

**ROLES OF ELECTRONIC TEXTS IN
RESEARCH PROJECTS IN THE HUMANITIES**

SUZANA SUKOVIC

A thesis submitted to the University of Technology, Sydney in fulfilment of the
requirements for the degree of Doctor of Philosophy

FACULTY OF HUMANITIES AND SOCIAL SCIENCES

2008

Certificate of authorship/originality

I certify that the work in this thesis has not previously been submitted for a degree, nor has it been submitted as part of the requirements for a degree, except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signature of Student

Посвећено успомени на моје родитеље,

Мирјану и Милорада Шуковића.



Dedicated to the memory of my parents,

Mirjana and Milorad Sukovic.

Acknowledgments

A number of people and organisations have assisted me during my doctoral candidature. First of all, I wish to acknowledge the wise and reliable guidance of my Principal Supervisor, Professor Joyce Kirk, which was instrumental for the development of this thesis. Many thanks are due to my Co-supervisor, Dr Theresa Dirndorfer Anderson, who gave me valuable advice and friendly support. The University of Technology, Sydney granted me a Doctoral Scholarship, which I greatly appreciate. I am also grateful for the financial support for the conference attendance, which I received from the Vice-Chancellor's Conference Fund, the Faculty of Humanities and Social Sciences, UTS and the Association for Literary and Linguistic Computing. I wish to thank the University library staff for providing invaluable help.

This thesis would not have been possible without the study participants. I am indebted to them for their willingness to contribute their time to the study and discuss their experiences. Their intellectual vigour and insights were a constant source of inspiration for me.

I am grateful to many people from the Faculty of Humanities and Social Sciences, UTS who provided their support. Special thanks are due to Dr Michael Olsson for his contribution during a semester when he was Acting Co-supervisor, and to Eva Cox and Jan Houghton for their advice. I value the conversations that I had with many people at conferences. Particularly insightful was a conversation with Professor Dino Buzzetti, who generously shared his ideas with me. I also wish to thank Pat Skinner for her professionalism and efficiency in proofreading the thesis.

Many thanks are due to my friends for their interest in my progress and kind offers of practical help. Finally, my very special thanks go to my husband Zoran and son Milan for accepting my work as part of our family life. I am grateful to Zoran for all his patience and support, and to Milan for making sure that I laughed.

Table of contents

Certificate of authorship/originality

Dedication

Acknowledgments

Table of contents

List of figures

List of tables

Publications arising from the study

Abstract

CHAPTER 1. INTRODUCTION 1

1.1. Origins of the thesis..... 1

1.2. Aims of the study 3

1.3. Overview..... 3

1.4. Significance and benefits..... 5

1.5. Limitations..... 6

1.6. Terminology 7

CHAPTER 2. THEORETICAL FRAMEWORK 8

2.1. The nature of electronic textuality 8

2.1.1. Definition of text 9

2.1.2. Hypertext and multimedia 10

Hypertext..... 10

Multimedia 11

Hybrid object.....	14
2.1.3. Shifting textuality.....	15
Intertextuality.....	17
2.1.4. Textual body and space.....	19
The body	19
Virtual text in virtual space	21
2.1.5. From print to e-text.....	22
The writer	23
The reader, the user.....	24
Transition.....	27
Revealing in technology	29
2.2. Information framework	30
2.2.1. Information and text.....	31
Information, data and knowledge.....	31
Text in information systems.....	35
2.2.2. Holistic view of information processes.....	40
Understanding	40
2.2.3. Social dimensions of information	45
Chatman's theories	47
2.2.4. Information environments.....	50
Information discovery and use.....	51
Knowledge and authority	53
Chapter summary	55
CHAPTER 3. RESEARCH IN THE HUMANITIES	56
3.1. The field of humanities research.....	56
3.2. Research environment.....	57
3.2.1. Working environment.....	58
3.2.2. Community of scholars	58
Citation as a social practice	59

Recognition of digital scholarship	60
3.3. Research process	61
Dynamic process.....	62
3.4. Research practices	63
3.4.1. Browsing and serendipity.....	64
3.4.2. Information sources	66
Primary materials	67
3.5. ICT in the humanities.....	69
3.5.1. Adoption of ICT	69
Acceptance of ICT.....	70
3.5.2. Applications and adoption of e-texts	72
E-text applications in digital scholarship	73
Adoption of e-text.....	75
3.5.3. Electronic research practices.....	78
Information-seeking	78
Informal networks	80
Citation as evidence of information use	82
Authenticity	83
Support for electronic research.....	86
Chapter summary	88
Gap in knowledge.....	88
 CHAPTER 4. METHODOLOGY AND METHODS.....	 90
4.1. Hermeneutic approach	90
4.1.1. Hermeneutics, LIS and computer applications.....	91
4.1.2. Concepts of hermeneutics.....	93
History and tradition	93
Interpretation and understanding.....	94
Play	96

4.2. Research design	98
4.2.1. Methodological approach	99
4.2.2. Approach to data-gathering	100
Choice of data-gathering methods	101
4.2.3. Approach to data-analysis	103
4.2.4. Credibility of a qualitative study	104
4.2.5. The researcher as an interpreter.....	105
4.3. Conducting the study	106
4.3.1. Process	107
4.3.2. Data-gathering: participants.....	108
Identifying participants	108
Protecting participants' privacy	111
Participants' profile	112
Participants' projects	114
4.3.3. Data-gathering: methods	116
Interviews	116
Other methods of data-gathering	119
4.3.4. Analysis.....	122
Transcriptions	123
Analytical process.....	123
4.3.5. Ensuring credibility	124
Chapter summary	126
 CHAPTER 5. RESEARCH RESULTS	 128
5.1. Interactions with e-texts.....	128
5.1.1. Understanding of e-texts.....	129
5.1.2. Interactions with selected e-texts.....	132
Reading and printing	132
Working with oral e-texts.....	134
Making and organising electronic copies.....	134

Developing collections of own e-texts	135
5.1.3. Investigating the topic	137
Searching	138
Netchaining	141
Evaluation and selection of e-texts	147
Investigation of research topic	152
5.1.4. Presenting the research findings	158
E-texts and writing	159
Referencing	164
5.1.5. Experience of working with e-texts	167
E-text and other media	167
Researchers' responses to e-texts	172
5.2. Contributions of e-texts to the projects	176
5.2.1. Research process	176
5.2.2. Uses of e-texts	180
Types of uses of e-texts	180
Complexity of e-text uses	185
Uses and accompanying thoughts and feelings	188
5.2.3. The functions and roles of e-texts in research projects	190
Functions of e-texts in projects	190
Roles of e-texts in projects	192
The roles in research phases	194
5.3. Challenges and aids	196
5.3.1. Electronic environment	197
Search for information in e-texts	197
Availability	200
Accessibility	202
Information overload	203
Presentation of e-texts	204
Technical aspects	206

Skills for working with e-texts	208
5.3.2. Research environment	211
Work setting	211
Research cultures	215
Summary of research results	229
Credibility of the study	230
Research results and knowledge gap	232
Chapter summary	233
CHAPTER 6. DISCUSSION.....	234
6.1. E-texts in research projects	234
6.1.1. Research practices	234
Core aspects.....	235
Netchaining	239
6.1.2. Contributions of e-texts to the projects	241
Research process	241
Uses	243
Roles	246
6.2. E-texts in scholars' information processes	248
6.2.1. Text and information	248
Text as information.....	249
Text as representation	249
Aesthetic as informational.....	252
6.2.2. Hermeneutics and information processes	253
Understanding	254
Ways of knowing	255
Play	256
6.2.3. Social dimensions of information	257
Academic small worlds	258

Authority	263
Historical moment	267
6.3. Electronic textuality	269
6.3.1. Fluidity	270
6.3.2. Embodiment and materiality	271
6.3.3. Dialogue	273
Contribution to filling a knowledge gap	274
Chapter summary	275
 CHAPTER 7. CONCLUSIONS & IMPLICATIONS.....	 277
7.1. Conclusions	277
7.2. Implications.....	278
7.2.1. Implications for system design	278
Approach to design	280
Meaning in the system	286
Root or rhizome	287
7.2.2. Research support.....	288
Support by academic institutions and organisations	288
Support by information professionals	290
7.3. Implications for future research.....	292
Appendix A: Definition of terms	
Appendix B: Ethics approval	
Appendix C: Letter sent to deans	
Appendix D: Call for participation	
Appendix E: Message sent to department heads	
Appendix F: Consent form (Stage One)	
Appendix G: Consent form (Stage Two)	
Appendix H: Interviewing Protocol	
Appendix I: Data-gathering form	

- Appendix J: Confidentiality agreement
- Appendix K: Chu’s model of research phases and e-texts
- Appendix L: Uses of e-texts
- Appendix M: The functions of e-texts and their contributions to the projects

References

List of figures

- Figure 1. Interactions explored in the study
- Figure 2. Logic of meaning (part of the image) (Arakawa and Gins 1988, 78)
- Figure 3. Overview of definitions of information, data and knowledge
- Figure 4. Research phases model (Chu 1999, 259)
- Figure 5. The research process of music scholars (Brown 2002, 88)
- Figure 6. Different uses of researchers’ own digital collections
- Figure 7. Two levels of e-texts uses
- Figure 8. Comments about Support roles
- Figure 9. Comments about Substantive roles
- Figure 10. About the network of ambiguous zones of a lemon (Arakawa and Gins 1988, p. 21)
- Figure 11. Information — data and meta-information — metadata

List of tables

- Table 1. Study participants
- Table 2. Data-gathering summary
- Table 3. Reasons for initiating netchaining activities involving other people
- Table 4. Characteristics of trustworthy e-texts
- Table 5. Uses of e-texts in projects
- Table 6. Roles in research phases

Publications arising from the study

Journal articles

Sukovic, Suzana. 2008. Convergent flows: humanities scholars and their interactions with electronic texts. *Library Quarterly* 78 (3).

— — . 2008. Information discovery in ambiguous zones of research. *Library Trends* 57 (1).

— — . Forthcoming. To see what turns up: uncertainty in the research process. *Information Processing & Management* (Special issue 'Designing for Uncertainty in Information Seeking').

Peer-reviewed conference papers

Sukovic, Suzana. 2006. Electronic texts in the humanities: converging media, formats, practices and ideas. Paper presented at IR 7.0: Internet Convergences, presented by the Association of Internet Researchers (AoIR), at Brisbane, 27 – 30 September. <http://conferences.aoir.org/index.php?cf=5>.

— — . 2007. Scholarly (r)evolution: roles of e-texts in the research process in the humanities. Paper presented at Digital Humanities 2007: The joint international conference of the Association for Computers and the Humanities, and the Association for Literary and Linguistic Computing, 4 – 8 June, at University of Illinois, Urbana-Champaign. <http://www.digitalhumanities.org/dh2007/dh2007.abstracts.pdf>.

Abstract

The focus of this thesis is interactions of scholars with electronic texts (e-texts). Although computer technology has become an increasingly prominent part of various practices, and textual sources have key roles in scholarship, particularly in research in the humanities, interactions of humanities researchers with electronic texts have been only marginally investigated. Scholars in the humanities use a wide range of primary materials, which are essential for their research, but the understanding of their interactions with these materials in electronic form is very limited. This study has explored roles of electronic text in research enquiry in literary and historical studies, and aimed to deepen the understanding of the nature of scholars' engagement with e-texts. The study has focused on the engagement of scholars in literary and historical studies with electronic texts used as primary materials. Researchers in these disciplines are known for their intense use of textual sources, particularly a wide variety of primary sources. A hermeneutical approach and qualitative methodology were used in the study involving interviews and other methods of data-gathering from sixteen academic researchers who discussed thirty research projects. The participants' perceptions of e-texts as fluid entities, which can include a variety of formats and media, underpinned their discussions of engagement with e-texts. The study results revealed a range of scholars' interactions with the e-texts used to investigate research topics and present results of their research projects. The study uncovered four types of uses of electronic texts: Supplementing, Locating, Exploring and Analysing text. The data analysis identified four functions of e-texts in projects: Support in finding documents and information, Aid in managing the research process, Aid in investigation of the topic, and Contribution to writing and presenting research results. Electronic texts played Support and Substantive roles in research projects. Support roles aid in providing the basis for research, and Substantive roles aid in exploring the topic and presenting research findings. The identified uses, functions and roles highlight the multifaceted contributions of electronic texts to all phases of the research process. A number of influences from electronic and research environments were identified as challenges and aids in working with electronic texts. The study findings

are related to considerations of text as information and to social aspects of information processes in academic research, which contribute to theoretical discussions in information studies. The thesis discusses implications of the study for the design of electronic information systems and for the support of research in the humanities. Insights into scholars' research processes and theoretical considerations indicate a number of areas for future investigation.

CHAPTER 1. INTRODUCTION

This work is about the interplay between people, text and technology in the research process. The interplay relates to knowledge production and communication as key issues for contemporary industrialised societies, which are often described as the 'information' and 'knowledge society'. A great emphasis on knowledge and learning is associated with a dramatic impact of ICT (information and communication technology) on knowledge acquisition, production, and sharing. Text and ICT, as key entities in information and knowledge cycles, have been brought together in the composition of electronic text. This study investigates how e-texts (electronic texts) contribute to the process of production and communication of scholarly knowledge.

