification in this area.

1.4.2. What's in a name?

Editions and user opinions (Q22, Q23, Q24, Q30)

The user survey respondents were asked to list the digital editions that they have used. The *Walt Whitman Archive* was the most frequently listed edition. Other popular ones included the *Vincent Van Gogh Letters*, the *Jane Austen Fiction Manuscripts*, the *Beckett Digital Manuscript Project*, the *Dickinson Electronic Archives* and the *William Blake Archive*.³⁹ So the most common area of interest of the sample were editions of modern literary authors, with the exception of the artist Van Gogh, which may have been popular due to its recent high profile launch. 80% of the respondents believed that it was either 'important' or 'very important' that an edition had the status of being deemed 'scholarly'. Even among more casual users of digital editions a majority of 62% also took this standpoint. The avenues through which users discover editions are quite varied. Academic citation was the most frequent

³⁹ See the Bibliography for all of these editions.

route of discovery and 'word of mouth' was the next most common. Respondents generally believed that digital scholarly editions should primarily be aimed at those involved in the higher end of academia such as scholars, university students, researchers but considerably less for the general public and school students.

The most common word to appear in the list of digital editions used by the respondents was actually 'archive', as shown in the first word-cloud below (Figure 1.12). There remains considerable debate in the field regarding the difference and gradients between an edition and an archive. Kenneth Price explains in his discussion of such terminology that an "archive in a digital context has come to suggest something that blends features of editing and archiving. To meld features of both - to have the care of treatment and annotation of an edition and the inclusiveness of an archive - is one of the tendencies of recent work in electronic editing" (Price 2009, 22). The survey introduction explained that a digital archive might be what you call a location that houses multiple editions in one place. There is a spectrum of types of publication between edition and archive and perhaps this result suggests that users are not quite so concerned with reflecting on the differences as long as the publication provides utility. Performing the same text analysis on all the titles in the digital catalogue of editions, the second word-cloud below, shows that the two most common naming terms used across the whole corpus were 'edition' followed by 'project' - the word 'archive' is not nearly as prominent in this case, which perhaps suggests a gap between the perceptions of users and editors (see Figure 1.13).

1.4.3. Purposes of digital editions

Having gathered and analysed the qualitative and quantitative data in this chapter it is now possible to consider the nature and purpose of digital editions from a top-level perspective and to do so without becoming tangled in all the nuances of this type of publication. Combining the assessment of existing editions in the *Catalogue of Digital Editions* with the responses of participants in the user study, I would argue that the purposes of almost all editions can find coordinates within each of the following three ranges:

- Editions that were created to answer specific research questions for the editors
- Editions that act as a resource for other scholars to perform research
- Editions that serve pedagogical purposes

While activities that users report on having performed with digital scholarly editions may be narrowed down to:

- Research (editor)
- Research / Reading (user)
- Teaching / Learning

When undertaking a digital edition project it would be a worthwhile exercise to attempt to locate the edition in relation to these purposes and activities, and to do so without being too unrealistic, such as believing that any edition project could satisfy all the purposes in each section. This may then help editors devise a more effective and realistic dissemination strategy. This chapter served primarily to reveal quantifiable information about the structure and purposes of digital editions as well as users' habits, opinions and expectations. The gathered data which has been presented in this chapter serves to inform the conceptual model for disseminating digital edition that will be proposed in Chapter 3.

Chapter Two

Publishing digital editions: an exploration of alternative approaches to financial sustainability for digital scholarly editions

2.1. Introduction

We established earlier that the paradigm shift in scholarly editing from print to digital has created a challenging process for DSEs to establish their position within a completely different and continuously evolving publishing landscape. In this setting, the edition in a 'digital paradigm', as defined by Sahle (2016), is no longer an object that is fabricated and distributed by professionals from the publishing industry. This chapter argues that the diminished role of the publishers as a key agent in the dissemination of textual scholarship has resulted in a great deal of uncertainty for scholarly editors as the creators of digital editions and how to assume these new dissemination responsibilities.

Creating and disseminating digital scholarly editions to a high standard are potentially costly processes, both in terms of labour time and regarding financial resources. The latter of these two is perhaps the most significant challenge for scholarly projects. The production of the *Brulex Digital Exhibit* as a form of outreach publication to improve dissemination (discussed in Chapter 4), for example, carried significant costs. It required a team of four from the Centre for Manuscript Genetics working for a short but often intensive period for a significant number of hours in addition to hiring an external web development agency. The financial cost of the experiment was something for which we were fortunate enough to have sufficient funding at the time, but many projects are unlikely to have access to this kind of funding, and perhaps even less so for more experimental forms of dissemination. The cost of publishing and sustaining the main digital editing project itself is an increasingly challenging domain. All editorial schools and approaches were originally developed in a print-based paradigm within which procedures, apparatuses, outputs, agents and their roles, and their related economics had become well-defined over many years (Greetham 1992; Tanselle 1995). The field of scholarly editing has been in a period of transition from a print paradigm to a digital paradigm and the field's theories, methods and practices face constant development and re-development. The

paradigmatic shift from print to digital has also, inevitably and profoundly, affected the economics of scholarship.

This period of economic transition is not unique to scholarly publishing but has affected the book publishing industry as a whole. The rise of e-books and of self-publishing have been two very significant changes to the landscape of the book publishing industry and these are, in many ways, parallel to the major changes seen within scholarly editing; namely the rise of digital publications and the consequential disappearance of a third-party publisher from the process. Frances Pinter expresses this well in her discussion of the academic book of the future, that “ripping off the physical covers of the ‘book’ and moving swiftly into the digital realm immediately raises a number of issues around form, substance, supply chains, delivery platforms, discoverability and business models” (Pinter 2016, 39). The digital scholarly editions produced so far can furthermore be regarded as “both products...and experiments, a way to test what is possible within the new medium and to establish new ways for scholarship” (Pierazzo 2015, 217). There is a tension between discovering what is possible in the new medium and the rearranging of the social and economic infrastructures that supported scholarship.

Digital scholarly editions as a type of publication with a social and material value also need to be sustained financially. This chapter will also consider ways to reconfigure how digital editions are made public as deliverables in such a way that their costs and distribution strategies might be remediated through monetisation methods that are currently in use with other types of digital content on the web. These methods, explored later in this chapter, are the result of a study carried out in collaboration with my DiXiT fellow Anna-Maria Sichani from the Huygens Institute.⁴⁰ Sichani’s research lies in the area of business-models and sustainability issues with regard to the dissemination and publication of digital scholarly editions. Our largely complementary research interests led us to undertake this joint endeavour in an effort to explore the extent to which practices in the digital economy might be

⁴⁰ Anna-Maria Sichani and I presented our ideas on the monetisation aspect of this discussion as a paper at the ESTS conference in Leicester in 2015 and as a poster at DH2016 in Krakow (see bibliography Kelly and Sichani 2015, 2016).

financially viable methods to fund the publication of digital editions and their sustainability in the longer term. It should be noted that this research is not an attempt to propose commercialisation as a replacement for the primarily grant-based model of funding digital editing projects. Instead, it focuses on exploring the methods that might allow scholars to independently generate supplementary revenue for their editions as publications, and for prolonging the sustainability of these digital objects in the post-grant phase.

2.2. Economic paradigm shift

Martin Paul Eve has drawn attention to the perception that “humanities research is sometimes viewed as an activity that exists outside the sphere of monetary exchange, often with no clear practical use-value” (Eve 2014, 43). The traditional outputs of humanities scholar (books, journals, articles etc) were usually fabricated and disseminated by publishing houses which means that there has normally been an intermediary agent between the researchers and the market economy. Those publishing houses plan and manage costs and revenues in the creation, publication and distribution of print publications. The scholarly edition, within the publishers work agenda, as a normally quite expensive book, has a number of fixed and non-fixed related costs and also has a retail price, in which production, sales, marketing, and distribution requirements are calculated, alongside the profit margins and consideration for market trends (Feather 2010, 07; van der Weel 2000, 14). The academic book in general has a:

well-established marketing and dissemination apparatus that allows it to reach its audience effectively. It benefits from institutional structures and communities of practice, such as libraries within and beyond universities, that ensure its long-term preservation and accessibility [...] Changing the form of the academic book will mean changing those structures in order for them to remain fit for purpose. (Mole 2016, 14).

The same logic applies to the scholarly edition, with the change to digital forms necessitating a reconsideration of the structures through which they are made available for use.

The move from print to digital requires a significant corresponding shift in the perception of the scholarly output. The printed edition, as a physical book, qualifies as a commodity that can be purchased, whereby the buyer secures proprietary ownership of that physical object. Regardless of whether that buyer is a sole individual or an institutional library, the physical book (or an individual copy of a book) is a possession and has an owner. In the digital paradigm on the other hand (referring primarily to web-based editions as opposed to CD-ROMs), the scholarly output will not be a commodity with a singular owner but rather a scholarly service with multiple clients. This implies a reversed relationship between the number of objects and owners in the print and digital paradigms: from a situation where multiple copies are made available to individual owners (print), to one where multiple clients acquire access to an individual service (digital). This shift from commodity exchange to client service is the fundamental change in the economics of scholarship which has and is taking place in the field.

Joris Van Zundert argues that a possible paradigmatic regression has taken place in the move from print to digital in his chapter "Barely Beyond a Book" in the recently published volume *Digital Scholarly Editing*. He argues that, in methodological terms, "most digital scholarly editions, in fact, are all but literal translations of a book into a non-book-oriented medium" (Van Zundert 2016, 103). This, however, is not true of the economic model of scholarly editing in the digital paradigm. The publishing model has actually changed dramatically in the shift from print to digital, largely due to the removal of the most economically orientated actor in that model, the publisher. As a result, editions produced in digital form are now typically published directly by the editors themselves. As such, the financial model of the print paradigm is not replicated, and in many cases editors are even trying to fully embrace open-access approaches to their content. There are also a number of hybrid publishing models with print and digital components that have also needed to establish new financial models. It could be seen as a paradigmatic regression in the sense that digital editions are (mostly) web-based content that have not realised the economic potential of their new environment (the web), which may be by choice or may be connected to some

practical operational conditions. While Van Zundert raises his argument in order to encourage an increased methodological dialogue that will help editions reach their computational potential (2016, 106), the economic reality of publishing in this new medium is perhaps found adrift between three islands: 1) a print publishing paradigm; 2) the dream of open-access; and 3) the emergent alternative finance methods that have been born on the web. It is the latter of these three which has been explored in this study.

The move from print to digital paradigms in the humanities has come with many exciting new possibilities. David McNinnis has highlighted that this also acts as a distraction from the need for sufficient planning in the area of financial sustainability.

The prospects of the digital humanities are enticing: it facilitates low-cost publication and wide dissemination of scholarship that may have not been supported by traditional print-mediums; it can provide access to primary and secondary sources that are difficult to acquire or search, unless one's university is particularly well resourced; it enables alternative visual layouts and online features that print simply cannot furnish. Yet the transition from print to web is often made with little planning or critical reflection. Allowance for maintenance and development of projects beyond the term of the grant used to fund their creation is often inadequate. The permanency of online resources is frequently and mistakenly taken as a given.

(McNinnis 2014, 43)

While the permanency of online resources is arguably no longer “taken as a given” by those working in digital humanities (as McNinnis would have it), the financial challenge to achieve sustainability is still an obstacle - and one that this chapter aims to address by investigating ways in which it might be possible to fund the sustenance of digital editions after the grant phase.

Entrepreneurial activities in humanities departments are, unsurprisingly, less commonplace than in some other faculties of the university such as among science, technology, engineering and mathematics (STEM) disciplines, which have more direct connections to commercial industries. However, even in these (arguably much more commercially exploitable) research areas, the methods for monetisation are not as well-defined as we might expect.

Matthew S. Wood in his study of academic entrepreneurship highlights that while a “wide range of scientific research takes place within universities, and some of the research results may have commercial applications capable of generating revenue for those universities” (Wood 2011, 153), the “process of academic entrepreneurship remains rather opaque as key activities, potential stakeholders, and key success factors associated with the academic entrepreneurship process have not been as well articulated as one might hope” (Wood 2011, 154). This seems to suggest that academic institutions are generally not highly conducive environments for more commercially oriented activities. If that is the case, this would mean that scholarly editing projects face two obstacles: a) an unsympathetic environment for monetisation; and b) the reality of working with less commercially exploitable research. Thus, finding workable solutions for monetisation of this type of scholarship will probably require a considerable amount of creativity.

According to Wood, the two most common forms of commercialisation activities in university settings are licensing agreements for intellectual property and the university ‘spin-off’ (2009, 930). In the first approach, the university exploits intellectual property that is protected by patents and copyright through contractual agreements with external entities. In the second approach, following Scott Shane’s definition, a “new company [is] founded to exploit a piece of intellectual property created in an academic institution” (2004, 4). Shane further classifies this type of spin-off company as “a subset of all start-up companies created by the students and employees of academic institutions” (4). Once again these approaches are more commonly seen in STEM settings, but we need to investigate whether they apply to the humanities and, in particular, to scholarly editing. One of the fundamental differences between STEM research and humanities research lies in the notion of intellectual property. The new innovations that arise from STEM research can be viewed as new intellectual ideas over which the researchers can then assert ownership. In scholarly editing we normally study materials over which we have no real intellectual property claim, they are typically old enough to be in the public domain or the estate of the writer holds the rights. Editors may claim copyright on some aspects of their scholarly editions (for example on their annotations) but these copyrights are usually not put in

place with a view towards the commercial exploitation of those materials in the same way as might happen with intellectual property rights for STEM research. Nevertheless, this chapter will examine some monetisation methods which take inspiration from these two main approaches to commercialisation. Subscription models for digital editions is one such method that will be discussed and one that could well be considered to be a form of licensing. The term ‘spin-off’ has been adapted to describe two of the proposed monetisation methods below, firstly in relation to spin-off publications that can be commercialised; and secondly in a sense that is closer to Shane’s definition of the university spin-off - albeit, in our case, for the purposes of service provision.

2.3. The sustainability of digital scholarly editions

The maintenance of and access to the printed scholarly edition as an output from the book publishing industry has traditionally been ensured through a network of people and institutions. Jerome McGann argues that the network which creates and sustains humanities scholarship comprises of four agents: scholars; publishing entities; librarians; and the various public and private funding bodies (2010, 6). In such a model both the division of labour and the allocation of financial resources are usually well-defined. Publishers’ production costs of a scholarly edition are typically covered by sales revenue, or in some systems it is covered by the scholar or their host institution. Libraries put maintenance and preservation plans in place that are integrated within their business plans and budget estimates, thereby providing a relatively stable material reality. The major difference arising from the shift from scholarly editions as commodities to digital scholarly editions as services is that the latter is a structure that needs to be maintained by its creators, which comes with an associated financial cost.

A number of initiatives and strategies have been developed over recent years aiming to explore and suggest potential sustainability paths and strategies for

digital resources and projects. Jisc⁴¹ is one such organisation that has developed a digital sustainability model aimed at supporting knowledge institutions in their curation of digital assets.⁴² Some digital projects are fortunate enough to have their longevity secured by these types of knowledge institutions, such as the numerous digitised archives at national libraries whose curation and sustainability are financed by government funding. However, for digital scholarly editions, which are often more experimental in nature, this is often not the case. That is one of the reasons why this chapter will explore methods for self-financing sustainability in the absence of such support.

Sustainability in digital humanities is a somewhat contested concept, both in theoretical and practical terms. Its full meaning and understanding remains rather problematic and obscure, which, until recently, resulted in a general absence of sustainability issues in discussions of the field itself. As McGann has pointed out, sustainability had turned into the “elephant in the room” (McGann 2010). The relatively new interest in the subject of sustainability is not just an academic trend but rather a timely scholarly and social necessity. Much of the recent discourse stems from concerns for the future longevity of the numerous existing digital resources and projects that were produced during the last 25 years or so. It has been further stimulated by emerging policy demands from funding agencies as they grapple with evaluating increasing numbers of digital project proposals within tight budgets and are beginning to require evidence of the impact of publicly funded digital resources (Hughes 2012, 2).

The Strategic Content Alliance has established a prominent definition of sustainability: “We define ‘sustainability’ as having a mechanism in place for generating, or gaining access to, the economic resources necessary to keep the intellectual property or the service available on an ongoing basis” (Guthrie et al. 2008, 10). The approach to sustainability for digital scholarly editions

⁴¹ Jisc (formerly Joint Information Systems Committee) is a UK non-profit organisation that provides digital solutions for UK education and research.

⁴² The Digital Curation Sustainability Model: <http://4cproject.eu/dcsm>, JISC Digital Curation Sustainability Model (DCSM).

taken in this chapter draws from this perspective and intends to contribute towards exploring ways to aid the transformation of digital scholarly projects into sustainable services. One of the intentions behind trying to identify revenue generation streams in this study is to explore whether there is an alternative to address the reality of digital scholarly sustainability in our field. This new reality requires the adoption of new practices since “scholarly projects are moving from a relatively sheltered environment operating at the pace of the academic enterprise into one that operates at the speed of web commerce” (Guthrie et al. 2008). Larger cultural heritage institutions from the GLAM sector are in fact making considerable progress in adjusting to this environment through centralising processes within their institutions for grant applications and digital asset management in order to improve sustainability (Ithaka 2013, 3), but scholars creating digital editions in more de-centralised academic environments may not have the benefit of this level of structural clarity and management.

Sustainability, in relation to digital scholarly resources, is becoming a subject area unto itself, that embodies a broad church of approaches and attitudes. Discussions of the sustainability of such resources almost universally focus on issues of technological maintenance and the challenge to ensure continued access for users in the face of incessantly changing technologies and standards. David Robey has argued that there are actually two strands to the sustainability of publicly funded digital resources which he identifies as *academic sustainability* and *technical sustainability*. Academic sustainability means ensuring that the content of a resource is updated, while technological sustainability means ensuring that they remain functional and accessible. Robey believes that academic sustainability is a less serious issue than technical sustainability because even if the former is not ensured, the resource may still continue to offer value; whereas if the latter is neglected the resource can no longer offer any value as it has become inaccessible to the user (Robey 2012, 149). While this is indeed a rather logical argument, there still remains a general absence of discussion on the financial aspects of sustainability in the field: as is the case with many of the studies in this area, they rarely extend

their investigation beyond the public grant money that may be invested in such projects.

In addition to two equivalents for the categories of sustainability that were proposed by Robey (here: ‘content’ and ‘technical’ requirements), Maron and Loy’s approach to post-grant sustainability also includes three further categories: ‘access and discovery’; ‘audience and impact’; and ‘staffing and ongoing enterprise’ (see table below) (2011, 21). Within their framework they have highlighted the need to determine costs and revenue in order to achieve this post-grant sustainability and within the revenue plan all potential sources of income need to be addressed “including direct and indirect support from host institution, potential earned income, and additional grants, donations, or endowment payouts” (21). In such a revenue plan it must be noted that the monetisation methods that are explored in this chapter would be categorised as part of the ‘earned income’ that might be derived from the publication. Therefore monetisation methods form only one small, although potentially useful, part of the puzzle for the overall sustainability of a digital resource.

Table 1. Framework for Post-Grant Sustainability Planning for Digital Resources

DEFINE DESIRED POST-GRANT IMPACT					
Components of Post-Grant Sustainability					
	Technical Requirements	Content	Access and Discovery	Audience and Impact	Staffing of Ongoing Enterprise
SET GOALS To achieve desired post-grant impact, what must be sustained? Consider all components, though each project’s goals will influence its needs.	What will resource require for long-term conservation, storage, server space, migration to new formats?	Will resource require ongoing editorial updating, new content, new metadata, other enhancements?	Does project team have a desire or obligation to provide open access?	How does project define its goals in terms of reaching an audience? (Or: What size/kind of audience, and what audience impacts, are desired?)	Who is needed to maintain resource: PI, full project team, expertise in a certain area?
IDENTIFY ACTIVITIES What ongoing activities will be needed to accomplish the goals above?	Regular maintenance plus labour devoted to updating of hardware and software	Labour (of staff or volunteers) in developing and updating content and metadata	Maintenance and upgrading of user interface and search and discovery tool; search engine optimisation	Development and execution of outreach or marketing plans	Succession planning for leadership; staff training, retention; recruiting new staff, experts, volunteers as needed
DETERMINE COSTS What resources will be required to support these activities?	Included here should be direct costs as well as needs for non-financial resources, including volunteer labor and in-kind services.				
BUILD REVENUE PLAN Where will project obtain resources needed to cover costs?	Included here should be a plan addressing all possible sources of revenue, including direct and indirect support from host institution, potential earned income, and additional grants, donations, or endowment payouts.				

Figure 2.1: Post-grant sustainability (Maron and Loy 2011, 21).

This also leads us back to the question of who is actually responsible for sustaining digital resources that have been funded by public money - a question that still remains rather unclear in the majority of countries. The responsibility could potentially fall on any one, or any combination, of the four agents that were identified by McGann (scholars, publishing entities, libraries and funding bodies). With digital scholarly editions the onus of responsibility often falls upon the scholars that have created them to make these efforts towards sustaining them. These scholars usually have a large personal investment in the project, meaning that they probably have the greatest motivation to do so - or rather they have the most to lose if their edition becomes inaccessible.

The goal of sustainability planning (that is: “to create, to endure and continue to provide value well beyond the term of the grant”; Maron and Loy 2011, 4), radically problematises the relation between the value and the financial regime of a digital editing project. This research into monetisation methods intends to show how digital scholarly outputs can have a separate but parallel economic value. This economic value offers the opportunity to build a revenue stream that could generate funds towards sustaining the digital edition and ensure its parallel scholarly value. Revenue generation in digital scholarly projects as it is envisioned here, is not to be confused with a full commercialisation of scholarly outputs for the purposes of profit, something which is probably both undesirable to scholars and unrealistic in practical terms, but rather to help the projects and publications achieve sustainability. Monetisation strategies are discussed as a way for the project to generate revenue that will be used within a virtuous cycle for the project’s purposes. The research seeks to find out technological maintenance become a cost that is covered by the demand side (audience) in order to ensure that the scholarly service is effective. It also explores whether monetised components of projects create a revenue stream that would allow the greater ambitions of the project to become economically viable and whether this can be done in such a way that simultaneously meets impact and valorisation targets. Before addressing this topic, it is worthwhile to first reconsider the ways in which the concepts of ‘price’ and ‘value’ are interpreted in the web era.

2.4. Value and price of scholarship

In order to discuss the generation of funding through monetisation activities, the ‘value’ of the digital publication must first be examined. Putting a price on scholarship is not an easy task. Within the print paradigm of scholarship the publisher was the agent who made this decision based on a balance of production costs, perceived market value and profit-margin targets. In this paradigm there was a consistency of format: since there was only a singular mode of communication, the printed book, this perhaps made it slightly easier to establish a price for the commodity. This is not to suggest that printed scholarly editions were ever a major money making commodity for publishing houses. Paul Eggert has pointed out that the publication of many scholarly editions in print form during the 20th century had to be subsidised by grants unless they were published by well-regarded university presses that had the capacity of distribution to recover the cost of production (2016, 797). Eggert further highlights that scholarly editions grew fatter⁴³ and more expensive in the 1980s and 1990s, which sold in decreasing numbers as they appealed to a small and specific scholarly audience (800); he hopes that the shift to the digital medium will allow editions to reach broader audiences by becoming more ‘reader-oriented’. This shift to the digital paradigm may allow us to reach broader audiences, as envisioned by Eggert, but it may also require the formation of new markets and forums of exchange to try to gauge the monetary value of these digital counterparts.

With this digital turn, the open access movement has also been a significant challenge to the economics of scholarship and is rooted in the shift to a digital paradigm, asking us to reconsider the concepts of ‘price’ and ‘value’. One of the arguments behind open access is that scholars are initially motivated to produce high-quality research, not for financial return but because “they see a longer term payoff in the form of reputation” (Eve 2014, 56), and that there is an “academic custom to write research articles for

⁴³ The editions grew ‘fatter’ due to the increased ambition of scholars working with modernist prose to offer more detail of the variants of works.

impact rather than money” (Suber 2012, 10). The open access movement has attempted to develop a model that ensures free and ongoing access to academic research, by eliminating its exchange-value (the price), while securing the necessary funds to cover the infrastructure costs for maintaining the digital service in the long-term elsewhere. Blackmore and Kandiko propose a model for academic motivation comprised of three parts: Academic Work; Prestige Economy; and Monetary Economy. They argue that despite the rise of performance-related pay systems for academics at universities, much of their academic work does not seem to be motivated by money but rather by prestige (Blackmore and Kandiko 2011). The creation of a scholarly output like an edition carries significant prestige or symbolic capital for a scholarly editor but such prestige often needs to be achieved through its dissemination - an aspect that may be assured by a publisher, who in turn is usually working for profit. Thus it would actually be quite difficult to argue that such scholarly activity is not part of the monetary economy - especially so if we consider that: a) the majority of those involved in working on the edition are usually occupying paid positions; and b) the output itself has both production costs and a capacity for generating revenue.

As mentioned previously, there is an increasing pressure in academic funding systems to demonstrate value and impact as a form of regulatory accountability. This is quite prevalent in the UK system, in particular with the requirements of the funding bodies like the Arts and Humanities Research Council (AHRC) who request grant applicants to demonstrate “the likelihood that the outputs and outcomes of the project will be highly valued and widely exploited, both in the research community and in wider contexts where they can make a difference” (AHRC 2015, 71). This has become commonly referred to as the ‘impact agenda’. In addition to the requirement to demonstrate impact to individual funding agencies research in the UK is also under the scrutiny of the Research Excellence Framework (REF) which performs checks on the quality of research that is produced at higher education institutions. Ben R. Martin has asked whether the REF and the impact agenda are “creating a Frankenstein monster” (Martin 2011, 1). Martin’s fears may well be justified, as many of the UK’s research governing bodies are now requesting researchers to submit research outcomes and

impacts by using an online system that is run by a private enterprise called Researchfish Ltd.⁴⁴ As a result of this pressure the academic discussion concerning the concept of ‘value’ in academic circles is primarily orientated towards the challenges of demonstrating impact and “debate about cultural value has further been distorted by the wish to protect public funding and to influence policy” (Crossick and Kaszynska 2016, 7).

Marilyn Deegan and Simon Tanner have discussed the concept of ‘value’ extensively in relation to digital resources in the humanities, or more specifically in relation ‘digitised resources’ for the purposes of impact assessment. They argue that there are five ‘modes of value’ for digitised resources:

Option Value - People value the possibility of enjoying the digitised resources and the resultant research outputs created through the endeavours of academics and HE now or sometime in the future.

Prestige Value - People derive utility from knowing that a digitised resource, HE institution or its research, is cherished by persons living inside and outside their community.

Education Value - People are aware that digitised resources contribute to their own or to other people’s sense of culture, education, knowledge and heritage and therefore value it.

Existence Value - People benefit from knowing that a digital resource exists but do not personally use it.

Bequest Value - People derive satisfaction from the fact that their descendants and other members of the community will in the future be able to enjoy a digitised resource if they choose to.

(Deegan and Tanner 2011, 34)

All of the aspects listed above are non-monetary forms of ‘value’ that Deegan and Tanner argue lead to ‘benefits’ in relation to learning, teaching, research, enjoyment and community engagement. Still, they do not help us understand the value of a digital resource from an economic perspective. Eve argues that “systems of economics and value in scholarly communication/publishing are determined not solely in financial terms but also in the exchange of symbolic

⁴⁴ Researchfish: <http://www.researchfish.net/>.

capital” (Eve 2014, 43). He also points out that research in the humanities has a potential exchange-value that can produce a financial surplus:

academic research, even that produced in the humanities, has an economic function. This can be seen most prominently in the way in which there is now often a charge to students [...] It can be seen wherever employers profit from the skills that their employees learned in a humanities degree. It can also be seen in publisher profits. It can be seen in the ticket prices for exhibitions and galleries, libraries, archives and museums (GLAMs). All of these sites extract surplus value over the academic labour that was necessary for the production of the research-commodity, even when the form looks as though it has no material value
(Eve 2014, 64)

So if humanities research can produce a surplus value that is greater than the cost of the academic labour, perhaps it is also possible to create a surplus value that covers the costs that are associated with the sustainability of its outputs instead of (or in addition to) the labour costs. This can also be seen in the journal publishing sector, which

requires a market to be sustainable, so too does online publishing. The metrics may be different, with income deriving from pre-publication payments and library subscriptions, where financial success is measured in clicks rather than direct sales, but it is still a marketplace, and one affected inevitably by the mechanisms of demand and supply.
(Hawker 2016, 86).

The question of whether scholars are able to charge a price for access to their scholarship in the first place must also be considered, especially if we take into account the fact that there may be restrictions or regulations against such practices from grant agencies or host institutions with strict open access policies. The European Research Council’s Horizon 2020 funding programme is certainly moving in the direction of open access as a requirement for many of their grants,⁴⁵ whereas in the case of the AHRC it is permissible to charge for access: “Although nothing debar[s] an AHRC-

⁴⁵ Article 29.2 on open access applies to most of the grants under the Horizon 2020 programme from 2014 onwards <https://erc.europa.eu/funding-and-grants/managing-project/open-access> (accessed 14 November 2016).

supported project from aiming to charge for access to its results whether in electronic or other format peer reviewers are encouraged to scrutinise dissemination and access strategies and to consider the extent to which the outputs that are produced by AHRC-funded projects will be utilised by the arts and humanities research community and other interested parties” (ERC). In which case scholars are left with the task of establishing (and perhaps justifying) whether charging a fee is possible depending on their specific conditions and circumstances.

Lorna Hughes has also attempted to tackle this question of ‘value’ by asking “under what conditions can cultural heritage content be monetized” and has stated that “there is an implicit understanding that ‘price’ and ‘value’ could become interconnected - people may have to pay for valuable resources” (2011, 3). At the same time, however, she also points to the fact that most studies “lack the evidence of the actual economic ‘value’ of digital resources” and calls for work to address this balance (3). Taking both this ‘implicit understanding’ from Hughes and the evidence produced by Eve that humanities research has a potential exchange-value (i.e. price) which can produce a surplus value, it is now possible to move on to investigating the possible monetisation methods for digital scholarly editions.

2.5. Monetisation methods for Digital Scholarly Editions

In order to understand the ways in which digital scholarly outputs could become monetised it is vital to situate them within broader digital economic practices. In recent years the digital economy has become global and almost all industries have undergone reorganisation and transformation to adapt to this landscape (Tapscott 1997). This change in landscape calls for a reconsideration of where scholarly publications, in digital form, could be located within the sphere of web commerce. What follows is an indicative catalogue of existing monetisation methods gathered together from an empirical study of methods that are currently employed in both scholarly and

more commercial digital publishing projects. Each of these will be briefly examined and some critical reflection will be offered on whether they may or may not be suitable for implementation on digital scholarly editions for the purpose of funding sustainability in the post-grant phase. The analysis undertaken is written from the perspective of scholars that are creating digital editions operating within a university or research institution context (as with the rest of the thesis). This perspective carries rather specific conditions and challenges that exist in this environment and which differ vastly from the digital resources created by other types of institutions such as libraries, archives or digital publishing houses.

The study carried out by Ithaka and the Strategic Content Alliance in 2008 on revenue models for the sustainability of online academic resources (OARs) laid some excellent foundations in this area (Guthrie et al. 2008). However the results of these studies are not directly applicable to digital editing projects because: a) the vast development of the digital economy in the intervening decade since they were published; and b) the reports focus OARs rather than DSEs, which include a variety of rather different types of academic resources such as online journals and are thereby subject to different sets of conditions in terms of both their management and audience.

The current study presents five different existing or hypothetical methods for monetising digital editions and examines a number of examples in each case. The methods in question are: *subscription*, *publication spin-offs*, *advertisement*, *donation and crowdfunding*, and *service spin-offs*. The intention is to focus on the monetisation of the digital edition itself, in other words how to generate revenue from the object itself. The latter two methods do not fit perfectly into this model but have been included because of their prevalence as methods of revenue generation in the web economy. By exploring these approaches to monetising our digital outputs I hope to cast some light on ways in which we might re-conceive how our scholarship is accessed (and by whom), the forms in which our scholarship is delivered and how these fit into the broader ecology of scholarly outputs and the knowledge economy.

2.5.1. Digital subscription

Subscription is a business model in which a customer or user must pay a fee in order to have access to specialised service. This model, which replaces the notion of ownership with that of access, was initially introduced by subscription and circulating libraries of the eighteenth and nineteenth centuries, when the acquisition of printed books was a rather expensive investment (Lyons 2011, 147). As such, these circulating libraries were effectively profit-driven enterprises. The advent of public libraries in the nineteenth century saw subscription libraries disappear, but the successful underlying business model of subscription was eventually adopted and further developed by magazines and newspapers, and more recently by e-commerce companies. Under the umbrella of subscription-based business models, within the digital economy, one can find a number of different specialised strategies in operation. Most of these share some common characteristics, most importantly, that they are rooted in the principle of product differentiation and market segmentation, now well-established economic concepts that were first introduced in the mid-twentieth century by Wendell R. Smith (1956). Market segmentation practices are generally used to identify multiple target groups, further define their needs and expectations and apply price discrimination and product differentiation strategies to achieve wider market capture. Price discrimination is the main device underlying many digital subscription packages: this is the practice of charging different prices to different groups for goods or services. In the field of economics it is typically conceived that there are three different levels of price discrimination: *first-degree* price discrimination charges different prices to each customer in order to capture the entire consumer surplus of the market; *second-degree* price discrimination charges different prices depending on quantity, such as quantity discounts for bulk purchases; and *third-degree* price discrimination charges different prices to different segments of the market i.e. different groups.⁴⁶

⁴⁶ For a full discussion of this topic see Philips (1999).

Some commercial publishers of digitised collections sell access via subscription in a way that is quite close to *first-degree* price discrimination, whereby they charge individual university libraries a price for access based on what they can likely afford. In the US market they use publicly available information on university endowments as an aid to negotiating a price with each institution that subscribes. Thus, a very well-endowed university will be asked to pay the full price for access while a smaller community college may get access to the same resource for a significant discount, perhaps less than 50% of the full price.⁴⁷ The practice of determining a different price for every individual or institutional subscriber would be an extremely labour intensive process and would not be suitable for most digital editing projects. Dividing the market into groups (*third-degree* price discrimination) would be a less cumbersome approach. This method can be seen in practice by companies such as Rotunda,⁴⁸ an imprint of the University of Virginia Press and the *Women Writers Project*⁴⁹ based at Northeastern University which both use tiered pricing structures for charging for access to their editions by different types of subscriber. This is explained in more detail below.

Second-degree price discrimination in the traditional sense refers to adjusting prices when selling higher quantities, but within the context of digital service provision via subscription this might be providing users with different levels and types of access at varying price points to receive the service in a way that is best suited to their needs. It could be argued that ‘Premium’ or ‘Freemium’ (a portmanteau of ‘Free’ and ‘Premium’) business models are a form of *second-degree* price discrimination. In this model a core service is provided free of charge to all users but revenue is generated by selling premium services, additional proprietary features or functionality to a small percentage of those users. ‘Lite’ versions are a similar feature-limited access to a service that are either bundled or freely available, which may have limited functionality or be supported by advertisements, or both, and typically lack technical support. Upgrading to the full version for a fee eliminates the ads or invokes more program features and technical support. Both Freemium and Lite systems are

⁴⁷ This information is based on my previous experiences of working in that sector.

⁴⁸ Rotunda: <http://www.upress.virginia.edu/rotunda>.

⁴⁹ *Women Writers Project*: <http://www.wwp.northeastern.edu/>.

models which could work for digital scholarly editing projects but are perhaps most suited to digital resources with large quantities of content or those with some specialised tools or features that could be isolated to become part of a premium package.

Introducing a subscription model to a digital edition would require some serious consideration to be given to the criteria they will use to set a price and how to determine the differentiation in user categories within that subscription system. In order to implement a freemium model a similar degree of consideration should be given to deciding which content or which tools in the digital resource should be placed behind a paywall and what should be free to access, a decision that may have practical, ethical and economical dimensions.

British History Online (BHO) is a digital library that has implemented a subscription model on their website as part of their long-term sustainability plan, which was made in order to meet the requirements of their funder, the Andrew Mellon Foundation.⁵⁰ BHO's collection currently contains almost 1,250 digitized volumes of which 80% are free to access while the remaining 20% are premium content which require a subscription. They provide a list of the content that requires purchasing a subscription, although the selection criteria for that content is not made explicit. The argumentation and justification in this case is that by charging for access to this premium 20% allows them to keep the remainder free to access for all users, something which they view as a form of compromise. The model seems to be quite effective in generating interest with currently 9,000 registered users, 10% of whom are individual subscribers, and the resource receiving 1.2 million page views per month. This model, which is a sort of freemium style service, utilises price discrimination by charging different prices for access depending on whether it is an individual or institutional subscription as well as offering different prices for different durations, such as 1, 5 or 10 year subscriptions for individual subscriptions. For institutional subscriptions they use Jisc

⁵⁰ Information about their sustainability plan is available on their website: <https://www.british-history.ac.uk/about#sustainability>.

Collections banding system in order to adjust the rate paid by different UK institutions depending on their banding which is primarily based on income.⁵¹ For non-UK institutions they charge based on the size of the institution.

Adjusting prices based on the size or financial endowment of an institution is a common enough approach and can be seen with both Rotunda and the *Women Writers Project*. Formulating a criteria for pricing is a critical part of the process of creating a subscription model. Rotunda publications, an imprint of University of Virginia Press, focusses on the publication of digital scholarship, including digitised scholarly editions, which are available for purchase by libraries, schools, and individuals by subscription. The pricing structure is divided into multiple tiers based on the Carnegie Classifications for the institution purchasing access.⁵² They also offer discounts based on purchasing two or more titles (10%) or a complete collection (20%), which is second-degree price discrimination. Subscriptions also carry an annual maintenance fee for technical and content updates and instalments. The Carnegie Classifications they use are comprised of six tiers. Prices for subscription on Tier 1 are approximately 10% of the price for Tier 6, with the remaining categories evenly spaced in between. Individuals are catered for as part of Tier 1 on this ranking system, which places them alongside high schools, which might be slightly restrictive for individuals to access publications like their *Washington Papers* where the Tier 1 subscription costs \$830.

Tier 6: Research Universities (very high research activity)

Tier 5: Research Universities (high research activity); Doctoral/Research Universities; Master's L institutions (large programs)

Tier 4: Master's M and Master's S universities and colleges (medium and small programs); Special Focus institutions - Schools of Law; Baccalaureate - Arts & Sciences colleges

Tier 3: Baccalaureate General colleges; Baccalaureate/Associates institutions; Research institutions with 50 or more FTE (full-time employees)

Tier 2: Associates institutions; Special Focus institutions

⁵¹ See Jisc banding system: <https://www.jisc-collections.ac.uk/Help-and-information/JISC-Banding/>.

⁵² Carnegie Classifications: <http://carnegieclassifications.iu.edu/>.

Tier 1: High schools; unaffiliated individuals; Research institutions < 50 FTE.⁵³

The *Women Writers Project (WWP)* is a research project based at Northeastern University devoted to early modern women's writing and electronic text encoding” that utilises subscription for access.⁵⁴ They are also charging different prices for access to different categories of institutional subscriber but rather than follow a defined model like we have seen with Jisc bandings or Carnegie classifications the *WWP* opted to develop their own pricing scheme based on the type of institution and the number of students. Using these types of stratified pricing systems as opposed to a single flat rate for all subscribers helps both parties in the equation: while more subscribers can afford to access the resource it also reaches a larger percentage of that potential audience. Developing an individual pricing schedule may take more time and work than following a template but this might also open up the possibility of developing a fairer division of categories once the customer base becomes known.

The *Beckett Digital Manuscript Project (BDMP)*, based at the Centre for Manuscript Genetics at the University of Antwerp is another scholarly editing project that has implemented a subscription model. In this particular case it is copyright which has necessitated a subscription system and this is in fact the sole reason for the monetisation of the resource. The estate holders required that a subscription system be implemented in order to retain their copyright over the original texts and facsimiles, given that Beckett died in 1989 (i.e. relatively recently in terms of copyright). The responsibility for managing subscriptions in this case is with the publishing company. Allocating time or people to managing a subscription system is another factor to consider if implementing the method with digital editions. The *BDMP* makes a fully functional demo available, which we might call a ‘lite’ version, which includes access to one of the modules within the project, while the *WWP* offers a free short-term trial. These trials or demos function as a sort of advertisement for

⁵³ Rotunda publications pricing tiers: <http://www.upress.virginia.edu/content/purchase-rotunda#TIERS>.

⁵⁴ Licensing and trials information for *WWP*:
<http://www.wwp.northeastern.edu/wwp/license/>.

the overall product by giving users exposure to the edition's features and functionalities before they make a decision on subscribing

The subscription model introduces a price barrier that hinders availability and restricts access to material and there is generally "some concern that resources that are not 'open' are less valuable for scholarship" (Hughes 2012, 3). The question is whether the principles of the subscription model, with differentiated pricing and audience segmentation, can be applied in a way that can provide a level of service that meet the demands of users at a price they are willing to pay that can help cover the costs of providing and sustaining the service. The conditions of the institutional environment will be a major determining factor in determining whether or not it is possible to implement a subscription system for a digital edition. Within some institutions and with some granting bodies there may be regulations that require this type of publication to be published as fully open access (as mentioned earlier regarding ERC grants) which would then completely exclude this monetisation method in those cases. There is also a certain ethical concern with placing a paywall between the user and the content. Such concerns can only be addressed within each individual scenario by self-assessing the balance of aspirations for access and dissemination against the financial realities of creating and maintaining the DSE.

The micropayments model is a related alternative to subscription, and is an increasingly popular method in digital news media. The Dutch company Blendle⁵⁵ utilises micropayments to provide their users with access to content from multiple news vendors. Users in this system pay a very small amount for each article that they wish to read rather than being required to subscribe to each individual vendor, the amount paid per use could be as low as a fraction of a cent but in many cases it will be around 25 cents. This is called a pay-per-use system, one which is already used by a number of Software as a Service (SaaS) providers. Applying this model to digital edition content would require the content to be divisible into several small units (images, chapters etc) or perhaps for users to incur a charge per usage session. A further requirement would be to utilise a relatively popular payment intermediary service such as

⁵⁵ Blendle: <https://blendle.com/>.

PayPal, so as not to inhibit potential interested readers from making payments.

2.5.2. Publication spin-offs

As mentioned earlier, the commercialisation of ‘spin-offs’ by research groups outside the humanities is quite commonplace, particularly in the STEM disciplines. This normally requires the research group to have some form of intellectual property ownership that could be patented and exploited. How can the idea of a spin-off be seen in the field of scholarly editing? This method can be applied by taking potential alternative publications as the ‘spin-off’; in other words publications derived from the bigger editing project. In Chapter 3 I will propose a framework for dissemination of editions that includes the use of such spin-offs, in this way the method has relevance both from a communicative perspective as well as in relation to financial sustainability. The idea of publishing a reading text simultaneously but separately to a scholarly edition text is one which already existed in pre-digital scholarly publishing. It serves as a way to reach a wider audience using a different format. It might also be a valid means of revenue generation for a published piece of scholarship if the reading text has the potential to sell copies in numbers far exceeding that of the specialist printed scholarly edition. This additional format does not necessarily require a lot of additional work from an editorial perspective but perhaps a little extra in terms of design.

This same principle can be applied within the digital paradigm of scholarship, a paradigm in which there are, in fact, many more potential publication formats and modes of communication. Even some early digital editions such as *Cædmon’s Hymn: A Multimedia Study, Edition, and Archive* could be regarded as experiments in using multiple-forms as a way to provide users with alternative views of the textual raw materials (O’Donnell 2010, 117). As has been discussed earlier in this thesis, a scholarly editing project in a contemporary digital setting can now consist of any combination of defined published outputs. It can include a web-based digital edition and a printed

traditional edition that are both aimed at scholarly audiences; while also producing public-facing outputs such as a printed reading edition and a multitude of digital forms such as e-books, interactive applications or games for purposes of engagement and communication. This would involve a stratification of the end output of an editing project from one form into many. It could also be a format that fits into Shillingsburg's vision of a "knowledge site" comprised of multiple different components (Shillingsburg 2006). This stratification also helps address what Lavagnino terms "the problem of two audiences and two natures" that the same product cannot serve both the popular reader and the editor's peers (Lavagnino 2009). Edward Vanhoutte's idea of 'maximal' and 'minimal' editions furthermore supports the idea that this sort of stratification might be a possibility:

a maximal edition logically contains a minimal edition and presents the textual archive alongside. The key feature of the electronic edition, then, in order to appeal to many audiences would be a differentiation of the supply by user controlled selection mechanisms which can turn the all-inclusive edition into a minimal version presenting one citeable text accompanied by selected categories of commentary.

(Vanhoutte 2012)

Elena Pierazzo has argued that there are in fact several different types of reading that range "from the linear reading of novels and essays to the fragmentary reading of newspapers, to the information-seeking reading of dictionaries, to the intensive re-reading of objects of study" (Pierazzo 2016, 54). She further points out that the economic constraints of the print paradigm do not apply in digital environments where instead of producing a single product for all audiences (the edition) it is now "conceivable to produce editions that aim at only one type of reading (and readers) or editions that provide different outputs for different readers [...] presented in an accessible and engaging way" (54). It is quite unlikely and perhaps unrealistic to attempt to satisfy all potential audiences, but in many cases it would be possible to create this sort of public facing edition derived from the content in the bigger work of scholarship in the edition project. If the content meets the precondition that it is a topic that could attract a wide popular audience, then this has the potential to become a realistic strategy to

at least raise the revenue required to sustain the edition in the longer term, or perhaps even more.

Jaki Hawker has highlighted that the most successful innovation in the academic textbook market over the last five years has been the paper and e-book bundles which can be bought in a single purchase, offering students flexibility and portability for their reading activities (Hawker 2016, 88). She believes that ‘choice’ is what readers want the most and that these readers and their choices “will determine the success or failure of any textual project” (90). The advent of e-readers as well as haptic TUI devices like mobiles and tablets presents us with the opportunity to reach different users in new ways, to offer them choice. Reading editions produced as e-books could be made available through the many online retailers. There is also the opportunity to take it one step further and develop a more interactive, rich media edition for the general public as an app for iOS or Android devices as previously discussed in Chapter 1.

Looking again at the *Beckett Digital Manuscript Project*, we can see an example of an edition that encompasses both digital and print elements in a dual production model. The digital edition is comprised of research modules, which are the TEI encoded manuscript materials with detailed genetic markup, collation functionality and facsimile images. In addition to each of these online modules the Centre for Manuscript Genetics produce an ancillary print volume via the publisher, which contains an analysis of the genesis of the work and includes a selection of the facsimiles from the online research module. Effectively there are two separate and different outputs, a digital form and a print form, which cover the overall project. This project’s dual production model also corresponds to the current transitional phase of scholarship, in which printed publications and monographs are still strongly linked with academic prestige and credibility, whereas digital scholarship is still considered to be more experimental and often does not carry as much purchase in terms of meeting academic contract requirements. In the case of the *BDMP* the target audience is probably the same group for both the digital and print outputs (relatively specialist Beckett scholars) although the two

outputs are purchased separately. Thus this kind of dual production model has the potential to offer different outputs to the same audience, or to separate target audiences.

An edition from outside of scholarly circles that is interesting from a financial perspective is the multimedia app produced by TouchPress of TS Eliot's *The Waste Land*,⁵⁶ which was discussed in the previous chapter. This resembles a scholarly edition in many ways but also includes readings in audio and video form among various other interesting functionalities aimed at a generally interested non-specialist user. The technological skill required to build such an app is certainly not beyond the capabilities of a small group of digital humanities scholars. Needless to say, this method is also only realistic if the content in question can generate a certain amount of public appeal. There are two excellent possible motivations for replicating the model created by the *Waste Land* app. Firstly, it offers the opportunity to achieve a much wider dissemination of this type of scholarship with a lot of space to experiment with modes of communication and general user engagement. Secondly, and also the most relevant motivation in this discussion, is that it can be a really effective means of generating revenue. To give a sense of the amount of revenue involved it can be estimated that during the first two years that at least 25,000 units of the app were sold at £10GBP each, resulting in a quarter of a million in sales,⁵⁷ an amount of finance which is probably hard for most scholarly projects to imagine.

Linking the discussion back to the field of textual scholarship, Peter Robinson has begun to explore this new territory with the aforementioned *CantApp* that is under development, a demo of which is freely available to use.⁵⁸ This app offers a multimodal platform that allows the user to engage with the work by reading the text in a variety of forms while listening to a

⁵⁶ *The Wasteland* app: <http://thewasteland.touchpress.com/>.

⁵⁷ This estimation was made using a number of third party websites that calculate numbers of app downloads because Apple's AppStore does not make this information available to the public. The figures have also been confirmed by the CEO of the company to Elena Pierazzo, see Pierazzo 2015, 137.

⁵⁸ *CantApp*: <http://www.appbrain.com/app/cantapptest/com.sdeditions.CantAppTest>.

synchronised audio oration of the Middle English text performed by a professional actor. Since the editors plan to make the application available in an app store at a later point of development, it will be interesting to see what kind of download numbers and revenue figures it will be able to generate. Which leads to us to identify another precondition that is necessary to make this spin-off method useful for digital editing projects: namely that the editorial team must have the skills (or relatively affordable access to people with the skills) to develop such spin-offs, since even a relatively small application can be both time consuming and labour intensive to develop.

2.5.3. Advertisement

The idea of using advertising to generate revenue is one which tends to carry a lot of negative connotations in scholarly fields. However, there is simply no escape from the reality that advertisement is the principal revenue stream within the web economy and is therefore a method which simply cannot be overlooked. Numerous popular social media providers such as Twitter and Facebook initially offered their services without advertisements to all users. However, they gradually learned how to bring these into play in ways which are minimally offensive for the user on screen (or one could say camouflaged as normal content), while also having enough clickthroughs to keep the advertisers satisfied. Even the BBC, which is not permitted to carry advertisements on their public services, have devised ways to carry advertisements on their services used from abroad such as on the BBC news website, which are again designed to appear in a minimally offensive low-key fashion. The website adverts usually appear somewhere at the bottom right and clearly labelled as “Adverts by Google” in order to avoid misleading the users. While some larger sites such as Facebook and Twitter have their own advertisement service, the real behemoth of Internet advertising is definitely Google Ads. These types of services gather information on users’ interests through online behaviour so as to allow them display advertisements which are more appropriate to each specific user, and thus more likely result in a clickthrough, which in turn generates revenue for them and the intermediary website on a pay per click basis.

The argument continues as to whether this profiling could be seen as an invasion of privacy or whether in fact this form of advertising is less imposing than exposing users to adverts that are not relevant to them at all. Regardless of opinion, this is the current status quo of online advertising, a form of affiliate marketing whereby businesses reward affiliates for directing visitors and customers to their sites. Companies like Google, Facebook and Twitter are in fact earning the majority of their revenue through their advertising services. Google, as the biggest player, made \$30bn in advertising revenue in 2015 alone (Bloomberg 2016). It should be mentioned that the increase in usage of adblocker software is forcing some changes in this industry with a number of media providers now preventing access to their content unless the software is disabled and many others politely asking users to consider doing so. Since advertising revenue is what keeps access to most of the content on the web free of charge this industry will no doubt adapt quite rapidly. This leads to the obvious question as to whether digital scholarly content providers should consider allowing advertising on their sites as a possible revenue stream. As Figures 2.2 and 2.3 show, a small but growing number are already doing so.

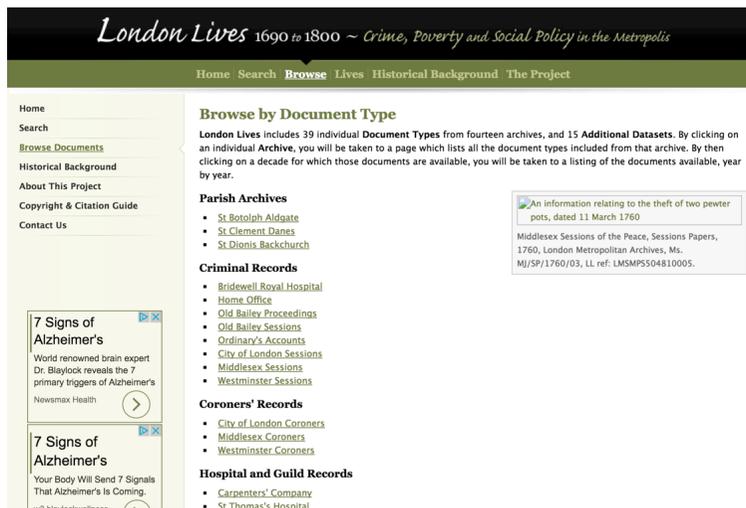


Figure 2.2: London Lives website with advertisements in the left column.

The screenshot shows the British History Online (BHO) website interface. At the top, there is a dark green navigation bar with the BHO logo and the text 'BRITISH HISTORY ONLINE'. To the right of the logo is a search bar with the text 'Search...' and a 'Search' button. Below the navigation bar are several menu items: Home, Search, Browse catalogue, Subject guides, Using BHO, About, and Support us.

On the left side, there is a search form with a 'Keywords' field and a 'Title' field, both with 'Search' buttons. Below this is a 'Subject:' section with a list of subjects and their corresponding counts:

Administrative and legal	555
Colonial	60
Economic	171
Historical geography	112
Intellectual and cultural	109
Local	459
Parliamentary	105
Religious	118
Urban	244

Below the subject list is a 'Place:' section with a list of places and their counts:

East	59
London	210
Midlands	79
North	63
South east	81
South west	63
Ireland	7
Scotland	25

In the center, there is a 'Start your search' section with the following text:

Start your search
 A keyword search finds occurrences of a word or several words across our entire library.
 A title search searches for occurrences of a word or several words only in the titles of series and individual volumes.
 The title and keyword searches can be combined for a focused search. Our new search interface also allows you to narrow your results to focus on a specific subject, place, period, and/or source type.

Below this is a 'Search tips' section with the following text:

Search tips

- Search for an exact phrase by including it in quotation marks.
- Consider the variant historical spellings of a word.
- Find a specific place on our Ordnance Survey maps by doing a keyword search for a postcode.
- See our [using BHO guidelines](#) for more search help.

On the right side, there is a green advertisement banner with the text 'Offrez lui son rêve !' and a small image of a car. Below this is a white advertisement for a pilotage course with the text 'Piloter sur circuit au volant ! Coffrets stage de pilotage à partir de 99€' and the logos for 'EXPERT PILCT' and 'SEVEX'. At the bottom of the advertisement is a button that says 'En savoir plus'.

Figure 2.3: *British History Online* with advertisement on the right.

British History Online is currently subscribed to the Google Ad service. Each of their web pages has two simple adverts in the left hand banner and another single ad at the bottom of each page (see Figure 2.3). This is just one part of the BHO monetisation strategy but, as mentioned earlier, they consider this strategy to be a practical means towards ensuring sustainability. The use of advertisements as implemented by *BHO* are interlinked with their subscription model, meaning that users who have taken a subscription will also benefit from the removal of advertisements when logged in to the site. Other scholarly resources which are using similar basic Google Ads include *London Lives 1690-1800*⁵⁹ (see Figure 2.2) and *Old Bailey Online*⁶⁰ produced by the Humanities Research Institute at the University of Sheffield in conjunction with other partners and funders. Both of these resources have indicated on their websites that they are not-for-profit projects and that the revenue generated from this is used solely to maintain the site beyond the end of their funding cycle. In reality, the use of this type of advertising as a strategy is probably best utilised if a digital resource receives a reasonable amount of traffic as the payment depends either on number of clicks or can be paid per 1,000 impressions for example. More niche digital content will

⁵⁹ *London Lives*: <https://www.londonlives.org/>.

⁶⁰ *Old Bailey Online*: <https://www.oldbaileyonline.org/>.

struggle to generate much revenue from this method, but for editions that are fortunate enough to have thousands of visitors per month (such as the *Walt Whitman Archive*) and whose institutional regulations allow them to do so, advertisement is a means to generate revenue without any real labour input after setting up an GoogleAds account and placing the advert on the website.

2.5.4. Donation & Crowdfunding

Donation and crowdfunding are not precisely forms of monetisation for existing content but as they are quite prevalent methods to raise revenue for web projects they become important to examine. Donation is a model that Wikipedia has also been using for a long time in order to keep its huge body of content freely available to access and without advertisements. Services such as these may be lucky enough to have vast numbers of dedicated and generous users but this is not something that could work for all types of digital projects. Calls for donations are, however, being utilised by *British History Online* as well as by the Centrum voor Teksteditie en Bronnenstudie in Ghent.⁶¹ It can also be seen in a number of open access repositories of scholarly articles and educational materials such as the OpenStax⁶² non-profit initiative (previously called Connexions) at Rice University, whereby users have the option to download materials for free or to donate a suggested amount such as \$10 per download. The *Mark Twain Project Online* at UC Berkeley is a digital scholarly edition that seeks donations to finance their ongoing work.⁶³ What is even more interesting about this example is that it uses a donation web platform that was developed by the university called 'Give Berkeley' to receive the funds.⁶⁴ This is a centrally managed platform which services all sorts of projects and causes across the university, which once again highlights the need to scholars to consider the tools and methods for users to pay in any case of monetisation.

⁶¹ Centrum voor Teksteditie en Bronnenstudie: <http://ctb.kantl.be/steun-ctb>.

⁶² OpenStax: www.cnx.org.

⁶³ Financial support page of *Mark Twain Project Online*:
http://www.marktwainproject.org/about_support.shtml.

⁶⁴ Give Berkeley: <https://give.berkeley.edu/>.

A related method which may be more worthy of exploration is crowdfunding. In digital humanities we have seen crowdsourcing has already become a big discussion particularly in relation to transcription projects like those we have seen with *Transcribe Bentham*⁶⁵ and the *Letters of 1916*⁶⁶ project. This type of ‘citizen science’ is becoming increasingly popular across the humanities and sciences, which can perhaps be best seen through the number and diversity of projects on the Zooniverse⁶⁷ platform. Could it be somehow possible to tap into randomly distributed enthusiasts of a specific subject matter in order to generate funding? Crowdfunding is a form of what is now called ‘alternative finance’. It has emerged among the many peer to peer online initiatives and marketplaces that have now become commonplace online. Crowdfunding even has a pre-digital history if you consider things like the financing of the Statue of Liberty or the construction of local amenities like hospitals through numerous small donations from the general public. Moving back to the current era, Stian Westlake of Nesta points out that “there is a growing movement afoot to revolutionise banking, investing and giving by using technology to simplify the links between those who want to invest money and those who need it. Crowdfunding and peer-to-peer finance are at the vanguard of this movement” (Baeck et al 2014, 4). The UK Alternative Finance Report 2014 distinguishes between three different types of crowdfunding systems:

Equity-based crowdfunding - Sale of a stake in a business to a number of investors in return for investment, predominantly used by early-stage firms.

Reward-based crowdfunding - Individuals donate towards a specific project with the expectation of receiving a tangible (but non-financial) reward or product at a later date in exchange for their contribution.

Donation-based crowdfunding - Individuals donate small amounts to meet the larger funding aim of a specific charitable project while receiving no financial or material return in exchange.

(Baeck et al. 2014, 8)

⁶⁵ *Transcribe Bentham*: <http://blogs.ucl.ac.uk/transcribe-bentham/>.

⁶⁶ *Letters of 1916*: <http://letters1916.maynoothuniversity.ie/>.

⁶⁷ Zooniverse: <https://www.zooniverse.org/>.

The nature of scholarly projects probably rules out the possibility of attracting equity investors as it is generally not possible to share a ‘stake’ in an academic project. Donation-based crowdfunding is the most straightforward of these methods for a scholarly project but reward-based methods could also be a workable solution in some cases. Organisations receiving crowdfunding also report a significant increase in volunteers as a result. Perhaps scholarly projects that utilise crowdfunding may also see an increase in public engagement due to the financial vested interest of the participants. There might even be a case for combining a platform for crowdsourced volunteers like Zooniverse with a crowdfunding platform in order to maximise the potential for citizen engagement and financing.

There are already a significant number of existing popular crowdfunding platforms including Kickstarter⁶⁸ and, perhaps more appropriate to this study, Patreon,⁶⁹ which is specifically focussed on funding for artists and creators. Once again the STEM fields have been faster to adopt this fundraising method with platforms like Experiment⁷⁰ but there have been some attempts for humanities projects too. A quick search for the word “scholar” on Kickstarter shows a campaign from 2013 for a biblical scholar to create a digital course⁷¹ on biblical textual criticism which generated over USD\$25,000. More recently there has been an attempt to crowdfund a digital humanities project by Greece’s Research Centre for the Humanities. The RCH are attempting to raise €125,000 to fund a digital archive of the Greek Revolution of 1821.⁷² At the time of writing (August 2016) they had already raised almost €60,000 towards this target. This crowdfunding bid was launched on the Act4Greece platform, which is an initiative to help fund social and economic projects using the crowd during the country’s time of economic difficulty. It is also worth pointing out that Act4Greece funding platform operates slightly differently to the typical crowdfunding mediators

⁶⁸ Kickstarter: <https://www.kickstarter.com/>.

⁶⁹ Patreon: <https://www.patreon.com/>.

⁷⁰ Experiment: <https://experiment.com/>.

⁷¹ Credo Course in Textual Criticism by Dan Wallace:

<https://www.kickstarter.com/projects/credohouse/credo-course-textual-criticism-by-dan-wallace-0/posts/502555?lang=de>. (accessed 10 September 2015).

⁷² Act4Greece: <https://www.nbg.gr/act4greece/1821-en/>.

like Kickstarter. The concept is relatively risk free as most of the campaigns work on an ‘all-or-nothing’ basis, either the campaign reaches its target and is thereby funded, or if there is a target shortfall by the chosen deadline then the pledged donations are withdrawn. The Act4Greece platform, however, has a different operational model in which all pledged donations are accepted, regardless of whether the overall funding target is achieved or not. Projects that fall short of their target then need to adjust their objectives to reflect the shortfall or find supplementary funding elsewhere. Both of these are valid approaches so long as the mechanism is made transparent to the donors. While this method could be more useful for initiating a project, it is worth pointing out that is not something that would be ideal for longer term revenue generation for the purposes of sustainability.

A major pilot project to investigate the possible use of crowd funding for generating funding for academic research projects was conducted by Deakin University in Australia in 2013 called ‘Research My World’. This pilot, led Deb Verhoeven, was carried out in partnership with the existing platform Pozible.⁷³ It took place over a number of months in 2013 and put forward eight projects for funding. Six of those projects managed to meet their funding targets, in total generating over AUS\$50,000 during the campaign and another AUS\$50,000 after the end of formal campaigning. They noted that successful campaigns were very clear in communication and relied on a high level of engagement with social media and traditional media (Verhoeven et al. 2013, 2). The projects received funding from over 700 individual donors and they estimated that the media stories generated reached an audience of over 1.4 million people. This seems to support the case that public engagement and monetization activities could be interconnected and support each other. It also shows that this method could be used as an alternative funding stream to support early career researchers as many of the projects funded in this pilot were led by researchers in their early part of their careers. After the pilot was completed Pozible expressed the intention to add ‘Research’ as a category to its platform, however, that does not seem to be the case on the website in 2016. In the absence of a crowdfunding platform

⁷³ Pozible: <https://pozible.com/>.

specifically catering for academic research it seems that future projects will need to decide on a platform which best suits their needs in terms of project type and which of those platforms are popular in the geographic location of their target audience. It is surprising that we have not seen more crowdsourcing campaigns for scholarly projects, due to its prevalence of crowdsourcing on the web and the general scarcity of grant money for humanities projects. It is very difficult to speculate as to whether the absence of crowdfunding is due to some institutional restrictions on this type of external fundraising or that it is not yet a cultural norm in the academic sector.

2.5.5. Service spin-offs

For larger research groups with the capacity to take on work from inside and outside their own institution, digital project teams could offer specific expertise performing services or providing consultancy, mainly in areas relating technical development and maintenance. This is not monetisation of the digital edition as a publication but rather of the skills and technical expertise that are required to make those editions. This sits close to the idea of the ‘spin-off’ entities that are more commonly seen in emerging from STEM research projects. This model can be seen in operation already in a number of institutions in the UK. King’s College London has two separate spin-offs which have emerged from the digital humanities department. The King’s Digital Consultancy Service⁷⁴ led by Simon Tanner has been in operation for number of years providing consultancy in the digital domain for cultural heritage sectors, as well as academic and commercial projects. Meanwhile the more recently established King’s Digital Laboratory⁷⁵ provides more hands-on collaboration with projects across the university and with projects from outside the institution as well. The Humanities Research Institute (HRI)⁷⁶ at the University of Sheffield as well as Brown University’s

⁷⁴ King’s Digital Consultancy Service: <http://www.digitalconsultancy.net/>.

⁷⁵ King’s Digital Lab: <http://www.kcl.ac.uk/artshums/digitalallab/index.aspx>.

⁷⁶ HRI: <https://www.sheffield.ac.uk/hri>.

Centre of Digital Scholarship⁷⁷ also provide similar services. Perhaps only universities with significantly large DH departments or research groups are likely to have the capacity to set up such a service. There is also probably a limited market place for this type of service and the UK market may have already become saturated in this regard (particularly given that Jisc also exists to perform similar functions), but there is probably still plenty of potential for similar types of services to be established in other countries. While this idea of a spin-off cannot really be seen as the monetisation of digital editions, it could be seen as the monetisation of the process and skills involved in creating and maintaining these outputs and thus justifies this brief mention as a potential monetisation method.

2.6. Conclusion

The aim of this chapter has been to explore where digital scholarly editions, as a commodity, fit within the digital publishing landscape, and how their value might be sustained financially. It presented the means by which digital scholarly editions might take advantage of monetisation methods in order to help fund the implementation of a sustainability strategy and has also touched upon other ways to supplement oftentimes scarce funding through the utilisation of alternative finance methods. There is no singular best practice that can be put forward for conceptualising and formulating a monetisation strategy for editing projects. Circumstances inevitably vary between different projects and audiences and as a result those monetisation strategies need to be considered and formed on a case-by-case basis. Not all methods will be appropriate or possible for every type of digital editing project. A combination of these approaches can form a full monetisation strategy for the purposes of sustainability. *British History Online*, as one of the main case studies assessed in this chapter, have implemented a monetisation strategy that combines subscription, advertisement and donation methods, which in turn allows them to employ a publishing manager who maintains this valued web resource as a full time job: it can be seen as a highly successful example of monetisation achieving sustainability.

⁷⁷ Brown University, Centre for Digital Scholarship: <http://library.brown.edu/cds/>.

Experimentation is already a common practice in digital editing, which is something to be celebrated and embraced. Perhaps these creative and innovative skills can now also be used to develop perceptive strategies that can promote the use of quality digital scholarly content that respects the needs, rights and habits of the user while also ensuring its continuous technical maintenance. Sustainable development, according to the UN's *Our Common Future* report "is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs" (UN, 1987). In other words, the approaches we take to ensure the sustainability of projects will need almost continuous development. It is quite possible that drafting robust sustainability plans will become an increasingly requested condition of grant proposals from funding bodies in the future and as a consequence this will become a more important part of a scholar's skill set. In terms of application both a built-in approach (incorporating a monetisation method in the initial project plan, before the start date, even in the project's proposal) or an add-on approach (developing a monetisation strategy after the project's completion or in any phase during the project's development) could be pursued; or a combination of the two methods, as determined by operational or institutional factors.

While it has been difficult to give many concrete financial figures in this chapter (as this information is usually kept private), I hope that it may still contribute towards the discussion sustainability planning for digital scholarly editing projects through this survey and analysis of the possible methods for monetisation. Although the digital edition as a knowledge artefact and as a valuable commodity is still finding its place within both the digital publishing ecosystem and the new digital economy, these methods could be a good starting point to re-imagine and experiment with new procedures, concepts and standards towards the publication and the dissemination of digital scholarly editions. As with the academic book of the future, the digital scholarly edition of the future will probably require "academics, librarians, publishers, funding councils, creative technologists and research consumers

to collaborate” (Mole 2016, 12) to address these challenges and reach its full potential.

Chapter Three

Towards a conceptual framework for the dissemination of digital scholarly editions: Engagement, Discoverability, Usability and Accessibility (EDUA)

3.1. Introduction

This chapter builds further upon the hypothesis started at the outset of this thesis: that the blurring of roles between scholars and publishers in the digital paradigm of editions has led to new responsibilities for the scholar. If this new medium has empowered us as editors and we feel that “the constraints of publishing formats and marketing requirements were too limiting” (Pierazzo 2015, 8) then how do we begin to approach these tasks ourselves? This chapter will attempt to draw together a conceptual framework through which digital scholarly editors can approach the dissemination process. There remains a continuing role for the traditional academic forms of research dissemination, these being the publication of academic articles and monographs as well as the presentation of conference papers and academic workshops. The argument presented here focusses exclusively on the parallel activities of distributing the digital scholarly edition as a type of publication and the ways in which it might be possible to use digital technology as a medium to engage with broader society.

In order to present this argument coherently I would now like to propose an understanding of ‘dissemination’ for DSEs that is comprised of two separate but complementary orientations:

1. the effective distribution of the digital scholarly edition as a type of publication within the digital ecosystem
2. the diffusion of the textual knowledge of the editors to broader society

The first of these two orientations is normally aimed at a scholarly audience and its function should be primarily to enable *research* while the second is orientated towards a general public where, typically speaking, the ambition should be to *educate* or *inform*. The digital scholarly editions produced to date and the surrounding research about them has shown little indication that the digital scholarly edition aimed at scholars can also be made suitable for a broader audience, at least not without negatively affecting the scholarly merit of the publication. Lavagnino highlighted this problem of trying to serve two

audiences, both readers who are peers and readers who are not peers, whom he calls the “public audience” or the “common reader” (2009, 65).