1.1. Origins of the thesis

Changes in technologies for presenting and transmitting text are associated with significant cultural changes. The print revolution is often mentioned in relation to far-reaching changes brought about by computer technologies. This common comparison signifies that the change in production and transmission of text is a central part of the perceived revolution.

Text is fundamental to scholars in the humanities, whose work is based on studying recorded texts and reflecting on their nature. Jerome McGann, a humanist scholar, wrote: 'Textual studies is ground zero of everything we do. We read, we write, we think in a textual condition. Because that is true, the new information and media technologies go to the core of our work' (McGann 1998, 609).

The origins of this study lie in questions about the effect of text processed and presented by electronic media (electronic text or e-text) on the way in which researchers think about and work with text. In an attempt to uncover a part of the change that involves people, text and technology, the study focused on academic

researchers in literary and historical studies, known for their intense use of textual sources. These scholars have a long tradition of engagement with text in various forms and from all periods, so they are in a position to reflect on the changes. An essential part of their work is a dialogue with texts past and present, which is valuable in considering the impact of the current transition from different perspectives. In modern academia, literary studies include traditional historical, critical and theoretical research as well as creative writing, which provides possible access to changes in creative and analytical approaches to e-text.

The potential importance of investigating interactions of humanists with e-texts has been recognised by a number of authors. Belkin wrote about plans to investigate these interactions: 'By studying humanists, we assume that we will observe behaviors which may not have been observed in studies of scientists, and we will therefore be able to extend our general knowledge of human interactions with text substantially' (1994, 483). Brockman et al. (2001, 30) wrote:

Electronic texts are potentially the most radical element in the construction of the evolving technology environment in the humanities. The explosion of electronic texts promises to alter the way in which scholars conceive of the activity of research in a way paralleled only by similarly major developments in the history of printing...

The need for an investigation of interactions with primary sources in electronic form, which are the basis of scholars' work, was stressed by Plotkin (2002), Neumann (2001, 38) and Wiberley and Jones (2000, 428).

A number of studies have investigated the use of digital resources, but very few have focused on the use of e-texts. Rare studies that did investigate the use of e-texts, especially primary materials, focused on the use of a particular database or an archive. Most of them employed surveys as a way of investigating uses and opinions. Ruhleder interviewed users of *Thesaurus Linguae Graecae* and noted that '[n]ew technologies support particular kinds of experience and shape ways of thinking' (1995, 40). The exploratory approach, which was taken in this study, enabled the uncovering of a range of issues related to scholars' practices and experiences.

1.2. Aims of the study

The aims of the study were to explore roles of electronic text in research enquiry in literary and historical studies, and to deepen the understanding of the nature of scholars' engagement with e-texts. The following research questions guided the development of the study:

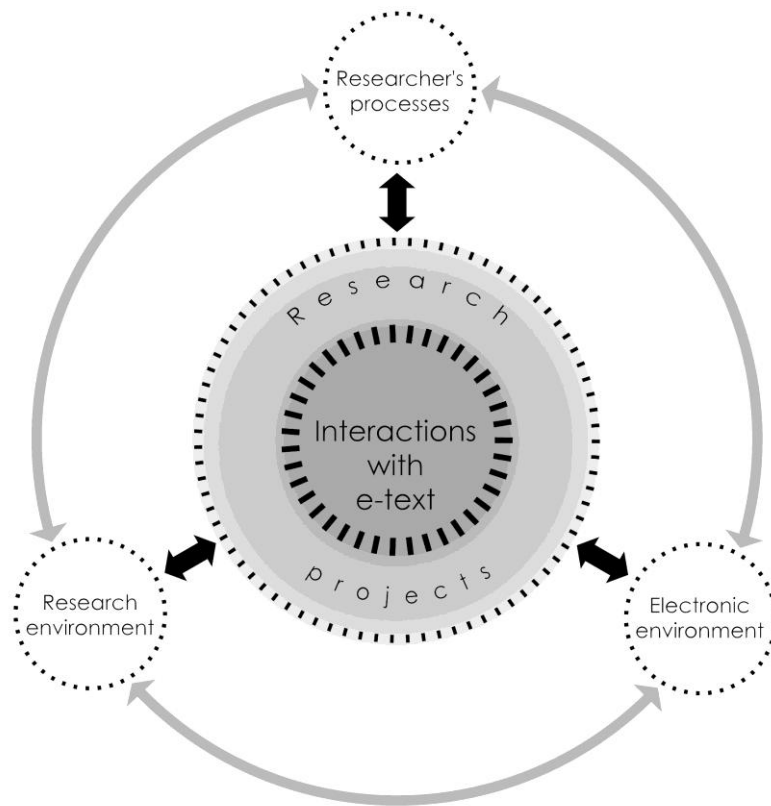
- How do academic researchers in literary and historical studies interact with e-texts?
- What do e-texts contribute to their research projects?
- What are some of the challenges and aids influencing the interactions with e-texts?

The study focused on interactions with electronic texts as primary materials, used as a resource and tool, as opposed to projects that aim to produce electronic textual editions or enhance electronic texts in any way.

1.3. Overview

The centre of interest in the study is humanities scholars' interactions with e-texts in the context of their research projects. These interactions are underpinned and contextualised by research and electronic environments as well as with scholars' research processes, such as their thoughts, feelings and attitudes related to their work. The diagram below (Figure 1) represents the interactions explored in the study.

Figure 1. Interactions explored in the study



The diagram represents issues considered in the thesis. It does not represent the whole reality of the e-text use, research projects or scholars' engagement with electronic information environments. The circles trace the areas of concern, but their size does not represent the importance of the issues. All circles in the diagram are connected to show multidirectional influences. The connections among the circles on the outer edge show their mutual influences, so the research and electronic environments, for example, do not act separately and independently, but inform and influence each other. The dotted lines identifying the circles signify their 'leaky' boundaries. All interactions happen in a dynamic field of multidirectional influences.

Presentation of the thesis

The thesis has six chapters following this *Introduction*. Chapter 2, *Theoretical framework*, provides an overview of the relevant literature in two sections. *The nature of electronic textuality* considers ideas that have preceded or influenced electronic textuality as well

as characteristics of e-texts that distinguish them from text in analogue forms, particularly print. *Information framework* considers key aspects of information processes as well as information provision, and some issues related to information environments.

Chapter 3, *Research in the humanities* defines humanities, history and literary studies, and provides an overview of research processes and scholars' practices. It considers the adoption of ICT in the humanities, particularly uses of e-texts, as well as some issues of working in academic and electronic environments.

Chapter 4, *Methodology and methods*, considers hermeneutical philosophy and methodology as a study approach. It explains the rationale for the study and the way the project unfolded.

Chapter 5, *Research results*, presents the study findings in three sections: *Working with e-texts*, *Contributions of e-texts to the projects* and *Challenges and aids*. Each section relates to one research question.

Chapter 6, *Discussion*, focuses on main issues arising from the study, and considers them in relation to the theoretical framework of the study.

Chapter 7, *Conclusions and implications*, draws conclusions related to the research questions and considers implications of the findings.

1.4. Significance and benefits

The significance of the study lies in its contributions to understanding the interplay between researchers, texts and technology. It also provides insights into research processes, practices, and information behaviour in the humanities. The study contributes to theoretical discussions in the field of information studies, and to practice-oriented considerations of approaches to the design of electronic texts and information systems.

The study contributes to the understanding of scholarly work, including research practices, by exploring various issues related to interactions with e-texts. It contributes

to understanding scholars' engagement with electronic texts. A theoretical contribution of the study is in its application of selected information theories to an understanding of text, and relating concepts of text and information to each other. Theoretical considerations of information concepts and processes in the thesis have been enriched by the connection with the philosophy of hermeneutics. Discussions of the conceptual issues of information theory as well as social, cognitive, affective and technical aspects of information-seeking and use contribute to establishing connections among different approaches to studying information. Finally, the study contributes to discussions about the design of user-oriented systems by considering implications of its findings and the theoretical analysis for the information systems.

Potential benefits of the study will be realised from applying research results to text encoding, development of digital collections, information services, educational programs and organisational approaches to supporting the use of technology in research. The study also contributes to understanding the envisaged scholarly and cultural change catalysed by the information technology.

1.5. Limitations

The study uses a qualitative methodology. The results do not have any statistical significance and cannot be generalised beyond the study data. The selected group of participants was not unique in any way, so a comparison with similar groups of humanities scholars is possible.

A broad investigation of issues may indicate a number of potentially relevant areas for investigations such as digital scholarship, digital libraries or the use of e-books. Although these and some other areas provide interesting and relevant issues for further investigation, they are not included in any detail in the thesis, because the study was conceived as an exploratory investigation in which the issues were determined by its theoretical framework and, most of all, by data gathered from the participants in the study. The fact that the study participants did not bring up some

potentially relevant issues also defines the roles of e-texts in research projects under investigation.

1.6. Terminology

Definitions of terms such as ‘humanities’, ‘text’ and ‘electronic text’ for the purposes of the study are considered in relevant sections of the thesis. Main definitions are provided in *Appendix A*. All references to ‘the scholars’ mean ‘humanities scholars’ unless indicated otherwise.

CHAPTER 2. THEORETICAL FRAMEWORK

The theoretical underpinnings of the study consist of three main elements: electronic textuality, information framework and the philosophy of hermeneutics. The first two will be considered in this section. The third, hermeneutics, provides a methodological framework and it will be discussed in Chapter 4 as the methodological approach. However, the study draws upon philosophical ideas of hermeneutics and the chapter *Discussion* will consider the three aspects of the theoretical framework in relation to each other. A theoretical foundation enables a deeper understanding of various issues of scholars' engagement with e-texts.

The first section, *The nature of electronic textuality*, considers characteristics of electronic textuality in relation to broader thinking about text, and its shift from print as the dominant textual medium over a long period of time. It opens a broad perspective on qualities of e-text that make it a unique entity in the tradition of textuality. The second section, *Information framework*, considers main concepts of information theory relevant for understanding text and research in the humanities.

2.1. The nature of electronic textuality

That word which moves in colour and sound; that codex manuscript which opens up its crumbling leaves exposing intimate details of an old stain and a still bright ornament — exist only in code, electronic impulse and a flickering pixel. Electronic text, wrote Hayles, 'comes into existence as a *process* that includes the data files, the programs that call these files, and the hardware on which the programs run, as well as the optical fibres, connections, switching algorithms and other devices necessary to route it from one networked computer to another' (Hayles 2003, 267). This denies an intuitive inclination to think that text is one of the least mechanical of all human-made objects, although text has never existed without a technological process. A painstakingly prepared surface of a rock, vellum or paper; shaping of a sharp stone, a

feather or a typing machine; the labour and skill involved in making the marks on the surface are all part of textual technologies. The main difference between electronic and other media is that the crumbling pages reproduced by computer codes and electronic impulses cannot be stroked nor further damaged, although they cannot exist in quite the same way in any other medium either. The technological process that enables electronic text underlies its dynamic nature, and makes it very different from text in any other medium: 'Electronic writing is mechanical and precise like printing, organic and evolutionary like handwriting, visually eclectic like hieroglyphics and picture writing. On the other hand, electronic writing is fluid and dynamic to a greater degree than previous technologies' (Bolter 2001, 8).

The main characteristics of electronic textuality, such as hyper-text and multimedia, and the qualities of e-text, such as its changeability and virtuality, will be discussed in this section. The transition from print to e-text will be viewed briefly from the perspectives of the writer and reader/user as a way of highlighting influences of new technologies on the way people write and use text.

2.1.1. Definition of text

The notion of text has been changing since the beginning of the twentieth century to reach a very broad understanding in postmodernism in which the definition of text encompasses linguistic and non-linguistic forms of expression. An understanding of text to be considered in this work is derived from two definitions which see text as an essentially linguistic phenomenon.

Rastier defined text as an 'autonomous linguistic chain (oral or written) that constitutes an empirical unit and that is produced by one or more enunciators in a given communicational situation' (1997, 265). According to Ricoeur, 'a text is any discourse fixed by writing' (1991, 43). For the purposes of this study, text is defined as an autonomous linguistic chain (oral or written) that constitutes an empirical unit, fixed by writing or recording. Textuality is the 'totality of the properties giving cohesion and

coherence and that render a text irreducible to just a succession of utterances' (Rastier 1997, 265).

2.1.2. Hypertext and multimedia

A provision of linkage between two texts and between sections of one or two texts is the most prominent and unique characteristic of electronic textuality that can be observed in almost any text on the Internet. The linkage can include textual segments as well as other media. The ease of combining aspects of different media in a piece of writing and linking textual, visual and sound files are the basis of a number of distinct qualities of electronic textuality.

Hypertext

Landow defined hypertext as 'text composed of blocks of text – what Barthes terms a *lexia* – and the electronic links that join them' (1997, 3). The importance of hypertext goes beyond hyperlinking as a simple line in the code, because it provides the most essential element for constructing outreaching and dynamic texts. The concept of flexible text is not new and it had been used for associative, active and non-linear reading in print form. Some examples are a series of books for children, *Choose Your Own Adventure*, published since 1979, and novels such as Julio Cortázar's *Hopscotch*, first published in 1963 and Milorad Pavić's *Dictionary of Khazars*, first published in 1984. Hypertext pushes the concept of dynamic print text much further by enabling new ways of interacting with a range of texts. Electronic writing acquired its distinct qualities through hypertext as a genre:

We can think of hypertext as a genre or series of genres, including interactive fiction, applications for education and entertainment, Web sites (which themselves constitute many different genres), and so on... Without this [digital] technology, hypertext would never have been recognized as a set of genres (Bolter 2001, 41–42).