There are two broad categories of digital output which scholarly editors need to employ in order to address the two elements of dissemination and the two audiences connected to them. Firstly, the research edition aimed at the specialist scholar and, secondly, the public facing outputs. The former is precisely the type of publication that we associate with the digital scholarly editions that have been produced to date and they function primarily as a research tool for humanities scholars to perform further research. The latter can take on a multiplicity of forms, which will be discussed in detail later in this chapter. A number of terms have been loosely applied to the public facing output including “public edition” and “outreach edition” by Elena Pierazzo (2015) or the “public digital edition” by Alyssale, “an edition created with a non-specialised audience in mind” (2012, 2). A number of scholars have argued that this problem of two audiences requires making two separate outputs, or a maximal and minimal edition, to use Vanhoutte’s terminology (2012), but this public facing output is usually pitched as a simplified edition whose primary function is for reading. This chapter will explore ways to go beyond the idea of our public facing outputs conceived primarily as a reading edition, arguing that there are in fact many more possible forms that could be employed for purposes of dissemination.

Methods for the dissemination of research results from certain scientific disciplines, particularly health fields, are highly developed. What is the reason for this difference between these science disciplines and the humanities? Perhaps the difference lies in the sense of urgency and potential contribution to ‘the public good’ that might be disseminated from the research results of health sciences compared with the relatively intangible contribution to such a ‘public good’ that comes from making the text of a medieval charter digitally accessible. Or perhaps the gap exists because of the relatively recent break with tradition from the breakdown of the typical publisher - editor divide. In either case it is clear that there is a need to address this question of dissemination in a conceptual and methodological manner in order to begin adapting to such a changed landscape.

3.2. Communication theories for dissemination

Dissemination, as defined in this chapter, would involve a wide range of communicative acts. Therefore it is important to situate our discussion within existing communication theories, especially those which relate to text, knowledge and technology. It would be impossible to discuss communication of texts without mentioning Robert Darnton's *Circuit of Communication* (1982). While Darnton's perspective is that of 'book history' rather than that of communication theory, it remains particularly relevant to look at his model in order to help understand the blurring roles of editors and publishers. In Darnton's model multiple agents are involved in the production and dissemination of books: authors, publishers, printers, shippers, booksellers, readers (1982, 76). As this list reveals, Darnton's model does not deal specifically with scholarly editions, if it did there might have been another agent - the scholarly editor. Furthermore, a number of the agents involved in this model are no longer suitable for the communication of scholarly editions in digital form. His model has been discussed and remodelled by others many times since its publication in 1982 and Darnton has revisited the model himself in recent years as well (2007). In this more recent publication he shifted his focus away from an agent-based model to an event-based one, by pointing to by Adams and Barker's model (1993), that proposed a typology of five events: publication, manufacture, distribution, reception, and survival. Again, this model seems more appropriate for the pre-web era and misses the extra layer of complexity that would be brought by adding scholarly editing to the transmission process.

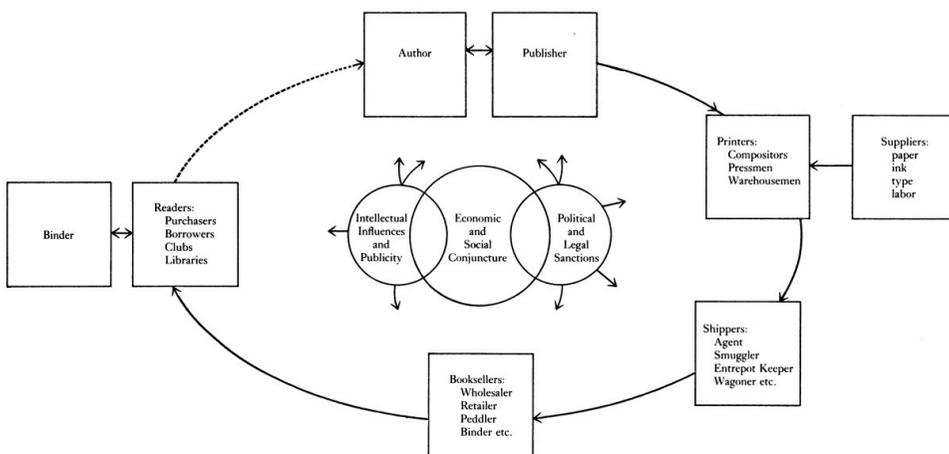


Figure 3.1: The Communication Circuit (Darnton 1982, 68).

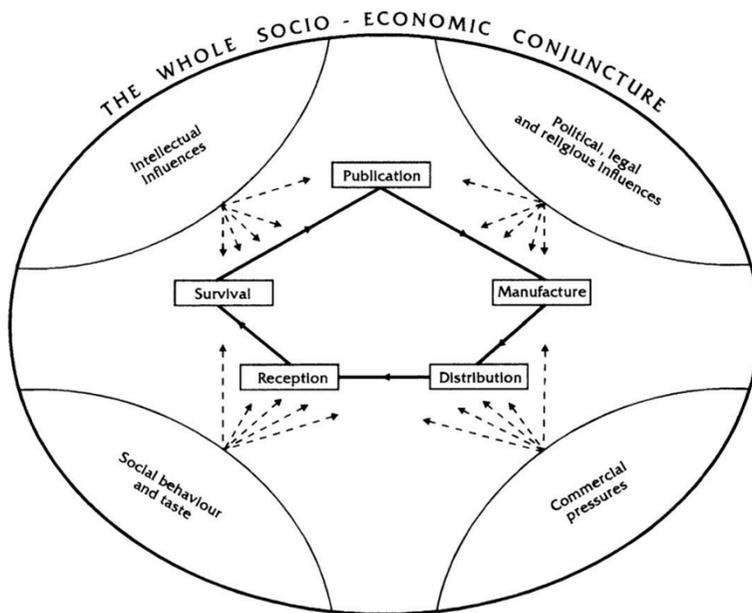


Figure 3.2: The Whole Socio-Economic Conjunction (Adams and Barker 1993).

According to Darnton's view books were communicated in consistent patterns that could be identified in his communication circuit (1982, 81). This level of consistency is not evident in the circulation of DSEs: there is no coherent communication circuit, and no standardised framework for how to distribute our publications - whether that be conceptualised through a network of agents or a series of events. Therefore, this chapter will attempt to develop a framework to deal with this highly altered and rather complex digital landscape.

Darnton's communication circuit focusses solely on the interaction between the agents involved in the transmission of texts in society. However, the aim of this thesis is not just to discuss the transmission of texts as the distribution of publications but also as the diffusion of textual knowledge acquired by the scholarly editors. Since our definition of dissemination involves the diffusion of knowledge, it is important to discuss what *diffusion* actually means in this sense. Diffusion theory was developed by Everett Rogers (1962) in relation to the diffusion and adoption of innovations in society. It has since become a major part of communication theory in relation to the diffusion of information and knowledge more generally. The theory has been highly influential in the field of public health and the methodologies they have employed for dissemination of research results. Lawrence W. Green et al., in their study of diffusion theory in the public health field, define dissemination as "diffusion that is directed and managed, although Rogers chose to include both the planned and spontaneous spread of new ideas in the term diffusion" (2009, 152). In medical research areas, among others, the idea of diffusion extends to utilisation and implementation of new ideas. The research conducted by scholarly editing projects is clearly quite different and any success in diffusing ideas is less measurable than in medical research findings due to the more abstract nature of literary topics. Nonetheless, in both fields the end goal of diffusion remains quite similar: we want our research findings to be read and understood, and to add to the pool of knowledge that exists relating to that subject matter. In this sense we may allow readers and researchers to 'utilise' our research, the 'implementation' aspect of diffusion

theory, on the other hand, is not necessarily appropriate or needed for our discussion.

Benjamin Lee and Edward LiPuma, two cultural studies scholars, published an influential article on the subject of ‘circulation’ in relation to culture. They perceived circulation as “a cultural process with its own forms of abstraction, evaluation, and constraint, which are created by the interactions between specific types of circulating forms and the interpretive communities built around them” (2002, 192). Their intention was to break away from the idea of circulation as a “form of transmission or delivery between unidirectional phases of production and consumption in order to recognize it as a dynamic cultural phenomenon in its own right” (Aronczyk and Craig 2012, 93). In this respect it is also important to highlight that the dissemination of digital editions is also more than a linear process of delivery from the producers of scholarship to its eventual consumers. Instead, it involves a complex social structure that is not entirely definable or controllable. This chapter will propose taking a directed and managed approach to distributing the DSE as a tangible object in combination with critically considered efforts to facilitate more organic diffusion of culturally valuable textual knowledge. As such, the approach taken here is close to how Rogers envisions the inclusion of both planned and spontaneous elements in the dissemination process.

3.3. Knowledge of texts

What exactly is meant by the term ‘textual knowledge’, this rather vague form of information to be diffused to broader society? To return to the point made by Peter Robinson, previously discussed in Chapter 1, we have become so familiar with receiving knowledge of texts through scholarly editions that editions have become confused with textual scholarship itself, while in reality textual scholarship is what precedes making an edition, what editors know and do (2010, 152). Kenneth Price has also described scholarly editing in a similar vein:

An edition is scholarly both because of the rigor with which the text is reproduced or altered and because of the expertise brought to bear on the task and in the

offering of suitable introductions, notes, and textual apparatus. Mere digitizing produces information; in contrast, scholarly editing produces knowledge.
(Price 2008)

We need to establish what precisely this ‘knowledge of texts’ contains, those things which editors know and do, in order to know how to communicate it to a wider audience. This will involve identifying aspects of the text that are insightful, educational and perhaps novel. Novelty is more than something which is useful for capturing the attention of an audience. Paul Rosenbloom has argued that good science typically has three attributes: veracity, importance and novelty (2010, 221-2). He further argues that researchers can be too focussed on veracity while he personally tends to learn more from things that are important or novel. This argument could also be applied to textual scholarship, whereby we have traditionally been extremely focussed on the veracity of our texts and our editorial methods. If we want to be able to communicate our knowledge of texts with broader audiences then perhaps we need to place more emphasis on how we convince our users of the importance of our topics and how to isolate interesting novelties within our research in order to capture their attention.

The textual elements that editors choose to communicate with their audience are, inevitably, subjective, to the nature of the texts being studied and to the specific editor’s tastes, which may both furthermore influence the editorial approach they have adopted. The traditional schools of scholarly editing play a major role in the decision as to which research results a digital scholarly editor diffuses to a wider audience. Another way to identify elements of textual knowledge that editors might want to diffuse would be through the ‘orientations to text’ as proposed by Van Hulle and Shillingsburg - these are: material, causal (agents), temporal, genetic (inventive), performance, and aesthetic/commercial (2015). In their paper, Van Hulle and Shillingsburg have pointed out that these are the “elemental materials, facts, and forces involved in the original production of literary works and then in their revision, reproduction, and dissemination” (27). They also distinguish between an editor’s interest in a text and their orientation to a text. While editors might be interested in many or all of these different aspects of a text

(28-9), their orientation towards a text will still shape their perspective and determine the message they want to convey about that text to a broader audience.

Perhaps an even more amenable way of looking at elements of textual knowledge to diffuse to broader audiences would be Pierazzo's *dimensions* of documents which she says could also be interpreted as channels of communication (2015, 42). These dimensions are groupings of 'facts' (observable features of documents as described by Sperberg McQueen, 2009):

- *Linguistic dimension*: the language in which the text is written, its grammatical rules, and the way it has been realised.
- *Semantic dimension*: what the words mean and what they were intended to mean.
- *Graphemic / palaeological dimension*: the letters that compose the words, their shape and succession, the type of script or typeface and the cultural implications of using one or another.
- *Literary dimension*: style, rhetorical features, genre, intertextuality, citations and allusions.
- *Genetic dimension*: by whom and when the document was filled with words, the revisions and the additions.
- *Artistic / iconic dimension*: how words and decoration look, their artistic quality, by whom they were created and why, what decoration represents and means.
- *Codicological dimension*: how the words have been progressively added to the document and how the particular shape and structure of the document and its production have influenced the words, how the document has been made, and its significance.
- *Cultural dimension*: the value we attribute to it because someone special has written it, or it has been owned by someone special, or has played a role in a historical event; because of the scarcity or the value of its components; for example, its role for religious devotion.

(Pierazzo 2015, 41-2)

While some of these dimensions are either exclusively material or exclusively immaterial, the genetic and cultural dimensions are said to bridge the two (49). Which of these dimensions are eventually communicated effectively would then depend on a combination of the orientations of the editors, the users interests and the dimensions of the text that are most prevalent in terms of importance.

3.4. Re-shaping dissemination

We established earlier in the chapter that the dissemination process is comprised of two parts: one which involves distributing the digital scholarly edition to make it available for researchers; and the other involving the diffusion of the scholarly knowledge of texts. How can this process be visualised as a whole and in what forms will the diffusion of textual knowledge to broader audiences take place, other than in the form of the DSE itself. Pierazzo's vision of an "outreach edition" is one which offers a reading text and provides some history of the text and its transmission (2015, 152). Pierazzo also acknowledges that there are many different types of reading (153), but perhaps the notion of 'reading' is still too restrictive as an activity facilitated to diffuse textual knowledge. It might seem most logical that the principal form of user interaction with textual scholarship would be in the activity of 'reading', but this is perhaps an extension of the skeuomorphic assumptions of interface design that, in the case of the scholarly edition, is still primarily based on the print paradigm (as argued by Van Zundert 2016). Multimodal forms of communication broaden the possibilities beyond the limits of reading textual characters on a surface. The scholarly edition itself, when used for research purposes has not often been used for a linear form of reading from beginning to end. By the same logic perhaps it would not be sensible to expect that amateur users of an "outreach edition" desire to perform a linear reading of the edition's text, but rather that they expect a more interactive or insightful mode of reading. Hans Walter Gabler has argued that: "We read texts in their native print medium, that is, in books; but we study texts and works in editions - in editions that live in the digital medium" (2010, 46). The amateur user of an outreach publication however, may not be reading a text (in a linear sense) nor studying it, in the sense intended by Gabler. Instead, the activity they are engaged in would perhaps be better described as *learning*. In other words, there are multiple possible modes of interaction with a digital edition and its other manifestations in outreach publications. According to Edward Vanhoutte a 'maximal edition' is aimed at researchers while a 'minimal edition' is aimed "towards well but negatively defined audiences - that is,

readers who are not interested in scholarly editing” (2012). And while we may indeed safely assume that a general reading public would have little interest in the nuances of rigorous scholarly editing, there are many other ways to introduce users to novel aspects of textual knowledge and in more diverse forms than reading editions alone.

How then can we conceive an edition that offers multiple modes of interaction for different purposes? In *A Thousand Plateaus*, Gilles Deleuze and Félix Guattari put concept of the ‘rhizome’ forward as a metaphor through which we can understand flows of information and interactions (1987). This is a model for DSEs which I explored, together with DiXiT colleagues Merisa Martinez and Daniel Powell at DH2015 in Sydney. We argued that “editing is a distributed, iterative web of processes with no set beginning or definite end. The edition is a multiplicity of information, personalities, objects, and activities; nevertheless, we believe that certain plateaus, certain moments of stability, emerge as points of entry into this dense matrix of interactivity” (Martinez et al. 2015). Alison Tara Walker has also adopted a similar approach to how digital editions of medieval documents might be read rhizomatically (2013). Within a rhizomatic understanding of editions it would be necessary to create many ways for users to access a text, and consequently, to be introduced to elements of knowledge that are relevant to those texts. Shillingsburg’s concept of a knowledge site also aligns quite well with a rhizomatic perspective when he describes it as “an environment where each user can choose an entry way, select a congenial set of enabling contextual materials, and emerge with a personalized interactive form of the work” (2006, 88). The lifecycle of a DSE is quite different to its print predecessor in the sense that DSEs are not exactly ‘published’ but rather can be said to be ‘extant’ or ‘non-extant’. A DSE could be likened to a living organism that experiences cell development and cell replacement as content is added, removed or altered. The DSE can furthermore give rise to offspring through the re-use of its content for outreach publications or through the utilisation of the knowledge it has diffused by users in other activities. All of which takes place in a non-linear fashion that might be best expressed in the form of a rhizome.

How are digital scholarly editions presented to their users in practical terms? The prevailing model of a digital scholarly edition is based on encoded text, the most common of which is TEI XML, presented to its users via an interface utilising web technologies such as HTML, CSS, and Javascript in order to make it more ‘readable’ for its users. Not that long ago this type of edition might have been presented in digital form not as a website but as a CD-ROM, (now an almost obsolete form of technology), such as the initial digital editions of the *Canterbury Tales Project* for example.⁷⁸ This fear of obsolescence has driven scholarly discussion towards the belief that the core data of a digital scholarly edition (namely the encoded text) should be separable from its interface (Galey 2010, 110). This approach might allow scholars to adapt to changing technologies in the future without a significant loss of scholarship. We could then view a digital scholarly edition as the principal interface for a core data set that allows visualisations of scholarly edited texts for its users. Perhaps if we continue in this line of thinking we can say that separate publications that are prepared for other audiences using this core data could also be called ‘interfaces’. Indeed not every textual scholarship project has an end goal of making an edition, some may decide to communicate their scholarship in multiple forms, as with the research volumes from the *Beckett Digital Manuscript Project* for example. And not every type of interface is orientated towards a human-computer interaction: for example the metadata files or APIs that connect with other digital environments also act as a form of computer-computer interface. Sperberg-McQueen put it best when he said that we need to understand the distinction between the edition and the temporary forms it may take for use. In order to do this we should create editions in an archival notation⁷⁹ that is independent of software and hardware which allow us to derive platform specific forms for distribution when necessary (1996, 58).

In order to disseminate textual scholarship in digital form both to users and towards digital research infrastructures we need to envision a structure that allows for multiple interfaces. I propose the visualisation below in Figure 3.3

⁷⁸ *Canterbury Tales Project*: <https://hridigital.shef.ac.uk/canterbury-tales/>.

⁷⁹ At the time he wrote this article the “archival notation” he was proposing was TEI encoding written in SGML, which later became XML.

as a way to formulate our understanding of dissemination. At the centre of this model stands the digital scholarly edition, the core resource which contains the most granular level of data, made available as openly as possible, from which other communicative interfaces can be derived. This manner of visualising the process is somewhat similar to what Peter Shillingsburg calls a “knowledge site” (2006). To avoid confusion with the term *interface* in the sense that it is typically understood (the graphic user interface GUI) I propose the use of the term *satellite*. The term satellite is more appropriate in a number of ways: firstly, that it avoids confusion with other meanings of interface; secondly, that it fits well with the visualisation as satellites revolving around a core central body; and finally, more importantly, because a satellite (as used in space technology) is also a means of two-way communication, which allows the possibility of input from users or other digital systems. The term satellite also seems more appropriate than the more commonly used ‘derivative publications’ which implies that one publication is derived from another in a reductive sense rather than items which can be complementary to each other for purposes of dissemination. Furthermore, as will be demonstrated in the next chapter, satellites can be produced even before an edition has been created or ‘completed’ and therefore cannot be a derivative of something which does not yet exist. In that case the satellite is communicating the knowledge of texts or research findings that the editors have acquired during the editing process.

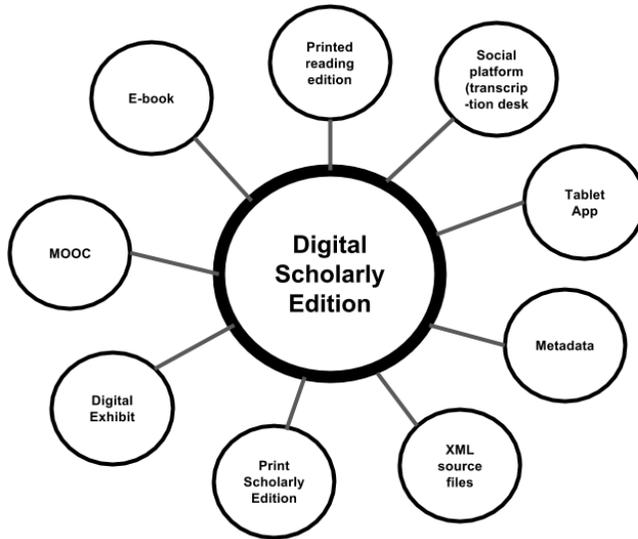


Figure 3.3: Satellite model of dissemination.

In this hypothetical visualisation of the dissemination satellites of a DSE I have placed multiple satellites around the centre in order to discuss *what might be possible*, rather than *what should be included* (as the latter may be too much for any one project to take on). At the centre of the diagram stands the DSE, the research edition proper, aimed at researchers, most probably embodied as a website, containing the maximum amount of data. Orbiting this central resource there are two print-based satellites, the *printed scholarly edition* and a *printed reading edition* of a text. There is an *e-book* and a *tablet application*, both forms of publication that were discussed in Chapter 1 and a *digital exhibit*, which is discussed in detail in Chapter 4 with the Raymond Brulez project. Also included here is a MOOC (Massive Open Online Course) as pedagogical output and a *social platform* such as the ones used for crowdsourced transcription projects. The satellites that are not necessarily directed at humans in this case are *metadata*, which might be ingested by library search catalogues or data aggregation systems like Europeana, and secondly, *source files* (e.g. XML files of encoded text) that might be re-used, where copyright allows. The importance of the inclusion of source files is something which James Cummings (2009) has emphasised, while Peter Boot describes source files of scholarly annotations as part of the ‘mesotext’, the text about the primary text, which he argues should also be disseminated

(Boot 2009, 203). Using the *Beckett Digital Manuscript Project* as an example of this model applied to an existing digital edition we can see the satellites for this project would include: printed research volumes (these are not editions, but rather monographs describing the genesis of a work): metadata (in this case provided specifically to a data aggregation portal for modernist scholarship: *Modnets*); the *Beckett Digital Library* (which is a digital reconstruction of the authors personal library); and a promotional video (that has featured at an international conference). All of these satellites play different roles in disseminating the scholarship of the digital editing project as a whole. One of these models taken as a whole, with the DSE at the central focal point, surrounded by its satellites, is a suitable visualisation for the entirety of a *project*.

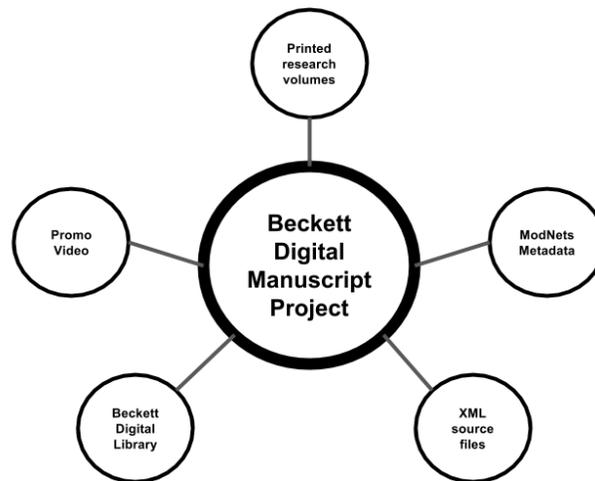


Figure 3.4: Satellite model applied to the *Beckett Digital Manuscript Project*.

This list of possible satellites for digital editing projects is potentially huge and could include all manner of things such as emerging technologies of virtual and augmented realities. Furthermore, providing such an exhaustive list might prove inefficient given the speed with which technology changes. Sperberg-McQueen pointed to this problem, once again, over 20 years ago when he argued that: “Our notions of what constitutes convenient use of an edition vary too much from individual to individual and will in any case

change radically during the lifetime of any serious edition” (1996, 58). Instead, it may be more desirable to devise a broader framework for scholarly editors to conceptualise and plan their dissemination strategies.

3.5. Forming the EDUA Framework

By looking at digital technology’s role in dissemination from the perspective of affordances and constraints to communication, it is possible to begin drafting a framework to address the challenges and take advantage of the opportunities afforded to us by the medium. The idea of affordances and constraints have been commonly used in design studies and will be discussed again in a later part of this chapter in relation to interface design. The theory of affordances, and the first use of the term as a noun, came from the work of the psychologist James J. Gibson on our perception of the environment: “affordances of the environment are what it offers the animal, what it provides or furnishes” (1986, 127). Donald A. Norman introduced the term into design studies with his book *The Design of Everyday Things* (1988) from where it has become a mainstay of theory in user-centred design and human-computer interaction. “An affordance is a relationship between the properties of an object and the capabilities of the agent that determine just how the object could possibly be used” (Norman 2013, 11). In its original sense affordance was used “either for good or for ill” but in more recent years the term has become used “almost exclusively to refer to a positive enabling” (O’Brien and Voss 2011, 75). As the normal counterpoint to this positive enabling the term *constraint* has been most commonly applied in scientific studies since the introduction of the term to affordance theory by James G. Greeno (1994). Although as Kennewel highlights “constraints are not the opposite of affordances; they are complementary and equally necessary for activity to take place” (2001, 106). In human-computer interaction the term *constraint* is typically applied to the design concept of “determining ways of restricting the kinds of user interaction that can take place at a give moment” (Preece et al. 2015, 27). In order to avoid confusion with these intentional restrictions I will use the term *barrier* rather than constraint. Applying the idea of affordances and barriers/constraints to the use of digital technologies has

received regular attention over the last two decades in studies of education and literacy, such as the forthcoming book by Smale and Regaldo on the use of digital technology in higher education whereby they attempt to explore ways to increase affordances and reduce barriers to students' use of digital technology (2017), or Jones and Hafner's monograph *Understanding Digital Literacies* (2012). A more directly relevant and related study by Arthur Thomas et al. (2010) takes the approach of identifying the challenges and opportunities of the digital medium in an investigation of researcher engagement with web archives. Maria Popova has also used the term 'barriers' in relation to information discovery:

Historically, the two main types of obstacles to information discovery have been barriers of awareness, which encompass all the information we can't access because we simply don't know about its existence in the first place, and barriers of accessibility, which refer to the information we do know is out there but remains outside of our practical, infrastructural or legal reach. What the digital convergence has done is solve the latter, by bringing much previously inaccessible information into the public domain, made the former worse in the process, by increasing the net amount of information available to us and thus creating a wealth of information we can't humanly be aware of due to our cognitive and temporal limitations, and added a third barrier – a barrier of motivation.
(Popova 2011)

What are the affordances and barriers of digital technology in relation to the dissemination of digital scholarly editions as defined previously? Since affordances are not properties of an object but rather the relationship between an object and an agent (Norman 2013, 11), it is important that the list of affordances is conceived from as perceived by an agent involved in the dissemination. In this case the affordances of digital technology are listed from the perception of the scholarly editor who wishes to make their scholarship as widely available as possible using the means available. Meanwhile the barriers that have been listed are those that might be encountered by the user of a digital scholarly output, this may be perceivable by the user or something of which they are entirely unaware.

Affordances

The primary communicative affordances of digital technologies as perceived by scholarly editors are:

- *Broader audience*: that the audience can be greater than the potential readership of print scholarly editions due to reduced geographical, financial and social limitations to access
- *Scale*: the potential for digital scholarly editions to provide users with access to a volume of textual data that would not be possible within the space limitations of the print medium
- *Dynamic design*: editions in digital form allow users to select multiple representations of text simultaneously for use, such as multiple witnesses and facsimiles and gives them access to useful features like search functionalities or annotation tools
- *User enjoyment*: the digital medium allows for more fun ways to attract users
- *Multimodality*: texts can be communicated in more forms than textual characters, such as audio and video performances
- *Social connectivity*: users can now become participants in a scholarly project such as with social editions
- *Integration*: that digital editions can be integrated with related scholarship in their respective scholarly fields

Barriers

This is a list of communicative barriers that could be encountered by users of digital scholarly outputs. They represent hypothetical user profile case scenarios that were greatly influenced by both the tablet user study and the usability studies on the *Brulez Digital Exhibit*:

- User finds the functionalities unclear
- User attention is not captured or maintained
- User cannot identify what the digital output actually is
- User finds it visually unattractive
- User cannot find the digital output
- User cannot understand the message intended by the scholars
- User is overwhelmed by the amount of information

- User cannot access it due to one or more digital divides⁸⁰

This is an extremely diverse and broad set of affordances and barriers, and there are potentially several more that others may argue for inclusion. Rather than dealing with each of these points individually, I want to make this discussion more manageable on a conceptual level. In order to do this all of these affordances and barriers to communication can be assigned to the following categories of concern: *Engagement*, *Discoverability*, *Usability*, and *Accessibility*. Some of the affordances and barriers appear in more than one category because they are relevant to more than one dimension - in which case they will need to be examined in each of those contexts.

- *Engagement*: the range of activities that seek to invite and sustain users' active participation with a digital scholarly output.
- *Discoverability*: the propensity of the publication to be discovered or found by users through digital means.
- *Usability*: making digital scholarly outputs easier to use and more effective in meeting the needs and requirements of the users.
- *Accessibility*: minimising or removing the barriers to content access for users that might exist due to technological, economic, disability, linguistic, socio-political or cultural reasons.

These four dimensions form the structure of what I will call the EDUA framework. They are proposed here as a way to conceptualise the dissemination process, and each of these individual dimensions will be discussed in more detail in the remainder of this chapter. The four dimensions are interconnected with some overlapping areas of concern and therefore cannot be treated completely in isolation from one another. In other words, there are some dependencies in this model. For instance: a publication cannot be engaging if it is not discoverable, usable and accessible. On the other hand, an edition can be perfectly usable without being engaging - so the dependency in this case does not work both ways. In order to properly

⁸⁰ The term 'digital divides' will be discussed in detail later on in the section 3.9.

address these four aspects we must be open to a critical reconsideration of the ways in which we deliver works of scholarship to users.

3.6. Engagement

3.6.1. Engaging the user

Engagement is by far the most elusive concept to define in the EDUA framework. Within the fields of information science and technology studies there is little consensus on a definition of the term. In the English language *participation* is one of the most common synonyms for the word *engagement*. As conceived here *engagement* involves harnessing the affordances of digital media in order to invite and sustain the participation of users.

In recent years, public engagement is increasingly viewed as more than an ‘additional extra’ in academia. In the UK, it is becoming more common for research projects to embrace public engagement with the belief that it informs research, enhances teaching and learning, and increases research impact on society. Therefore, it is becoming increasingly important to consider ways of incorporating public engagement activities into digital humanities research.
(Bailey-Ross et al. 2016, 1)

Brenda Laurel in her highly influential work in the field of human-computer interaction, *Computers as Theatre*, defined *engagement* as being comprised of both cognitive and emotional components which “implies sustained attention as well as a degree of emotional involvement as the plot unfolds” (2014, 139).⁸¹ When Laurel talks about the idea of *engagement* she is approaching it from the perspective of the *experience* of a user (although she prefers to use the term ‘interactor’ instead of ‘user’). How can editors approach the delivery of scholarly outputs in order to facilitate such an *experience*? This section will attempt to discuss the existing and potential ways in which scholarly editors can facilitate and encourage user engagement with digital textual scholarship. The *engagement* dimension of this conceptual framework is perhaps the part

⁸¹ The first edition of Laurel’s work was published in 1991 and has remained an influential approach throughout the intervening years.

that is most demonstrative of the variety of forms of interaction that can take place through the publication of what have been described earlier as ‘satellite’ publications. While it is theoretically possible to design a research DSE that is engaging for its users, in reality the edition is less likely to be able to achieve a high level of (public) engagement while simultaneously meeting scholarly expectations through a single interface. Consequently, the remainder of this section will focus on the forms of user engagement that might be achieved through types of digital publication other than the core DSE publication that is aimed at researchers.

Creating an engaging digital publication requires a significant investment into considerations of design, and it thereby overlaps significantly with issues of *usability*. The idea that the aesthetics and the functionality of digital media are highly linked concepts will be discussed in greater detail later in the *usability* section of this chapter. Usability difficulties are listed as one of the main causes for users to become *disengaged* and decrease the likelihood of them *re-engaging* with the digital resource in the future (O’Brien and Toms 2008, 949).⁸² *Engagement* forms one of the five dimensions of *usability* put forward by Whitney Quesenbery (2003). In her paper she described usability as the way in which an “interface can draw someone into a site or a task (3). It also looks at the quality of the interaction, or how well the user can connect with the way the product is presented and organized” and further defines it as “how pleasant, satisfying or enjoyable an interface is to use” (3). Laurel argues that a user needs to be provided with a kind of ‘first-person experience’ within which the user would have a certain degree of *agency*, and that this experience is also determined by the “number, variety and integration of sensory modalities” (142). In other words: a user’s engagement with digital media is enhanced through providing the feeling of control, as well as a range of ways to interact with the content.

⁸² O’Brien and Toms proposed a process model of engagement that consists of “a point of engagement, a period of sustained engagement, disengagement, and (possibly) reengagement” (2008).

3.6.2. Reading as engagement: modes and forms

To understand the different potential ways to boost user engagement with the content of a digital editing project it is necessary to understand the different types of interaction that they might have with that content. In the pre-digital era the primary mode of communicating a scholarly text to a non-specialist audience was in the form of a reading edition in book form, in which the critical apparatus was either stripped down or entirely omitted.⁸³ While there are now many more ways to communicate scholarly knowledge it remains true that the act of reading is inevitably the primary form of human interaction with texts as cultural heritage objects. Reading as an activity can be broken down into a number of forms. How has reading and interaction changed in the shift to digital forms of editions? Shane McGarry argues that editors of digital scholarly editions have carried many metaphors with them from the analogue printed form, these include things like footnotes which are often still located on the bottom of the ‘page’ despite the digital medium offering more fluid ways to interact with this information (McGarry 2016).

Whether we should use the term *reader* or *user* of digital scholarly editions has been addressed by Krista Stinne Greve Rasmussen who argues that there are three reader roles or modalities which the reader can assume separately or simultaneously, namely: the *reader*, who is “interested in scholarly editions as reliable academic versions of literary works; the *user* who “also seeks an understanding of the work, but in a more intertextual context”; and the *co-worker* who “seeks to go beyond the user and reader roles, and to contribute actively to the scholarly enterprise” (Rasmussen 2016, 127). While Rasmussen’s description makes an important point, that some individuals may assume different types of reader roles, she does not cover the general reader (someone who reads for pleasure), perhaps because she assumes that such readers do not visit digital scholarly editions. A more suitable division of

⁸³ The critical apparatus is a fundamental element for establishing the credibility of a scholarly edition, as it provides accountability. Elena Pierazzo has argued that while no edition can be objective we can at least make our work accountable: Accountability is at the base of any rigorous scholarly method and provides other interested parties with the tools for verifying the work done, testing it and then agreeing or disagreeing with it (Pierazzo 2015, 98).

reader types for my suggested model of dissemination is that of Ray Siemens et al. who have argued that there are two forms of reading, one which seeks to understand, and the other seeks primarily to enjoy the object with which they are engaging (Siemens et al. 2012, 167-8). These two categories fit well with the model of dissemination proposed in this chapter whereby the former category matches the main digital scholarly editions aimed at researchers, while an array of other types of satellite or outreach publications fall under the latter category. There is plentiful opportunity to create digital reading editions for tablets and e-books that are derived from the main digital edition, that would serve the purpose of engagement and thereby dissemination (see Chapter 1).

3.6.3. Gamification

Play is the form of interaction that a user engages in with a game. According to Laurel, this idea of play is inherently important for engagement, which “entails a kind of playfulness: the ability to fool around, to spin out ‘what if’ scenarios” (Laurel 140). The global games market is extremely large, generating US\$99.6 billion in 2016 (Newzoo 2016, 10). To put that figure into context, that is almost three times larger than the global movie industry.⁸⁴ How could a digital scholarly editing project create a game as a spin-off from their project or use gamification affordances to boost user engagement with an editing project? Pierazzo has discussed the idea of gamification to boost user engagement when she considers the use of rather small gamified elements inside of editions. She talks about making facsimiles more ‘interactive’ by integrating views of the transcription onto them, for which she uses the examples of her Proust prototype⁸⁵ as well as the *Beckett Digital Manuscript Project's* ‘zoom topographic’ tool. If we accept the premise that these approaches also constitute a form of gamification, then there may be many ways to gamify editions and their content. In the *Brulex Digital Exhibit* (discussed in Chapter 4) we created animations of materials which can be played as a video, which then might qualify as a form of gamification. Still,

⁸⁴ China has also overtaken the USA as the world’s largest games market (Newzoo 2016, 15).

⁸⁵ Proust prototype: http://research.cch.kcl.ac.uk/proust_prototype/.

Pierazzo's use of the term gamification may be too broad for our purposes - so we should look into some more typical (and interactive) examples of games to fully explore our options for gamifying scholarly content in general, and the digital scholarly edition in particular.

Human civilisation has been gamifying text and language for hundreds if not thousands of years. Playing Scrabble, however, is perhaps not the first image that comes to our minds when we think of computer games. While gaming has traditionally carried a slightly negative connotation for adults, smartphones have led a major shift in this attitude with the rise in popularity of game apps that are played by a wide range of age groups, such as Angry Birds and Candy Crush. These two examples of game apps are primarily intended for pure play, i.e. as a type of entertainment. However, gamified apps with a pedagogical goal have also achieved a great amount of success in this market. A 'serious game' is the term used to describe a game that has been designed with a purpose beyond entertainment, and usually the further purpose is education. DuoLingo, as a free and community-run language learning application is one of the forerunners in this area. As mentioned in Chapter 1, several respondents in our survey in this had used DuoLingo - an app that has a global usage of around 120 million people (DuoLingo 2016). What is interesting about the DuoLingo application is the extent to which it is gamified. The simplicity of its design is part of its winning formula. It has used some simple concepts like incentivised competition to encourage its users. Crowdsourced transcription projects have also used this incentivised competitive element to boost user engagement with their projects, with a leaderboard or badges for the transcribers who have done the most. Games offer a space to offer multimodal and multi-sensory delivery of content. DuoLingo allows users to listen and speak as well as read and view images, again in a relatively simple but effective form. Another feature of DuoLingo which makes it more engaging, or rather, a feature that lowers the chance of users disengaging, is the functionality it provides to ask questions to the curators of the courses and to fellow users. Serious games for learning in the cultural heritage sector can take many forms such as strategy, simulation, adventure, quizzes or puzzles which can orientated towards increasing cultural

awareness, heritage awareness or historical reconstruction (Mortara et al 2013, 319).

Champion has explained that “many computer games now come with editors that allow users to modify the game or import their own ‘levels’, 3D assets, characters or scripts”, those editors are called “mods” (Champion 2015, xiii). This idea of actually editing a game is interesting for representations of scholarly editions. If a game or a virtual reality world can be seen as a visualisation of a scholarly text as envisaged by Schreibman et al. (2015), what could happen when the users/gamers also become editors too. In a situation in which the game does not have a limited number of potential outcomes and scenarios but can be altered by the user, the altered game would be an entirely new representation of the text(s). Gamification discussions applied to digital scholarly editions tend to be more about gamifying the editing process than about gamifying the content matter. Saklofske et al. have asked “how might we game the scholarly edition? For instance, what benefits might result from designing digital editioning environments that help people “level up,” learn, and negotiate stages of editorial expertise? Beyond the learning potential offered by gaming techniques, what interventions could be made in traditional editorial processes?” (Saklofske et al. 2016, 15). This discussion focusses largely on the potential for using gamification for the purposes of social knowledge creation or social editing (a topic that will be discussed here in section 3.6.5).

In the early 2000s Jerome McGann, Johanna Drucker and Bethany Nowviskie experimented with the use of a game as a pedagogical tool for their students when they developed the game Ivanhoe (named after the novel by Walter Scott upon which the game was originally based). The original game went through several iterations which are no longer extant but it was recently revived by some research fellows at the University of Virginia in the form of a WordPress theme. The goal of the game is described as “to uncover alternative narratives and readings by intervening directly in the text: adding to it, reordering the plot, or deleting scenes or characters”.⁸⁶ The intention

⁸⁶ Ivanhoe, “About”: <http://ivanhoe.scholarslab.org/about.html>.

was to teach students about critical reading and interpretation of texts as well as to improve research and bibliographical skills (McGann et al. 2004). The game was designed to be non-specific to any one academic discipline but it does raise some interesting questions about what digital scholarly editors might be able to teach users of gamified editions. Alex Christie has developed gamified teaching tools using some of Proust's and Beckett's texts which ask players to assemble fragments of texts from unfinished manuscripts. The reality of these games is that there is not necessarily a solution to the puzzles but rather the intention is to teach theory to students through play. This absence of a solution also teaches about editorial uncertainty which can be valuable, something which would be embraced by Bruno Latour when he said that: "The world is not a solid continent of facts sprinkled by a few lakes of uncertainties, but a vast ocean of uncertainties speckled by a few islands of calibrated and stabilized forms" (Latour 2005, 245). So beyond teaching students solely about the textual subject matter of the digital resource we can also try to introduce users to the skills and techniques of scholarly editing and critical interpretation. The potential avenues are endless when it comes to gamifying our content purely along the lines of the subject matter - in other words, when we try to teach our users something about the cultural dimension of a text. In a university context perhaps there is more to be gained by teaching students critical skills rather than solely introducing them to cultural facts. Saklofske et al. argue that using gamification with digital scholarly editions "can and should encourage two types of education simultaneously: the use of the scholarly edition software, and scholarly editing practice and literacy" (2016, 36).

Virtual Reality (VR) is an increasingly popular form of multi-sensory digital experience (Statista 2017). Recent advances in the technology sector make VR more cheaply available by allowing smartphones to be inserted into relatively basic headsets, which makes this immersive technology much more widely accessible. There are conceivable advantages to VR such as for the presentation of 3D digitisations of documents to researchers which might give them a better understanding of the codicological dimensions of the original. There have been efforts to achieve this in the cultural heritage sector, primarily by museums and major libraries. The Cambridge Digital

Library has been actively involved in 3D digitisations of historical objects including documents, which could potentially be viewed using VR. One documentary example from this collection is a 3D digital image of the *Epitome* from a series of books on the anatomy of the human body known as the *Fabrica* by Andreas Vesalius published in Basel in the sixteenth century. The *Epitome* includes a graphic of the human body which is further comprised of a number of pop-outs that could not be captured accurately in a two dimensional digitisation. 3D digitisation technology and VR offer a major affordance to digital scholarly editing projects that wish to make engaging representations of codicological elements of documents to users.⁸⁷ This is an area which has been researched extensively in the cultural heritage sector, particularly by museums (see, for example: Zha et al. 2006; Ionnides and Quak 2014; and Gonizzi Barsanti et al. 2015), but it is relatively new territory for textual scholars.

*Contested Memories: The Battle of Mount Street Bridge*⁸⁸ is a virtual world project that has been developed with the digital scholarly edition in mind. The project aims to make a 3D reconstruction of an important battle that took place during the Easter Rising in Dublin in 1916 using “abundant documentary sources which were both contradictory and fragmentary” in order to “investigate alternative interpretations, and to test theories about how visual representations can augment traditional approaches to knowledge creation”.⁸⁹ It could be argued that such a project could offer a new type of critical edition of different documentary accounts. At the DH2016 conference in Krakow Schreibman et al. argued it was an exploration of “how to integrate a 3D visualisation as the primary text of a digital scholarly edition, raising issues of how the phenomenology of place and space can be used to design a new language of scholarly editions” (2016). Today, the execution of this plan has yet to reach these grand ambitions, in so far that they have succeeded only in recreating the streets of the battle scene but not the actual battle itself. Nonetheless, the project raises an interesting point for

⁸⁷ Cambridge Digital Library, 3D image of Andreas Vesalius' *Epitome*: <https://sketchfab.com/models/03dded8f65934e26a37ae41122b1c804>.

⁸⁸ *Contested Memories: The Battle of Mount Street Bridge*: <http://mountstreet1916.ie/>.

⁸⁹ “Revision Methodology”: <http://mountstreet1916.ie/revision-methodology/>.

this new way to express a digital scholarly edition through 3D visualisation and for the potential use of game algorithms to express variants of text.

3.6.4. Pedagogy

Creating more engaging and appealing methods to connect with users should not equate to merely providing entertainment: it should have some inherent pedagogical purpose as well. There is an increasing amount of scholarship being done on digital pedagogy within the field of digital humanities.⁹⁰ Matthew Kirschenbaum notes that:

the digital humanities today is about a scholarship (and a pedagogy) that is publicly visible in ways to which we are generally unaccustomed, a scholarship and pedagogy that are bound up with infrastructure in ways that are deeper and more explicit than we are generally accustomed to, a scholarship and a pedagogy that are collaborative and depend on networks of people and that live an active 24/7 life online. Isn't that something you want in your English department?
(2013, 202)

As technology has entered the classroom it became inevitable that there would be some new pedagogical practices and tools for digital learning and blended learning approaches that would emerge in response. Laurel argues that: “Educational simulations excel in that they present *experience* as opposed to *information*. Learning through direct experience has, in many contexts, been demonstrated to be more effective and enjoyable than learning through information communicated as facts” (Laurel 2014, 145).

A good example of an edition that was developed with teaching in mind is the *Digital Thoreau* edition and more specifically, the *Readers' Thoreau* within that project. This project allows classes to create groups within which they can carry out social annotation and discussion around the text for the duration of their course. The editor Paul Schacht wrote about teaching his groups at SUNY Geneseo with *Readers' Thoreau*:

⁹⁰ See *Hybrid Pedagogy*: <http://www.digitalpedagogylab.com/hybridped/> and Hirsh, Brett D. (ed). *Digital Humanities Pedagogy: Practices, Principles and Politics*. Open Book Publishers. 2012.

In an increasingly connected world, what is the best argument for the literature classroom as a physical space? Surely it is not the prospect of controlling students' access to the knowledge and ideas outside it. A better argument might be the physical classroom's potential to be a site of community and trust, a space in which unsettling questions may be asked and radical possibilities glimpsed.

(Schacht 2015, 17).

MOOCs (Massive Open Online Courses) also offer an affordance in the area of digital pedagogy, in particular with the general public. MOOCs have had a tumultuous existence in their short history, from a beginning in which they were perhaps overhyped as representing the future of education, to later being almost dismissed as a passing fad. Yet more recently they seem to have found their niche as more and more universities are offering credits towards degrees for completing certain MOOC courses. At the same time several MOOC courses see an overwhelming subscription from non-specialist audiences, i.e. members of the public, which makes them an excellent medium for pedagogical outputs relating to textual scholarship.

3.6.5. Social approaches to engagement

Arguably for users to feel fully engaged with a digital scholarly edition, and to feel like a true participant, they must be empowered with some sort of agency, allowing them to contribute to shaping its construction and content. The connectivity provided by digital media provides a major affordance in how environments can be constructed that enable user input into editions and that can enable social interaction between individual users as well as between editors and users. The idea of crowdsourcing has been discussed in great detail in scholarly editing and digital humanities more generally. *Transcribe Bentham* is probably the best known example of a scholarly editing project that has taken this approach by harnessing crowdsourcing, in this case for the purpose of performing transcriptions. In itself, crowdsourcing is already a way to engage an audience in the content of the project, and gives these users a vested interest in the overall outcomes of the scholarly editing project. Their participation in editorial activities also raises general public awareness of the existence of the edition and performing these activities enables the generation

of new knowledge about the text, which could be seen as part of the diffusion of knowledge itself.

Amanda Visconti developed a digital edition of James Joyce's *Ulysses* called *Infinite Ulysses*, which is designed to be a participatory and public edition. The concept behind her research was to make a platform in which users could read and socially annotate an authoritative text of the novel.⁹¹ This edition arguably aims for the widest possible audience appeal that could be achieved with such a literary work. The concept was to ask: "What if we build a digital literary edition and invite everyone?" (Visconti 2016). The edition allows both scholarly and public users to annotate the text and interact with each others annotations (saving annotations, adding annotations to their favourites and rating other users' annotations). Annotation is one of the activities listed among the 'scholarly primitives' proposed by John Unsworth (2000), but to what extent do non-scholarly users of digital editions tend to embrace it as a mode of engagement? Annotation is a form of commentary that contemporary website users may find relatively familiar given the prevalence of 'comment' functionality throughout digital media such as with news websites and social media sites. Social annotation has also been explored by the aforementioned *Digital Thoreau* project through another social reading edition, the *Readers' Thoreau*, which provides digital reading editions of two of Henry Thoreau's major works that include both scholarly and public annotations. As I've noted in a *RIDE* review of the project, the format in this project creates an interesting discourse, whereby scholarly annotations from the 1960s are visible alongside comments from current users almost as if in conversation with each other (Kelly 2016, §13). Also, as with *Infinite Ulysses*, school and university groups are allowed to form private sessions of social annotation for the purposes of teaching. Strikingly, both of these two social reading editions have had considerable success in generating large and well engaged readerships in the relatively short period of time that they have been published online. While still officially in 'beta mode', as of February 2017, *Infinite Ulysses* had over 24,000 visitors and 775 registered users who had

⁹¹ The text use in *Infinite Ulysses* is sourced from a Modernist Versions Project digital transcription of the 1922 Shakespeare and Co first printing which has been reused by Visconti, see: <http://www.infiniteulysses.com/content/text>.

created 1,168 annotations and 287 unique tags. Whereas *Readers Thoreau* at the time that I reviewed it in 2014 had 500 ‘active’ members and 20 discussion groups with up to 98 members each. (Kelly 2016, §17). These usage figures tend to suggest that the format works, that social annotation is a valid and effective form of user participation.

Both crowdsourced transcription and social annotation have proven to be successful methods of improving user engagement and public participation, both of which can be described as forms of ‘social editing’. Such social approaches to editing require us to re-conceive how textual knowledge is created and consumed. It compels us to acknowledge that the diffusion of textual knowledge is not simply a linear movement from A to B (i.e. from scholar to user), but that the actions of the user also generate important textual knowledge that needs to be considered and recognised in efforts towards dissemination. In his research into ‘social knowledge creation’, Daniel Powell argues that knowledge has always been socially constructed, (even in the print medium multiple actors were at play in the creation of books), and that the digital medium has merely made the social dimension of the process more transparent (Powell 2015, 2).

One notable digital publication that functions as a self-declared ‘social edition’ is *A Social Edition of the Devonshire MS*.⁹² The project was created using Wikibooks, something which caused considerable anxiety for the project coordinators. Nonetheless, despite their initial fear that the open nature of the environment might result in some public editors being wreckless with amendments (or even malicious) they found that the opposite was the case. Instead, these editors felt they did not want to intrude on someone else’s work and preferred to discuss possible changes with the other editors before implementing them (Crompton et al. 2013, 6). By stricter definitions the *Devonshire MS* project might not qualify as a digital scholarly edition. Both Barbara Bordalejo (2013) and Peter Robinson (2015) have actually argued that, effectively, no social editions actually exist, as they are all editor-led and

⁹² *A Social Edition of the Devonshire Manuscript*:
https://en.wikibooks.org/wiki/The_Devonshire_Manuscript.

that users normally play only a small specific role. However, even if this assertion is true, then it is still not a bad outcome from the perspective of generating user engagement.

3.6.6. Textual scholars as Wikipedians?

Wikipedia celebrated its 15th anniversary in 2016. It became one of the top 10 websites in the world by 2007 and is the only non-profit near the top end (Wikimedia 2016). The INKE group have argued that: “Wikipedia’s model for contribution clearly interrogates notions of authorship and intellectual property rooted in print culture. It is worth noting that this is not a new model: it is one that was displaced by the formalized diffusion of academic writing, which saw its genesis in seventeenth-century Europe”.⁹³ It is a forum in which scholars should become more engaged. Not only to become well-informed custodians of existing content, but also to take advantage of the fact that this is already a huge interconnected web of knowledge in which millions of people are engaged on a daily basis. After producing an edition and generating some interesting results from that process, a possible follow-up step would be to create and curate a wikipedia page on the topic and to connect it to other relevant knowledge by linking it to many other relevant Wikipedia pages. The sheer size of Wikipedia might initially seem intimidating, in that it might be only possible to scratch the surface of its content, and also that as scholars some may argue that we should not be promoting the use of a resource which is not entirely ‘reliable’. In reality, however, since scholars mostly only have a small and specific area of expertise, this means that perhaps we might only need to monitor and edit a dozen or so wikipedia pages per scholar. We could try to resist the prevalence of Wikipedia as a common public source of knowledge, or, we could accept the reality of Wikipedia’s positive power and impact in our society and engage with it fully and enthusiastically. This would offer us the possibility to bring our content into a real publicly accessible and discoverable forum for the non-experts and non-specialists. Still, there are some small barriers to becoming a Wikipedia editor such as the need to learn the Wikipedia

⁹³ INKE, “The uses of books”: <http://inke.ca/projects/the-uses-of-books/>.

language (i.e. Wiki markup), while such skills are not particularly difficult to learn, they might act as an initial disincentive to engage with the form. Recently we have seen the emergence of so-called “Wikipedians in residence”⁹⁴ in university libraries and other GLAM institutions whose role is to promote and train people in its usage for scholarly purposes. Wikipedia has become even more important in an age of lazy desk-bound journalism in which facts are often not checked beyond a quick Google search, and as people in power use cultural knowledge for purposes of political propaganda. Thus the imperative for scholars to engage with Wikipedia is both timely and moral in nature. Editing Wikipedia can also be performed as community activity or as part of teaching. I participated in a Wikipedia 'edit-a-thon' organised by the University of Victoria in 2015. Several knowledge institutions have also organised similar events such as the ‘rewriting history’ event organised by the British Library and Jisc in 2012 (Fahmy 2012) and Europeana’s Verdi edit-a-thon in 2016 which saw 130,000 visitors editing Wikipedia in 123 languages over a two-week period (Sciotti and Martinelli 2017).

3.6.7. Physical spaces

The final area that I would like to bring into the discussion of engagement is what we could do with digital edition content in public places and physical spaces like in GLAM institution exhibitions. The importance of public museums and other similar institutions for public access and exposure to cultural heritage is immense - and even more so for people from less privileged economic backgrounds. Most people who walk through the doors of a GLAM institution arrive with the intention to gain access and exposure to culture and heritage, which means that these venues are an ideal environment in which we may try to meaningfully engage with a relatively captive audience. There is a growing commitment by museums and other cultural heritage institutions to establish new forms of engagement and participation by providing a myriad of resources that facilitate visitor

⁹⁴ Wikipedia. “GLAM/Wikipedian in Residence”:
https://en.wikipedia.org/wiki/Wikipedia:GLAM/Wikipedian_in_Residence.

participation, interaction, and learning (Bailey-Ross et al. 2016, 4). GLAM institutions are also more inherently audience-focussed than a typical scholarly research centre. While they have similar research and curatorial concerns as a scholar they also have a clear public function and civic responsibility. During a visit to Archives+⁹⁵ in the Manchester Central Library I was partially inspired by the idea of creating digital touchscreen exhibitions in GLAM institutions as a form of public engagement for digital editing projects. Archives+ is a truly multimodal and multimedia space: it is open, welcoming and engaging, and it attracts a real public interest through its use of digital exhibitions. In the final chapter of this thesis I will provide an outlay of our partnership between a memory institution and a scholarly editing project in the creation of the *Brulex Digital Exhibit*. This approach could be a mutually beneficial exercise in the dissemination and valorisation of textual heritage knowledge.

3.7. Discoverability

3.7.1. Discovery and information retrieval

Earlier I described *discoverability* as the propensity of the publication to be discovered or found by users through digital means. How do users discover scholarly publications and how can we facilitate those discovery methods with our digital editions? The information seeking patterns of the users of scholarly content have changed as dramatically in the shift to the digital paradigm, as have the publication formats through which we deliver that content. One typical starting point for users in a university environment might be their institutional library catalogue, but a lot of scholarship takes place in isolation in a university so these catalogues may not be comprehensive.

Digital projects on campuses live everywhere! This extreme decentralisation adversely affects their discoverability. They may be hosted by academic departments,

⁹⁵ Archives+: <http://www.archivesplus.org/>.

the library, museums/collections, other support units, or elsewhere. While this is a mark of the admirable independence and creativity of scholars, it also poses challenges for discovery. There is often no single place for users to find digital projects and some projects can too easily slip from view.

(Ithaka 2013, 2)

As has been discussed in Chapter 2 the role of the publisher has diminished within the digital paradigm of scholarly editing, which leaves editors to assume functions involving the distribution of their own scholarly products. Book publishers have expertise in deciding the price and quantity of certain books that could be sold to the most appropriate libraries and bookshops, digital editors however find themselves facing a much more ambiguous landscape. While the methods to make our editions discoverable in a digital paradigm may seem more ambiguous, it also provides many more affordances for that aim than the analogue form of publication would allow. The decentralisation of digital projects does not by definition reduce the discoverability of digital scholarly projects. By employing the satellite structure of communication discussed earlier in this chapter it would be conceivable that we could reach more and broader audiences through the diversification of the modes and channels of output that are being disseminated by a scholarly editing project. In the earlier discussion of editions as rhizomatic entities the idea of multiple ‘entry points’ to a single edition was put forward. If we expand and diversify the availability of these ‘entry points’ into the scholarship then we could also expand the potential number of entrants and even the types of entrants.

In the survey discussed in Chapter 1 of this thesis participants were asked “How do you discover digital editions?” The highest number of responses were given for: “academic articles / citations” and “word of mouth”, both ahead of the digital option: “institutional / academic websites” (see Figure 3.5). Participants who selected “Other” were asked to specify the alternative method, several of whom referred to the use of an online search engine such as Google and discovering them through mailing lists. A small number of respondents listed the websites of consortiums such as the TEI’s list of projects and *NINES*,⁹⁶ one respondent listed Patrick Sahle’s *A Catalog of*

⁹⁶ *NINES*: <http://www.nines.org/>.

Digital Scholarly Editions and another listed library catalogues. However, it is quite possible that other respondents that use these formats simply regarded those resources as falling under the category of “institutional / academic websites”. The outcome of this survey question might deliver a completely different result if participants were asked the manner in which they would wish to be able to discover digital editions.

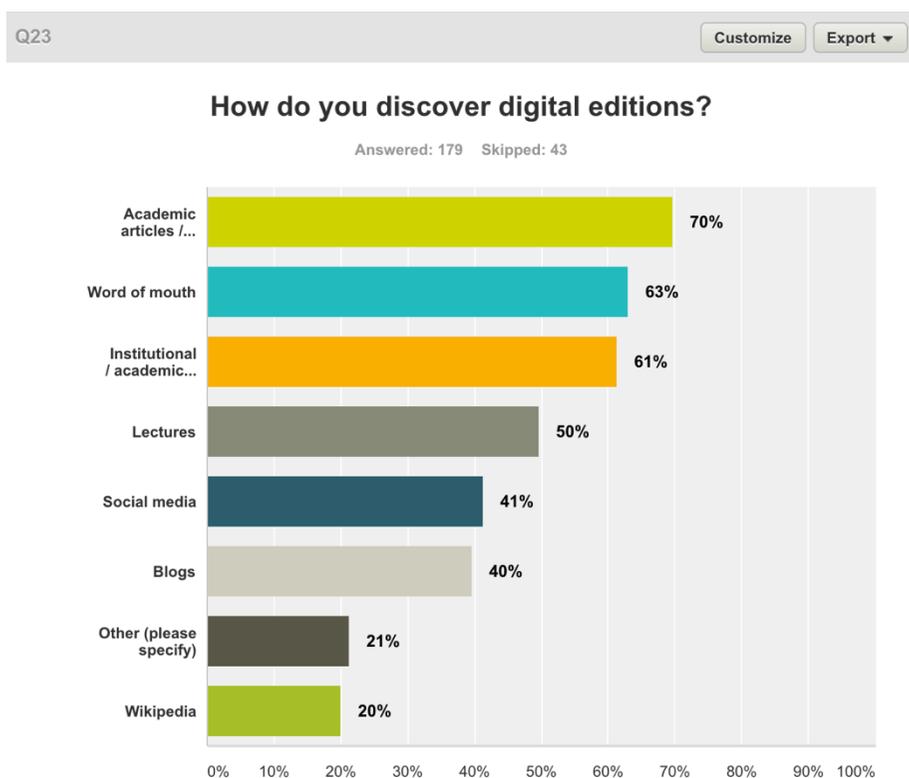


Figure 3.5: User survey - Discovery of editions.

Some critical consideration needs to be given to the venues in which we make our scholarly content discoverable and how best to use these existing venues. A study was conducted in 2009 in the UK on the best means to disseminate information about new digitisation projects that had been funded by Jisc to the academic research community by utilising the communication channels which academics typically use themselves. The study concluded that there was

little consensus among academics about how to achieve this type of dissemination although many of the study's participants mentioned "web portals, the use of academic mailing lists, and workshops" (Wilson 2009, 3). The study made a number of recommendations on how to improve communication through these channels including the suggestion to "articulate the range of research interests that they can effectively serve", in order to help researchers find things that are relevant to their research even if in unexpected places (11). The identification of research themes for a digital scholarly edition of a single literary work may have a smaller range of potential themes than a digital collection containing wide varieties of materials, but even the former may have wider research angles than the editors themselves might be able to imagine.

3.7.2. Libraries, cataloguing and recognition

Historically, the foremost source for discovering scholarly content has been the library. While the internet has greatly altered how society seeks and retrieves information, the library, as custodian of scholarly knowledge, remains a fundamental institutional agent in the process in the digital age. "Intelligent digital libraries can allow a greater number of users to make more effective use of a wider range of their holdings than was ever feasible in print. Traditional finding aids were much more limited in their ability to increase intellectual access" (Crane 2006). I have already mentioned that the decentralised nature of digital scholarship in universities poses a significant challenge which can have an adverse effect on the comprehensiveness of library catalogues. In addition to this issue with fragmented scholarly activities at universities, libraries and their users face a great deal of uncertainty with the cataloguing of the digital scholarly edition as a bibliographic record or item.

Digital editions that are created at university institutions may be catalogued in a variety of ways at their respective institutional libraries. The library catalogue at the University of Antwerp, for instance, lists the publication type of the *Beckett Digital Manuscript Project* as a 'book', which is said to be available through 'online access'. The *Jane Austen's Fiction Manuscripts* digital

edition⁹⁷ at King's College London, on the other hand, is listed as a 'website', while it describes the edition as a 'web publication/site' the suggested citation provided in the catalogue. As a final example, the library catalogue at University of Nebraska-Lincoln, home to the *Walt Whitman Archive*, describes this edition as an 'electronic resource'. These are three extremely well-known examples of digital scholarly editions that are based at university institutions and yet there is little consistency regarding in the way in which they are catalogued.

At the root of this issue lies the difficulty in forming consensus on identifying what a digital scholarly edition actually is, or should be. If we, as editors, already have some difficulty defining in clear terms what a digital scholarly edition is within our own field, it will be even more challenging for the librarians who classify our resources within their bibliographic systems. Elena Pierazzo has argued that: "Classification is a concern that pervades digital scholarship, and in fact a tumultuous development needs to be counterbalanced by a discrete analysis" (Pierazzo 2015, 6). In her monograph, she then goes on to say that this need for classification is fulfilled by Vanhoutte's model of an *ergodic edition* in which he classified the functionalities of an edition (Pierazzo 2015, 32-34). While Vanhoutte's ergodic approach certainly makes a thorough analysis of the functionalities of an edition, it does not, however, offer a classification of the digital scholarly edition itself as a bibliographic item.

The most widely accepted and influential bibliographic ontology is the *Functional Requirement for Bibliographic Records* (FRBR) model developed by the International Federation of Library Associations in 1998. The FRBR distinguishes between four types of entities among intellectual and artistic endeavours:

The *work*: a distinct intellectual or artistic creation.

The *expression*: the intellectual or artistic realisation of a work.

The *manifestation*: the physical embodiment of an expression of a work.

The *item*: a single exemplar of a manifestation.

(IPLA 2009)

⁹⁷ *Jane Austen's Fiction Manuscripts*: <http://www.janeausten.ac.uk/>.

Placing a scholarly edition, even in print form, within this hierarchy would prove to be extremely challenging. This hierarchy becomes even more challenging to apply to a digital edition, particularly if it includes facsimiles of manuscripts or first editions. Its classification could fit into different entities within this model depending on individual interpretation. While Pierazzo points out the FRBR's shortcomings as a means for text modelling from a textual scholar's point of view, she also rightly reminds us that the intention of the model is to help libraries organise their holdings (2015, 56). However, if editions do not fit into the prevailing model of bibliographic ontology then it is difficult to envision how to establish a consistent means to catalogue digital editions in such a way that can address this issue of recognition and thereby make them more amenable to discovery.

This identity crisis is a challenging issue that is clearly an area in need of further in-depth study and analysis. A extremely wide dialogue would need to be opened between the scholarly editing community and the Library and Information Science community if some sort of consistency and consensus is to be found in this matter. In the meantime, it is important for scholarly editors to make provisions to ensure that editions are at least discoverable in these library catalogues, regardless of consistency of bibliographic classification. This involves keeping the libraries informed of, if not involved in, the publication of editions within the university and furnishing them with metadata records according to whichever standards are appropriate in each case for ingestion into their search databases.

Within the scholarly editing community there have been some significant efforts towards cataloguing digital scholarly editions and making these lists publicly available, some of which were mentioned earlier. The TEI provides a simple hyperlinked list of projects using TEI on their website (not all of these are necessarily editions). Projects request to be included on the list rather than it being created as an effort by the TEI to find and list all projects using their standards. The two best known catalogues of digital scholarly editions are the ones created by Patrick Sahle's *A Catalog of Digital Scholarly Editions* and Greta Franzini's *Catalogue of Digital Editions*. However, neither of these

catalogues are anywhere like a comprehensive list of existing digital scholarly editions on a global scale and it would be unfair to expect them to be able to achieve that. They can be a useful tool, but primarily to those of us interested in digital scholarly editing as a discipline rather than scholars of specific humanities subjects and topics. They cannot be treated as canonical lists even within the field of digital scholarly editing as their deficiencies have been pointed out, such as the lack of Chinese language editions or editions of cuneiform. Any attempt to catalogue all DSEs as a type of publication also faces the challenge of competing definitions of the DSE from within the field.

Efforts towards increasing peer review of digital editions may also contribute towards addressing the issue of recognition. Unfortunately peer review is quite difficult to perform on digital publications because of their “mutability and instability” (Pierazzo 2015, 187). The Institut für Dokumentologie und Editorik (IDE) at the University of Cologne is making some of the first dedicated efforts towards peer reviewing digital editions in their journal *RIDE*.⁹⁸ The meticulous detail of published peer review for a transient digital publication means that the review can sometimes become outdated, since the editions often continue to make changes and improvements. Nonetheless, even if some of the content of the review becomes outdated, the article still serves its purpose to improve the recognition and discoverability of the digital edition. Another approach to improving peer recognition of digital scholarship is to build and participate in research communities and infrastructures that aggregate digital content on a thematic basis (as discussed in the next section below); these initiatives can help “improve the perception of SDEs by the academic community” (Rosselli Del Turco 2016, 238).

3.7.3. Web portals and content aggregation

The number and quality of what the Jisc study called ‘web portals’ (Wilson 2009, 3), that allow users to search across different resources, is increasing and these certainly provide an excellent affordance in the area of discoverability for digital editions. However, the recognition and classification

⁹⁸ *RIDE*: <http://ride.i-d-e.de/>.

of digital scholarly editions presents yet another significant challenge to discoverability through this medium. Take for example the *Europeana*⁹⁹ web portal, a European project which specifically aims to make the materials and collections of libraries, museums, galleries and archives more discoverable for wider audiences. This is done through metadata aggregation and the provision of a search tool that allows users to discover digital materials from the participating institutions. The portal provides only metadata level information and links the users to the host site of the actual content and search results are returned at an object level such as a manuscript, photograph or first edition. Digital scholarly editions, however, are not featured in the types of content that are aggregated for this portal nor is it clear how they would be classified inside of their existing model.

Content aggregation projects that have a specific subject or theme are more amenable to making digital scholarly editions discoverable. There is no standard name for these types of projects; they might be called ‘research infrastructures’, ‘communities’, ‘consortiums’ or ‘networks’ depending on the agenda and scope of the project. The *NINES* (*Networked Infrastructure for Nineteenth-Century Electronic Scholarship*) that was developed by Jerome McGann at the University of Virginia was one of the early attempts to bring together archival materials from different locations in a common research environment. *NINES* was developed as a small scale experiment in conceptualising what an online ‘world library’ would look like and how the scholarly objects it made available might need to be designed (McGann 2014, 140). It states that its three goals are: to provide peer review for digital projects on 19th century British and American scholarship; supporting scholars in the creation of digital materials; and developing software that can facilitate research and analysis.¹⁰⁰ Several other similar communities have emerged in other subject areas and many of them are now affiliated together under the umbrella organisation Advanced Research Consortium (ARC). ARC describes itself as a “consortium of scholars committed to advancing research in the humanities through period-specific online communities built around

⁹⁹ *Europeana*: <http://www.europeana.eu/portal/en>.

¹⁰⁰ ‘What is NINES?’: <http://www.nines.org/about/>.

peer-review, aggregation, and searching digital data.”¹⁰¹ Within this umbrella consortium the communities include: *18thConnect*¹⁰² which is dedicated to the study of the 18th century; *Medieval Electronic Scholarly Alliance (MESA)*¹⁰³ for medieval studies; *Studies in Radicalism Online (SiRO)*¹⁰⁴ for studies in radicalism; and *Modernist Networks (ModNets)*¹⁰⁵ for modernist literary and cultural studies. The *Renaissance Knowledge Network (ReKN)*¹⁰⁶ is yet another such community that is currently in development and for which I am an advisory board member. *ReKN* hopes to take this experiment in community building and knowledge creation even further through this approach that combines content aggregation with a wide range of tools for textual analysis and utilising crowdsourcing.

DSEs can certainly benefit from the affordances of discoverability offered through these subject specific online portals. Such a subject specific approach is quite logical as it places the editions among the ongoing scholarly narrative on the topic in question. We do not make editions for editions' sake but in order to create and provide new scholarly insights into the subject matter. In order to make these resources discoverable in this case we need to give some significant consideration to which subject areas our editions are relevant to. The challenge for scholarly editors then in the current landscape is to establish which of these consortiums and content aggregators that their projects should be included in - although it is probably the more the better from a discoverability point of view.

3.7.4. Searchability

There has been little to no discussion of search engine optimisation (SEO) in digital humanities circles as a whole let alone within the digital editing communities. SEO is “a methodology of strategies, techniques and tactics used to increase the amount of visitors to a website by obtaining a high-

¹⁰¹ ARC: <http://idhmcmain.tamu.edu/arcgrant/>.