Hypertext allows linking between different media, so Landow compared hypertext with Velcro-text 'to which various kinds of materials began attaching themselves' (1997, 168).

Multimedia

Text, image and sound can be combined in novel ways in multimedia works. An important aspect of electronic multimedia is its ability to bring together traditionally separate media forms: 'Central to all definitions of multimedia is the idea that multimedia combines types of information that traditionally have been considered different media and have therefore had different traditions of production and distribution' (Rockwell and Mactavish 2004, 109).

Kress and Van Leeuwen (2001, 1) noted a distinct preference for monomodality in Western culture in the past, so that dense text, for example, was used for the most highly valued genres such as literary novels, academic works and official publications. According to these authors, the preference for monomodality has been changing, and publications, even official documentation, demonstrate care for visual aspects such as colour illustrations, layout and typography. Kress and Van Leeuwen considered differences between multimodality and multimediality:

Radio (which is of course a distribution medium rather than a production medium) is multimodal in its affordances, because it involves speech, music and other sounds; but it is monomedial, since it can only be heard, and not seen, smelled, touched or tasted. Everyday face to face interaction, on the other hand, is both multimodal (it uses speech, non-verbal communication and so on) and multimedial (it addresses the eye and the ear and potentially also touch, smell and taste) (67).

Different meanings of an e-text can be contained in its words, written or spoken, as well as in visual presentation of the text, which may include picture-like formation of the letters, animated text, the use of colours and images. The text can be accompanied or linked with music, film, images or any combination of multimedia. This text can be

seen and heard, the user can use it and experience it through interactivity, but it can never be smelled, touched and tasted.

Image and text

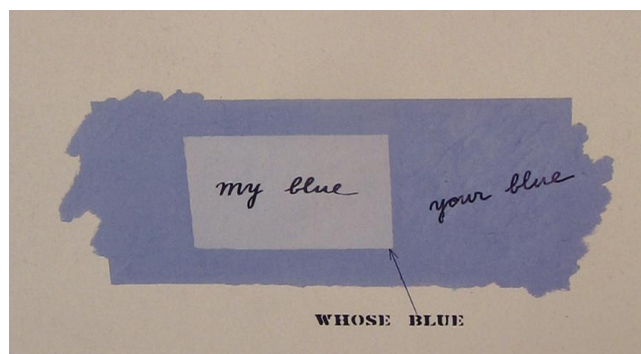
The shift towards multimodality is particularly prominent in the changing relationship between text and image. Kress and Van Leeuwen pointed out that 'writing is itself a form of visual communication' (2006, 17). The relative importance of visual and textual elements depends on a writing technology. Bolter is one of the authors who compared the importance of visual presentation of electronic writing with mediaeval manuscripts. The integration of visual and textual aspects largely disappeared in print when printers separated verbal and pictorial elements (Bolter 2001, 65). During the last century, television, film and video-technology were significant forces in promoting visual modes of expression and communication (Stephens 1998). Warwick (2004, 375) suggested that the popularity of the Web started with the appearance of graphical browsers and access to images. The rise of graphical user-interfaces has the effect of 're-acquaint[ing] us with the power of images, not only as ways of organizing information, but as way of communicating it'. Bolter (2001, 72) observed the way in which images often dominated web pages, so text is presented in the form of messages, and dominated by buttoned-style text, which is about 'writing with images rather than words'. There is an increasing expectation that the designer should present the idea as a graphic, video or audio segment rather than text.

Communication always affects us, even when trying to do the opposite and failing to engage us affectively (Kress and Van Leeuwen 2001, 71). How the change of semiotic mode in presenting a text affects the reader/user is an important question with no clear answer at this stage.

Multimediality and meaning

The modality of media influences the construction and communication of meaning. Images are polysemous and there is no clear understanding of how to read them, argued Barthes. The linguistic message used with image(s) aids the choice of 'the *correct level of perception*, permits me to focus not simply my gaze but also my understanding' (Barthes 1977, 39). However, language clarifies in a selected way by referring only to some signs of the iconic message (40). Kress and Van Leeuwen (2006, 18) thought that Barthes missed 'an important point: the visual component of a text is an independently organized and structured message, connected with the verbal text, but in no way dependent on it — and similarly the other way around'. The ability of pictures to provide a unique way of expressing subtleties and variations of meaning that cannot be expressed in a linguistic mode is illustrated in the image bellow (Figure 2).

Figure 2. Logic of meaning (part of the image) (Arakawa and Gins 1988, 78)



The image in Figure 2 shows that the shade of colours associated with the word is not always the same. Different languages and individuals may assign somewhat different meanings to the word for a colour. However, the word 'blue' transcends 'your blue' and 'my blue' to refer to the idea of blue. 'Writing's great limitation grows out of its great strength: its abstractness' (Stephens 1998, 63). Stephens also wrote:

Printed words may take us, metaphorically at least, 'behind a face'; they can help us see what we might not ordinarily see in a face; but they must work hard to tell us what a glance could about the expression on that face. In interpreting

the code we make little use of our natural ability to observe: letters don't smile warmly or look intently (1998, 63).

E-text can combine the linguistic, visual or musical expressions of the idea of a warm smile or the colour blue with their specific instances. Multimedia has the ability to extend meaning by bringing different fields of meaning and different expressive abilities together. Smith wrote that a 'more radical approach to the co-presence of words, sounds and image is ... that of "semiotic exchange": the negotiation of different media so that each takes on the others' characteristics and cultural connotations' (Smith 2004, under 'From Analogue to Digital: the technowriter'). Semiotic exchange is not about just bringing different formats together, but about the way they are shaped by each other: 'A text then may start to behave as a visual object, or a sound may start to assume much more a semantic content, or the continuum between word and sound, or words and image, can be more extensively explored'. The presence of other media with and around text changes its meaning. Multiplicity becomes part of its semiotic field.

Hybrid object

E-text, characterised by multimedia and multifunctionality, can be seen as a hybrid object. The concept of 'hybrid objects' has been discussed in the literature, but the focus here is on the understanding presented by psychiatrist Akhtar: 'While the concept of something being hybrid comes to us from the biological world, it is no less applicable to inanimate objects. Physical objects that are composed of diverse materials and have their origin in disparate technologies also qualify to be called "hybrid"' (2005, 119).

Akhtar described 'four types of inanimate mongrels' (2005, 120):

1. multi-ancestral objects are heterogeneous in origin or composition, so different materials compose one object
2. multifunctional objects perform two or more functions (for example, cell phones that take pictures and send e-mails)

3. multiformal objects can change shape (for example, modular objects like modular sofas)

4. multicontextual objects involve a new and previously unintended use of a familiar object; the object 'performs that particular function in a way that enlarges its context' (Akhtar 2005, 122).

E-texts fit Akhtar's description of hybrid objects. They are:

1. multi-ancestral because they combine different media and formats (for example, the word 'music' on a music web site can be written in a sentence, shaped in the form of a guitar or sung in a music clip)

2. multifunctional (for example, a music web site provides information in written text and songs; communication by providing discussion forums and feedback options; entertainment by offering songs, video-clips and interviews)

3. multiformal (for example, a music database responds to a query by assembling text in response to the query; the user can copy and manipulate written and oral passages according to a specific need)

4. multicontextual (for example, journal articles from a database are not only read, but they are also searched, downloaded and used in different contexts such as circulation among a group of people, and inclusion in an online subject guide or personal digital library).

Multimediality is the basis for e-texts as hybrid objects, which invite semantic exchanges. Responses to hybrid objects in general and to e-text in particular will be discussed at the end of this section in relation to the transition from print to e-texts.

2.1.3. Shifting textuality

E-text is easily changed, moved and sometimes lost, which makes it appear mutable and unstable. However, text is changeable and mutable by nature whatever the medium. Marks on stone and clay tablets were scrapped so that new text could be

engraved, tablets were broken and parts of texts disappeared; manuscripts were copied with textual alterations, then damaged or lost, only to be recreated from found pieces, memory or imagination; histories were shaped on the basis of altered documents and then copied to teach many generations. What is well known about text only confirms what most people take as common sense — everything changes and evolves. Heraclites and later proponents of dialectics made a strong imprint on our thinking by making us see the truth of *Panta rei* in everything we observe.

In the long history of human thought dealing with transformation, Greetham (1997, 200) saw two essential positions — an understanding of change as death or as an energising force. Transformations brought by computer technology are part of humanity's history of dealing with change: 'The morph is thus not something *added to* our human condition by technology, and specifically by digitization, but is already deeply embedded in both our hopes (our progressional, ameliorative mode) and our fears (our acknowledgement of mutability and 'nature corruptible') ...' (Greetham 1997, 221).

Print as a medium inherited textual mutability, but it emphasised aspects of textual fixity and stability. Because it is expensive to print and difficult to organise many variations of the same text in book form, print requires one central text. Scholarly and popular editions are all based on a central text, possibly accompanied by notes and interpretations of excluded variants. There are several approaches to textual editing, but re-construction of author's intended text has been the dominant approach, particularly in literary editing.

Before the advance of electronic textuality, postmodern and feminist thinkers challenged the conception of authoritative texts, the importance of authors' intended meaning and standard reading. Ryan (1999b, 100-101) pointed out that postmodernists and their predecessors as well as feminists talked about networks and access to text by several entrances, where none was declared to be the main one. Intertextuality, reading as 'exploding the text', and the death of the author were all part of a cultural milieu before electronic textuality, challenging the notion of the stable central text.

Intertextuality

The concept of intertextuality is particularly relevant for considerations of e-texts, because hypertextuality and multimedia emphasise and develop textual connections and polysemy, which are the central ideas of intertextuality. Nelson (2001) traced the most direct line of development of the concept from Russian formalists, via Bakhtin, to Julia Kristeva. Bakhtin's ideas were 'synthesized with (post)structuralist notions as Kristeva and her colleagues produced their extension' (Nelson 2001, 391).

Textual connections appear in what Kristeva described as three dimensions or coordinates of dialogue: '... writing subject, addressee, and exterior texts. The word's status is thus defined *horizontally* (the word in the text belongs to both writing subject and addressee) as well as *vertically* (the word in the text is oriented toward an anterior or synchronic literary corpus)' (Kristeva 1980, 66). Nelson summarised the role of intertextuality in the contemporary thought:

Now poststructuralism (and, with it, the concept of intertextuality) has been appropriated in various disciplines from history to psychology, from education to computer science. In computer science, for instance, some have synthesized intertextuality with the theoretical aspects of hypertext. For instance, George Landow (1992) has argued that hypertext is the 'literal embodiment' of intertextuality (2001, 391).

Visual aspects contribute to making connections explicit. Mapping in the electronic writing can become a collective effort as different readers add to the text: 'This tradition, this passing on of the text from writer to reader, who then becomes a writer for other readers, is nothing new; it is the literal meaning of the word "tradition"' (Bolter 2001, 179). The previous texts were also part of textual connections, but '[w]e are now using the computer to simplify the technology of intertextuality so much that we seem to be refashioning the idea of tradition itself' (Bolter 2001, 179).

Ambivalence and carnival

Kristeva explained Bakhtin's literary theory in which 'any text is constructed as a mosaic of quotations; any text is the absorption and transformation of another. The notion of *intertextuality* replaces that of intersubjectivity, and poetic language is read as at least *double*' (Kristeva 1980, 66). This leads to the concept of ambivalence: 'The term "ambivalence" implies the insertion of history (society) into a text and of this text into history; for the writer, they are one and the same' (Kristeva 1980, 68). Ambivalence is related to the polysemy of poetic language, which cannot be formalised according to the logical (scientific) procedures. Literary semiotics requires a 0—2, instead of a 0—1 interval. 'The only discourse integrally to achieve the 0—2 poetic logic is that of the carnival. By adopting a dream logic, it transgresses rules of linguistic code and social morality as well' (70). It means obeying another law. The carnivalesque structure exists only 'in or through relationship' (78). In Western culture, it is present 'as an often misunderstood and persecuted substratum' (78) noticeable in folk games, mediaeval theatre and prose. The polyphonic novels of Rabelais, Swift, Dostoevsky, Joyce, Proust and Kafka, for example, have a carnivalesque structure, explained Kristeva (79—80). Connections among online content produced by anyone regardless of, and sometimes despite rules that govern the society have a carnivalesque structure.

Kristeva discussed Menippean discourse as a particular aspect of textual dialogue, which emphasises 'the text as social activity' (Kristeva 1980, 82). The tradition of Menippean discourse includes stories about adventures in the underworld, and it 'is both comic and tragic, or rather, it is *serious* in the same sense as is the carnivalesque; through the status of its words, it is politically and socially disturbing' (82). Menippean discourse 'is an all-inclusive genre, put together as a pavement of citations' (83), and characterised by multistylishness and multitonality.

Co-existence of a variety of texts with different origins, polysemy of connected texts, visual images and multimedia — all form a ground for the growth of intertextuality and carnivalesque structures. Shifting and instability are part of the dynamics of electronic text, which takes mutability and connectedness, inherited with the textual tradition, as its organisational principle.