¹⁰² *18thConnect*: <http://www.18thconnect.org/>.

¹⁰³ *MESA*: <http://www.mesa-medieval.org/>.

¹⁰⁴ *SiRO*: <http://www.studiesinradicalism.org/>.

¹⁰⁵ *ModNets*: <http://www.modnets.org/>.

¹⁰⁶ *ReKN*: <http://rekn.itercommunity.org/>.

ranking placement in the search results page of a search engine” (Webopedia, ‘SEO’). These methodologies are commonplace for commercial activities online but there seems to be little knowledge of how to approach this dark art in the scholarly community. Dan Cohen was one early exception who wrote a simple ‘how to’ post on the subject back in 2006 on the blog *Digital Humanities: Theory & Practice* (Cohen 2006). And Martin De Saulles claims that Google probably handles more reference enquiries in a day than have all the world’s librarians over the last 100 years (2012, 5).¹⁰⁷ This shows that while information professionals such as librarians are extremely important for dissemination activities, it still only scratches the surface of what has been made possible by the behemoth that is Google. Should we not only aim for our resources to be made discoverable for those who are searching specifically for this type of content but to also make the possibility of serendipitous discovery a reality by taking advantage of the affordances of large online search engines? This may be a particularly pertinent question if we are serious about reaching an audience of for non-scholarly users.

3.8. Usability

3.8.1. The user and the interface

Usability as it relates to dissemination involves making digital scholarly outputs easier to use and more effective at meeting the needs and requirements of the users - or the extent to which users can successfully interact with the digital edition via its interface. Usability as defined by Jakob Nielsen is a “quality attribute that assesses how easy user interfaces are to use” (Nielsen 2012a). On this basis usability is affected, and to a large extent determined, by interface design. In fear of stating the obvious: if a user cannot successfully operate the edition as a piece of software, then it cannot succeed in the core goal of diffusing scholarly knowledge. Usability is something that often becomes a consideration quite late into the

¹⁰⁷ De Saulles cited this from Abrams 2007, “The Future of Reference in Special Libraries is What Information Pros Can Make It” in *Information Outlook*, October, 35).

development process of digital humanities projects and the “interface can at times seem little loved” (Kirschenbaum 2004).

It would be beyond the scope of this research to be able to offer a detailed insight into the usability of all the various types of digital scholarly edition interfaces and the array of features that they provide. This is an area that deserves its own individual study.¹⁰⁸ Nonetheless, I believe it is important to discuss the theory and practice of interface design and its relation to user experience in view of creating new digital edition interfaces. These practices have been applied to a considerable extent in the design of the *Brulex Digital Exhibit* (which will be discussed in the next chapter) such as the utilisation of findings from the user survey and interviews from Chapter 1 in addition to performing user observation tests during the design iterations phase. In other words, these practices for improving usability are equally applicable to satellite or spin-off digital publications as they are to the main digital scholarly edition. This section attempts to explore approaches to design from a user-centred perspective, that asks for a greater consideration into how we conceive the interface as a point of contact between editors and users.

3.8.2. User and Usability Studies

In order to have any success in the area of usability it is vital to try to understand users. A study in 2010 of a broad selection of DH tools revealed that less than a third (31%) performed some kind of usability studies to determine their usefulness, while only 14% performed user surveys (Schreibman and Hanlon 2010, §35). The INKE group have highlighted the importance of user studies and usability testing in the humanities, especially in relation to understanding the habits of readers with books and e-books. They also raise the point that there is an often misguided assumption that it is better not to ask the users because they do not know what they want (and will therefore not be particularly helpful to the design process).¹⁰⁹ However, a

¹⁰⁸ This topic will be further explored to some extent in section 3.8.3 of this chapter.

¹⁰⁹ INKE. “Reader Studies”: <http://inke.ca/projects/scheme-of-research/>.

study of why some digital humanities remained unused conducted by Claire Warwick found quite the opposite to be true:

When asked to evaluate unused resources, users were able to identify several problems with design and content. They were deterred from use because of unintuitive interfaces, the need to download data for use in another application, confusion as to what the content might be used for and even a confusing name. They also needed more information about the content of resources, how and why it had been selected and the expertise of the project team.

(Warwick, 2011)

User-led design can also (and perhaps more accurately) be called *participatory design*. User participation in the design process does not only involve improving user experience, it can also form part of a democratising process in much the same way as has been discussed earlier on social approaches to editing. Finn Kensing and Joan Greenbaum suggested as much when they argued that: “[t]he need for participation, in essence, recognises that tensions exist between those with some form of knowledge and power and those without” (2013, 22). In much the same way, those of us who propose participatory design approaches for scholarly outputs are implicitly acknowledging that there is an imbalance of knowledge and power between the scholar and the user. Elena Pierazzo is also an advocate of applying user-led design principles to the construction of digital scholarly editions saying that it is important to “identify the audience we want to use the resource and what they are likely to do” but also stating that analysing user expectations can be difficult if what is being developed is completely new, so new that they may not be able to imagine how it will work (2015, 158). This problem can be overcome by adopting an iterative design process by which users are introduced to new ideas via some sort of prototype in usability studies, feedback is received and a new iteration of the prototype is developed.

Such iterative design processes for digital editions have been proposed by Ferraro and Sichani (2016). For this approach to work participant numbers do not need to be particularly large; many usability experts including Jakob Nielsen believe that a group of 5 users will reveal most usability problems (2012b). Prototyping involves building and experimenting with the

information architecture of the digital resource. It is a specialist activity in some larger research centres such as the King's Digital Lab connected to the Digital Humanities Department at KCL who employ a full-time UX/UI developer to work across their various digital projects. However, even for smaller research groups with little experience in this area it can be highly beneficial to the design of the interface. There are a number of free tools online that can be used to make wireframes but even sketching out prototypes on paper can be quite effective. Wireframe programmes such as Axure are a tool for modelling the interface as well as modelling the mode of interaction with the content. In cases where it is especially difficult to identify an audience and to work iteratively with a user test group, an alternative may be to create fictional user personas in order to think about the potential user paths through a digital edition. In cases where it is not difficult to identify an audience the usage of user surveys and interviews can also be carried out prior to the prototyping phase.

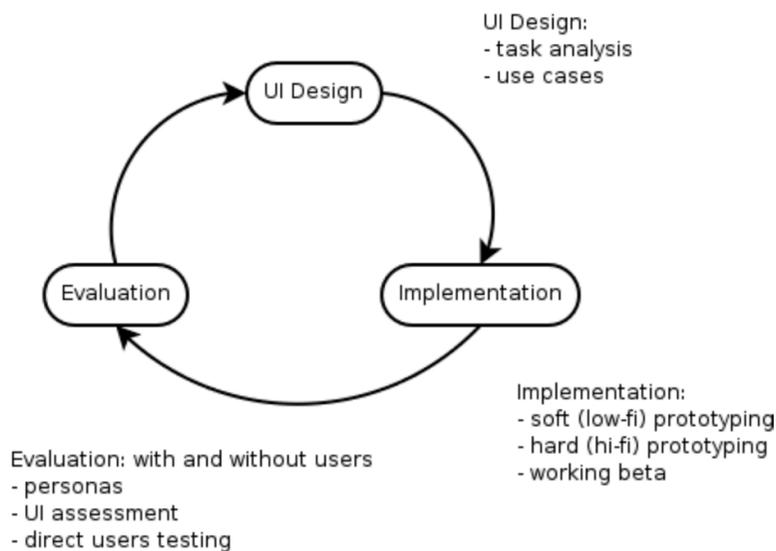


Figure 3.6: Prototyping and testing: The UI Design Cycle (Rosselli Del Turco 2011).

3.8.3. Interfaces of the edition

Good design is actually a lot harder to notice than poor design, in part because good design fits our needs so well that design is invisible, serving us without drawing attention to itself. Bad design on the other hand, screams out its inadequacies, making itself very noticeable.

(Norman 2013, xi)

This discussion of interfaces refers specifically to the human-computer interface between a digital scholarly output and a user, what is usually in the form of a Graphical User Interface (GUI). Robinson in his “Desiderata for Digital Editions” proposes making all materials available independently of the interface, claiming that: “your interface is everyone else’s enemy” (2013). Ensuring the separation of content and interface can contribute towards the sustainability of our scholarship (as will be discussed under *Accessibility*). There may also be a good case to argue that textual scholars should focus on editing and leave the design of interface to someone else with specialist skills. Nonetheless, we cannot avoid the fact that the quality of the interface design affects the usability of the edition. The DiXiT network hosted a two day conference in 2016 on the topic of “Digital Scholarly Editions as Interfaces”¹¹⁰ in which a healthy debate ran throughout on the question of which was more important for a digital edition, the data or the interface (for example see Porter 2016 and Dillen 2016).¹¹¹ Neither camp managed to win this debate outright, which went some way to show that both are in fact important, and in this sense the design of interfaces must therefore at least deserve considerable thought and attention. The interface must be treated as a crucial point of discussion in relation to dissemination of digital editions as it is what mediates the communication between a human and a computer or, more specifically applied to our case, between a human and an edition. In her influential work on computers as theatre, Brenda Laurel asks to consider what is being represented by a human-computer interface:

¹¹⁰ Digital Scholarly Editions as Interfaces conference, Graz, September 2016: <https://informationsmodellierung.uni-graz.at/en/events/archive/digital-scholarly-editions-as-interfaces/>.

¹¹¹ Many of the papers from this conference are being published in a dedicated volume by the Institut für Dokumentologie und Editorik, forthcoming 2017.

1. A way for a person to communicate with a computer
2. A way for a computer to communicate with a person
3. A surface through which humans and computers can communicate
4. A way for humans and computers to construct actions together

(Laurel 2014, 2)

Laurel argues that the third of these options is the one that comes closest to the mark. The same is probably true if we ask this question in the context of digital editions: indeed we could regard the interface as a surface through which a user and an edition communicate.

Stan Ruecker et al. (2011) provide one of the few in-depth studies of interface design as it relates to digital cultural heritage in general. In this work, the authors do not only emphasise the importance of functional design, but also of the aesthetics of interfaces in general, with a special focus on how these may affect the resources's usability. Ruecker et al. highlight that: “[p]revious studies have shown there is a significant relationship between perceived aesthetic quality and perceived usability for a variety of cultures” (13). This is also important in relation to communicating with non-scholarly audiences “the connection between graphic design and academic research has implications for the ongoing need for improved communication between the academic and non-academic worlds” (13). This suggests that the kind of communication with broader audiences through the varied interfaces of satellite publications as suggested in this chapter would rely considerably on attaining a reasonably high level of aesthetic appeal. In addition to this dimension of visual appeal, they argue that users will enjoy interacting with a digital interface if it also caters for confidence, trust, willingness and satisfaction (16-18). This then raises the question: how do we go about designing such interfaces that are both visually appealing and have an air of trustworthiness? Roberto Rosselli Del Turco created a general list of principles for interface design as well as an additional list of principles for good digital edition interfaces. The general principles were: consistency; readability; recognition rather than recall; availability and discoverability; control; visible navigation; ergonomics; and scalability (2011, §16-23).

Perhaps more importantly these specific principles relating to digital editions are:

- Good hyper-textual functionalities
 - “Special-character” handling
 - Image manipulation tools
 - Advanced search functionality
 - Integration of supplementary tools (glossary, concordances, etc.)
- (2011, §25-29)

While no list of principles for digital editions can really be definitive (and the same is true for any kind of interface), Rosselli Del Turco’s list comes from the field of digital editing, and is therefore at least a good starting point for our discussion. These principles would be complimented if used in conjunction with user and usability studies. One thing that I would add to this list, as an aspect that is crucial for any interface, is that it should be identifiable by the user. In other words: the user should know what type of digital publication they are viewing. This aspect is covered in Ruecker et al.’s approach when they argue that an interface should address three fundamental questions for the user - questions that can also be applied equally to the context of digital editions and their satellites.

1. What am I looking at?
 2. Why would I want to look at it?
 3. What can I do with it?
- (Ruecker et al. 2011, 6)

I believe that these three questions should be considered in that exact order. Can a user identify what they are looking at initially? If so, they can decide whether or not this is something that interests them. And they can then continue on to ask themselves what they can do with it? On this basis the landing page of a website becomes absolutely crucial in conveying in clear and intuitive terms what the publication actually is. If this first condition is not met then there is an increased likelihood of losing some users who would have been interested in the resource if only they had known what they were looking at.

3.8.4. Usage analytics

There is a complete dearth of usage statistics of digital scholarly editions. One notable exception to this is Kenneth Price who has produced some vital statistics for the *Walt Whitman Archive*. Of course it is easier to talk about statistics publicly when you are confident that they are good. As mentioned earlier, the *Walt Whitman Archive* can boast having around 30,000 visitors per month (Price 2013). Understandably projects with less impressive user statistics are going to be less willing to share their information publicly, particularly if they fear it may negatively impact on funding opportunities. Google Analytics¹¹² is the leading tool in this area and it is relatively easy to install and find training on and the leading alternative open source analytics tool at the moment is Piwik.¹¹³ Of course the value of digital resources should not be measured solely in numbers of users but also in the value it adds to society by making a body of knowledge available, even if this means reaching just a small number of researchers. The probable reality is that due to low numbers of users for many digital editions, that editors are too afraid to share these statistics (or perhaps even to check them). As a relatively small community we suffer from the absence of data in this area, data that can allow us to gain a better understanding of the use and usability of different types of editions, to implement different types of features and functionalities, and how to improve them.

3.9. Accessibility

3.9.1. Accessibility fundamentals

In the digital paradigm of scholarly editing, *accessibility* is concerned with minimising or removing the barriers to content access for users. These barriers might exist due to technological, economic, disability, linguistic, socio-political or cultural reasons. Sperberg-McQueen saw accessibility as one

¹¹² Google Analytics: <https://analytics.google.com/>.

¹¹³ Piwiki: <https://piwik.org/>.

of the fundamental requirements for electronic editions, that they “should be accessible to the broadest audience” and that all “possible unnecessary technical barriers to their use should be avoided” (1994). Printed scholarly editions are quite inaccessible by nature, relatively few in number, expensive, and usually only located in research libraries. While the digital medium seems to offer the affordance of being able to reach this ‘broadest audience’, the removal of communicative barriers is rather complex. Edward Vanhoutte has also argued that the digital medium does not result in a quantifiably higher level of accessibility but rather a qualitatively different type of accessibility that will only see increased user numbers if it can overcome technological barriers (2013). The W3C is the body that has laid out accessibility guidelines to make the web more accessible, specifically to users with disabilities. Some of the W3C practices recommended in these guidelines are already commonplace (e.g. the practice of providing a ‘text alternative’ description of non-text content such as images) others less so. *Accessibility*, within some models of media studies and digital communication, is considered to be one of the dimensions of *usability*. Such an approach could also have been used in devising this critical framework for dissemination but this would imply that barriers to accessibility are exclusively technological in nature. The cultural, economic, linguistic, disability and socio-political barriers to accessibility would be underrepresented in such a model. In order to give sufficient weight to these non-technological barriers *accessibility* is treated as an individual dimension within this framework.

More than a decade ago Kathryn Wymer published guidelines on the subject in *Digital Medievalist* (2005). Wymer made a strong case for the adoption of basic accessibility principles by highlighting that:

1. Accessible design can benefit all users, and more widely useful projects are likely to be adopted by other teachers and scholars.
 2. In many jurisdictions, accessible design is a legal obligation.
 3. Ensuring accessibility does not have to be a cumbersome or difficult process.
- (Wymer 2005)

The principles set out by Wymer are just as appropriate to the current landscape of digital scholarship as they were more than a decade ago. The

approach to accessibility adopted here accepts these principles but also intends to approach accessibility with an even broader gauge. Simon Tanner conducted a poll at the DCDC 2015 conference in Manchester with the assembled group of LIS professionals and humanities scholars. His question centred around a (much appreciated) drinking metaphor in which he asked whether the value of a digital resource was in the: wine (content), glass (infrastructure), or the drinking (access). Access was the winner in this poll, and it has seemingly topped the polls every time that it's been conducted (Tanner 2015). Without returning to the discussion of 'value' that has been addressed in Chapter 2, I think it is nonetheless important to highlight that despite some consensus that *access* is seen as most valuable, a greater proportion of scholarly attention is almost certainly given towards the *content* and *infrastructure* components. The topic of accessibility has been raised periodically in scholarly discussion and continues to appear intermittently, such as this year when at DH2017 in Montreal where 'Access/Access' is one of the main thematic areas for the event. The call for papers for this conference gives some insight into what are perceived as topics of interest in this area: "knowledge mobilization, public-facing scholarship, collaboration among scholars and communities, open access to code, software, research and results, and aspects of digital humanities research and publication involving accessibility technologies" (ADHO 2017).¹¹⁴ This is a slightly broader approach than what is typically discussed under the *accessibility* label, which more commonly refers to the types of web accessibility issues as laid out by the W3C. This difference may lie in a perceived difference between the term *access* and the term *accessibility* (in the narrower sense of web accessibility). In the EDUA framework, I use the term accessibility in its broadest sense, which covers the areas of web accessibility for users with disabilities but also incorporates a broader discussion of digital divides as well as addressing questions of open access and copyright. On a general level, accessibility could be treated as a key pillar of the democratisation of knowledge in the dissemination of digital scholarship.

¹¹⁴ I will participate in a panel with DiXiT fellows on "Refining our Concept of 'Access' for Digital Scholarly Editions: A DiXiT Panel on Accessibility, Usability, Pedagogy, Collaboration, Community and Diversity" (Bleeker et al. 2017).

To what extent are digital scholarly editors already taking accessibility issues into account in the design of their editions? *Infinite Ulysses* is one digital edition that makes its intentions regarding accessibility quite clear with a page dedicated to it on the website, which in itself is a massive step towards making the edition more accessible.¹¹⁵ The editor, Amanda Visconti, also asks for ongoing feedback from users on how to improve the accessibility of the edition. At present the edition has implemented some WordPress usability plugins, including one for Braille¹¹⁶ and has used validators which check the overall usability of the site.¹¹⁷ In addition to addressing the technological accessibility issues facing users with disabilities *Infinite Ulysses* also dedicates a page to clarifying in plain terms the copyright and license status of each type of content on the site (the text, user annotations etc) and for the website code itself.¹¹⁸ It is by far the best example that I have seen of an edition that makes its efforts towards accessibility clear to the users.

3.9.2. Global Outlook: addressing digital divides

Publishing a digital project online, even in an open access form, does not equate to accessibility. This discrepancy can be caused by the various digital divides that present barriers to access for the potential users. The idea of a digital divide usually refers to a social inequality in digital access to information within a society or between wealthy nations and developing nations (Ragnedda and Muschert 2013). In the context of digital scholarly editions it is not hard to imagine what types of divides could exist, they might be technological, economic, linguistic, socio-political or cultural or related to disabilities.¹¹⁹ While the global challenge of digital divides is something that extends far beyond what the academic world alone could resolve, the point remains that without a basic awareness of how digital divides act as barriers to

¹¹⁵ *Infinite Ulysses*. “Accessibility and Inclusion”: <http://www.infiniteulysses.com/content/accessibility-inclusion>.

¹¹⁶ BrailleSC: <http://mith.umd.edu/research/braillesc/>.

¹¹⁷ Tenon: <https://tenon.io/>.

¹¹⁸ *Infinite Ulysses*. “IP and Copyright”: <http://www.infiniteulysses.com/content/ip-and-copyright>.

¹¹⁹ There are potentially many more ways to frame these digital divides: the theory on the subject is continuously and rapidly evolving.

access, we cannot hope to disseminate knowledge to diverse global audiences. As a community of scholars working in the area of digital editing it is abundantly clear that our subjects of study are overwhelmingly from a European, North American and Australasian context. This can be seen clearly from the aforementioned catalogues of editions by Sahle and Franzini and also from the location of digital humanities centres and activities as studied by Melissa Terras (2012). We saw earlier that when the *Shelley-Godwin Archive* was launched the site received 60,000 visits, which came disproportionately from Latin America and Eastern Europe which made them re-think the audiences that they might reach. This highlights that while the majority of digital editing projects are taking place in European, North American and Australasian contexts the end users of these editions can be far more diverse and as editors we might take a global audience into consideration.

One of the biggest challenges to digital access to information in developing countries (or rather access to information in general in these regions) is the reality of lower wifi speeds and potentially lower standards of digital hardware available. The Global Outlook Digital Humanities special interest group is beginning to explore this area, particularly with a focus on the concept of ‘minimal computing’.¹²⁰ This approach involves using techniques like static website generation, devising strategies for data transfer, and using low cost and DIY hardware in order to make digital humanities resources available to those with greater technological constraints. The GO::DH group have also recently developed a website theme in Jekyll to create ‘minimal editions’ of texts which they describe as being designed for “textual editors based on minimal computing principles, and focused on legibility, durability, ease and flexibility.”¹²¹ Providing a minimal edition could easily be done alongside the main digital edition website in order to make texts accessible to users constrained by things like very low wifi speeds.

The literacy levels of global users should not be taken for granted which means that there is a case to be made for multimodal approaches to

¹²⁰ GO::DH special interest group: <http://go-dh.github.io/mincomp/>.

¹²¹ Ed. Jekyll theme: <https://elotroalex.github.io/ed/>.

accessibility. Erik Champion argues that a “concern or predilection with text-based material is obstructing us from communicating with a wider audience. Multimedia, visualisations and sensory interfaces can communicate across a wider swathe of the world’s population” (Champion 2015, 10). He also points out here that, according to UNESCO, the rough global percentage of literacy today has risen to 84% from 76% in 1990. That still means that 774 million people are functionally illiterate and about 160 million of these are in highly developed OECD nations (10). The *eTalks platform*¹²² produced by Claire Clivaz at the Swiss Institute for Bioinformatics is a good example of how to address different types of literacies simultaneously by linking together text with sounds and images. In a paper by Clivaz at DiXiT Convention 2 in Cologne in 2016 she made a point that history usually cannot tell the story of the losers. However perhaps through this multimodal approach it might be possible to do so. The *Genocide Archive of Rwanda*¹²³ is a digital archive that it is truly multimodal: it contains documents, publications, video recordings, audio recordings, objects, photographs, interactive maps, transcriptions, commenting features and perspectives from both victims as well as perpetrators. As such it is a good example of how a multimodal approach can make accessible voices that are normally unheard. A multimodal approach to communicating our scholarship may also help address some of the divisions caused by disability, trying to make our resources accessible to those with visual and hearing impairments for example. W3C’s guidelines for web accessibility is the most established approach of its kind and some of these approaches are reasonably well-known and can be seen on many government websites such as adding ‘alt text’ descriptions to images to make them machine readable or the use of Text-to-Speech (TTS) technology that allows text from websites to be read aloud. However, the extent to which web accessibility principles could be applied to digital scholarly editions, as complex multi-layered digital publications, is unknown and in need of some in-depth exploration.

¹²² *eTalks platform*: <https://etalk.vital-it.ch/>.

¹²³ *Genocide Archive of Rwanda*: <http://www.genocidearchiverwanda.org.rw/>.

Cultural contexts have a profound affect not just on the reception and accessibility of scholarship but also on how scholarship is being done. Domenico Fiormonte argues that there is a tension in how scholarship is performed between the “centre” and “periphery” countries involved in digital humanities and that “these tensions originate from profound global changes in the production and diffusion of knowledge” (Fiormonte 2014, 3). Linguistic divides are highly problematic, and decisions about which languages we make our resources available through are naturally going to affect the composition of the audience. There is also the inevitable limitation of editions of texts written in languages spoken by far fewer people. Vanhoutte has argued that editors of Dutch and Flemish language texts need to be realistic in their ambitions as works in these languages can never achieve audiences or community involvement on the level that might be enjoyed by texts of Victorian writers in the English language (Vanhoutte 2012). It is also not realistic to expect editions to be offered in their entirety in multiple languages, although there may be a case for offering some introductory, bibliographical and licensing information in a suitable lingua franca. Again, scholars as a group cannot be expected to solve all global digital divide problems. Simon Tanner argues that: “Whilst we can hope for the digital divide to be eradicated, it might be more reasonable to expect information technology to address some of the worst information, education and cultural resource inequalities rather than solve all of them” (Tanner 2005, 27). The challenge then for scholarly editors is to simply make efforts towards making their outputs more accessible given these divides. The only thing we can do as scholars to address the economic dimension of the digital divide, for example, is to make our digital products free to use, in other words to apply open access principles. Of course open access is a discussion that relates not only to the digital divide aspect of accessibility, but also to the ways in which we make our outputs accessible for scholarly use, which leads to the next part of this discussion.

3.9.3. Access and re-use: making editions as open as possible

Peter Robinson is among those who have made strong calls for scholarly editors to make their data totally open for others to use as they please. As one

of his five ‘desiderata’ for digital editing he argues that “all materials should, by default, be available by a Creative Commons share-alike license” (Robinson 2013). Under this type of license (CC-BY-SA) users can: “Share - copy and redistribute the material in any medium or format”; and “Adapt - remix, transform, and build upon the material for any purpose, even commercially.”¹²⁴ Robinson was trying to emphasise that this license should not exclude commercial reuses of scholarship in profit making ventures. The logic to this argument is that if a private publishing entity took it upon themselves to reuse openly accessible scholarly content and make it available in a different format, while charging a fee, then this would be in no way harmful to our projects. If we make our editions as open as possible and make that information overt through the use of clear licensing information then it can help maximise the possibilities to disseminate that scholarship in various forms to different audiences. On the other hand, projects working with materials that are not yet in the public domain face further obstacles regarding copyright. Wout Dillen and Vincent Neyt have highlighted this issue in relation to the *Beckett Digital Manuscript Project*: “By arguing that all DSEs should by default be made available under a CC-BY SA license, Robinson neglects the fact that this license is not necessarily the editor’s to give” (2016, §1). They argue that editors working with manuscripts that are still in copyright, like Beckett’s, cannot use a CC-BY-SA license but that this obstacle should not discourage editors from working with copyrighted materials. Instead there are other ways to make an edition as accessible as possible within copyright constraints. This can be done by providing public access without a public license or applying a ‘fair use’ policy¹²⁵ and furthermore by making metadata and other scholarly ancillary as open as possible for further use (2016, §6).

Another way to overcome this problem would be to take the approach mentioned earlier of *Infinite Ulysses* in which the editor differentiated between the different types of content in the edition and explained which licenses apply to each. Separate licenses could be applied to: the text of a work used;

¹²⁴ Creative Commons. “Attribution-ShareAlike 4.0 International (CC BY-SA 4.0)”: <https://creativecommons.org/licenses/by-sa/4.0/>.

¹²⁵ ‘Fair use’ is a US copyright doctrine that permit limited use of copyrighted materials.

facsimiles used; contextual information created by the editor; comments and annotations of users; the name of the DSE; and the website code. The last of these areas, the website code, perhaps needs a little elaboration. The creation of a DSE is a scholarly endeavour, not only in our treatment of the text but also in the creation of the digital infrastructure to make it accessible. In that sense we also need to consider if the community might benefit from being able to re-use or adapt the code for other projects. This principle applies equally to satellite publications. This will be discussed in the next chapter in which we have endeavoured to make the code for the *Brulex Digital Exhibit* open source. Code can be placed on a Git repository such as GitHub with an open source license applied. Since Creative Commons licenses are not intended for code, instead the typical open license to use is a GNU General Public License.¹²⁶

If we want to make our DSEs as reusable as possible, is there a case for making our editions interoperable across different environments? “Interoperability may be defined as the property of data that allows it to be loaded unmodified and fully used in a variety of software applications” (Schmidt 2014, §7). Marilyn Deegan argues that: “[i]nteroperability is difficult to achieve, and the digital library world has been grappling with it for some time. Editors should not strive to ensure the interoperability of their editions but make editorial and technical decisions that do not preclude the possibility of libraries creating the connections at a later date” (2006, 362). Desmond Schmidt echoed this sentiment when he said of interoperability that “there is something fundamentally different about the way digital humanists encode texts that seems to make this impossible” (2014, §52). However, he did hold the ambition to make digital editions that “are as far as possible interoperable” (§53). However, even if a complete interoperability of digital editions remains elusive there are other ways to make important data from digital editions reusable in other environments, namely via APIs (Application Programme Interfaces). The *Proceedings of the Old Bailey Online* have provided users with an API that allows text from their trials to be exported to Voyant

¹²⁶ GNU. “General Public License 3.0”: <https://www.gnu.org/licenses/gpl-3.0.en.html>.

Tools¹²⁷ for text analysis. Another good example is correspSearch which created a series of APIs for use on various scholarly editions of correspondence (print and digital), using metadata such as sender, receiver, locations and dates in order to research correspondence networks.¹²⁸ While the graphical user interface (GUI) is of utmost importance to the usability of editions, data interfaces like APIs can contribute towards the re-usability of scholarly content and thereby its accessibility.

One final barrier to the re-usability of scholarly content from DSEs is the troublesome matter of citability. Elena Pierazzo has argued that the mutability and evolving nature of editions has a negative impact on how they are trusted by the academic community as a scholarly source, which in turn affects their citability (2015, 187). Attitudes towards digital editions as reliable scholarly sources may take a long time to adapt and it may take some concerted efforts by the editing community to boost credibility.¹²⁹ On an individual basis editors can improve citability of editions by specifying to users how their work should be referenced, in terms of format for example:

Jane Austen's Fiction Manuscripts: A Digital Edition, edited by Kathryn Sutherland (2010). Available at <http://www.janeausten.ac.uk>. ISBN: 978-0-9565793-1-7¹³⁰

These kinds of references could be augmented further by providing persistent identifiers, such as DOIs, to the edition as a whole, and where applicable to individual digital objects such as facsimiles on an object-by-object basis throughout the edition.

3.9.4. Sustainability and access

The challenges of sustainability for digital scholarly editions have been discussed already in some detail in Chapter 2. However, it would be

¹²⁷ Voyant Tools: <http://voyant-tools.org/>.

¹²⁸ correspSearch: <http://correspsearch.net/>.

¹²⁹ Elena Pierazzo has suggested that using a versioning system on editions at points in time and greater efforts in the area of peer review might help, although both of these activities are also challenging (2015).

¹³⁰ Example taken from: <http://www.janeausten.ac.uk/edition/citation-policy.html>.

impossible to discuss accessibility without also addressing the need to sustain that access. The question of sustainability is then clearly a core concern to dissemination. What exactly are we trying to sustain in a digital scholarly editing project? From an editors point of view it might be argued that we are trying to sustain access to our editions, in the form that we have presented it, to as many users as possible for as long as possible. While the print medium has a certain physical robustness it has a relatively lower potential to reach broader audiences and while the digital medium has the potential to broaden access, the technology used to present it is continually in danger of impending obsolescence. This conflict was addressed by Cathy Moran Hajo when she asked: “Should we create an edition that is as sustainable as digital text can be, but might not be widely accessible, or should we create a widely accessible edition that might not last a long time?” and concluded that “neither option is acceptable” (2010). The potential role of the library to ensure sustainability and thereby the accessibility of digital scholarly editions cannot be overstated, nor as institutional repositories of datasets. It does not bear to imagine how many invaluable scholarly outputs may have been lost over the years because they had only been stored on a local machine and not made accessible to a wider community.

Digital edition teams face considerably financial challenges in order to sustain access to their projects publications through technological maintenance even before the technology used to present them has become obsolete. Given enough time, technological obsolescence becomes an inevitability - and while we cannot hope to sustain access to our digital editions in the very long term, we can at least attempt to ensure it for as long as possible by whatever means possible such as funding streams or partnerships with memory institutions. This brings us back to the discussion of data versus interface. While our scholarly exertions go into both sides of this dichotomy, this threat of technological obsolescence means that we cannot realistically hope to sustain its representation in the long term. There is some hope that we might be able to preserve the data for a much longer period of time and this is where we need to invest the majority of our efforts of sustainability. At present the best approach available to the scholarly community is to engage with and adopt the practices of the TEI community where possible, and to cooperate with

memory institutions such as university libraries that have an interest and stake in preserving that data for the longer term. As Elena Pierazzo has argued, while all standards may eventually become obsolete, the best chance we have to achieve sustainability is to present our data in widely accepted standards in order to create a “critical mass of data” (Pierazzo 2015, 171) This creates an incentive for someone in the future to migrate the mass dataset to a new standard in the future.

Earlier in this chapter I presented a model for disseminating digital scholarly editions through the use of satellite publications. These satellite publications are representations of a selection of the core data, the totality of which is made accessible through the digital scholarly edition. In this regard, the sustainability of the satellite representation could be treated as a lower priority than the sustainability of access to the digital scholarly edition and the preservation of its core data. If smartphones and tablets were to become obsolete a decade from now that does not mean we should not invest in making a public outreach application for these devices that could be used to access scholarly knowledge in those intervening years. There might be a case to be made for collecting and preserving these satellite publications as the subjects of study in the future, as types of ephemera.¹³¹ However, our commitment to sustainability does not necessarily need to be a tradeoff against our commitment to dissemination. In other words, we can and should persist in disseminating our scholarship through diverse satellite publications even if their long-term sustainability cannot be guaranteed.

3.10. Conclusion

The dissemination of digital scholarly editions is a complex activity with multiple simultaneous and competing concerns across the four dimensions presented in this chapter. One unifying reality in this dissemination process is that there is an advantage to taking collaborative approaches to these issues

¹³¹ For satellite publications that are presented in website form it would be possible for editors to take the preservation initiative themselves and submit a copy to the Internet Archive <https://archive.org/>.

due to the complex and diverse nature of the activities involved and owing to the challenges we face on a disciplinary level. One of the most significant of these disciplinary challenges is the necessity to work towards a more widespread recognition of digital editions as a form of scholarly output. The need for this recognition is not only important for scholarly credit and promotion but also for how digital scholarly editions, as publications, can be disseminated and distributed effectively.

This issue of recognition goes far beyond what can be achieved by any single editing project but it rather calls for the joint effort of the field as a whole to continue to invest energy in building the reputation and status of digital scholarly editions as a form of scholarship and communication, which it has been increasingly attempting to do in recent years. One of the key reflections to take from this exercise is the potential role libraries can take in the dissemination process particularly in the areas of *discoverability* and *accessibility*. To truly benefit from the skills of libraries, scholars need to approach them in the spirit of partnership, rather than seeking the services of these institutions retrospectively after an edition has been created.

It needs to be acknowledged that the production of some satellites, particularly those discussed in relation to user engagement, could be extremely costly endeavours both in the use of financial and labour time resources. Collaboration with external parties may be the only solution for smaller research projects with less abundant resources, this will be discussed in more detail in the following chapter. Dissemination activities and the creation of satellite outputs are a complex endeavour and therefore should be treated as critical scholarly processes. In the following chapter I will discuss the creation of one such satellite publication and the practical application of the dimensions discussed in this framework, which will intend to demonstrate the complexity of such activities and bolster this argument for treating dissemination as a critical process.

Returning to the metaphor of computers as theatre as proposed by Brenda Laurel, we could now arguably extend the metaphor to this entire framework for dissemination of digital scholarly editions by focussing on the aspects that

affect the experience of the audience. How well the show holds the audience's attention, captures their imagination and makes them feel immersed are questions of *engagement*. How the show advertised to its potential audience, the location and recognition of the theatre venue are questions of *discoverability*. How our theatre is designed in order to make sure the audience can enjoy the show with good acoustics and well-designed seating arrangements that enhance the view all can be seen as matters of *usability*. The cost of tickets and the availability of things like wheelchair access or sign language translations of the performance would then be categorised as *accessibility*. All of the four dimensions of dissemination as proposed in this chapter would benefit from further in-depth studies but hopefully through assembling and discussing them on a macro level in this EDUA framework we can begin to conceptualise the dissemination process and the various affordances and barriers to communicating our scholarship in the digital medium.

Chapter Four

Dissemination in practice: exhibiting
literary genesis

4.1. Introduction

This chapter will discuss the process and outcomes of creating a digital museum exhibit for a digital scholarly editing project as an experiment in dissemination for the purposes of engagement and outreach.¹³² The *Brulex Digital Exhibit* can be considered as a form of satellite publication as described in the previous chapter, and the project as a whole acts as partial test case of the practical application of the EDUA framework.

Stephen Ramsay has said that “Digital Humanities is about building things” and that building is “a new kind of hermeneutic” (2011), indeed, in digital scholarly editing ‘making’ is almost a requirement for scholarly credibility. While other forms of research such as theoretical and empirical investigations are certainly not diminished or antiquated they are perhaps not necessarily deemed to be sufficient on their own. Making a digital output has become one of the most important ways in which we are expected to transmit and test our research in the field. In order to address this expectation and to further test my own research hypotheses I set about attempting to create some new form of digital output for the purposes of dissemination from an existing scholarly editing project. The creation of this digital exhibit utilises the results of the tablet user study and the theoretical work on the EDUA framework for dissemination. Its focus is primarily on the *engagement* aspect of the dissemination process and is executed in the interface design through experimenting with the use of touchscreen devices.

The initial challenge in this pursuit was to select the content, the scholarly editing project, that would be the subject matter for this experiment. A number of projects were considered both within and outside the Centre for Manuscript Genetics (CMG) before eventually deciding that the most logical option would be to work with an internal project of the CMG. Collaboration is a fundamental part of digital scholarly editing, as has been discussed in the

¹³² Elli Bleeker and I co-presented a paper “Interfacing Literary Genesis” at the Digital Scholarly Editions as Interfaces conference in Graz in 2016, the work on that paper also contributes towards this chapter. See bibliography, Bleeker and Kelly 2017 (forthcoming).

introduction to this thesis, and the CMG already has a strong history in this approach to scholarship over recent years. There were two active projects ongoing at the CMG at the time. Firstly, the well-established *Beckett Digital Manuscript Project (BDMP)*, an edition already in existence since 2011 with new modules in preparation for publication on an ongoing basis. The second option was to work with a project on Flemish author, Raymond Brulez and his work *Sheherazade: Of Literatuur als Losprijs* (1932).¹³³ This early twentieth century author is the subject of ongoing work in the form of genetic research at the centre, with a view to building a digital genetic edition. *Sheherazade* has already been used as a case study by Dirk Van Hulle to teach genetic criticism to literature students at the department in Antwerp.¹³⁴

The two projects carried with them two entirely different sets of conditions. Working with the materials of Samuel Beckett offered the potential to disseminate to a rather large audience due to both the prominent status of the writer in literary studies and the accessibility of the languages in which he wrote most of his works (i.e. English and French). The limiting factor, however, came in the form of the copyright restrictions on these materials. Digital facsimiles can be accessed and downloaded by users of the *BDMP* within conditions of fair use, so their use is somewhat protected through the requirement for subscription to access the edition. These copyright restrictions made it a less amenable publication for the sort of experimentation in dissemination methods that we might wish to undertake.

Brulez offered an interesting challenge as a subject for textual scholarly dissemination as he is not exactly regarded as a canonical author even within Flemish and Dutch literary traditions. The Dutch language, as one which is spoken by a small number of people in comparison to English and French, immediately reduces the size of the potential audience for outreach to a great extent. Edward Vanhoutte has already drawn attention to the reality of

¹³³ The translation of this Dutch title into English would be - *Sheherazade: Or Literature as Ransom*.

¹³⁴ Dirk Van Hulle in partnership with the Letterenhuis created a teaching exercise pack in print form consisting of full colour facsimiles of materials from *Sheherazade* and instructions on how to approach reconstruct the order of the writing process of the notes and drafts for one of the stories in *Sheherazade*. See (Van Hulle 2014).

scholarly editors working with Flemish and Dutch texts and has argued that scholars are working for “an audience of only a few interested academics and a small reading public who for the most part want simply to read texts from printed books” (Vanhoutte 2010, 120). He goes even further to argue that the idea of social approaches to editing or the building of a knowledge site built around these texts from a smaller language tradition, with involvement of a critical community, is but an “idle fantasy” (120). Our particular case is somewhat different since did not intend to create reading editions or social editions, but rather to utilise the Brulez project as a form of outreach and public engagement for the type of scholarship conducted at the CMG by introducing some interesting aspects of genetic research in an attractive form.

It would be unfair to imply that working with Brulez only presented us with challenges. On the contrary, *Sheherazade* is in itself a fascinating subject to use in order to diffuse knowledge of writing processes and genetic criticism. The self-aware and reflective approach to the writing process which is present in both the story of *Sheherazade* and its genetic materials actually make it highly amenable for teaching and outreach. An additional positive aspect of working with Brulez’ material was the possibility of working in partnership with the archives that house his material, the Letterenhuis¹³⁵, based in Antwerp. The CMG already has a long-existing relationship with the archive that also acts as a museum of Flemish literary writers for which they curate a number of permanent and temporary exhibitions. Working with physical public spaces like museums and archives to create digital forms of public engagement has not been a common practice among textual scholars of modern literary works. There are however some libraries that have created digital exhibits such as the *William Butler Yeats Online Exhibition*¹³⁶ at the National Library of Ireland which provided some inspiration for this project, but these are typically library or museum-led initiatives rather than forming part of the dissemination activities of scholarly editing projects. There has also been some notable research done within the broader field of digital humanities on the potential utilisation of museum spaces. Most recently a

¹³⁵ Letterenhuis: <http://www.letterenhuis.be/>.

¹³⁶ *The Life and Works of William Butler Yeats: Online Exhibition*: <http://www.nli.ie/yeats/>.

study has by Claire Bailey-Ross et al. emphasised how this type of public engagement in museum spaces can and should form a core part of digital humanities projects (2016, 2). The outcome of this situation was the creation of a digital exhibit of the genesis of *Sheherazade* designed for a museum interface and for the web.

Working on user engagement with a project that is not yet “published” might initially appear to be an unusual approach. However, as has been discussed in Chapter 3, *engagement* must be viewed as much more than a marketing activity for an existing publication. It is, rather, the prerogative of the academic to make their scholarly research available in multiple forms and contribute to public knowledge. This does not need to wait for a particular moment in time but can be created at any stage of the process when the project team has sufficient time and resources. While other members of the project team are still busy with encoding transcriptions of Brulez’ material there has already been much discovered from the manuscript research performed by Dirk Van Hulle, Elli Bleeker and Sarah Fierens. Some of the research results come in the form of identified ‘genetic paths’¹³⁷ through the writing process of *Sheherazade*, which will be discussed in detail below. With this museum exhibit we attempted to target a sort of minimal threshold for who the users might be, in terms of prior knowledge, education and literacy.

4.2. The genesis of Brulez’ *Sheherazade*

In the previous chapter I argued that pedagogical activities are one of the central aspects of the *engagement* dimension in the dissemination of digital scholarly editions. In order to demonstrate what we hope users might learn from using the digital exhibit this section will elaborate on the textual genesis of *Sheherazade* as a work of literature. The genetic materials of *Sheherazade* preserved at the Letterenhuis are rich in demonstrable traces of the writing process and its related materiality, which provided us with many opportunities to introduce users to aspects of genetic criticism. In this section

¹³⁷ Our use of the term ‘genetic path’ was inspired by the *HyperNietzsche* project and involves tracing the chronology of a writing sequence, as described by Bartscherer (2003).

I will introduce *Sheherazade* as a work and provide an overview of some of the main aspects of its literary genesis that we have attempted to introduce to users in the digital exhibit.

4.2.1. The writer and the work

Sheherazade was first published in book form as collection of stories in 1932. The book was written in the early stages of Raymond Brulez' career (born in 1895) after having just published his first book two years earlier, *André Terval* (1930), during a career that spanned over forty years until his death in 1972. Some of the stories that featured in the 1932 publication had previously been published in isolation in Dutch magazines over the two preceding years: 'De Fatsoenlijke Faun' in *De Gids*, 'De Achtste Reis van Sinbad' in *Elsevier's Geïllustreerd Maandschrift*, and 'Sheherazade of Literatuur als losprijs' in *Forum*. The collection of stories was a modern adaptation of the well-known *One Thousand and One Nights* stories from the Middle East. The appearance of this type of publication might be considered to have been out of place with the Flemish book publishing scene at the time. Brulez' biographer, Joris Van Parys described the book as a frivolous fantasy that appeared as an extreme contrast to the contemporary social novel, *Moeder waarom leven wij* by Lode Zielens (Van Parys 2015, 129).

Brulez' *Sheherazade* can be regarded as a modernist literary work, as it exhibits several modernist characteristics such as his focus on the work not just as a finished product but as a process. This would have been typical of the most famous modernist writers of the period such as James Joyce, T.S. Eliot, Marcel Proust or Virginia Woolf, or within the Dutch language Martinus Nijhoff or Willem Elsschot. Later in his career Brulez described how he believed that the process of writing was more important than the outcome when he compared the activity of writing to a sailing adventure in which the journey was more important than the destination: "*Niet op de bestemming, maar op het reizen komt het aan*" (Brulez 1969, 62). He claimed that the origins of a book were too often portrayed in botanical terms as the planting of a seed, followed by growth and then by becoming ripe and giving fruit, whereas

he preferred to see it as such a sailing adventure, with far more uncertainty, one which will often sink ingloriously but will sometimes find itself landing on the coast of “Eldorado” (Brulez 1969, 62).

While Dirk Van Hulle argues that *Sheherazade* can be ranked as a modernist work (2014, 16), Van Parys has described *Sheherazade* as a work that fits with postmodernist *avant la lettre* owing to its wealth of literary references, critical reflections, ironic anachronisms and allusions to contemporary politics and society (2015, 130). Regardless of the work's literary classification or Brulez' popularity as a writer, the story itself offers us a fascinating portrayal of how a literary author viewed literature and the struggle of the writing process. The book itself is actually a collection of stories built around the very theme of the writing process, inspired by the ‘Arabian Nights’ tales. The main protagonist, the young woman Sheherazade - just as in the *One Thousand and One Nights*, must tell the Sultan Shiriar a story every night in order to avoid execution. In this twentieth century adaptation of the tales Sheherazade must not only tell the stories but she must also write them out in full on a writer's notepad. Brulez portrays the obligation to write as a manner of being held hostage and equates the ransom for this type of incarceration with literature, - hence the work's subtitle: *literatuur als losprijs* (or, ‘literature as ransom’). This may be truly representative of Brulez' personal feelings on the writing process at the time of preparing *Sheherazade*, as he wrote in a letter to fellow Belgian writer Raymond Herreman in 1932 that he experienced no pleasure in writing.¹³⁸ Structurally, the book mirrors the *One Thousand and One Nights* in the respect that it is composed of a frame story, that of Sheherazade herself, accompanied by a series of stories within the frame story as they were supposedly told by her to the Sultan.

4.2.2. Exogenesis

Very tangible material traces of that first inspiration for this work are preserved among Brulez' materials at the Letterenhuis. We know, for

¹³⁸ Brulez wrote “*Ik beleef geen genoegen aan het schrijven*” in a letter to Raymond Herreman, 2nd November 1932.

instance, that Brulez attended a symphony concert of the Russian composer Rimsky-Korakov's *Scheherazade* performed in Oostende in Belgium in the summer of 1929. The story's summary in the concert programme provided the direct inspiration for the collection of stories, which he began writing in 1930, the same year as his first novel *André Terval* was published. He kept a copy of the concert programme upon which he marked the summary in blue pencil (as seen in Figure 4.1). He later revealed he had a creative impulse to write something immediately from this moment of inspiration, describing it as the moment the anchor lifted on his literary creation (Brulez 1969, 61). Brulez also wrote on the cover of his draft writing notes for *Sheherazade*: "First thought: 16th August 1929 in Oostende at the classical concert in the Kursaal when listening to Shéhérazade by Rimsky Korsakov"¹³⁹ (as seen in Figure 4.2). The cover page of the drafts for the individual stories also have similar notes relating to when each one was first conceived and sometimes even include the date on which they were written or completed. Brulez was not so much impressed by the music as he was inspired by the idea of Sheherazade and indeed with the practice of bundling stories together within the structure of a frame story as had become the practice with the *Thousand and One Nights* and subsequently developed over the centuries. He later described his first imaginings during the concert performance of the storyteller Sheherazade as a sort of patron saint of literature that is incarcerated by the Sultan, as her critic, the mental hard labour of Sheherazade acting as a metaphor to demonstrate the form of torture that a writer must endure (Brulez 1969, 61). From the perspective of creating our digital exhibit, this colourful metaphor along with the clarity and tangibility of Brulez' first inspiration during the concert, as the exogenesis of the work, make it a highly amenable feature for us to demonstrate to users.

¹³⁹ Translated from "Eerste Gedacht: 16 augustus 1929 te Oostende op het klassiek Concert ter Kursaal bij het luisteren naar Shéhérazade van Rimsky Korsakow".

PROGRAMME

1. Shéhérazade N. RIMSKY-KORSAKOW suite symphonique (1844-1908)

Cette *suite*, du plus pittoresque et du plus coloriste des musiciens de l'École russe moderne, date de 1888 ; le sujet est emprunté aux *Mille et une nuits*.

Le musicien a inscrit en tête de sa partition la légende suivante :

« Le sultan Shahriar, persuadé de la fausseté et de l'infidélité de toutes les femmes, avait juré de faire donner la mort à chacune des siennes après la première nuit. Shéhérazade sauva sa vie en intéressant son maître aux contes, qu'elle lui racontait pendant mille et une nuits. Pressé par la curiosité, le sultan remettait d'un jour à l'autre le supplice de sa femme et finit par renoncer à sa résolution sanguinaire ».

Voici les épisodes, que Rimsky-Korsakow a illustrés du prestige d'une palette sonore unique de richesse et de variété :

- a) La mer et le vaisseau de Sindbad le marin.
Largo maestoso — Allegro non troppo.
- b) Récit du prince Kalender.
Lento — Andantino — Vivace.
- c) Le jeune prince et la jeune princesse.
Andante quasi allegretto.
- d) La fête à Bagdad,
Allegro molto.

Violon-solo : M. Henry Gadeyne.

2. Concerto en si bémol L. BOCCHERINI pour violoncelle et orchestre (1743-1805)

*Allegro moderato ;
Adagio cantabile ;
Allegro vivo.*

Solo : M. Enrico MAINARDI.

Luigi Boccherini, violoncelliste-virtuose et compositeur fécond, a écrit un nombre prodigieux de trios, quatuors, quintettes, une vingtaine de symphonies et des concertos pour violoncelle, ainsi que de la musique d'église. Sa destinée ne fut guère heureuse ; malgré leur grande vogue, ses œuvres ne rapportaient plus rien et il ne sut s'attacher nulle part et il mourut dans la plus profonde misère.

Collectie Letterenhuis
Antwerpen

Figure 4.1: Nota's. Letterenhuis, BE-ANN07/lh/B917/112.

4.2.3. An evolving plan

The first of three parts in the exhibit focuses on providing general context and this genetic path relating to the initial inspiration for the work. In the second part we attempt to demonstrate the materiality of the planning, structuring and writing of *Sheherazade*. Brulez had initially intended the work to take the form of an essay during his initial moments of inspiration. However, rather than writing an essay he instead began to write stories and planned a structure around a series of these stories with the frame story. Figure 4.3 shows the plan for the structure of the work. It was composed of three parts, marked A, B and C, although its structure was not yet finalised. Part A was the opening of the frame story and Part C its end, while Part B was a list of five stories told by Sheherazade. The main text in the image can be transcribed as follows:

- A: Shiriar.
de aanslag van Sheherazade
- B. Sheherazade's verhaaltjes
 - 1) De laatste reis van Simbad de zeeman
 - 2) Eén mei ~~Feest van de Arbeid~~
geëindigd in 1934
 - 3) Het Beeld der Eeuwige Godin
 - 4) De opstand der voetnota's
 - 5) De ~~boswater en de vogelschrik~~
fashionable Faun
- C. Sheherazade's afscheid

(Transcription of the 'Plan' in Figure 4.3)

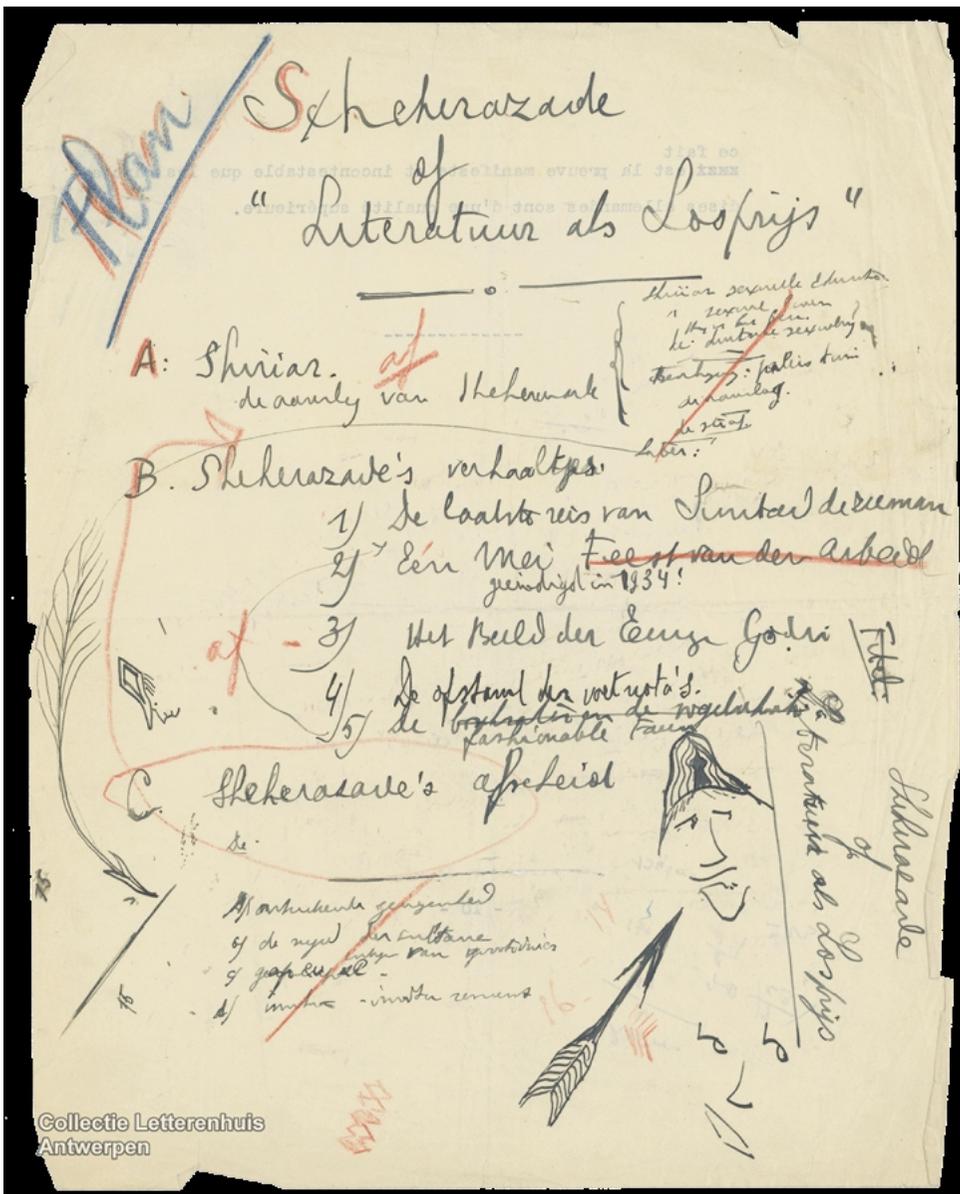


Figure 4.3: Nota's. Letterenhuis, BE-ANN07/lh/B917/112.

By the time the first edition was published in 1932 the structure was considerably different, with changes made to the titles and order of the stories. The frame story of Part A was given the title “*Wat is liefde zonder verleiding?*” (‘What is love without temptation?’). Part C, “*Sheherazade’s afscheid*” (‘Sheherazade’s farewell’) was not the end piece of the book but was instead integrated into a new final story called “*De tweesprong*” (‘The fork’ or ‘The crossroads’), which appeared as an interjection in which Sheherazade has run out of space in her notebook before the story was complete. The Sultan, dissatisfied with this explanation, demanded that she write a better ending by using the space available on the covers of the notebook, and then when this was full she was asked to write sentences sideways across lines of text the way that lovers would in a letter. Sheherazade duly complies to his demands, finalising “*De tweesprong*” and bringing a conclusion to Brulez’ book. The second story in the original plan “*Een mei*” was not included in the book but was published separately in a collection of stories with other writers in 1937 called *Vertellen*. The story “*Het beeld der Eeuwige Godin...*” then moved to become the second story in the running order while a new story “*De projectielantaarn ‘Aladin’*” was also added. The story “*De opstand der voetnota’s*” was not included in the first edition in 1932 but was subsequently introduced in the second edition of 1946 as displayed in the table of contents below:

Wat is liefde zonder verleiding?
De verhalen van Sheherazade
De achtste reis van Sindbad, of ‘Het geluk is het ander...’
Het beeld der Eeuwige Godin, of ‘Men moet meegaan met zijn tijd...’
De projectielantaarn ‘Aladin’
De opstand der voetnota’s
De fatsoenlijke faun
De tweesprong

(Table of contents from the second edition, Brulez 1946)

In the exhibit we attempted to give users some general idea of the process through which Brulez structured and re-structured the work throughout the writing process. Brulez brought order to his writings by marking drafts and notes with the letters from his plan such as ‘A’ and ‘C’ next to passages of

text. Some pieces of text were written on scraps of paper or on the backs of envelopes. In the exhibit, we demonstrate how he redistributed these documents throughout his dossier, in many cases by literally cutting and pasting pieces of paper onto others or by crossing through the text when it had been used elsewhere, in order to avoid duplication. By showing the user these materials and features we wanted to demonstrate the materiality and physicality of the writing process, and to emphasise how Brulez brought structure to what might otherwise seem like a chaotic grouping of materials.

4.2.4. The revolt of the footnotes

The shortest story of *Sheherazade* is “*De opstand der voetnota’s*” (“The revolt of the footnotes”) which consists of only a few pages. Nonetheless, it is perhaps the most interesting story in the book due to its symbolism and the ideological matters that it touches upon. Ideologies arise throughout the six stories of *Sheherazade*. These stories were written at a time of increasing ideological division in which many countries and their populaces were becoming more deeply entrenched in radical ideologies such as fascism and communism. The message that Brulez offers is that all of these systems are inherently flawed. Even though Brulez himself leans towards individualism, he recognises that it is difficult for individuals to oppose the system: instead he believed that there are actually no good or bad solutions to the problem. In his final story, “*De tweesprong*”, the central protagonist, Herakles, listening to Nietzsche, decides to give up on traditional life and departs for lands that are beyond good and evil, which is the final conclusion of the story and thereby the book itself. “*De opstand der voetnota’s*” tells the story of a sort of class struggle. The story is set in a classic printing press room where a book is being printed on the subject of the history of the different forms of government through the centuries. During the night the footnotes protest about their status, doomed to stay below the dividing line, printed in a smaller font-size than the letters in the running text above. The footnotes lead an uprising on page 1789 (by no coincidence the year of the French Revolution) which was a piece of text about monarchy. During this uprising they mix with the other letters in order to change the title from “*DE MONARCHIE*” to “*anARCHIE*” and also change the running text to deliver

their message. Their uprising is, however, quite short-lived, as the printer returns the following morning to see the order has changed into nonsense and decides to melt all the letters down again.

The story was not included in the first edition of the *Sheherazade* as it was rejected by the publisher Jan Acke, not so much in an objection to its socialist message but more as a rejection of its typographical appearance. In the interim between the first edition in 1932 and when the story was re-introduced in the second edition of 1946 it had also been published in two magazines: *Hooger Leven* in Belgium in 1933 and the left-wing *De Groene Amsterdammer* in the Netherlands in 1936. Facsimiles of both have been included in the exhibit to demonstrate how a writer uses pre-publications in periodicals before book publication.

The page ‘1789’ before the rebellion and the page after the rebellion are both included in the text of the “*De opstand der voetnota’s*” story (see Figure 4.4). This is the most difficult and complex genetic path which we attempt to illustrate to users. The materiality of the story is of great importance to this story, both in the narrative and in the genetic dossier. Brulez began by writing notes as he did with the other stories and planned out a fairly traditional structure for the story of introduction, climax and conclusion and then wrote out the draft of the story on rough paper, including the pages 1789 ‘before’ and 1789 ‘after’ the rebellion in between the introduction and conclusion of the story. He then typed out the two 1789 pages and used these typescripts in an attempt to count and list all the letters from “*DE MONARCHIE*” page in order to try make them appear on the “*anARCHIE*” page. He wasn’t quite able to manage to use all the same letters but he did ensure all the uppercase letters were included in “*anARCHIE*”. In the sketch plan in Figure 4.5 it is clear that the letters that Brulez intended to use were the capital letters D,E,M,O,N that were left over from the title before the rebellion, forming the word ‘demon’.¹⁴⁰

¹⁴⁰ The research leading to the discovery of the ‘demon’ genetic path was conducted by Dirk Van Hulle and he has written about it (in Dutch) in more detail in the teaching pack he created in conjunction with the Letterenhuis (Van Hulle, 2014).

Brulez intended for both of these pages to be visible on a single opening of the book but unfortunately the print setting of the 1946 edition placed these on opposite sides of the same leaf on page 111 and 112, which made his letter-play far less overt. A bigger issue than this was that there was a print setting fault on page 112 that saw the final three lines disappear (because it was being published in a smaller format). These lines were quite significant because they contained the capital 'M' that was needed to make the word 'DEMON'. This can be seen in Figure 4.4 in which a prominent capital D, E, O, and N can be seen towards the end of the page but no 'M'. The letters did appear correctly in the pre-publications in *Hooger Leven* and *De Groene Amsterdammer* (although there were some other differences in these editions from how it appeared in the typescripts). The hidden message of Brulez seemed to have been that with any ideologies there is always something demonic, that whether it is currently monarchy or anarchy, the 'demon' is always present.

By explaining this process in the exhibit to users they are exposed to several features of the genetics of the work. They get an insight into Brulez' thinking process but also into the writing and publishing processes through observing the progression from manuscript to typescript, and into the complicated manner in which it appeared in publications: that the story was excluded from the first edition, but appeared in magazines and was later introduced into a second edition with significant errors. This will give the users some sense of the problematic issue of seeking definitive editions or considering a work to be a finished publication at a certain point in time.

DE MONARCHIE

daar aldus de continuïteit van de buitenlandse en binnenlandse politiek het best gewaarborgd wordt. 1) Al de krachten die in den schoot der natie sluimert moeten samengebondeld en eendrachtig op het gemeenschappelijk doel gericht worden. Alleen de monarch kan, zoo hij met voldoende macht bekleed is, de belangen der enkelingen samenordnen ten bate van het gemeenbest. Hij is als een goede familie-vader, 2) die wakt opdat al de kinderen

(1) CHARLES MAURRAS, « *Atton Francaise* », passim.

(2) In zijn beroemd werk « *Dalla Monarchia* », levert DANTE een meesterlijk betoog ten gunste der monarchie. Dit betoog kan als volgt samengevat worden. De monarchie is de regeringsvorm die het best geschikt is om het heil der menscheit te bevorderen. Dante beschouwt de samenleving als een groote familie. Iedere familie erkent een hoofd. De ideale regeringsvorm werd reeds verwezenlijkt door het Romeinse Keizerrijk en daar dit ideaal beantwoordt aan het goddelijk inzicht kan het niet voorgoed zijn ondergegaan. Het ideaal is een christelijke wereldmonarchie (Keizerrijk) waarin de groote machten : Pruisdom en Keizerschap eendrachtig samenwerken.

de ARCHIE

verliest uit het oog het groote verkschil dat tusschen communisme en Anarchisme bestaat, terwijl in De Communistische Samenleving ieder individū, van de wreg tot het graF, slechts een gedisciplineerd rad is in het groote staatsmechanisme, streeft het anarchisme daarentegen Naar de onbeperkte vrijheid van den enkeling, deze vrijheid kan slechts verzekerd worden door de afwezigheid van gelijk welken regeringsvorm in de anarchistische maatschappij maakt het regiem der "vrijwillige" overeenkomsten alle overige recht, gezag en regering overbodig; dit ideaal behoort geenszins tot het rijk der utopie, zoo de mensch van natuur uit niet goed is, zoo kan hij toch wel opgevoed worden tot geschiktheid tot dergelijk regiem, alle menschen hebben een zeker besef van rechtvaardigheid, en zullen zich rekenenschap geven dat hun welbegrepen belang onafschiedbaar verbonden is met dit der menscheit, daar de anarchisten alle bestaande staats "orde" negeerenhoeft het ons niet te verwonderen zoo de middelen

Figure 4.4: Brulez, Raymond. *Sheherazade*, 1946 edition.

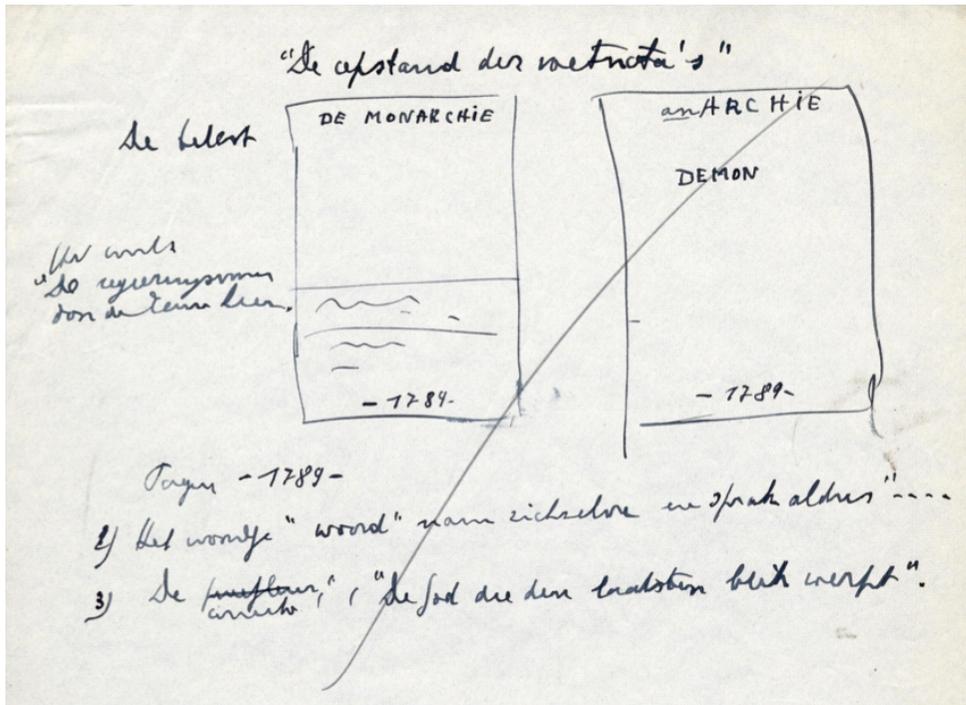


Figure 4.5: Manuscripten. Letterenhuis, BE-ANN07/lh/B917/111.

4.2.5. Presenting genesis

Dirk Van Hulle has pointed out that traditional critical editing usually attempts to create a definitive text that is teleological, an approach which “reduces a complex chaos of manuscripts to a linear progression” (Van Hulle 2004, 34). This linear progression is “exactly what genetic criticism is trying to avoid” (Dillen 2015, 48). For Almuth Grésillon the writing process should not be only viewed in a chronological order of procession but the genetic file should be read in all directions (Van Hulle 2004, 35). This way of viewing the writing process was something we wanted to express in the exhibit design. The intention was to guide users through a selective genetic path in a sequential order but to do so in way that might visually represent the non-linearity of the writing process. Our digital exhibit is structured in much the same way as the book itself, which is a series of stories set within a frame

story. The exhibit is comprised of two main genetic paths, each of them drawn from individual chapters of *Sheherazade* and then set within the broader frame of the exhibit that provides context to the users.

The ambition is not to demonstrate a comprehensive genetic analysis of the work in this exhibit, as that would go far beyond the amount of time and attention we expect users to dedicate towards the exhibit, nor is the Brulez project ready at this time to be able to present that work. It rather acts as a teaser for a full (future) digital genetic edition that will contain a more comprehensive representation of the work's genesis. Users are introduced to rather complex genetic aspects of the work but without the inclusion of what might be regarded as intimidating terminology. Instead the idea was to make the user aware of these processes, but purely at an entry-level difficulty with a minimal threshold so as not to discourage them from continuing their reading. For example, unbeknownst to the user, their reading of Brulez' notes, manuscripts and typescripts actually pertains to the *avant-texte* of the work, that is, "the totality of the material written for any project that was first made public in a specific form" (Bellemin-Noël 2004, 30-31).¹⁴¹ Another feature of genetic criticism which users are introduced to in this exhibit is the *exogenetic* influence of the music of Rimsky-Korsakov which is an influence on the writing process that "stem[s] from a source exterior to the writing" (de Biasi 1996, 44-45). We were able to represent this exogenesis in the exhibit through the inclusion of images of the surviving material evidence in the form of the concert programme and also through the use of music from a recorded performance in the animations, as will be discussed later. The presentation of these aspects to the user is done in a way which is intended to be informative enough to stimulate some critical thinking on the topic, and to plant a seed of interest that might encourage the few highly enthusiastic users to delve deeper into the subject (perhaps by visiting the full edition when it is finished).

¹⁴¹ The term 'avant-texte' was originally coined by Jean Bellemin-Noël in *Le Texte et l'avant-texte*, 15.

4.3. Creating the exhibit

4.3.1. Background

By combining the body of materials and research results on *Sheherazade* that were made available by the work done by the CMG (as described in the previous section) with the results of the tablet user study discussed in Chapter 1 of this thesis, we had a strong foundation to begin experimenting with conceptualising a form of satellite publication. A number of key findings from the tablet user study provided the initial direction and orientation for the project. The most significant finding in this respect was that touchscreen interfaces, such as tablet computers, were deemed to be a suitable medium for satellite publications created for purposes of public outreach and engagement (as opposed to scholarly textual research with complex tools). The study found that learning and gaming were popular use purposes for tablet computers, 80% of tablet-using respondents had used the devices for learning and 57% had used them for gaming. This led us to the idea to build a digital publication for pedagogical purposes with an ambition to use some amount of aspects of gamification in order to improve the engagement of the users. The other finding from the user study that was reflected in the development of the exhibit was that it should be built as a responsive website rather than as a native tablet application in order to maximise the potential distribution.¹⁴²

4.3.2. An experiment in collaboration

The digital exhibit was a project created in collaboration for the purposes of user engagement and public outreach, a collaboration that consisted of our team at the CMG, the Letterenhuis and an external web design agency called Prophets.¹⁴³ Creating the exhibit was not only about engagement and outreach but also an experiment in trying to understand how such a

¹⁴² If built as a tablet application we would not be able to reach non-tablet owners and we would also need to decide whether to build for iOS or Android or both.