2.1.4. Textual body and space

Texts are reflections of our minds not only in general and abstract but also in intimate and physical ways. English syntagmas 'body of the text' and 'type face' point to the animated nature given to text, and to an associative connection between a sense of our physical self and material form of text. People's attitudes to their bodies have gone through radical cultural changes over the last several decades and the same has happened to the notion of text as an intimate mirror and extension of the mind.

The body

The correctness and integrity of the central authoritative text has been compared with attitudes to corporal chastity. A number of authors have challenged the notion of textual correctness and purity. Flanders, director of the The Women Writers Project, outlined the connections between gender relations, body and editorial practices:

Thus the error-ridden manuscript is figured, in the rhetoric of the humanist scholar, as an unchaste female body which has suffered 'corruption'. ... The remedy is a 'castigation' — literally, a making chaste — whereby the scholar restores the true readings, measuring the document against the authorial, universal text and eliminating deviancy; both the standard of reference and its champion are male agents within this dynamic (Flanders 1997, 129).

Grigely (1995) compared eugenics and its quest for purity and perfection with textual practices, which seek pure authorial text and track damages done to the text by unauthorised changes. Greetham (1997, 204) saw the history of textual debate 'in terms of a struggle between text as *textile* (woven, indeterminate, cross-referential) and text as *textus*, text as *the Scriptures*'. Hypertext and electronic textuality 'must therefore be seen as part of an epistemic history of two thousand years and more, in which the morph has been feared as the sign of our corruptible nature and/or embraced as the energy driving the citational ethic of the (inter)text' (Greetham 1997, 204).

Hypertext may be the final answer in this debate. Many theorists have emphasised the need for expression of textual diversity, both in terms of existing editorial practices and

representation of the transformative nature of the text (McGann 2001; Flanders 1998; McCauley 1998). Although there are many questions to be answered (how to distinguish between corruption and transformation; how to work with textual morphs in binary codes and within scholarly tradition), it appears that the essence of the textual body is in its many disguises.

Physical body

The transfer of a textual body from a physical carrier such as a book to electronic waves and codes has been very significant for the perceptions of e-texts. Akhtar (2005, 28) wrote that people need things not only for their usefulness, but for their emotional value as well. Keep reflected on a symbolic value of the book as a physical object:

The codex book is an exemplary fetish object. ... Held in the hands, its pages caressed and turned, or even flung away like a lover scorned (and it is significant in this regard that one of the most oft-repeated complaints about electronic texts is that 'you can't take them to bed'), the book is a reassuring comfort to the ego's deep-seated concerns for its own illusory integrity (Keep 1999, 167).

The immaterial body and technological nature of e-texts can be related to the perceptions of the limitations of one's own body. Akhtar wrote that people need fewer things as they age, but they become more dependent on them: 'We rely on canes, wheelchairs, diapers, pillboxes, and dentures for our safety and well-being. Ultimately, we may find ourselves relying on machines for our existence. The end forces us to say good-bye to the world of things' (2005, 27). Landow considered the resistance to technology by looking into the meaning of technology as a bodily extension and prosthesis:

Transferring the term *prosthesis* from the fields of rehabilitation ... gathers a fascinating, appalling congeries of emotion and need that accurately conveys the attitudes contemporary academics and intellectuals in the humanities hold towards technology. Resentment of the device one needs, resentment at one's own need and guilt, and a Romantic dislike of the artificiality of the device that answers one's needs ... (Landow 1997, 274-275).

Haraway (1991a, 152-153) wrote that machines in the late twentieth century made distinctions between natural and artificial, mind and body particularly ambiguous. Not only are so-called natural objects socially constructed (Haraway 1992) but the distinctions between bodies, technological and biological, animal and human, are increasingly unclear (Haraway 1991a). The last point has a special meaning in dealing with digital technology. In the realm of information and computer studies, from investigations aimed at developing tools that will closely mimic and enhance the way humans operate to attempts to develop artificial intelligence, humans and machines are appearing as actors whose independent roles are increasingly difficult to define. Considering that writing, power and technology are 'old partners in Western stories of the origin of civilization' (Haraway 1991a, 153), the transfer of writing to the silicon chip has a particular significance for the perceptions of self and power relations.

Virtual text in virtual space

The word 'virtual' has several layers of meaning, all reflected in the notion of virtual as electronic. Ryan (1999b) explained that 'virtual' came from Latin *virtus* — strength, manliness, virtue. In scholastic Latin, *virtualis* designates the potential. In the eighteenth and nineteenth centuries, virtual became an opposite to real: 'the virtual becomes the fictive and the non-existent' (Ryan 1999b, 89).

In addition to 'potent', 'potential' and 'non-existent', 'fake', 'virtual' also means 'almost' and 'real in every important aspect': 'The notion of the virtual which the electronic world has brought to popularity thus hovers in an odd state: "virtual reality" could mean "not-quite-reality" or "reality in every important respect"' (Flanders 1997, 127). Haraway thought that 'the virtual has effects by seeming, not being' (1992, 324-325).

Virtual technologies have become 'virtualising' technologies (Ryan 1999b, 88). Electronic texts have become virtual texts under the 'virtualising' effect of electronic technology. A transfer from 'electronic texts' to 'virtual texts' has relevance for the perceptions of electronic texts. Electronic texts are 'potent' in the sense that they can be

more than print, written or spoken texts. They are 'potential' because their full capacity has not been explored and revealed yet. They are also 'fake' because they are different from 'real things' people know, but also because they do not have physical bodies which we can touch or smell. They 'seem to be' because they can disappear and they can be perceived by sight and hearing, but their existence cannot be confirmed by other senses. At the same time, they are 'almost' real and 'real in every important sense'.

Like a physical environment, the electronic environment is situated in space — cyberspace or virtual space. Even before three-dimensional and animated digital images, the electronic environment was conceptualised in spatial terms. Nunes (1999) recognised 'two very different figurations of virtual topography: one that is fluid, plane-oriented, and unbounded; the other that is linear, point-oriented, and Cartesian. These two figurations of space correspond to Gilles Deleuze and Felix Guattari's description of smooth and striated space' (62). Striated spaces present a structured information environment where movements happen in an orderly fashion from one node to another. Smooth and striated spaces are often described in oppositions, such as wild—controlled and unregulated—regulated domains.

Thinking of the electronic environment in spatial terms influences the perception and construction of electronic textuality. The perceptions of the electronic environment as a virtual space and of a text as a virtual entity underlie attitudes to media and approaches to the design. A pure body of the text or one open to all changes and influences, a solid fixed body or one that is fast and dispersed like light, followed as posts on a virtual superhighway or surfed as ocean waves — are all metaphors for different ideas about what e-texts are and what they should be.

2.1.5. From print to e-text

The electronic text and the extent of its shift are perceived from the vantage point of the print text as a dominant medium over a long period of time. The current generation of writers, artists and scholars who are working on the theory and practice of electronic textuality was culturally defined by the print tradition, which still has a very strong

hold in all literate cultures. This section considers the writer, the reader or user of e-text as well as reactions to the changes of media.

The writer

The approach to writing depends on a genre. Bolter pointed out that, generally, hierarchical and linear organisation has been expected from essays, scientific articles and reports. E-text provides a means of breaking away from the practice of linear writing:

A hypertextual essay in the computer could in fact be fashioned as a dialogue between the writer and her readers, and the reader could be asked to share the responsibility for the outcome. Instead of one linear argument, the hypertext could present many, possibly conflicting arguments. Hypertext could therefore redefine scholarship in a way that reveals what Sontag has called the 'impossibility or irrelevance of producing a continuous, systematic argument' (Bolter 2001, 112).

However, this opportunity has been rarely taken. According to Bolter, writing is a culmination of scholarly research, and the way it is presented is more than a matter of style. 'In order to be taken seriously, both scholarly and scientific writing must be nonfiction in a hierarchical-linear form' (Bolter 2001, 105). Although the notion of the single authorial voice has been challenged for several decades, very few scholars, poststructuralists and postmodernists included, 'have been willing to challenge the voice of the text by experimenting with hypertextual form.' (112). The writer of a formal text still speaks in an apparently single voice and takes responsibility for the writing.

A promotion of visual elements in e-texts has not been perceived as advantageous in a culture where a serious argument has to be developed in verbal form. Bolter wrote that the success of the World Wide Web, based on borrowing from print as well as graphic design, photography, film, and television, had promoted its wide use, but tended 'to devalue the Web for many scholars in the humanities, especially those influenced by French theory with its tendency to distrust visual representation ...' (Bolter 2001, 113).

Even cultural studies that examine modern media write about it in print essays, noted Bolter.

Fictional and less formal writing has been more open to the possibilities of e-text than academic writing. Ryan (1999b, 101-102) considered opposing characteristics of print and electronic textuality, such as authorial authority versus reader freedom, text experienced as depth (immersion) versus text experienced as surface (surfing), solidity versus fluidity, and asserted that taking a position on one side or another had missed the point: 'Hypertext theory has too often resorted to an "End of the Book" rhetoric that doomed to extinction the pleasures and modes of thinking associated with the print medium' (Ryan 1999b, 104). Linear writing and reading, the strong authorial voice and reader's immersion in a print novel have been viewed as part of the literature that has been surpassed by flexible, open-ended writing and reading, better suited to contemporary sensibilities. Ryan predicted that computers would eventually replace books for the purposes of disseminating knowledge, but she argued for the acceptance of the aesthetic potential of writing for both print and e-media.

Ryan's argument for the acceptance of different styles of writing is supported by the experience with fictional, and to some extent, scholarly literature. There are times of sweeping changes when writers proclaim a definitive split from the preceding literature, but some literary works remain constantly present through time or they are forgotten and rediscovered through accidents and changes in aesthetic perceptions. 'One of the dependable things in life are the delights of literature', are words written by Sei Shonagon in pre-Gutenberg Japan and displayed on screens world-wide in a Greenaway film *The Pillow Book*, for reading and viewing pleasure of the audience ten centuries later (Greenaway 1997).

The reader, the user

E-texts are usually viewed on screen of a computer or e-book reader, but they can be potentially viewed by using any other electronic device that can display text.

Prolonged reading from a screen is difficult and, as has been repeatedly pointed out, the reader cannot easily take a computer to bath and bed.

Reading an e-text is different from reading a printed text. Scholars are less likely to read books online for a long period of time, but they use them for browsing and searching (Summerfield, Mandel, and Kantor 2000, 47). Brown found that sequential reading, cover to cover, had been used less often than segmental reading: 'Readers of digital text search, scan, select, cut, paste and create a "personal library" of related files that hold their citations and texts.' (Brown 2001, 395). Searching capability is a prominent feature of e-texts, and Flanders thought that it was a form of reading 'that cuts completely across the grain of concepts like intention, narrative, genre, and even syntax, although it may yield insight into any of these' (Flanders 2002, 55).

Visual displays aid interactions with e-texts. Bolter wrote about the opening of different screens and their changeable layouts, in which the movement carries meaning in a hypertext:

In a conventional printed text or manuscript, although the reader's eye moves along the letters and possibly back and forth among images, the letters and images themselves are static. In an electronic text, however, both the reader's eye and the writing surface can be in motion. Electronic readers therefore shuttle between two modes of reading, or rather they learn to read in a way that combines verbal and picture reading (Bolter 2001, 68).

Visual elements can aid the interpretation of text. Warwick wrote about visual representations of textual information, such as a 3D model of Dante's *Inferno* or graphical mapping of literary texts:

A very new view of the information in the text is created, but the effect of it, at least on this reader, is to make her wish to return to the text itself in printed form, and to read it with new eyes. The digital resource has therefore not made reading redundant, but helped to suggest new avenues of interpretation (Warwick 2004, 375).

The relative flexibility in configuring one's own textual space makes the relationship between background and foreground material less relevant, because the user can decide about the focus (Warwick 2001, 54).

Electronic media are conducive to establishing connections. The speed of retrieval and quantity and range of materials that can be brought together are often mentioned as the greatest advantages of electronic editions. The speed is not only a matter of convenience, because 'for human memory, speed of access is crucial. It often makes the difference in whether self-organizing processes spontaneously emerge or not' (Hayles 1999, 215). On the other hand, the ability to discover links between texts and collect materials according to the user's own interests cannot replace intellectual processing. According to Sutherland, the visual cortex is faster than that part of the brain that reads. 'There is the threatening possibility that in its display of instantly accessible and multiply manipulable data, the computer screen will deliver information from the constraints of understanding' (Sutherland 1997, 10). Hockey warned against presenting many versions of the text without editorial annotations or navigational tools:

This has been hailed as empowerment of the reader, but more often than not it can lead to confusion: the reader knows what to do with a book, but is much less sure about what to do with electronic information unless it is something very obviously searchable such as a reference work (Hockey 2000, 133).

The expectation of an instant connection makes it much easier for the reader/user to miss some relevant texts. When 'some connections require no more effort than does continuing to read the same text, *unconnected* texts are experienced as lying much further off, and availability and accessibility become very different matters' (Landow 1997, 286). Some readers would not look for anything that was not appearing on the computer screen (Litz 1996, 248).

Saying that someone would easily miss or find relevant texts and that the interaction with e-texts will aid or inhibit intellectual processing is referring to the way texts are being searched and used. Duggan wrote about the use of an electronic edition: 'It matters little that no one is ever likely to want to *read* all fifty-four documents. Many will want to *use* them' (1996, 83). The line between the activities of using and reading

the e-text has become very blurry. Although people use and read books in different ways as well, the options for interacting with a book are quite different from using and reading an e-text. Using e-text involves active searching, interaction, watching, different ways of reading textual and visual signs, downloading and manipulating text, and only occasionally sequential reading.

Transition

As mentioned earlier, the transition to e-text is viewed in relation to print as the dominant media, because anything new in human experience is perceived and judged in the context of previous values and events: 'It is from the depth of a certain culture that I approach a new object of the culture. As a result pre-comprehension and prejudice are necessarily a part of comprehension (Ricoeur 1991, 446). The process of transfer to a new technology affects print as older technology as well. Not only is the print tradition the basis for electronic writing, but electronic textuality influences changes in the older medium because 'printed materials find it necessary to compete against digital technologies in order to hold their readers' (Bolter 2001, 46)

Bolter noted a popular claim that print is a simple and natural medium (Bolter 2001, 46). It is the print's 'simplicity' and 'naturalness', resulting from the tradition of using books, that form a background against which the mechanical and hybrid nature of e-texts is perceived.

Reactions to the transition

In this section, e-texts were viewed as hybrid objects because they have heterogeneous origin and composition, they are multifunctional, multicontextual and can change shape (see p. 14). Akhtar wrote that

... the invention of a hybrid product, regardless of it being in the realm of mythology or technology, is invariably bold on the creative front, economical on the functional front, and exhilarating on the emotional front. It captures what is the most pure, wide-eyed, and childlike in us. It says that elements that seemed incompatible can actually be combined to beneficial effect. It reminds

us that more is possible and that the constituents of novelty are at our disposal all the time (2005, 127-128).

Hybrid objects bring hope because they offer a possibility of uniting what is divided and separate, they open new views to imagination, but they also destroy the order of things, wrote Akhtar. Migration, globalisation and cultural diffusion via the Internet became a threat to the tribal and regional, so globalisation and fundamentalism are both tendencies on the rise (Akhtar 2005, 134).

The aspects of promise and wonder as well as destruction and threat are present in reactions to electronic textuality. On one side is nostalgia for the more thoughtful and intelligent world of print epitomised by writings of Sven Birkerts:

My core fear is that we, as a culture, as a species, are becoming shallower; that we have turned from depth — from the Judeo-Christian premise of unfathomable mystery — and are adapting ourselves to the ersatz security of a vast lateral connectedness. That we are giving up on wisdom, the struggle for which has for millennia been central to the very idea of culture, and that we are pledging instead to a faith in the web (Birkerts in Unsworth 1996, 234-235).

Birkerts worried about relativism in the postmodern era and the absence of leadership. Technology is not the only one to be blamed, but it is an important influence. Most writers who do not share his views pointed out that Birkerts's opinions would not be worth much discussion if they were not shared by many and, very importantly, seen as representative of the humanist perspective (Unsworth 1996). Unsworth recognised the same fears in the discussions he had at various American universities. The common denominator is a fear that the quantity will replace quality, that 'as scholars, teachers, as human beings, we stand to lose our mysterious uniqueness — or, what comes to the same thing, that this uniqueness will no longer be honored — in the new technological landscape' (Unsworth 1996, 236). Although this was written more than a decade ago, there are indications that the observation is still relevant.

On the other side is an excitement about the most prominent cultural project since Gutenberg's invention of print: '... we stand on the verge of a major reconceptualization of the nature of text, that like printers in the age of the

incunabulum, we are initiators of a vast cultural project, the ultimate ends of which we cannot see' (Duggan 1996, 77). The text of all texts is at our fingertips. Ryan called it 'The dream of the text as sum, or every text in one': 'In the electronic age, thanks to the hyperlink, the text literally becomes a matrix of many texts and a self-renewing entity. We need to look no further than the World Wide Web to find the text that contains all others' (Ryan 1999a, 14).

Electronic technology has introduced significant changes: 'No wonder polarized camps of hybridization and fundamentalism have sprung up everywhere. ... Donald Winnicott's celebrated phrase "There is no originality except on the basis of tradition" comes to mind in this context' (Akhtar 2005, 135). As time passes, there has been a growing acceptance of the change as well as an understanding that the print cannot disappear — 'for whatever happens in the future, whatever new electronic poetry or fiction gets produced, the literature we inherit (to this date) is and will always be bookish' (McGann 2001, 167).

The comparisons with technologies of the past, and the recognition of similarities between e-texts and mediaeval manuscripts are some of the reminders that in human development as individuals and species, the previous phases are rarely lost. Electronic textuality bears the imprint of previous texts which shapes it, alongside innovation.

Revealing in technology

Electronic text as a technology is based on major changes in thinking during the twentieth century, which encompassed shifts in ideologies, philosophy, literature and the arts. The innovation behind electronic text reveals historically grounded ideas. As Heidegger poignantly said, 'the essence of technology is nothing technological':

Because the essence of technology is nothing technological, essential reflection upon technology and decisive confrontation with it must happen in a realm that is, on the one hand, akin to the essence of technology and, on the other, fundamentally different from it. Such a realm is art (Heidegger 1993, 340).

Electronic textuality, which is based in thinking about literature and art, and which has enabled new ways of combining literature and visual arts, has a unique revealing potential. Technology on which e-texts are based highlights underlying social connections:

... the more science and technology develops, the easier it is to physically trace social connections. Satellites, fiber optic networks, calculators, data streams, and laboratories are the new material equipment that underline the ties as if a huge red pen was connecting the dots to let everyone see the lines that were barely visible before (Latour 2005, 180-181).

Haraway (1991b, 194) thought that histories of science could be told as histories of technologies that tell elaborate stories about ways of life, social orders and perspectives. Text in the electronic medium underlines inherited cultural tradition as well as the impulse for experimentation and change. Electronic text further blurs the boundaries between text, image and sound, as well as the divisions between authoritative and non-authoritative text. It promotes novel ways of producing and using the text. The changed text is a hybrid object and a catalyst of opposing tendencies for preservation and change that are shaped by a variety of other influences and interpreted from different perspectives. In the exploration of influences on scholars' interactions with electronic texts, these texts become a big red pen that highlights some features of the academic humanities today.

2.2. Information framework

This section discusses some relevant information theories, which provide an approach to considering e-texts and researchers' interactions with them from an information perspective. A consideration of basic concepts such as information and data aids the identification of gaps in the current understanding of text. Information processes are discussed in relation to understanding as individual construction of meaning and in relation to social dimensions of information, which provide an approach to considering researchers' information processes. Finally, information environments are examined by looking into some issues of information discovery and use as well as knowledge and

authority. This section establishes the ground which will be revisited from different perspectives — text, research processes, social context and the electronic environment.

2.2.1. Information and text

The consideration of meanings of fundamental concepts such as information, data and knowledge as defined by information studies sets the scene for viewing text in the information framework. The overviewed definitions from information studies will be compared with understandings of information and text for computer-processing in the humanities. These views will be considered again later in the *Discussion*. Theoretical considerations of information and text have practical implications for approaches to information design, provision and access.

Information, data and knowledge

The idea of form and structure is central to the understanding of information from its origins in the Latin word *informare*, meaning ‘to give form to, describe’.¹ Capurro and Hjørland outlined the long history of the concept of information, and pointed out that ‘informing’, as formation ‘of the mind or character, training, instruction, teaching’, as defined by the *Oxford English Dictionary*, have origins in the 14th century (2003, 353). Derrida (2001, 351) wrote that the concept and the word ‘structure’ are as old as the *epistēmē*. Bates (2005) accepted Edwin Parker’s definition: ‘*Information* is the pattern of organization of matter and energy’ (under ‘A definition of information’) and called it Information 1. Bates (2006) pointed out that the stress is on patterns of organisation. Hayles (1999, 209) also commented on patterns as a defining element of information.

For Bates, the word ‘information’ implies structure and formation in a sense of patterns of organisation in the physical world and a mental construction of meaning and knowledge (Bates 2005). Bates called Information 2 ‘some pattern of organization of matter and energy that has been given meaning by a living being’ (Bates 2005,

¹ *Collins dictionary of the English language*, 2nd ed., s.v. ‘inform’.

abstract). Buckland (1991, 41) recognised different dimensions of information, and he called recorded knowledge — information-as-thing, and the act of imparting information — information-as-process. Information-as-thing is of special interest to information systems because systems can deal directly only with information in this sense (43). Spink and Saracevic (1998, 252) considered dominant definitions of information, and accepted one that encompassed them all: '(i) a message (text), AND (ii) a cognitive interpretation, AND (iii) a contextual consideration'. This definition includes intentionality, affection and motivation as well as social, situational and cultural contexts.

'Data' has been defined as selected and processed information. According to Buckland (1991, 45), data means information-as-thing processed in some way for use. Bates (2005, under 'Finally, what are data?') found that 'data' usually referred to information gathered for further processing. Bates distinguished between meanings of so-called data 1 and data 2. The meaning of Bates' data 2 is important for the purposes of this work: 'The second sense of data, or data 2, refers to information selected or generated by human beings for social purposes'.

Knowledge is 'information given meaning and integrated with other contents of understanding' (Bates 2005, So what is knowledge?). Figure 3 provides a summary of the discussed definitions of information, data and knowledge.

Figure 3. Overview of definitions of information, data and knowledge

Information
Buckland: information-as-thing, information-as-process, information-as-knowledge
Bates:
Information 1: The pattern of organisation of matter and energy (adopted from Parker)
Information 2: Some pattern of organisation of matter and energy given meaning by a living being
Spink and Saracevic: (i) a message (text), AND (ii) a cognitive interpretation, AND (iii) a contextual consideration
Data
Buckland: information-as-thing processed in some way
Bates: Data 2 is information selected or generated by human being for social purposes
Knowledge
Bates: information given meaning and integrated with other contents of understanding

Definitions of information and data in this work are based on the definitions provided above:

- **Information** is a pattern of organisation, which can be contained in any physical manifestation, and it is given meaning by a human being under certain contextual conditions. The concept of information includes the physical manifestation, the process of making sense of that information or ‘being informed’, and contextual considerations.
- **Data** means information produced, selected and/or assembled for further processing — specifically, for further research, in the context of this study.
- **Knowledge** is understood in terms of Bates’ definition.

Information and semiotics

The way information is disseminated, received and understood has parallels with Peirce's semiotics, which emphasised three elements — sign, interpretation, and object (Bates 2006, 1041). The process of receiving and interpreting information as sign was explained by Bates. Information 2 assembled by a sender is disseminated by means of speaking or writing, for example. The receiver receives the message as Information 1, meaningless signs such as sounds or letters:

These sign vehicles remain meaningless until given meaning by the receiver through interpretation, thus constructing an understanding of the message as Information 2. As we know, the Information 2 constructed by the receiver may be very different from the Information 2 that the sender intended to communicate. Eventually, the constructed Information 2 is integrated more or less permanently into the receiver's knowledge stores, and disappears as a separate entity in the individual's experience (Bates 2006, 1042).

Bates' explanation of how the concept of sign and interpretation relate to information is particularly relevant in this context because interpretation has particular importance for research in the humanities. Signifiers and their intangible, always absent signifieds are the central problem of interpretation, wrote Derrida (2001). In the following section of this chapter, the concept of sign will be mentioned again in relation to text, this time with reference to de Saussure's semiotics, and concepts of signifier and signified.

Computers are particularly appropriate for working with signs: 'Indeed, it might be argued that the computer is an ideal semiotic machine, for it can examine vast numbers of signs rapidly, comparing sign use in defined blocks of text' (Olsen 1993, 313). Bolter argued that the semiotic view is in alignment with the way computers work because

... semiotics itself grew in the same cultural matrix that reproduced the computer. The computer was constructed as a machine for creating and manipulating signs, which could themselves be mathematical, verbal, or pictorial. Computer programming and indeed all kinds of electronic writing and reading by computer are exercises in applied semiotics (Bolter 2001, 176).

The connection between computers and the semiotic view of information can be explained in different ways that are not mutually exclusive. Computer developments and the conception of information as a sign possibly grew from the same background. It may be that computers encourage a semiotic approach to information, but also working with computers clarifies that information is a sign.

Text in information systems

The significance of text in the humanities will be discussed in some detail in relation to researchers in the humanities. For the discussion here, it is important to note that scholars work with a variety of texts to develop their individual interpretation. Some of these texts are factual, but most of them are historical documents and literary texts, which have ambiguous meanings.

A definition of data and information is critically important for computer-processing. Igartua (1991) and Hockey (2000) pointed out that the ambiguity and polysemy of data and texts used by humanities scholars needed to be resolved and clarified for computer processing. Hockey wrote about 'humanities texts and scholarly research on those texts' that

... if any activity is to be carried out on a computer, the processes involved in that activity and the nature of the material on which those processes are carried out must first be thoroughly understood, and then specified in fine detail (Hockey 2000, 2).

Since textual materials have particular significance for research in the humanities, the nature of text needs to be clarified for computer-processing. This and other challenges possibly provide an opportunity for far-reaching insights: 'It has taken the emergence of electronic textualities, and in particular operational theories of natural language like TEL, to expose the deeper truth about print and manuscript texts' (McGann 2004, 205) — and about information and knowledge.