¹⁴³ Prophets: <http://www.prophets.be/>.

collaboration might work in practical terms and what impact it would have on the object that is produced. This was a new approach for the CMG, and it is not common with other comparable research centres that specialise in digital scholarly editing. The nature of this partnership, comprised of multiple parties with different skills and ambitions, was central to the evolution and form of the digital exhibit as an end output.

Our team at the Centre for Manuscript Genetics working on this digital exhibit project consisted of four people: Dirk Van Hulle, Vincent Neyt, Elli Bleeker and I. A master's student at the CMG, Sarah Fierens, is also involved in researching Brulez as part of the work towards the full digital edition but she was not directly involved in this satellite exhibit project. Each of our team of four had different strengths to bring to the project and we all actively participated in every part of the process. Dirk Van Hulle had already pursued Brulez as a subject of study for a few years: he had researched his materials at the Letterenhuis archives; and had taught courses on genetic criticism to students using some of Brulez's materials as a case study. Elli Bleeker had hands-on experience of the manuscript materials from many months spent in the archives carrying out genetic research and making transcriptions. Vincent Neyt provided our internal technical expertise and had also brought a technical approach to teaching Brulez already with an experimental application that allowed Dirk Van Hulle's students to attempt an exercise in assembling a genetic dossier of some of the materials. My role was to utilise my research on dissemination of digital editions particularly in relation to the areas of engagement and usability, and I also took the central role of managing the collaboration between our team and the external partners.

In the early phases of this digital exhibit project the Letterenhuis was an enthusiastic but passive partner. As the archive for Brulez' collections they had already provided us with the access to the materials in order to carry out the textual research and they made it clear that we could use their digital facsimiles in our exhibit (as had the estate of Brulez). The Letterenhuis were pleased that we wished to make a digital installation for their exhibitions and we were left with free-reign to proceed to conceive and create it. The most important aspect of the museum's role in the process was the affordance it

offered us, that of physical space for our exhibit and a suitable audience in the form of museum visitors. Later on in the process the Letterenhuis made some key contributions to the success of the project including the provision of the touchscreen device for the exhibition space in the museum.

Our decision to work with a private sector web development company was one which required considerable discussion and consideration. Working with external companies is far from standard practice for most academic projects in digital humanities and the CMG had no prior experience of operating in this way. There were several skills among our team at the CMG, but aesthetic design was not one of them. The aesthetic appeal of the exhibit, we believed, would be central to successful public engagement and, as discussed previously, aesthetic design promotes the perceived usability and therefore the overall usability of a digital resource (Kurosu and Kashimura 1995). We felt that we would be unable to achieve such a high level of aesthetics without external input from experienced designers. We intended to use the interface design as something which, in the words of Stan Ruecker, is “visually rewarding for the reader of research results” (Ruecker et al. 2011, 13).

The aim was to find a company that could be a true partner in the project and with whom we could develop a relationship, rather than working with a firm to whom we would simply outsource some work. Our research into the web design sector began on the basis of making a long-list of companies on the basis of two criteria. Firstly, that they were based locally, which would ensure that their collaboration with the museum and ourselves would be relatively easy, and also in an effort to forge links with a local agency in case it would be a useful relationship to build for any potential future projects that needed some similar input. Secondly, that they must have had some experience working with cultural heritage projects - or at least have a sympathetic interest towards literary projects. We made a shortlist of our three preferred companies and contacted them with a document explaining what we were looking for. We called this relatively simple three page document a ‘concept brief’ and it is attached as an appendix to this thesis (see Appendix 3). It provided an introduction to our team and work, and to the Letterenhuis, and we emphasised that we were looking for a designer who

would be interested in this work as collaborative partner. The document also explained the concept of the Brulez project: “we want to illustrate the origins and development of the writing process of this collection of stories” (see Appendix 3, 258). In addition, it also provided some initial technical specification for how we expected a digital exhibit to be delivered: “We envision this to be created as a digital application for a fixed touchscreen device located inside the exhibition area at the museum, but that could also be downloadable for remote visitors as an application for Android/iOS devices and/or as a responsive website” (see Appendix 3, 259). A number of ‘case studies’ were provided of cultural heritage websites and apps of similar goals that had the kind of design we were hoping for (such as the Yeat’s online exhibit and TouchPress’ *Wasteland* app). We offered a time frame with an expected start date and end deadline and we also made our intellectual property rights requirements explicit at this early stage by explaining that we intended to make the code available in an open access repository for use and modified re-use by other academic projects.

All three of the companies expressed an interest in working on this project and in the end two of them attended an initial meeting. In these initial meetings the companies presented themselves to us, we presented our idea and materials in the form of a mini powerpoint presentation, and then they offered some of their first ideas on how to approach the design. The company we selected, Prophets, had considerable experience with the cultural heritage sector in Antwerp and they also showed a keen interest and a good understanding of what we were trying to demonstrate to users from the start. The process of selecting a company required us to learn how to explain our scholarly concept in a clear fashion to non-experts, and also to make the goals of our exhibit quite explicit, which contributed greatly to finding a clear direction for the project from an early point in the process. If we could not get our message across to our web designers then we would probably have little hope that the end product would get the message across to the users.

4.3.3. The build process

In order to fully explain and demonstrate the course and effect of the collaboration with Prophets and the Letterenhuis on this project it is necessary to provide some practical details of the process of building the exhibit.

We began by asking Prophets to provide us with an initial proposal with an estimated budget after the first meeting had taken place and we had provided them with some content. What we received in return was a well developed proposal with a detailed explanation of the various phases of development, but with a price tag that was far beyond what we could afford. However, as we had such a positive meeting with them, and because the other companies were failing to provide us with other interesting proposals, we decided to meet Prophets again to re-negotiate. Luckily, they were enthusiastic enough about the project that we managed to come to an agreement on a simplified version of the original proposal for approximately one quarter of the originally quoted price. The planned build followed an ‘agile’ methodology comprised of multiple design and development sprints as well as releases of small iterations for feedback during the build. Prophets’ solution to simplifying this meant that we needed to agree on the designs before their developers began to code and it would be built in a single ‘sprint’. However, in reality, there was still some space for adjustment to the design after we had received the demo version of the site for testing. This single sprint approach meant that we needed to give substantially more consideration to the designs early on in the process and it also ruled out the possibility of user-led design. This simplified build meant removing some of the proposed elements from the proposal such as a custom-built content management system (CMS) which was replaced by an existing open-source CMS called Cockpit. The initial proposal contained three interactive games, one for each of the three genetic paths we intended to demonstrate, but these were replaced by animations instead. From our perspective these modifications were still acceptable, particularly because we had started the process with an open mind about how the end product should take form and we were pleased to work

with a company that expressed such an interest in the project that they were willing to adapt to our needs and our budget limitations.

The estimated time Prophets provided for the build was three months, plus an open-ended period for us to perform testing and provide feedback for them to do some bug fixing and make any final minor modifications to the design and functionality. The schedule was roughly adhered to for the development phase, taking place over the three months of July, August and September 2016. Testing and bug fixing took place over the course of three months, on slightly sporadic basis due to variable work schedules. The final version of the site was signed off in early January 2017, which was just over six months since we began the project. The communications for the project were organised using the project management software Basecamp which meant that all communications were visible to everyone involved at both the CMG and Prophets, which greatly improved the clarity and transparency of the build process.

4.3.4. Curating content

From the beginning of the process Prophets strongly emphasised the importance of selecting and refining our content in order to ensure the most suitable design was chosen. This effectively marked the beginning of our process *curation* of the exhibit in terms of digital images and audio visual materials as well as the descriptive text content we had written. After we had finished negotiations and agreed to a proposal and budget, Prophets invited us to their office for a workshop during which we discussed the content and the potential design that would best present it. During this workshop we needed to make some important decisions about how much content we wanted to use in the exhibit. It was a quite difficult but enlightening process to keep our selection compact, so as not to overload the user with information, while somehow still managing to express the complexity of the concept to them. In the period after the workshop our team at the CMG assembled all the content needed for the exhibition and uploaded it to a

piece of software used by Prophets with their clients called GatherContent.¹⁴⁴ This software is a content management system that is designed for collaboratively assembling content before it is published on the web. It provided a useful way for us to experiment with the structure of our content and also to send the image and sound files to the developers.

In a museum setting user attention time is quite limited. A report of a study conducted by Open Exhibits indicated that the average time spent at a multi-touch table in museum spaces was only about *two minutes* (Goldman and Gonzales 2014, 2). This is a rather short time-frame to communicate information on textual genesis but, we hoped, not impossibly short. We cannot expect to hold the attention of all users, but there are some potential users who will find it more interesting and will spend longer than the average of two minutes using the interface. The ambition is to be able to provide something stimulating for both the casual users and the more enthusiastic ones. Two user observation tests were conducted on the exhibit while it was still in the demo phase for testing and feedback. The users were asked to navigate through the entire site, and to speak what they were thinking aloud, while we observed and took notes. These tests helped us identify issues in both the usability of the website and in the selection and presentation of content. Several user experience issues, particularly around navigation, were relayed back to Prophets and improvements were made. These tests also helped us identify where the narrative of our exhibit needed improvement, either in terms of the order in which information was presented or difficulties with concepts or language. One thing that was clear, however, was that the exhibit presented too much information to hold users' attention, which resulted in another round of team curation to clarify and reduce the content. This process of curating a small exhibit perhaps goes against the instincts of the digital scholarly editor who may be more inclined to include as much material and details as the technology will allow.

¹⁴⁴ Gather Content: <https://gathercontent.com/>.

4.3.5. Delivery

On completion of the development (i.e. when the process of testing and bug fixing had finished) Prophets delivered the website to us in the form of a file package at the end of the process of bug fixing and testing. The website package is being placed on the GitHub repository of the CMG with full open source access. Hosting and installation of the website on a server was a major obstacle to overcome in this project. We discovered quite late in the development process that the website was not compatible with any of our existing servers at the CMG, and that we did not have any access to servers with the correct configuration through the university. We investigated the option of hosting the website with an external company who would also carry out the installation for an annual fee. Such a recurring cost (€60 per year) for a relatively small website was not a financially viable option for our research centre. We then explored whether Letterenhuis had a server with the right configuration, which they did, but after some investigation they believed that installation might cause complications with existing data on this server. In the end we were fortunate that in the meantime another project had begun at the centre with the correct server configuration and we were able to share the infrastructure. This was a lesson to note for the future, as even though the digital exhibit requires a relatively small amount of server space, if the server installation and configuration is not planned from the beginning of the process it can lead to needless time-consuming obstacles. Luckily, however, this was the only real practical difficulty that arose during the collaboration.

The Letterenhuis also made a major technological contribution through the provision of the touchscreen interface. During the early phase of the project we explored the option of purchasing a new touchscreen device for the exhibit in the museum. Such devices typically come with a big price tag, beyond what we could hope to pay in addition to the cost of design and development with Prophets. Purchasing hardware for use in the museum space also raises issues around ownership and long-term use. What would happen to the device when the digital exhibit had run its course? In the end no purchase of hardware was necessary as we discovered that the Letterenhuis had two previously used touchscreen devices, encased in a stand that could be

placed in the exhibition room. These were 23 inch Acer touch-screens connected to a PC inside the stand running Windows 7.

When delivering a digital exhibit it needs to be ensured that the user cannot navigate away from the intended exhibition and access the internet for example. This is particularly important in relation to minors visiting museums, who might hit on inappropriate content if they are unsupervised. The casing for the touchscreen device hides all external buttons on the device from the user, which eliminated the problem. However, the delivery of the exhibit as a website means that there are several potential ways for a user to navigate away from the exhibit unless the right measures are put in place. We had considered the option of installing a local version of the website on the museum device and thus requiring no connection to the internet. However, this would make it impossible to update the website without physically returning to the museum to install a new version. The solution was to have a slightly modified museum version, also online, that removed features like social media share buttons and disabled links to external sites. This version, which needs to be opened in full screen mode by the Letterenhuis curators, is then safe for museum usage. Prophets advised us that the type of content we were working with was unlikely to be suitable for display on a smartphone, so a decision was made to optimise the user experience for devices as large as a tablet or bigger. Users who open the exhibit on a smartphone receive a message to explain this and advise them to visit the website on a larger device.

4.4. Interface design

4.4.1. Concept

In order to get the most from the interface design we remained quite open to proposals from Prophets rather than providing them with strict ideas about how we wanted it to be presented. This was done intentionally in the spirit of partnership and collaboration and also in the hope that their professional experience in user experience and interface design could guide us in some directions that we had not considered. They were not left completely without

guidance as we did provide a range of ‘case studies’ in our concept brief document of digital projects that we found visually appealing, in order to help give them a sense of our tastes. In addition we had also provided them with the printed teaching pack that had been used by Dirk with his students at the university. From these materials they were able to get inspiration for the suitable colour schemes and the texture of the background design. They also adapted the typography of the 1946 edition directly into the title design. We furthermore expressed to them that we would like to take some inspiration from one of the principles of rich-prospect browsing as expressed by Stan Ruecker et al.:

The primary page or screen should show a meaningful representation of every item in the collection (these might consist of photos, graphical objects, or pieces of text (Ruecker et al. 2011, 3)

While this research on rich-prospect interfaces relates more specifically to *digital collections* of cultural heritage materials we were interested to see if it could be applied to a *digital exhibit* that provides access to considerably less materials. The end design of the interface was created with an idea to express a certain amount of what could be seen as the ‘chaos’ of a writer’s desk, with its various materials scattered around but visible simultaneously, as can be seen in Figures 6 and 10. Prophets were further inspired towards this by the materials and genetic paths that we had shown them, as well as our explanation of the difficulty of the writing process, since we know that Brulez himself had remarked that he experienced no pleasure in writing. This was not, however, an attempt to fully replicate a real world writer's desk in a skeuomorphic manner, an approach that the design world is trying to escape in order to investigate the true potential of the digital medium through more minimalistic design (Judah 2013).

4.4.2. Structure

As mentioned earlier, the exhibit was modelled in a similar structure as *Sheherazade* itself. There was a top level grid, much like a frame story, and

within this grid there were two sub grids, each containing a genetic path. The top level grid, simply called *Sheherazade of literatuur als losprijs*, introduces the user to the concepts of the exhibit and gives an introduction to Brulez and *Sheherazade* as well as introducing the first genetic feature, the inspiration, with the materials connected to the Rimsky-Korsakov concert. The first of the two sub-grids, *Wat is liefde zonder verleiding*, guides users through the genetic path that demonstrates the planning, note taking, cutting, pasting and restructuring of the plan until it reaches a published table of contents. The second sub-grid is *De opstand der voetnota's* genetic path which explains the concept of the story as well as demonstrating its evolution through plans, drafts, typescripts and publications as explained earlier in this chapter. Each block on the grid can contain a combination of text, images, audio or video files which gives a lot of flexibility to craft a dynamic telling of the genetic paths.

4.4.3. Navigation

Navigation through the grids is done by clicking on the arrows on the right and left of the screen or by using the numbered navigation bar on the bottom right. In the original design the only way to navigate between the grids was through links on the final slide of each grid. During user observation studies we noted that the users found this grid structure confusing. They did not realise that there were different grids from the offset and often became lost while trying to navigate between them. In order to address this issue, a secondary form of navigation was added to the top left of the screen with the three grids' titles, so that users could navigate between the grids at any time and could see clearly which grid that they are currently viewing. With this additional navigation users sometimes decided to go through the exhibit in a different order than it was laid out, by starting with one of the sub-grids rather than the top level grid. This additional navigation and user freedom falls in line with user experience practices such as with two of the main usability heuristics as developed by Jakob Nielsen and Rolf Mohlich in the 1990's that are still recognised today, that of "user control and freedom" and "flexibility and efficiency of use" (Mohlich and Nielsen 1994). *User control and freedom* refers to how "users often choose system functions by mistake and will

need a clearly marked emergency exit to leave the unwanted state without having to go through an extended dialog” (Preece et al. 2015, 501). *Flexibility and efficiency of use* refers to “accelerators - unseen by the novice user - may often speed up the interaction for the expert user such that the system can cater to both experienced and inexperienced users” (Preece et al. 2015, 502).

4.4.4. Animation

One of our biggest and most challenging design ambitions at the outset of the project was to conceive a way to visually represent the physical dynamism of the writing process, in other words to demonstrate the movement, change and non-linearity of text production between the notes, drafts, typescripts, proofs and publications. The solution offered by Prophets for this visualisation was to create animations of the materials that could be viewed as a video by the users. The animations idea replaced the original concept presented by Prophets to use interactive games to display this genesis. Gamification of the process was very interesting for us but was simply beyond our budget. It is also hard to conceive how to gamify the genesis of some rather difficult to read manuscripts for our intended users within a small usage time window. While the textual genesis is not ‘gamified’ it might be said rather that the animations ‘storify’ the writing process. The process of creating the animations was rather simple for our side of the partnership. Prophets demoed a couple of different styles that they could use and we selected our favourites. They then used our genetic path content including the documentary materials contained in the two sub-grids to give a dynamic preview of each genetic path being demonstrated.¹⁴⁵ The first video demonstrates the documentary materials of the first inspiration at the concert following through the plan and ending with a published table of contents. The second video shows the story of *De opstand der voetnota’s* and begins with images of a traditional printing press and letter types, and then animates the movement of letters on the typescripts and published pages. Both animations

¹⁴⁵ The two animations can also be viewed individually at the following links: *Wat is liefde zonder verleiding* - https://www.youtube.com/watch?v=2_gYBs5-gzA; *De opstand der voetnota’s* <https://www.youtube.com/watch?v=MAMeEveMyp0>.

are set to the music of a recording of Rimsky-Korsakov's *Scheherazade* conducted by Leopold Stowkowski.

4.4.5. Screenshots

The remainder of this section is a series of screenshots of the Brulez exhibit included in order to demonstrate its aesthetic design and functionalities.

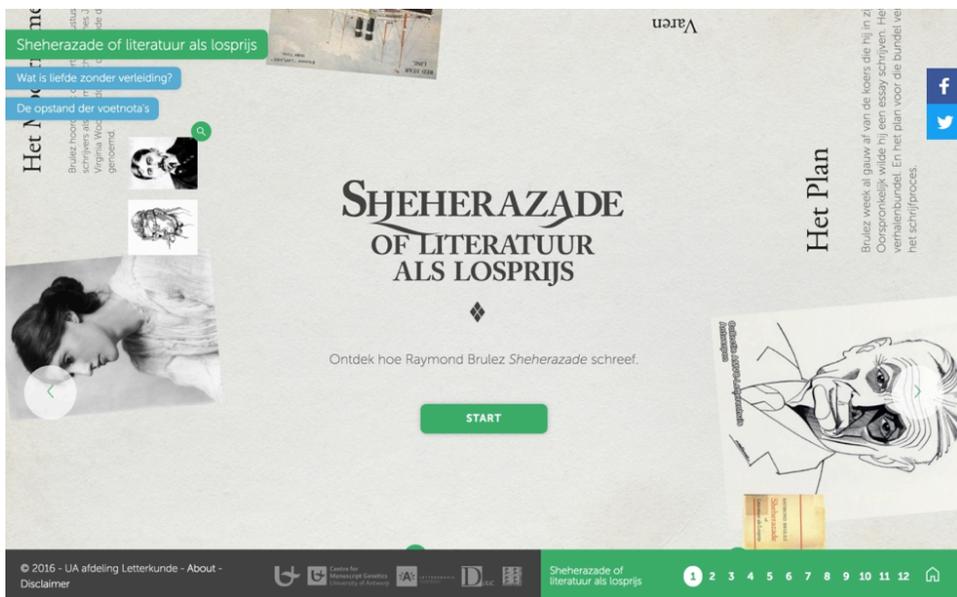


Figure 4.6: The landing page of the digital exhibit. This page shows a call to action button “Start” and all the navigation options are also visible: forward and back arrows on the right and left; the menu of grids on the top left; and the numbered navigation menu on the bottom right. The social media share buttons are on the top right and the panel on the bottom left shows the ‘About’ and ‘Disclaimer’ sections as well as linked logos to the various stakeholders.

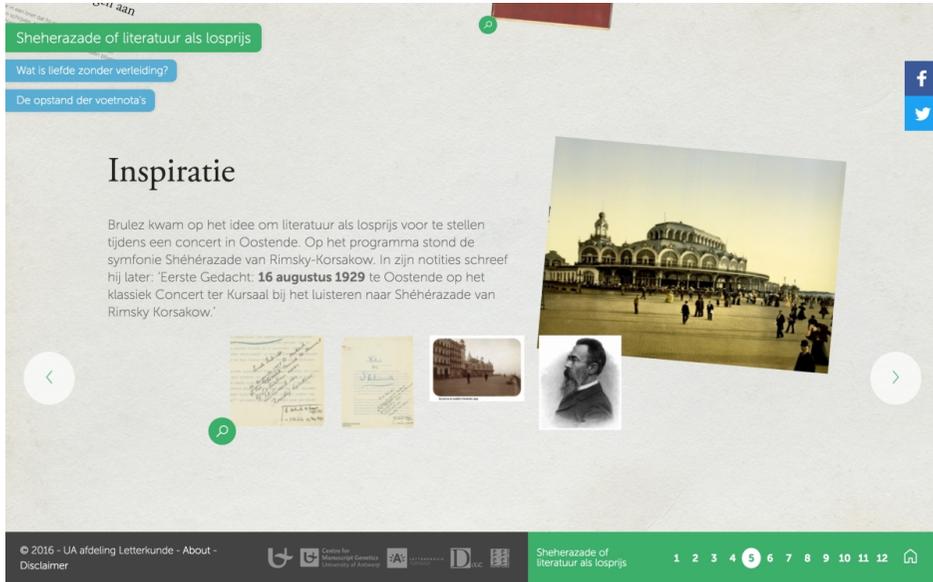


Figure 4.7: A typical slide from one of the grids showing a title, descriptive text and thumbnails of facsimiles and images which can be clicked to view in an image viewer.

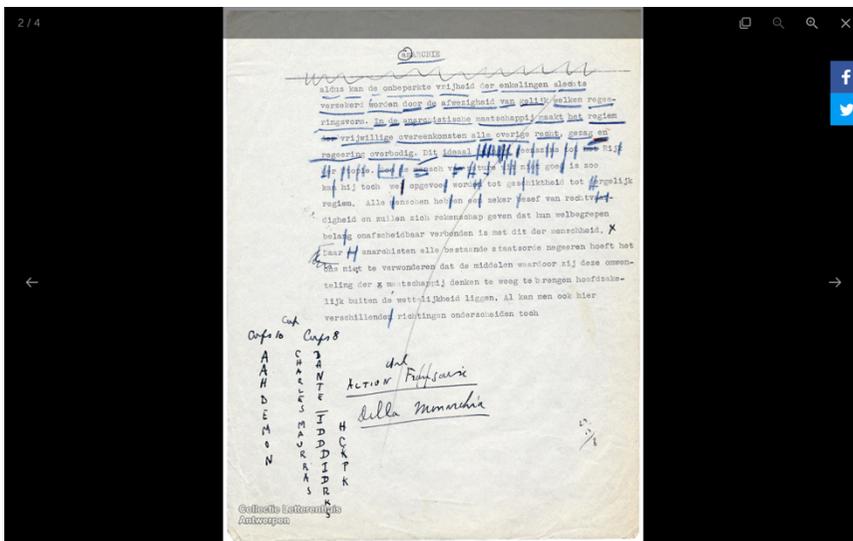


Figure 4.8: The image viewer, with zoom functionality on the top right and navigation arrows on either side of the screen to move between images from the current slide.



Figure 4.9: A view of the embedded animation video of the *Opstand der voetnota's*.

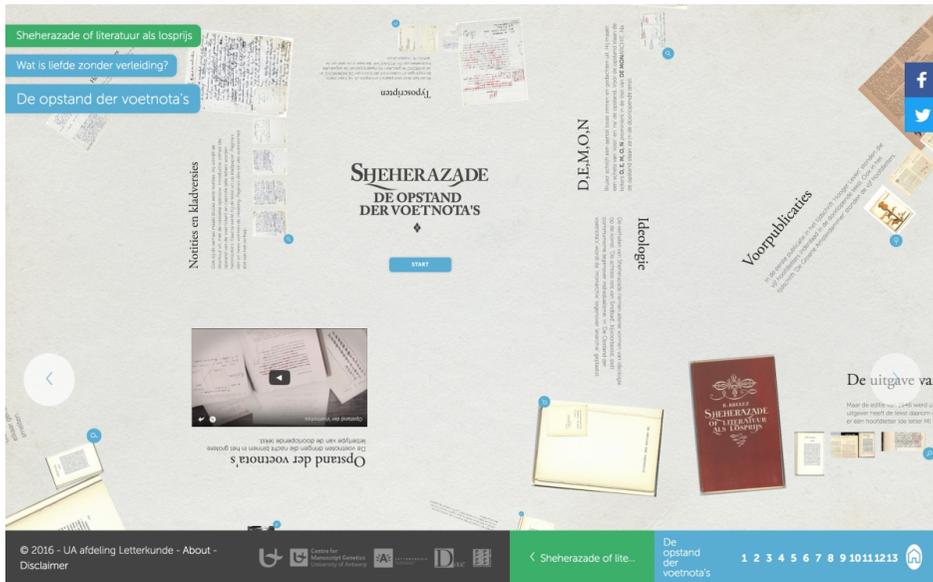


Figure 4.10: The 'Home' view which provides a zoomed out overview of all the material in a particular grid in the manner of a rich-prospect interface, discussed above. Users navigate to this view by clicking the house icon on the bottom right of the screen.

4.5. Reflections

4.5.1. EDUA framework: outcomes and findings

At the time of writing this chapter, the digital exhibit has gone live but is awaiting an official public launch after installation on the touchscreen interface at the Letterenhuis. The conclusions discussed in this section are therefore only reflective of what was learned from the process of conducting this experiment. Further analysis can be carried out in the near future on the live exhibit through additional user testing and data from web analytics.¹⁴⁶ Nonetheless, it is possible to discuss a number of key findings from this experiment.

Looking at this experiment through the lens of the EDUA framework can provide a sense of the affordances and barriers to dissemination that exist with this type of publication. As mentioned earlier, working with a museum provided our digital editing project with a major affordance in the area of *engagement*, by providing physical space and a certain amount of guaranteed user traffic. This museum presence as well as the online exhibit have the potential to boost the *discoverability* of the Brulez digital edition project when it is completed. We gained multiple insights into *usability* from this process, particularly in relation to the role of curation and selection of material for the exhibit given a relatively small window of user attention. The iterations of curation also helped us consider the impact of the language used on the *accessibility* of the publication. Curation of the exhibit proved to be an extremely challenging activity, it required the input of four scholars from the CMG as well as feedback from designers and users. This suggests that the creation of satellite publications for dissemination, in order to be successful, should be treated as a critical scholarly endeavour.

The collaboration between the three parties produced some excellent outcomes and it can be concluded from this experiment that dissemination can be improved through partnership for multiple reasons. The aesthetic

¹⁴⁶ Google Analytics was configured for the digital exhibition during the build phase.

appeal of the interface design is far beyond what we could produce ourselves and is arguably one of the more visually appealing digital outputs to be created from within the field of scholarly editing. The success of this shared enterprise will hopefully serve to highlight that working with commercial companies is not necessarily a difficult pursuit for academic projects with funding limitations. The partnership with the Letterenhuis provided us with the rather expensive hardware for the installation, which to some extent compensated for the expense of outsourcing the design and development; and of course, it further provided us with the physical space in their exhibit area along with an audience for our scholarship.

Making the code available to everyone in an open source repository was an ambition of this project from the very beginning. And fortunately our preliminary fears that a private sector firm would be too protective of their source code to allow it to be made available to the public proved ungrounded. In the Q&A section of a presentation on the development of the *Brulex Digital Exhibit* at the ‘Digital Scholarly Editions as Interfaces’ conference in Graz, Elli Bleeker and I received a number of positive comments on this experiment (proceedings forthcoming, Bleeker and Kelly 2017). It was even suggested by some of the audience that our strategy of using a small part of the project’s funding to pay a commercial firm to deliver their end-product for open source had created an interesting new model that should be explored further in the field.

The argument that the scholarly edition in its digital forms should not be seen necessarily as a finished product has been raised already in this thesis. While writing this chapter, the *Brulex Digital Exhibit* is still subject to ongoing alterations and may continue to be to some extent in the future.¹⁴⁷ This may come from user feedback if there are indications that alterations to the exhibit that would improve its usability or understandability. As further research into the genesis of *Sheherazade* continues to accumulate we may also decide to add more genetic paths. The exhibit also goes some way to show

¹⁴⁷ The CMS allows us to update the content of the exhibit ourselves rather than asking Prophets to make any ongoing changes.

that if we regard a digital scholarly edition as a perpetually unfinished product, then there is no reason why the process of dissemination (through such a satellite publication) cannot already make a head start while the research and development of the edition is still ongoing. Such early stage products may even help the editor decide which elements of the text warrant extra interest and investigation, and could be used as proof of concept studies in further funding applications.

4.5.2. What's in a name? Revisited

This satellite publication that has been created for *Sheherazade* is not a digital scholarly edition, digital archive, digital library, thematic research collection, reading edition nor database. The label that has been applied to it is *digital exhibit*, but where would that fit within the ecosystem of digital textual scholarship as a whole? Since it is not necessarily the aim of genetic textual scholarship to create a digital scholarly edition, it might be better to look at the scholarly work being conducted on *Sheherazade*, and Brulez more generally, as a *project*. If we return briefly to Kenneth Price's discussion on the difficulties of names in digital textual scholarship we see how he places projects in relation to editions:

In a literary context, *editions* and other results tend to emerge out of *projects*, but what constitutes the *project* is also the entirety of the undertaking: space, personnel, atmosphere, and the totality of all efforts. An *edition* might result from a project, without being the *project*, which includes all of the work conducted and records produced. (Price 2009, §14)

The research being conducted on Raymond Brulez at the Centre for Manuscript Genetics would certainly see it categorised as a *project* under this definition, a project from which an *edition* is going to be produced in the near future, and the *exhibit* is then yet another result that has emerged from the bigger project. Or if we use the terminology introduced in the previous chapter, this exhibit can be categorised as a satellite publication, as could the printed teaching exercise packs that were distributed to students. Thus, the Brulez project has already created two satellite publications for purposes of dissemination, even before the digital edition has been created.

A digital exhibit is created for different purposes than a digital edition and it is also used in a different way. Users are ‘reading’ the exhibit, if reading is defined as “the process of constructing meaning from written texts. It is a complex skill requiring the coordination of a number of interrelated sources of information” (Anderson et al. 1988, 389). But how is this a different mode of reading than that of a book, or a digital edition. Shane McGarry has drawn attention to the fact that digital editions still draw heavily from the interface of the edition in print form through the use of things like footnotes, page turns and tables of contents. He argues that these are metaphors which are intended to facilitate the activity of ‘reading’, and while digital editions provide great opportunity for close reading, that users read differently in digital form than in print (McGarry 2016, 3). The exhibit does not provide enough detail or a complete text in order to perform a close-reading, nor for distant reading purposes i.e. looking at large corpuses of texts simultaneously (Moretti 2013). It does not intend to provide a full text of any kind but rather a demonstration of features of the text.

So this begs the question: are our users actually ‘readers’? The users of museums, in its physical form, are called ‘visitors’, while typically the users of libraries are called ‘readers’, while the activity performed by a visitor to an exhibition would be called ‘visiting’, ‘viewing’, or perhaps ‘interpreting’. Although scholarly editors typically create objects which are targeted at ‘readers’, this way of taking the museum as a metaphor and preparing digital objects for a ‘visitorship’ might be a useful exercise for thinking about how we communicate and engage with broader publics. Indeed, museums are public oriented bodies, and their model for communicating with that public is something from which we as editors could certainly learn more. Museums have a much higher level of experience in communicating with their audiences through the meticulous selection and curation of the important or novel items in their vast collections. If you consider that an institution like the British Museum can only display 1% of its entire collection to the public at any given time (British Museum, 2017) it gives a sense of the difficulty of this process and why it needs to be treated as a critical consideration. As the Letterenhuis is a combined archive and museum of literary writers materials it

offered us the perfect model in which to conceive of an exhibit of textual scholarship. It would be an interesting exercise for any scholarly editor to stop and think: what if it is only possible to only communicate 1% of the research findings from the scholarly editing project? Which elements would be highlighted? Which ignored? Curating materials, introducing new ideas, delivering a message and guiding visitors while also leaving enough space for interpretation (a must when creating an exhibit), can be a highly effective approach to disseminating research to wider publics at a minimal entry threshold.

Conclusion

To conclude, I would like to return to the definition I offered in Chapter 3, that dissemination is comprised of: 1) the effective distribution of the digital scholarly edition as a type of publication within the digital ecosystem; and 2) the diffusion of the textual knowledge of the editors to broader society. This research has shown that the dissemination of digital scholarly editions is not only an important undertaking but is also a complex and multifaceted process. Scholarly editors are faced with a difficult and perpetually changing landscape in this regard as technology develops and the precise nature of digital scholarly editions continue to evolve. When I was hired by DiXiT I naively had the idea, as a person coming from the publishing industry, that the end outcome of this research would be to propose a series of ‘best-practices’ to disseminate digital scholarly editions. However, I soon realised that the situation was much more complex as a result of the richness and diversity of approaches to digital scholarly editing. As a consequence I have focussed my energies on trying to conceive of a way to treat dissemination on a conceptual level (with the EDUA framework) while at the same time beginning to fill in some of the informational gaps in our knowledge of the role of digital editions.

This research took the position that the shift to the digital paradigm has had a profound impact on the relationship of editions with their users and with their creators. While the digital medium allows for greater contact with the user than was ever possible in print there has not yet been a great deal of analysis of those users. The disappearance of the publisher as an agent in the creation of many editions has left editors with new and unfamiliar responsibilities in the area of distribution and promotion of our publications, a task made even more challenging by evolving technologies. These challenges leave us with a gap between the editor’s perception of the affordances of digital technologies and what users actually want from such publications. And yet another gap exists between what technology allows us to create and what we can actually sustain technologically and financially.

Addressing the gap between what is provided by the corpus of extant digital scholarly editions and their users’ needs and expectations will take some

considerable efforts by individual editing projects and the field as a whole. Social approaches to editing may bridge some of this disparity but in general there is a need for more user-centric design with editions. The user study in Chapter 1 was intended to contribute towards bridging this divide. That study demonstrated that the respondents would like to be able to access editions in more diverse forms. However this stands in tension with editors' wishes to produce their scholarship in stable forms that can be more robust and sustainable as discussed in Chapter 2. As the technologies we use to create editions continue to evolve so too will the challenge of sustainability.

The EDUA framework in Chapter 3 has proposed a way to make the complex process of dissemination more manageable on a conceptual level. The satellite model for dissemination may help reconceive the relationship between the core digital edition and the various channels through which its data and knowledge can be communicated with wider audiences, in which the core digital edition is what needs to be sustained while many of the satellite outputs can be treated more ephemerally. Digital editions are still trying to find their place within the scholarly publishing ecosystem in order to establish the form for the future there needs to be concerted effort towards creating multi-party collaborations with libraries, archives, museums, designers and various research infrastructures. This concerted effort is also needed to help address the identity crisis in digital scholarly editing, the issue of recognition and classification. The definitional uncertainty surrounding digital scholarly editions may serve as an advantage in helping to forge new approaches to scholarship. However, we also need to be mindful that information professionals such as librarians, and also non-specialist users need to be able to identify the type of publication in order for it to be utilised effectively. Nonetheless, even in face of these obstacles I believe that digital editing projects can achieve a good standard of dissemination if they engage in sufficient planning that attempts to address all four proposed dimensions of engagement, discoverability, usability and accessibility, in a way that suits the individual circumstances of the project.

Building the *Brulez Digital Exhibit* allowed the opportunity to put the EDUA framework into practice. Even more importantly, it provided us with a way to think about the scholarly research taking place at the CMG in a different light. The act of curating small amounts of material and information forced us to identify precisely where the value of our research lay. The digital exhibit, as a form of scholarly output, can be an interesting model for scholarly editors to pursue as a means to engage with a public at a minimal threshold. But perhaps the greatest achievement of the *Brulez Digital Exhibit* so far was the success of the collaboration of scholars, a memory institution and designers. Without this multi-party approach it would never have been possible for our research output to achieve such a high level of aesthetics, nor reach a truly 'public' audience that we can with the museum visitors.

The importance and value of collaboration was the one common thread that was evident in all the topics I touched upon in this thesis. For the scholarly editing community to move forward in the area of dissemination requires us to continue to open up to working in collaboration with each other, and with the other interested parties in textual cultural heritage, such as: users, libraries, archives, research infrastructures and designers. Exploring and sharing methods to improve in this area will not only benefit the scholarly field but also bring us closer to making a more positive impact on society at large given some extra thought and effort. The role and experience of scholarly editors as gatekeepers of textual cultural heritage equips us to take on the responsibility to ensure that our research and knowledge achieves the broadest possible social impact.

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Appendices

Appendix 1

Survey questionnaire for tablet user study

1. Introduction

This survey will assess the potential use of tablet computers as an interface for digital scholarly editions for research, study and teaching in the humanities.

Wait....what is a Digital Scholarly Edition?

This term may look unfamiliar to you but if you are studying or working in subjects like Literature, History, Languages or Linguistics there is a good chance you have seen one of these before.

A scholarly edition is a publication that provides an important work of literature or historical document that has been prepared by experts in the field. These can be in print or digital forms (or a combination of the two). An example of a scholarly edition in print would be a volume of a play by Shakespeare that includes a long introduction, lots of footnotes or endnotes and variants of the text.

Scholarly editions in digital form generally serve the same purpose as the print editions but can provide other features such as including digitised images of original manuscript documents, a search functionality and it can have interactive elements such as maps and videos. Digital editions have less restrictions in terms of space, so they can sometimes include a large collection of texts at which point it may be called a digital archive.

Some good examples of digital editions include:

[The Walt Whitman Archive](#)

[Vincent Van Gogh - The Letters](#)

[Samuel Beckett Digital Manuscript Project](#)

[Old Bailey Proceedings Online](#)

Practical information about this survey:

We are inviting scholars, young researchers, teachers and students in third and second level education to participate in this study. If you have never used a scholarly edition before please complete the survey anyway as the first section still applies to you. The results of the study will be used to help create tablet user interfaces for digital scholarly editions.

The content written by you in the survey is **strictly anonymous** and your participation is entirely voluntary.

It should take approximately **15 minutes to complete**.

A more detailed Information Sheet for this project can be viewed at <http://goo.gl/D0Cns5>.

King's College London Research Ethics Committee Ref: REP/13/1487

If you have any questions or require more information about this study, please contact me using the following details:

Aodhán Kelly - University of Antwerp

Visiting Researcher at King's College London

aodhan.kelly@uantwerpen.be

Assisted by Manuela Vastolo - Intern (MA Digital Humanities, King's College London)

This study is funded by the European Commission through DiXiT Marie Curie Actions research programme.

2. Consent Form

Thank you for your interest in this research project.

Please complete the Consent Form below before starting the survey.

***1. Please tick the box below to confirm your consent to the following statements:**

- I confirm that I have read and understood the information sheet dated 2 June 2014 (link above) for this study. I have had the opportunity to consider the information and asked questions which have been answered satisfactorily
- I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. Furthermore, I understand that I will be able to withdraw my data up to 1 week after submission
- I consent to the processing of my personal information for the purposes explained to me. I understand that such information will be handled in accordance with the terms of the UK Data Protection Act 1998
- I understand that my information may be subject to review by responsible individuals from the College for monitoring and audit purposes
- I understand that confidentiality and anonymity will be maintained and it will not be possible to identify me in any publications
- I agree that the research team may use my data for future research and understand that any such use of identifiable data would be reviewed and approved by a research ethics committee. (In such cases, as with this project, data would/would not be identifiable in any report)
- I understand that the information I have submitted will be published as a report

I confirm that I understand that by ticking this box I am consenting to the statements above.

2. If you would like to be invited to follow up studies on this project such as interviews or tablet app trials please provide your email address.

Email Address

3. Tell us about your digital habits

***3. Have you ever used a *digital scholarly edition*? (as explained in the Introduction)**

- Yes
- No
- Don't know

***4. Which of the following electronic devices do you use? (Please select all that apply.)**

- | | |
|--|---|
| <input type="checkbox"/> Desktop Computer | <input type="checkbox"/> E-book Reader (e.g., Kindle, Nook) |
| <input type="checkbox"/> Laptop Computer | <input type="checkbox"/> MP3 Player (e.g. iPod) |
| <input type="checkbox"/> Tablet computer (e.g. iPad, Samsung Galaxy) | <input type="checkbox"/> Printer |
| <input type="checkbox"/> Smartphone (e.g. Samsung, Nokia, iPhone) | <input type="checkbox"/> None |

***5. For what purposes do you read digitally?**

- News
- Research
- Leisure reading (*novels, magazines, etc.*)
- Study
- Email
- Other (please specify)

***6. How often do you use digital devices for...**

	Always	Often	Sometimes	Seldom	Never
work or study purposes?	<input type="radio"/>				
leisure reading and news?	<input type="radio"/>				

***7. Which devices do you use for reading digitally?**

- Desktop
- Laptop
- E-reader (*including Kindle*)
- Other (please specify)
- Tablet
- Smartphone
- None of these

***8. Which software have you used for work/study reading?**

- iBooks
- ePub readers
- Kindle
- Internet browser (*e.g. Chrome, Firefox, Internet Explorer*)
- Microsoft Word
- Adobe Digital Editions
- Google Docs
- Notepad/TextEdit (*it: Blocco Note*)
- PDF reader (*e.g. Adobe Reader*)
- Don't know
- Other (please specify)

***9. For e-reader users - Where do you download e-books?**

- Amazon
- iBooks (*Apple*)
- Barnes & Noble
- Free e-book stores or databases (e.g. *Project Gutenberg, World Public Library*)
- Local/university libraries
- Not applicable (I don't use an e-reader)
- Other commercial vendors (please specify)

***10. How often do you...?**

	Always	Often	Sometimes	Seldom	Never
Take notes with pen	<input type="radio"/>				
Take notes digitally	<input type="radio"/>				
Read digitally	<input type="radio"/>				
Read on printed paper	<input type="radio"/>				

11. If you take notes digitally, what programs do you use? (e.g. *MS Word, OneNote, Apple Notes, Google Docs, Evernote* etc)

12. Which websites or apps do you use for e-learning, if any?

***13. Do you ever use tablet computers / e-readers in the classroom for teaching or learning?**

- Yes, I do.
- No, I don't.
- Not applicable

***14. If you use a tablet for any purpose, which brand is it? (Otherwise, click 'not applicable' and then skip to next page)**

- iPad
- Kindle Fire
- Sony
- Nokia
- Samsung
- Nexus
- Other (please specify)
- LG
- Microsoft
- Acer
- Asus
- Not applicable (I don't use a tablet)

15. Do you ever use tablets for...?

	Yes	No	Not applicable
Learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Playing Games	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. What are your favourite games on a tablet, if any?

17. Do you use tablet apps?

- Yes
- No
- Not applicable (I don't use a tablet)

Please name some of your favourite apps

18. On a tablet, do you typically prefer to use...

- Apps (ie standalone apps such as the BBC News app)
- Internet Browsers (e.g. Chrome, Safari, Opera)
- Not applicable (I don't use a tablet)

19. Where do you download apps?

- AppStore (for iPad)
- Google Play
- Windows Store
- Other stores
- Independent downloads directly from websites
- Not applicable (I don't use a tablet)

4. Tell us how you use editions

***20. Which of the following types of scholarly editions have you used?**

- Print editions
- Digital editions (or archives)
- Both

***21. Are the editions that you use mostly print or mostly digital?**

Only digital editions More digital than print Equal amounts of print and digital More print than digital Only print editions

22. Please name some digital editions which you have used

***23. How do you discover digital editions?**

- Word of mouth
- Blogs
- Social media
- Wikipedia
- Other (please specify)
- Lectures
- Academic articles / citations
- Institutional / academic websites

***24. How important is it for you that an edition which you are using is 'scholarly' edited on a scale of 1 to 5? (print, digital or both)**

5 - Very important 4 3 2 1 - Not important at all Don't know

***25. For what purposes do you access a scholarly edition? (print, digital or both)**

- Academic research
- Personal reading/browsing
- Study/assignments
- Other

***26. What types of tasks do you typically perform with a scholarly edition? (print, digital or both)**

- Teaching
- Text analysis
- Text download
- Looking at the manuscript (a digitised image)
- Other (please specify)
- General reading / learning
- Looking for further resources
- Comparing editions
- Historical research

***27. What elements of a print scholarly edition do you use and find important?**

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Foot/endnotes | <input type="checkbox"/> Index |
| <input type="checkbox"/> Other | <input type="checkbox"/> Text |
| <input type="checkbox"/> Critical apparatus | <input type="checkbox"/> Introduction |
| <input type="checkbox"/> Bibliography | <input type="checkbox"/> Don't know |
| <input type="checkbox"/> Appendices | |

***28. What features do you find important in a digital edition?**

- | | |
|--|---|
| <input type="checkbox"/> Search functions | <input type="checkbox"/> Discussion and comment features |
| <input type="checkbox"/> Visualisations | <input type="checkbox"/> Video |
| <input type="checkbox"/> Critical apparatus | <input type="checkbox"/> Access to XML encoding |
| <input type="checkbox"/> Essays & articles (internal to the website) | <input type="checkbox"/> Maps |
| <input type="checkbox"/> Translations | <input type="checkbox"/> Digitised images of documents (facsimiles) |
| <input type="checkbox"/> Links to external sources/resources | <input type="checkbox"/> Collation/comparison of versions |
| <input type="checkbox"/> Audio | <input type="checkbox"/> Transcriptions |
| <input type="checkbox"/> Text | <input type="checkbox"/> Information on academic credibility |
| <input type="checkbox"/> Contact details | <input type="checkbox"/> Don't know |
| <input type="checkbox"/> Bibliography | |

***29. Which of the following statements best describes your usage of digital scholarly editions?**

- I have used a wide range of digital editions and have also been involved in creating them
- I am a frequent user of digital editions for my own research or study
- I rarely use digital editions but I have seen some examples

***30. Who should digital scholarly editions be aimed at?**

- | | |
|--|--|
| <input type="checkbox"/> Academics and scholars | <input type="checkbox"/> University students |
| <input type="checkbox"/> School students | <input type="checkbox"/> Teachers |
| <input type="checkbox"/> Early researchers (Ph.D., Postdocs) | <input type="checkbox"/> Don't know |
| <input type="checkbox"/> General public | |

***31. How important to you are digitised images (facsimiles) of original documents in digital editions?**



5. Tablets and the future of digital editions

***32. Have you ever attempted to use a digital edition on a tablet?**

No

Yes (please specify which ones)

***33. Would you prefer to access digital editions which are designed for the tablet's browser or to download a standalone app?**

Browser

App

Not sure

***34. Which interactive or dynamic features do you think digital editions on tablets should include, where possible?**

Interactive timelines

Image Viewer (with zoom and rotation functions to read a digitised image of the original document)

Interactive maps

Video

Audio

None

Other (please specify)

***35. What types of functionalities do you wish you had in a digital edition on a tablet?**

Highlighting

Bookmarking

Notes / Annotating

Citation tools

Drawing

Download

Social features

Other (please specify)

***36. Would you expect a digital edition on a tablet to be...?**

- Available only with an internet connection
- Available in offline mode with full functionalities (*requires more storage space on tablet*)
- Available offline but with reduced functionalities

***37. Would you typically expect digital editions on a tablet to be Open Access and free to download?**

***38. What social features or facilities would you use for an edition?**

- Forums
- Commenting on blogs
- Sharing on social networks (Twitter, Facebook etc)
- No, I wouldn't use these features
- Editing a project's wiki page

6. Personal Demographic Information

This survey is anonymous; the information provided below will not identify you in any way.

***39. Gender**

***40. Age group**

***41. Occupation or position**

- High-school student
- University student
- PhD student
- Post-doc/Young researcher
- High-school teacher
- Teacher/Professor (university)
- Other (please specify)

***42. Country of residence**

***43. Do you consider yourself to have any disabilities?**

***44. Which academic discipline is your field of expertise or study?**

***45. Which broad historical period does your research or study usually relate to?**

3600 BC - 500 AD

500 AD - 1500 AD

1500 AD to present

Not applicable

46. Please feel free to provide any final comments or feedback.

Appendix 2

Survey results data for tablet user study

The anonymised raw data of the tablet user study's online survey is openly accessible on Google Docs at: <http://goo.gl/zgOrDw>.

Appendix 3

‘Concept brief’ for *Brulex Digital Exhibit*

The text below is the information provided in the initial call for proposals sent to the shortlist of web design agencies to create the *Brulex Digital Exhibit*.

—

The genetics of writing: a digital exhibition

Introduction

The proposed project is a collaboration between humanities researchers based at the University of Antwerp and the Letterenhuis Museum, also based in Antwerp.

Dirk Van Hulle is Professor of English Literature at the University of Antwerp and director of the Centre for Manuscript Genetics. Elli Bleeker and Aodhán Kelly are researchers within a European Commission funded project called DiXiT based at the University of Antwerp. Sarah Fierens is a Masters student in literature at the University of Antwerp who has been involved in researching the materials in question. DiXiT is an international network of high-profile institutions from the public and the private sector that are actively involved in the creation and publication of digital scholarly editions.

The Letterenhuis is the largest literary archive in Flanders which exists since 1933 and houses materials dating back to the 1780's, it also houses the Literatuurmuseum of Flemish literary writers with permanent exhibitions open to visitors showcasing various literary materials such as books and manuscripts and the history behind them.

One of the objectives of this project is to bridge the gap between the academic world and the cultural heritage sector and furthermore with the creative design sector; to demonstrate what can come from a fruitful collaboration between different partners in a local setting.

Scope and specification of the project:

The objective of the project is to create a digital exhibition within the exhibition space of the Letterenhuis, displaying the manuscripts and typescripts of the Flemish writer Raymond Brulez' collection of stories *Sheherazade of De Literatuur als Losprijs* (published 1933). Specifically we want to illustrate the origins and development of the writing process of this collection of stories.

This interface would guide users through the content of a multimedia, digital edition of *Sheherazade*. We envision this to be created as a digital application for a fixed touchscreen device which is inside the exhibition area at the museum but that could also be downloadable for remote visitors as an application for Android/iOS devices and/or as a responsive website. This digital exhibition will also be later integrated into a larger digital edition of Brulez' work as a component part. The content we will be able to provide will include digital images of manuscript and typescript materials, audio and video materials as well as explanatory text.

Project description

Brulez worked in the 'Golden Age of the Literary Manuscript', a time when many literary writers preserved their material and their notes because they themselves were interested in the creative process. The set of materials is large and diverse, and therefore provides numerous opportunities to visualise this process of writing and creating a literary work. It is this process which we want to demonstrate to the users. We would like to furthermore contextualise the work within Flemish literary history as well as within the longer literary historical context of the 1,001 Nights stories that are so well known such as those of Aladdin and Sinbad.

The exhibition should present visitors with pathways into the story collection of *Sheherazade* that follow Brulez' personal writing process. These pathways will be selected by the research team at UAntwerp. This writing process starts with a first inkling of inspiration (in this case a music piece), after which Brulez goes on to sketch a writing plan, collect notes, write a first draft by hand and later two typescripts (both of which he corrects at a later stage). The writing stages are then illustrated with audio/visual material such as facsimiles of the manuscripts, pictures, links to his library books, music score of the opera he was listening to, an interview with his daughter, etc. Overall, the exhibition aims to show the full scope of the process of literary writing. The goal is to make visitors aware of the treasures kept in the literary archive, and to introduce them into the fascinating world of a writer's mind and the composition of a novel. A demonstration of one of these pathways can be given at a kick-off meeting with the prospective technical partner.

What we are looking for?

We are seeking a technical partner that is willing to make some creative input into the execution of this plan as well as designing and implementing a solid technical solution. Hopefully such a collaboration between the designers and the academics involved throughout the process might help lead to some original ideas. This would ideally involve having both the researchers and the technical partner working together from the wireframing stage to the launch phase.

Our ideal technical partner should have solid digital application development and design skills alongside experience and interest in working with cultural heritage projects and the hardware/software solutions best suited to museum environments. Experience of making video animations would also be an added advantage.

Budget

The funding for this experimental interface will be provided from the DiXiT Marie Curie research budget by the University of Antwerp subject to agreement.

Timeframe

We would ideally hope for the design company to be available to commence work by June 2016. The digital exhibition should be completed by the end of September 2016 as a hard deadline but preferably earlier.

Intellectual Property Rights

The team at the University of Antwerp endeavour to make the developed platform open access so that other academics and cultural heritage institutions can have the opportunity to replicate and build upon it with their own materials.

Case studies

Literatuurmuseum.nl - we see this website as an excellent example in terms of both design and concept.

Archivesplus.org - a good example of interactive touchscreen interfaces being used as part of a permanent public exhibition in the Manchester Central Library.

nli.ie/yeats - within this digital walkthrough tour of the museum exhibition there are also some videos of the writing process explained

wasteland.touchpress.com - Wasteland app features multimodal engagement with a text - talking heads, performances, audio, video etc

Antwerpmuseumapp.com - has a nice app and responsive website combination

Contact details

Mr. Aodhán Kelly, University of Antwerp

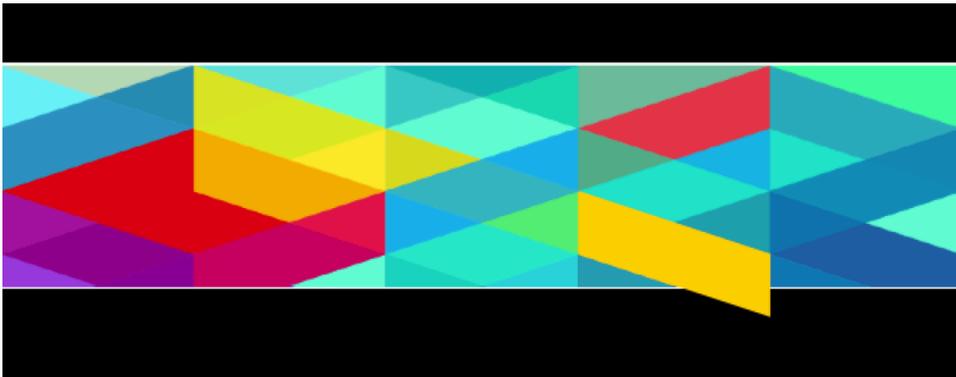
+32497071189, aodhan.kelly@uantwerpen.be

Appendix 4

Functional analysis documentation for *Brulez Digital Exhibit*

The document below was created by the web agency Prophets after web design had been agreed and finalised. The document provided a functional analysis of the digital exhibit before web development took place.

PROPHETS



Functional Analysis

UNI00001 - Genetics of writing - UA August 2016

1. About this document

This document describes the way the wireframes, designs and the required functionalities for the Genetics of writing website should be interpreted. You can contact kvanhauwermeiren@prophets.be for answers to your questions or additional information regarding this document or the designs.

2. Links to the website

The website will be communicated through the following channels:

- TBD

An UTM convention should be created for all communication leading to the website in order to track each medium's success.

3. Explanation of the designs

The designs reflect all pages and a flow of the site, below you'll find an explanation on how the different screens interact between each other.

4. Front-end structure of the site

The main elements of the site consist out of 1 main grid. Below you'll find a short summary regrouping the page and items included for this website. The site will be developed in 1 language: Dutch.

4.1.1 Site url

TBD

Re-directs will be in place to the following URLs:

TBD

4.1.2 The base overview



The base overview (as well as the rest of the screens) is based on the framework impress js. It's a presentation framework based on the power of CSS3 transforms and transitions in modern browsers and inspired by the idea behind prezi.com.

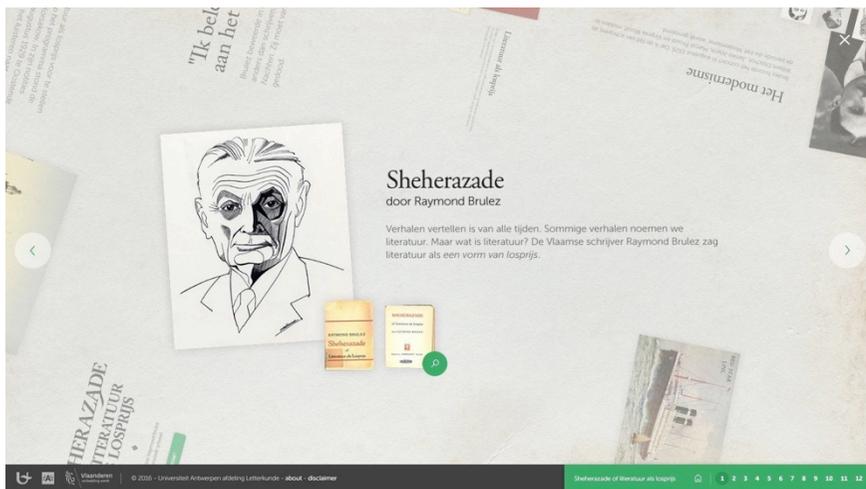
The base overview consists of 2 distinct parts namely the above part where most of the interaction will occur and the footer.

The page will have the following elements, we'll also define in each of those elements, if they are static so they can't be changed or they are dynamic (PHP) so we'll be able to change them easily afterwards in a basic CMS.

- A logo in the middle (static).
- A background image for the site, bear in mind that this background image should support 2560 x 1600 screen size (static).
- A set of links and logos in the footer of the site (static).
- Links towards the different sections in the site (PHP)
- A Facebook-share of the site (static):
 - og:title - The title of your object as it should appear within the graph, e.g., "The Rock" (Static).

- og:type - The type of your object, e.g., "video.movie". Depending on the type you specify, other properties may also be required (Static).
- og:image - An image URL which should represent your object within the graph (Static).
- og:url - The canonical URL of your object that will be used as its permanent ID in the graph, e.g., "http://www.imdb.com/title/tt0117500/" (Static).
- A Tweet for the site (static):
- A text of maximal 180 characters including the url of the action (Static).

4.1.3 Navigating in the site



Navigating through the site will be different on a touch device as on a desktop that's why we'll split this up below:

Desktop; here we'll navigate mainly with a click on the arrows although you'll also be able to click on the articles or on the numbers in the footer. When clicking on the arrows you'll simply go to the next "page/slide" in the story.

You'll also have the possibility to include a sub story/grid (static), this will be triggered with a button in the page/slide. At the end of this sub story you'll end up again on the "page/slide" where you started of that specific grid.

Touch device; here you'll be able to swipe left or right to move to the next "page" in the story, tapping immediately on a different "page/slide" will not be possible. The numbers in the footer will also be accessible.

At the end of the full story you'll simply go back to the first page/slide.

When there is no activity during 5 minutes, the website will immediately go back to the main grid, first slide.

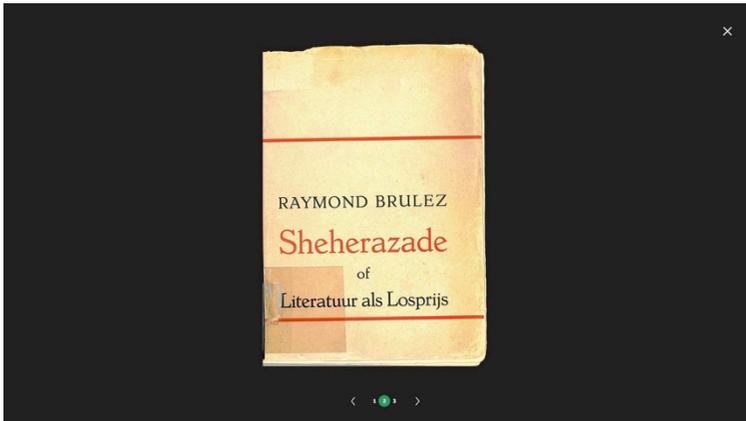
4.1.4 The detail page



A possible detail page consists of the following elements:

- An image (PHP).
- A title (PHP).
- A sub-title (PHP).

- A text (PHP).
- A number of smaller images (max 4) when clicking on them you'll see them full screen (PHP), for this integration we'll be using viewer.js <https://fengyuanchen.github.io/viewerjs/> this will provide a zoom integration of the image.



The image can be left or right from the text.

Inspiratie

Brulez kwam op het idee om literatuur als losprijs voor te stellen tijdens een concert in Oostende. Op het programma stond de symfonie Shéhérazade van Rimsky-Korsakow. In zijn notities schreef hij later: 'Eerste Gedacht: 16 augustus 1929 te Oostende op het klassiek Concert ter Kursaal bij het luisteren naar Shéhérazade van Rimsky Korsakow.'



To integrate the video animations we'll provide a YouTube inlay with the possibility to play this full-screen.

4.1.5 The Share

The share page consists of 2 buttons a button to share your result on Twitter or Facebook, we see as fields on this page.

- An image ending the contest (PHP).
- A title (PHP).
- A description (PHP).
- A Facebook-share of your result:
 - og:title - The title of your object as it should appear within the graph, e.g., "The Rock" (PHP).
 - og:type - The type of your object, e.g., "video.movie". Depending on the type you specify, other properties may also be required (PHP).
 - og:image - An image URL which should represent your object within the graph (PHP).
 - og:url - The canonical URL of your object that will be used as its permanent ID in the graph, e.g., "http://www.imdb.com/title/tt0117500/" (PHP).
- A Tweet for your result:
 - A text of maximal 180 characters including the url of the action (PHP).

4.1.6 About & Terms and conditions page

The about page and the terms & conditions page are both generic pages, with basic content. This is also an overlayer on the site with purely text + back button. This text can be changed via the CMS system.

5. Technical setup

5.1.1 Technical choices

We selected the following front and backend technologies for the development:

backend:

- **Cockpit CMS (<http://getcockpit.com/>)**
Cockpit is a light weight CMS that gives you total flexibility in the implementation trajectory of your site.
- **PDO**
The PHP Data Objects (PDO) extension defines a lightweight, consistent interface for accessing databases in PHP. Each database driver that implements the PDO interface can expose database-specific features as regular extension functions. Note that you cannot perform any database functions using the PDO extension by itself; you must use a database-specific PDO driver to access a database server.
- **SQLite**
SQLite is an embedded SQL database engine. Unlike most other SQL databases, SQLite does not have a separate server process. SQLite reads and writes directly to ordinary disk files. A complete SQL database with multiple tables, indices, triggers, and views, is contained in a single disk file. The database file format is cross-platform - you can freely copy a database between 32-bit and 64-bit systems or between big-endian and little-endian architectures. These features make SQLite a popular choice as an Application File Format.
- **PHP**
PHP is a server-side scripting language designed for web development but also used as a general-purpose programming language.
- **MySQL**
MySQL is an open-source relational database management system.
frontend:

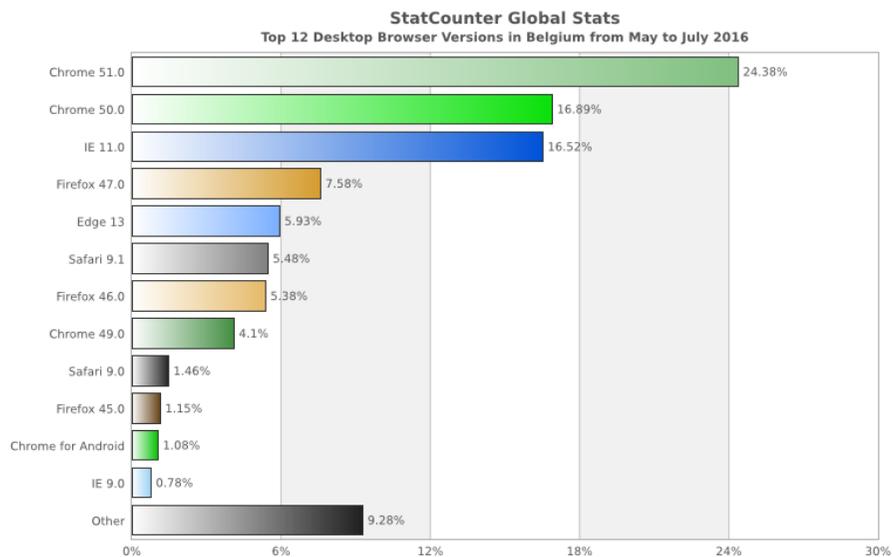
- JavaScript
- JQuery
- React
- Modernizr
- Css
- Sass
- sass-bootstrap

5.1.2 Browser Support

Browsers on laptops and desktops.

The front of this project will be developed mainly in HTML 5, this will only be supported in the most recent browsers. Some functionalities will never the less not be available in some browsers we'll always provide a fallback for these situations.

These are the **statistics for Belgium** for browser used to browse the internet by type and version in the last 3 months.



Layout, design and feature consistency will be available in the following desktop web browsers:

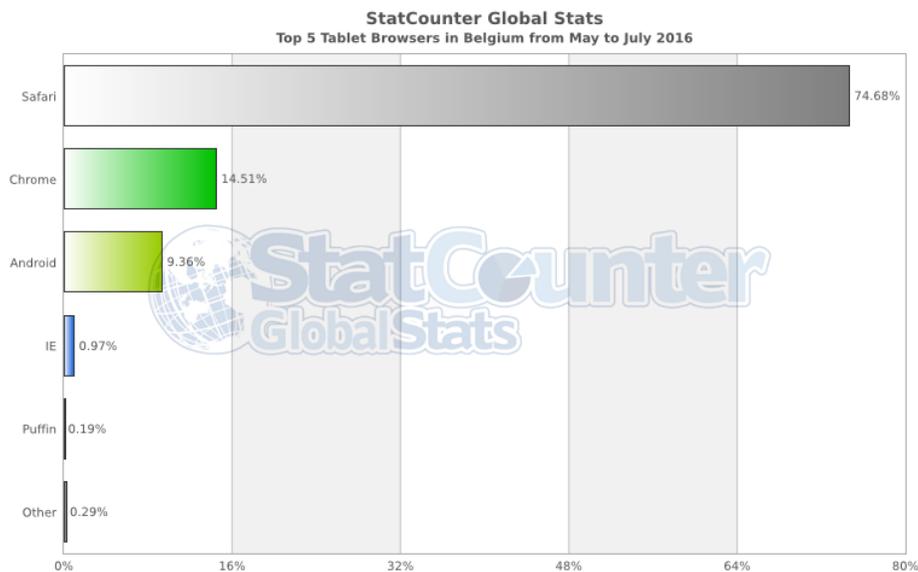
- Internet Explorer 11.0, Edge 13
- Firefox 47.0, 46.0, 45.0
- Chrome 51.0, 50.0, 49.0
- Safari 9.1, 9.0

Support for not mentioned higher versions will be available if those browser versions are available to the general public at the start of the online production.

For the not mentioned browsers and lower versions we'll integrate the **graceful degradation**. This means that the site can look in some edge cases differently but we'll always try to respect as much as possible the initial layout and functionalities bearing in mind the limitations of the browser.

Browsers on Mobile devices

These are the **statistics for Belgium** for browser used to browse the internet by type and version in the last 3 months on tablets



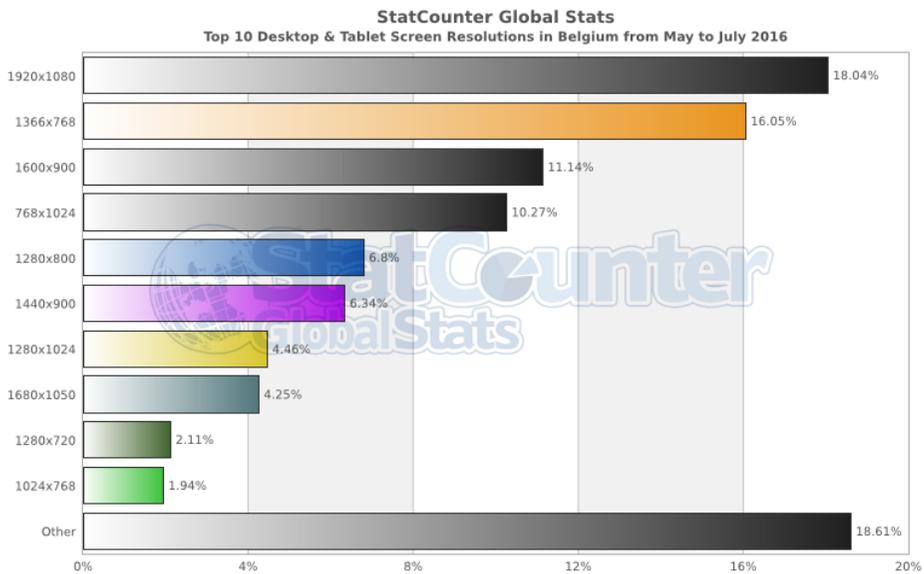
This means we'll support Safari, Chrome and Android with which we'll cover more than 98% of the population. We won't deliver the site on a smartphone as this will not give a satisfying user experience.

5.1.3 Screen resolutions

The choice is made to create the site for desktop screens 1200px, 1024px landscape tablet. This resolution and aspect ratio will fit the larger majority desktops and landscape tablets. For tablet in portrait we'll show a message to turn the tablet in landscape for an optimal user experience.

Live statistics can be reviewed at <http://www.screenresolution.org/>.

These are the usage statistics of popular Belgian screen resolution in the last 3 months:



5.1.4 Presentation of the site on TV Screen

To present the site on a larger screen at the Letterenhuis we'll create a desktop application with electron. This will allow us to have only this site running on the TV screen.

Appendix 5

Brulez Digital Exhibit

The digital exhibit is accessible online at:

<https://brulez.uantwerpen.be/>