Terminological ambiguity

The ambiguous and polysemic nature of information used in the humanities, and the way in which information is processed 'as a thing' by information systems seem to underlie an understanding of the word 'information' in the context of computer-processing in the humanities. The following examples indicate common uses of 'information' in relation to text and humanities research.

The use of word 'information' often indicates a separation from understanding. Herman (2001, 388) reviewed the literature on computerisation in research and concluded that 'information (data processed and rendered useful), is characterized by the fact that it does not require the human mind to provide it with meaning, it is eminently suitable for processing and transmission using electronic technology'. Understanding, on the other hand, 'exists entirely within the human mind' and is 'carried out without the direct support of electronic technology' (Herman 2001, 389).

In their use of the word, humanists often distinguish between information as records and data handled by computers, and literary aspects of the text:

A library processes traditional texts by treating them strictly as records. It saves things and makes them accessible. A poem, by contrast, processes textual records as a field of dynamic simulations. The one is a machine of **memory and information**, the other a machine of **creation and reflection**. ... Most texts — for instance, this chapter you are reading now — are fields that draw upon the influence of both of **those polarities** (McGann 2004, 202, emphasis by SS).

In a debate on the nature of text (Hockey, Renear, and McGann 1999), Renear proposed that text was real in the sense that it was independent of our interests and theories about it, abstract, intentional as product of mental acts, hierarchical in structure, and linguistic. McGann objected to Renear's 'view of text as essentially a vehicle for transmitting information and concepts', and pointed to "'poetic" or noninformational forms of textuality' (under '2. Position statement from McGann').

Ruhleder (1995, 41) referred to Lyman who expected 'that humanists incorporating computing into their work will be influenced by the cybernetic models of information

and knowledge inherent in the computer sciences. These models emphasize control over diagnosis and explanation over interpretation ...'. In this view, some forms of understanding can be associated with information, but it cannot capture interpretation.

A different use appeared in Gilmore and Case (1992) who referred to Tibbo's opinion when they wrote that 'abstracts simply do not currently contain the information that scholars find most important — e.g., point of view, theme, etc.' (676). As may be expected, a suggestion that information can be interpretation (a point of view) or an aspect of text (theme) came from the information literature, but this point has not been discussed in any detail.

A variety of uses illustrates a lack of common understanding, but it also indicates that 'information' does not have a broad meaning identified in definitions from information studies. Even more, 'information' is something different from poetic text and interpretation, which are so important in the humanities.

Document, representation, data

Texts are often viewed as documents and, as Buckland (1991) pointed out, most documents consist of text. Document was defined by Briet as 'any concrete or symbolic indication, preserved or recorded, for reconstructing or for proving a phenomenon, whether physical or mental' (Briet 1951, in Buckland 1991, 47). The ideas of 'symbolic indication' and 'representation' are central to the definition of documents and their informativeness. Buckland discussed 'document' and 'text' in the broadest meaning:

... we could hardly regard an antelope or a ship as being discourse, nor are they representations in any ordinary sense. Their value as information or evidence derives from what they signify about themselves individually or, perhaps, what they imply about the class or classes of which they are members. In this sense, they represent something, and, if not a representation, they could be viewed as representative. If an object is not representative of something, then it is not clear how far it can signify anything — that is, be informative (Buckland 1991, 48).

The distinction between 'representation' and 'represented' is fundamental for Buzzetti's (2002) text model, based on Saussure's distinction between signifier and signified. Buzzetti argued for 'a clear distinction between the structure of the representation and the structure of the object represented' (63). Buzzetti pointed to Hjelmslev's model in which signifier was expression, and signified — content, as well as to their inseparability. According to Buzzetti, 'there can be no text without representation; instead, the text *is* representation, but representation which depends upon an abstract content and is severally determined in the singularity of a concrete expression' (64).

The marks on the page are signs signifying some meaning. Buzzetti referred to Cesare Segre and his "'original constitution" of the text as a "series of letters and punctuation marks" that are bearers of "graphic meanings," which in turn are "carriers of semantic meanings"' (Segre in Buzzetti 2002, 64). Text in its digital form can be seen as datum. Representation refers to a combination of signs, and information refers to the content, to the signifieds, attributed to data as a combination of signs (65). Buzzetti did not elaborate on this point, since he was concerned with the text model.

So far it has been established that text and document have connections in the sense that texts are presented as documents, documents consist of texts, and they are both representations. According to Huitfeldt (1999), text can be either representation, interpretation or it can have elements of both. Huitfeldt discusses text in the context of textual encoding and uses the word 'representation' in a somewhat different sense from Buzzetti:

1. A text is a **representation** of another text if the first has the same linguistic content, i.e. the same wording, as the other.
2. A text is an **interpretation** of another text if the first is **not** a representation of the other, but explains, discusses, or gives an alternative account of the meaning of the other with other words.
3. A text may contain **both** a representation and an interpretation of another text, provided that the representation and interpretation are clearly distinguished from each other (Huitfeldt 1999, last para.).

Huitfeldt's understanding involves the distinction between representation understood as reproduction and interpretation, and points to different aspects of textual connections. "'Representation" and "interpretation" are best seen as names for relations between texts' (Huitfeldt 1999, para 5). This view points towards intertextuality as a central aspect of defining text for computer-processing.

Text can also be seen as data. An important step from the point of view of the information systems is the separation of data from documents: 'By providing for a flexible structuring of data and the juxtaposition of different sources, database management systems allow historical information to be detached from its medium, the document, and brought together into logical units of analysis' (Igartua 1991, 79). At the same time, 'database management systems facilitate the bringing together of information found in separate sources and the creation of units of analysis which do not exist in a single source' (79). For the purposes of information systems, it is important to recognise textual elements that can be separated and brought together. In the common use, textual elements that can be brought together in response to a query are words from the text. However, words in context are not sufficient for more sophisticated functions. McGann (2004, 213-215) identified elemental dimensions of textual fields as linguistic, graphical/auditorial, documentary, semiotic, rhetorical and social.

Unsworth (2000) emphasised parallels between medical informatics and humanities computing and pointed towards data elements in literary text, which are also recognised by encoding systems for scholarly texts. Comparisons between concepts of text and data in the humanities and other fields are still not commonplace. Computers process text used in the humanities and information systems include them for various purposes; differences and ambiguity in understanding information, data and text make it unclear what is the nature of text, particularly literary text, in information systems. Considering that computer-processing requires clear definitions and that electronic texts are often presented by and used within information systems, the lack of clarity is likely to influence the effectiveness of the system and users' interactions with the texts.

2.2.2. Holistic view of information processes

An integrated view of information processes includes individual processes of understanding as well as contextual considerations, which take into account social aspects and information environments. This section discusses some ideas related to three aspects of information processes: understanding, social aspects and electronic information environments.

Understanding

Information exists independently of anyone's perception of it, but information has meaning that people assign to it in the process of understanding. Different cultures have different views on what constitutes understanding, but cultures originating from the ancient Greek tradition place a great emphasis on rational and logical thinking. Disciplines such as philosophy, logic, psychology and information theory have produced large bodies of literature on various aspects of conscious, rational thinking. While acknowledging the great significance of rational logical thinking for understanding, this section will be concerned more with aspects of understanding, which have not traditionally attracted a great deal of attention, such as the role of unconscious processing, different approaches to understanding, and the role of affect in understanding.

Different ways of understanding

Holistic views of information-processing, which attempt to include previously neglected aspects, have become a topic of interest in the recent years. These views have particular significance in considering dynamic research and information processes in the humanities. Cole (1997) studied information processes of doctoral students in history, and found that a big part of information-processing may not happen consciously. Cole (1998, 46) suggested that the information process started unconsciously, and the unconscious stage was likely to be significant in the humanities because researchers often did not know what they were looking for until they found it.

Cole proposed a view of developing ideas in historical research in the form of a picture or background, against which the relevance of primary and secondary material was perceived (40). The jigsaw is a metaphor that explains a process of putting a conceptual thesis together. Information goes through a multi-stage process in which objects or words 'enter an in-between state like a word registry or sense data registry, and are used in later processing ...' (Cole 1994, 475). Unconscious processing is particularly important in the humanities, where, at an unconscious level, researchers may be seeking information all the time (Cole 1997, 58). Harmon and Ballesteros (1997) also found that unconscious cognition influenced information processes.

Insight is an important aspect of understanding, and implies an unconscious phase of processing. Insight means 'a state of understanding' as well as 'the sudden emergence of an idea into conscious awareness' (Schooler, Fallshore, and Fiore 1995, 560). Different types of understanding are based on different processes. According to Schooler, Fallshore and Fiore, insight problem-solving relies on pattern-recognition processes while non-insight problem-solving relies on reasoning skills and keeping the whole process in mind (581). Ford (1999) referred to research in psychology that showed how the processing of complex similarity relationships, which are the basis of creative thinking, 'entails what some have considered predominantly "right brain" activity, characterised as parallel, intuitive, and perceptual — as opposed to predominantly "left brain" activities, characterised as relatively logical and sequential' (531). The two activities complement each other in complex understanding. Ford (1999, 532) also thought that serendipitous discovery of similarities could be attributed to perceptual holistic information-processing, which often occurs when the person is not focused on the problem.

Verbalising may disrupt nonreportable processes: 'Our interpretation of this result, termed *verbal overshadowing*, is that verbalization may emphasize verbalizable processes at the expense of nonverbalizable ones' (Schooler, Fallshore, and Fiore 1995, 583). Insight appeared to be particularly 'vulnerable to verbalization' (583). The suggestion stands in contrast with a long tradition of viewing verbal expression as a constructive part of meaning formation, represented by the view that '[d]iscourse is

existentially equiprimordial with state-of-mind and understanding' (Heidegger 1962, 203). However, research into neuroscience does not confirm the primacy of language in understanding. Damasio (2000a, 89) found that the display of images (visual, sound and olfactory) is an essential condition of thought. Images precede the formation of words: 'Most of the words we use in our inner speech, before speaking or writing a sentence, exist as auditory or visual images in our consciousness. If they did not become images, however fleetingly, they would not be anything we could know' (106).

Personal differences may play a significant role in different approaches to information-seeking and understanding. Heinström (2003) reviewed literature which showed that various personality traits and cognitive styles affected information behaviour. Ford et al. (2002) identified certain practices and personal characteristics as beneficial in finding alternative approaches. Schooler, Fallshore and Fiore (1995) listed perseverance in searching, generating lots of ideas and selecting some, risk-taking and broad knowledge as helpful. They considered playfulness to be essential for creative and productive thought, and the ability to recognise analogies as a central aspect of insight. Erdelez (1997, 417) proposed that some personal characteristics such as curiosity, desire for exploration and a variety of interests may be beneficial for information-encountering as an accidental discovery.

These studies point to the need for considering unconscious information-processing, different cognitive styles and personal characteristics as factors influencing cognition and approaches to understanding, which could have implications for information provision and services. Research into unconscious processing, insight, non-verbal information-processing and the possible influence of individual differences provides a background for considering different aspects of interactions with textual sources.

Affect and understanding

Expressions suggesting 'looking in one's heart' as a way of knowing imply a traditional belief that feelings contribute to understanding. Heidegger (1962) wrote that mood came from Being-in-the-world, and provided a unique way of knowing: 'Indeed from

the ontological point of view we must as a general principle leave the primary discovery of the world to “bare mood” (177).

There is also a long tradition, traced back to Plato, of seeing emotion as an impediment to rational thought, ‘the pinnacle of cognition’ (Scherer 2002, 563). Scherer discussed the shift in psychology because ‘the Zeitgeist seems to be dominated by efforts to integrate rather than oppose cognition and emotion’ (563). Forgas (2002, 596) wrote about ‘something like an “affective revolution” in psychological research’ in the past two decades.

Damasio (2000b, 40), a prominent neuroscientist and one of the main researchers of emotion and cognition, wrote about a recent shift in neuroscience and cognitive neuroscience, which have finally endorsed emotion: ‘For example, work from my laboratory has shown that emotion is integral to the processes of reasoning and decision making, for worse and for better’ (41). Damasio (2000b; 2000a) discussed cases of patients who had brain damage but their rationality and logic remained intact. However, the patients had major problems in their functioning, particularly in decision-making if their feelings were affected by the damage. Damasio wrote that findings of his research ‘suggest that selective reduction of emotion is at least as prejudicial for rationality as excessive emotion’ (41). Damasio’s work endorses an integrated view of the body, brain and mind, based on the findings of neurological research. He opposed the exclusion of feelings and emotion from mainstream cognitive science: ‘[F]eelings are just as cognitive as any other perceptual image’ (Damasio 2000a, 159).

The role of feelings in cognition has been recognised in some recent writings. For example, Thrift (2004, 60) considered different approaches to affect and found that ‘in each approach *affect is understood as a form of thinking*, often indirect and nonreflective, it is true, but thinking all the same ...’. Lacewing (2004, 176) wrote that ‘a psychological state is cognitive if it represents the way the world is’.

The information literature has acknowledged the importance of feelings in information processes. Kuhlthau (1999; 1993; 1988) recognised feelings as part of information-seeking process, and considered information-seeking as a holistic ‘interplay of

thoughts, feelings and actions' (1999, 14). Brooks (1980) understood feelings as an integral part of mental life and, consequently, of information and knowledge. In the following passage, Brooks referred to Popper's worlds: 'Worlds 2 and 3 are furnished with information and knowledge — and with feelings too. Everything mental can be assigned to Worlds 2 and 3. So what does the furniture of Worlds 2 and 3 comprise? As far as I can see, only information and knowledge. Nothing more' (Brooks 1980, 132).

The question is how feelings take part in information processes. Burnett and McKinley (1998), who saw information-seeking as 'predominantly affective in nature', wrote that 'cognitively-based models of information seeking ... may satisfactorily answer the question of how do people seek information, but can never answer why' (292).

Lacewing (2004) suggested that 'emotions may always remain cognitively impenetrable to some degree, for the shape of our emotional capacities is originally forged by forces more primitive and powerful than those of thought' (185).

Although it may not be possible to fully understand emotions, the studies from different disciplines that investigated affect in cognitive processes confirmed the importance of exploring their roles. Kim, Chan and Chan (2007, 521) found that thinking and feelings contributed to formation of attitudes, which provided 'summary evaluation' (514). They identified pleasure and arousal as two primary dimensions of affect. Their survey of users of Internet services showed that both dimensions had a role in the formation of attitudes, and some influence on the use of services. Quinn (2003) also discussed an optimal level of arousal for performance in online searching.

Experiments of induced mood by Chartrand, van Baaren and Bargh (2006) indicated that people in a positive mood perceived their environment to be safe and were more likely to rely on heuristic and creative processing. A negative mood indicated a problematic environment, resulting in more analytical, effortful and cautious information-processing (70). The authors found that people primed by negative stimuli were more accurate in their processing of information and less likely to rely on stereotypes than people who were exposed to neutral or positive stimuli who were, supposedly, less cautious in subsequent information-processing. Damasio (2000a, 164)

showed a relationship between a feeling of elation and a cognitive mode that increases exploratory behaviours, while sadness reduces inferences and exploration.

These studies provided some clues for considering possible connections between feelings and information processes. One area marked with the lack of understanding is aesthetic emotions (Scherer 2002). According to Scherer, the view of music as the 'language of the emotions' (568), and 'interest in the affect-eliciting effects of the symbol systems' in performing and visual arts (569) opened some options for investigation. It can be added that another avenue is literature, particularly poetry, which often expresses emotions and arouses emotions in readers.

The study of affect relates to literary and historical scholars in two ways. Firstly, emotions are often a subject of their research. Literary scholars study the expression of emotion in literature as well as its effects on readers. Historians may be interested in the emotional responses of people at the time of their study. Secondly, affect contributes to scholars' understanding of the topic, and has to be seen as part of their research process. In addition to physical and intellectual aspects, unconscious information-processing and a broad spectre of emotions are sources of insights in humanists' individualistic and dynamic research practices, which will be discussed in the section on researchers. Sensory, rational and affective ways of knowing, as well as conscious and unconscious information-processing, are all part of the holistic process of understanding.

2.2.3. Social dimensions of information

Information processes happen in a social context which enables, influences and sometimes determines individual cognition. Budd (2001) discussed the concept of the lifeworld, which includes 'a world of *practice* (of action, making and doing) and *praxis* (of social action, of production of goods, exchange of goods, and distribution of goods)' (Mohanty in Budd 2001, 258). Budd continued that '[a]dding praxis to practice provides a reminder of the nature of experience — individual and collective — and its impact on meaning'.

Taylor (1991) discussed the information use environment, in which settings and a way of thinking of a particular group of people defined information behaviour. Information behaviour is a product of the following elements of the information use environment:

- the assumptions made by a defined set of people about the nature of their work
- kinds and structure of the problems considered to be important by this group of people
- the constraints and opportunities of typical environments in which the group operates
- assumptions about the solutions of the problems and what makes information useful in their context (Taylor 1991, 221).

Documentation theory focuses on the history, practice and social aspects of document use, which is pertinent to this study into scholars' work with e-texts as documents.

Frohmann (2004, 396) referred to Wittgenstein when he objected to an idea of mental activity transforming lifeless signs into meaning, and pointed out that '[m]any practices with documents have little, if anything, to do with informing anyone about anything' (405). According to Frohmann, important properties of practices are:

- materiality of the documents, which configure practices with them
- their embeddedness in institutions
- social discipline, in the sense that documentary practices 'require training, teaching, correction, and other disciplinary measures ...' (397)
- historicity because practices exist and disappear under certain historical circumstances (396—397).

Documents have an important part in social practices of different groups of people, argued Brown and Duguid (1996). The authors referred to Anderson's imagined communities, which are large and dispersed, but the important way in which they are imagined as communities is through the documents they share (under 'Political linkage'). Meaning is not embedded in documents, but constructed in the process of negotiation by members of a community, which Brown and Duguid called 'community of interpretation' (under 'Negotiating meaning'). Intertextuality is a concept that names numerous links between documents and their interpretations. The characteristics of a

medium influence the characteristics of a document, such as fixity and fluidity which, in turn, can influence social practices and institutions (under 'Fixed and fluid').

Social aspects of academic work, particularly disciplinary norms and traditions, intertextuality of academic writing and connections between electronic texts, as well as influence of a medium on social practices, all relate to the context of scholars' interactions with e-texts. The rest of the consideration of social aspects of information processes will focus on Chatman's theories of 'a small world' and 'a life in the round', which look into dynamics of social influences on information behaviour.

Chatman's theories

Chatman developed her information theory about social aspects of information behaviour in a series of studies of groups of people usually considered as information poor — retired women, inmates in a women's prison, janitors and women who practised eating dirt for its perceived benefits. Chatman's studies showed that these groups had complex information practices. Chatman's research led to an information theory of a 'small world' and a 'life in the round', which showed how groups influence and determine information behaviour.

The concept of a small world is included in a theory of 'life in the round'. Chatman (2000, 3) described the concept of a small world as 'a world in which everyday happenings occur with some degree of predictability'. 'A small world is also defined by natural philosophy and everyday *knowledge*' (Chatman 1999, 210).

Social norms, worldview, social types and information behaviour are key concepts in her theory of normative behaviour (Chatman 2000, 11):

Normative behaviour is that behaviour which is viewed by inhabitants of a social world as most appropriate for that particular context. Essentially driven by mores and norms, normative behaviour provides a predictable, routine, and manageable approach to everyday reality. Aspects of interest are those things which serve to legitimize and justify values, which embody social existence (13).

Horizons of people living in a small world are defined by social norms. 'Insiders' are people who have greater understanding of social norms and are able to 'establish standards for everyone else' (Chatman 1999, 212). The norms are defined by 'legitimised others' who have a degree of control of information. 'Legitimised others' were described as

... people who share physical and/or conceptual space within a common landscape of cultural meaning. Within the contextual understanding of information behaviours, the legitimized others place narrow boundaries around the possibilities of these behaviours. In other words, legitimized others shape, change, or modify the information that enters a small world in light of a world-view (Chatman 2000, 3).

The social roles and functioning of the group are performed as part of regular daily life. This everyday life is the basis for Chatman's theory of a life in the round:

A life in the round is a public form of life. It is a lifestyle with an enormous degree of imprecision. Yet, it is this inexactitude that provides an acceptable level of certainty. This way of life sets standards by which one constructs everyday meaning from reality. It is a 'taken-for-granted,' 'business-as-usual' style of being (Chatman 1999, 207).

Chatman described her theory of life in the round in six propositional statements (Chatman 1999, 214):

- The concept of a small world is central to a life in the round because it 'establishes legitimized others (primarily "insiders") within that world who set boundaries on behavior'
- 'Social norms force private behavior to undergo public scrutiny. It is this public arena that deems behavior—including information-seeking behavior—appropriate or not'
- 'The result of establishing appropriate behavior is the creation of a worldview'

- 'For most of us, a worldview is played out as life in the round', which is 'a life taken for granted'. Most of the time it is predictable enough that there is no need for information
- 'Members who live in the round will not cross the boundaries of their world to seek information'
- Boundary crossing happens under certain conditions: '(1) the information is perceived as critical, (2) there is a collective expectation that the information is relevant, and (3) a perception exists that the life lived in the round is no longer functioning'.
- Information has to be trusted and believable to be accepted. The most believable information conforms to common sense. Information is judged as credible because the provider is trusted and the source can be easily verified (Chatman 1999, 215).

Withholding information or secrecy is an information behaviour aiming at preserving one's autonomy and caused by social norms (Chatman 1996, 195-196). Chatman points out that the 'primary issue has to do with information need and factors that *hinder* persons from making use of relevant knowledge that, in many cases, is not only public (that is, known) but also accessible' (196). Chatman's definition of information poverty does not necessarily concern the amount of information that is available, but rather the way in which social norms limit the use of information:

When concerns and problems present themselves and when information is recognized as potentially helpful but is ignored, individuals live in an impoverished information world. Determined to hold the seams of their life-world together, they engage in self-protective behaviours, which define the finite boundaries of a world of poverty (Chatman 2000, 7).

Chatman showed that the powerful social rules determine conditions and ways in which information is sought, what acceptable information is and what appropriate uses of information are. Individuals usually conform or keep socially unacceptable

practices private. Chatman's theories will be revisited in *Discussion* in relation to information behaviours of scholars in the study.

2.2.4. Information environments

Like any environment, the information electronic environment provides a context in which information processes happen. This environment can be seen in terms of Nardi and O'Day's information ecology:

We define an information ecology to be a system of people, practices, values, and technologies in a particular local environment. In information ecologies, the spotlight is not on technology, but on human activities that are served by technology' (Nardi and O'Day 1999, para 1).

Information ecology is characterised by 'a complex *system* of parts and relationships. It exhibits *diversity* and experiences continual evolution. Different parts of an ecology *coevolve*, changing together according to the relationships in the system' (Nardi and O'Day 1999, under 'Characterizing Information Ecologies', para. 2). The design and use of information environments is tied with individual information needs and uses as well as with social practices and it depends on available technologies. The concept of information ecologies aids the understanding of mutual influences in information environments, but it also assists in identifying the rigidity of a system and the lack of its ability to grow as a thriving ecology.

The first part of the following section considers information discovery and use, emphasising aspects related to the way in which scholars seek and use information. It also discusses some current obstacles to information discovery and possible solutions. The second part focuses on knowledge and authority, which are socially constructed, but have significance for information provision and use. The issues raised are applicable to different information environments, but the focus is on electronic information-seeking and use.

Information discovery and use

Users in general, and humanists and social scientists in particular, conduct evolving searches. They start with a query, and then move to a variety of sources, constantly adjusting the query by selecting bits of information. Bates (1989) discussed this way of working and called it a berry-picking model, which described online and other information retrieval.

The retrieval of large amounts of information enables different connections to be made. Lyotard (1984) talked about performativity that can come from arranging the data in a new way: 'This new arrangement is usually achieved by connecting together series of data that were previously held to be independent. This capacity to articulate what used to be separate can be called imagination. Speed is one of its properties' (52). Discovery of analogies was seen as the basis for creative thinking by Ford (1999) and Cory (1999). Cory argued that a support for discovering analogies was a way to support research in the humanities.

The problem with current systems is in how they provide materials and mechanisms for information discovery. Brockman et al. (2001) suggested that libraries needed to do much more 'to assemble information resources in a way that allows scholars to search across them, rather than digging down into separate, exclusive "silos" ...'(18). The current retrieval systems often limit the discovery of connections. Palmer and Malone (2001) showed that subject descriptions inhibited access to and isolated knowledge about women and women's work by removing connections with a wider body of knowledge, which was often replicated on the Internet. The act of inclusion or exclusion of materials is a sign of power that archives and other collections have: 'What has been excluded from the record determines its meaning as much as what was included' (Ketelaar 2002, 223).

Jakubowicz wrote that a fundamental problem in digital research was a separation between 'a) the collection, collation, manipulation and preservation of data and information, and b) the transformation of information into knowledge through the

application of human creativity and its dissemination through new global information networks' (Jakubowicz 2007, under 'Conclusions', para. 1).

The critique of hierarchical systems which isolate information and impose certain ways of thinking is often related to Deleuze and Guattari, who contrasted rhizomes and trees as metaphors for two different systems:

Arborescent systems are hierarchical systems with centers of significance and subjectification, central automata like organized memories. In the corresponding models, an element only receives information from a higher unit, and only receives a subjective affection along preestablished paths. This is evident in current problems in information science and computer science, which still cling to the oldest modes of thought in that they grant all power to a memory or central organ (Deleuze and Guattari 1987,18).

A rhizomatic system, on the other hand, does not work in hierarchical structures and allows full connectivity:

Let us summarize the principal characteristics of a rhizome: unlike trees or their roots, the rhizome connects any point to any other point, and its traits are not necessarily linked to traits of the same nature; it brings into play very different regimes of signs, and even nonsign states. ... It is composed not of units but of dimensions, or rather directions in motion. It has neither beginning nor end, but always a middle (milieu) from which it grows and which it overfills (Deleuze and Guattari 1987, 23).

Rhizomatic structures are more akin to the way in which the human nervous system works. Bush criticised artificial systems of indexing based on hierarchical structures. Although Bush wrote during the time before personal computers, the problems with these information systems have remained in electronic environments. Bush contrasted indexing based on following established paths with the way the human mind works:

The human mind does not work that way. It operates by association. With one item in its grasp, it snaps instantly to the next that is suggested by the association of thoughts, in accordance with some intricate web of trails carried by the cells of the brain. It has other characteristics, of course; trails that are not frequently followed are prone to fade, items are not fully permanent, memory

is transitory. Yet the speed of action, the intricacy of trails, the detail of mental pictures, is awe-inspiring beyond all else in nature (Bush 1945, Section 6).

Burnett and McKinley (1998) proposed that the 'rhizomorphic model of information contexts better accounts for both the richness and the chaos encountered in seeking information ...' (294). Their preferred information provision models

... need to make and emphasize connections — between areas of content, amongst ways of knowing, and between individuals. It is not enough to connect a user to a document, some documents, all documents, or even the most relevant documents. Users need to connect with documents, with meaning-laden bits within documents, with their own 'other selves', and with other individuals (294).

Different levels of control over the system are still required and desirable. Liu summarised the gist of objections to rhizomatic models: 'While knowledge workers may vote for rhizomatic democracy in principle, they also want firewalls for their personal computers; and they kill Bermuda grass on their lawns' (Liu 2004, 374-375). The ambivalence of different needs mark the rapidly changing, predominantly electronic, information environments.

Knowledge and authority

Two major barriers to users' access to information identified by Buckland (1991) are cognitive access and acceptability. Cognitive access means that the recipient has 'sufficient expertise to understand or, at least, misunderstand the information', and acceptability means that '[t]he recipient must be willing to accept the information, believing it to be true and not rejecting it as awkward' (Buckland 1991, 113). The latter is particularly important in the context of scholarly information use.

Acceptability of information can be considered in terms of cognitive authority, defined as 'influence on one's thoughts that one would consciously recognize as proper' (Wilson 1983, 15). Authority is a matter of degree. Judgment of the degree of authority of information sources has become particularly difficult in online environments, but

the clues associated with the group belonging provide some reference points. Rieh (2002) suggested that the perception of authority was often based on group identification, so academics valued academic information while bankers trusted information on bank web sites. Judgment of cognitive authority of online information was characterised by six factors: 'trustworthiness, reliability, scholarliness, credibility, officialness and authoritativeness' (Rieh 2002, 153).

Burnett and McKinley (1998, 287-288) suggested that the perception of cognitive authority might be affected by the media through which it was received. More verifiable media such as print are perceived to have more cognitive authority, but in situations when currency was important, databases would have more authority than books.

A critical question concerns which knowledge and which sources can be accepted as authoritative. Reliability, credibility and scholarliness, for example, are all notions open to interpretation. Wilson (1983, 43-44) wrote that the struggle for authority prevailed in the knowledge industry in which everyone tried to convince peers of the worth of his or her own knowledge. Lyotard thought that power relations had a strong influence on knowledge claims. The truth and credibility were relative and dependent on consensus which, in turn, depended on the truth of statements supporting the claims:

No money, no proof — and that means no verification of statements and no truth. The games of scientific language become the games of the rich, in which whoever is wealthiest has the best chance of being right. An equation between wealth, efficiency, and truth is thus established (Lyotard 1984, 45).

Despite dominant power relationships associated with claims to knowledge and truth, Foucault (1980, 81) found 'insurrection of subjugated knowledges'. They appeared as buried and disguised historical content and as 'a whole set of knowledges that have been disqualified as inadequate to their task or insufficiently elaborated: naive knowledges, located low down on the hierarchy, beneath the required level of cognition or scientificity' (Foucault 1980, 82). Foucault argued that critical discourses in the previous 'fifteen years have in effect discovered their essential force in this association between the buried knowledges of erudition and those disqualified from

the hierarchy of knowledges and sciences' (82). He named this union *genealogy* and saw it as anti-sciences, 'opposed primarily not to the contents, methods or concepts of a science, but to the effects of the centralising powers which are linked to the institution and functioning of an organised scientific discourse within a society such as ours' (84). Genealogy is related to Deleuze and Guattari's rhizomatic systems:

It is based on a reactivation of local knowledges — of minor knowledges, as Deleuze might call them — in opposition to the scientific hierarchisation of knowledges and the effects intrinsic to their power: this, then, is the project of these disordered and fragmentary genealogies (Foucault 1980, 85).

Information systems are inseparable from the social contexts in which they are designed and used. Rhizomatic and arborescent structures of information systems arise from and, in turn, influence cognitive approaches, intellectual climates and social interactions. The design of technology requires specificity and clarity, which brings to light not only the nature of text, but also the nature of knowledge and academia.

Chapter summary

Theoretical underpinnings of the study have been identified in electronic textuality and information framework. This chapter opened with a discussion of the nature of electronic textuality. It has considered hypertext and multimedia as characteristics of electronic texts, its changeable nature, the perceptions of textual body and space in electronic environment and the transition from print to e-text in relation to thinking about text which preceded and in many ways prepared for the appearance of electronic text. The effects of e-texts on writing, reading and interactions with text have evoked mixed responses.

The information framework section included considerations of text in relation to basic concepts of information theory. It discussed a holistic view of information processes, which includes rational and conscious as well as unconscious and affective processes, and social influences. Issues of information discovery and use, and knowledge and authority have been discussed in relation to information environments.

CHAPTER 3. RESEARCH IN THE HUMANITIES

The focus in this chapter is on research in the humanities — the field of scholars' work, their research environment, the research process and practices, and the way they have adopted ICT in general, and e-texts in particular. Although literary and historical studies are of particular interest for this research project, the chapter often refers to the whole field of the humanities. One reason is that there are a number of trends that apply to all disciplines in the humanities. Another reason is that discipline-specific literature on various issues is not always available. The examination of relevant literature shows that research practices in history have been studied more often and in more detail than in literary studies. Although a number of findings from studies of historians may apply to both fields, especially when literary scholars use historical approaches, there may be differences that have not been sufficiently examined.

3.1. The field of humanities research

Humanities researchers investigate some aspects of human life and creation by focusing on artefacts, particularly on creative works. Humanists deal with the 'creative, imaginative, the subjective world' (Immroth 1974, 250). Wiberley and Jones (2000, 422) defined the humanities as 'those fields of scholarship that strive to reconstruct, describe, and interpret the activities and accomplishments of men and women by establishing and studying documents and artifacts created by those men and women'. Disciplines usually included in the humanites are languages, literature, philosophy, religion, visual arts, performing arts, fine arts, history and archaeology (Fulton 1991, 188) as well as the modern disciplines media and communication studies.

Research in the humanities may involve a creation of an artistic work, interpreting someone's creative work or analysing the past activities (Fulton 1991, 188). Stern wrote that '[t]he major thrust of literary scholarship is a critical concern for past and present

creative writing' (1983, 199). A definition of literary studies for the purposes of the thesis encompasses creative writing, which is a recognised academic program nowadays, as well as the field defined by the German term *Literaturwissenschaft*, which includes literary theory, literary history and criticism.

History is defined as 'the discipline that studies the chronological record of events (as affecting a nation or people), based on a critical examination of source materials and usually presenting an explanation of their causes'.² It is often difficult to distinguish between history and other disciplines that have historical approach (Delgadillo and Lynch 1999, 255). Shera saw the historian as 'the sociologist of the past' (Gilmore and Case 1992, 669), and Wilson (1983, 96-98) discussed why history can be seen as a social science. Although history could be included in either social sciences or the humanities (Dalton and Charnigo 2004, 402; Case 1991, 61), it is usually included in the humanities.

The ambiguity of disciplinary divisions in the humanities is not characteristic of history only. According to Walker (1990, 45), subject connections between disciplines in the humanities are more diverse and interconnected than suggested previously. Although disciplinary divisions in the humanities are often vague and artificial, they still exist and are operational for various academic purposes.

3.2. Research environment

Scholars' work in their research environment is defined by disciplinary and organisational practices and traditions. This section will deal with social aspects of disciplines, such as disciplinary communities, which shape citation as a social practice and the acceptance of digital scholarship for career advancement. The section starts by acknowledging influences from the academic working environment characterised by a number of changes and often conflicting demands, which underpin scholars' research practices.

² *Encyclopædia Britannica Online* 2007, s.v. 'history', <http://search.eb.com/eb/article-9040600> (accessed 24 May 2007).

3.2.1. Working environment

Universities world-wide have been undergoing transformations, which for academics have often meant dealing with escalating pressures and demands. Increased expectations for tenure were noted both in Australian (Anderson, Johnson, and Saha 2002) and US studies (MLA Task Force on Evaluating Scholarship for Tenure and Promotion 2006; Dalton and Charnigo 2004, 406). Academics in Australia and the USA work 50–55 hours a week, showed studies by Forgasz and Leder (2006, 17-19) and the MLA Task Force (2006, 13) respectively. Australian academics have a strong sense of engagement and identification with their work, but they feel disconnected from their institutions (Winter and Sarros 2000; Coaldrake and Stedman 1999, 9). According to Winter and Sarros (2000, 10), a change to a top-down managerial style in Australian universities did not foster a motivational climate of continuous learning, imagination, experimentation and creativity.

At the same time, UNESCO (2007) recognises knowledge as a key factor in social and economic development, which requires continuous learning and innovation. Academics' daily work is contextualised and often determined by these changes and conflicting influences.

3.2.2. Community of scholars

Scholars in an academic field form a community that sets the standards for scholarly research, and have the final say in evaluation of the work through the peer review process. 'The use of appropriate sources and literature, analyses, theories, and even jargon are all evaluated' (Neumann 2001, 186).

A sense of the community and disciplinary rules vary among different disciplines. Disciplinary convergence is related to the maintenance of reasonably uniform standards, procedures and a sense of community (Becher 1989, 154). Despite all differences, convergent disciplines such as physics and history are defined by a sense of belonging to 'a particular and definable world', share 'common assumptions and styles of thought', and a strong tradition of intellectual connection (156). On the other

hand, literary and linguistic scholars are split according to their affiliation with a particular area and approach to research. In Becher's study, literary scholars did not demonstrate 'commonality of intellectual perspective or any closely shared set of disciplinary values' (Becher 1989, 157).

The historians' strong sense of the disciplinary community does not necessarily mean that they all share the same opinions. A formation of a consensus among economic historians was investigated by Whaples (2001), who found that the respondents claimed to focus on the strength of evidence and argument individually contributing to the formation of the consensus. However, when they explained differences in opinions between themselves and colleagues, ambiguity in proposition and argument as reasons for disagreement were followed by the difference in historians' ideological position.

Regardless of the strength of community ties and different views within a discipline, scholars identify with their discipline. Physical objects have a role as strong identification signals. Becher referred to Clark when he wrote that an individual's sense of belonging to a discipline was manifested through 'idols' such as pictures on the wall, dust jackets and other objects displayed in the office (1989, 23). Shelves full of books and filing cabinets filled with paper signal "I am a humanities scholar", and "this is what is important to me". ... Clearly these "symbols" are the heart of humanities' scholars work' (Neumann 2001, 138). These signposts mark knowledge domains, which usually do not shift rapidly, but rather in the process of steady evolution (Becher 1989, 21).

Citation as a social practice

Social aspects of a discipline have a major influence on information activities (Palmer and Cragin in press), which can be observed in the way information sources are used in citation. 'Citation, one historian suggested "serves a social and institutional as much as an epistemological function"' (Becher and Trowler 2001, 114). This observation was confirmed by Brooks (1985, 228) who found that a need to persuade colleagues of the correctness of their own research was the most influential in humanists' decisions to

cite a source. The act of citing is an acknowledgment that the cited work deserved attention (Gilbert 1977, 117). According to Gilbert, it involves a complex negotiation, because the author could not be sure who would read the work and what readers would consider worthy of citation.

In the process of recognising peers' work and legitimising own research, electronic sources have an ambiguous role in different communities. Dalbello et al. (2006, under 'Conclusion') suggested that electronic documents had a widespread use in supporting humanities research, but they were still invisible in citation practices. The citation patterns will be overviewed later in this chapter in relation to the scholars' information evaluation and use.

Recognition of digital scholarship

Despite the significance of ICT in general and the importance of innovation in academic research, digital scholarship has not received adequate recognition (Andersen 2001; Chappell and Wissenburg 1998). It has had implications for career advancement, especially for junior scholars. It is not an accident that most active humanists and social scientists working with digital media are at the post-tenure career stage (DLF scholars' panel 2004).

Andersen (2004, 16-21) discussed a complex way in which an organisational culture, and senior and junior academics influence each other. If digital scholarship has not been rated highly, junior scholars quickly learn that it is not a good way to develop their careers. In interdependence between an individual academic and the group, individual preferences may shape organisational cultures, so academics who do not want to rely on technology in research are less likely to teach about technology, while senior scholars who are more active in digital scholarship value this sort of research in the promotion and review process. There seems to be a gap between a push from university administration to use computers and include them in teaching, and history departments where chairs were concerned that these activities did not help junior scholars in meeting promotion criteria (Andersen and Trinkle 2004, 73).

The library may have a pivotal role in negotiating the acceptance of digital scholarship: 'Academic librarians are helping to define the value and significance of using IT in teaching within all disciplines' (Westney 2004, 37). McGann (2005, 181), a renowned literary scholar, saw the research library as the basis of modern humanities, which is undergoing a process of 'complete digital transformation'. Libraries may have a role not only as providers of information sources and services, but also as initiators and co-ordinators of digital initiatives.

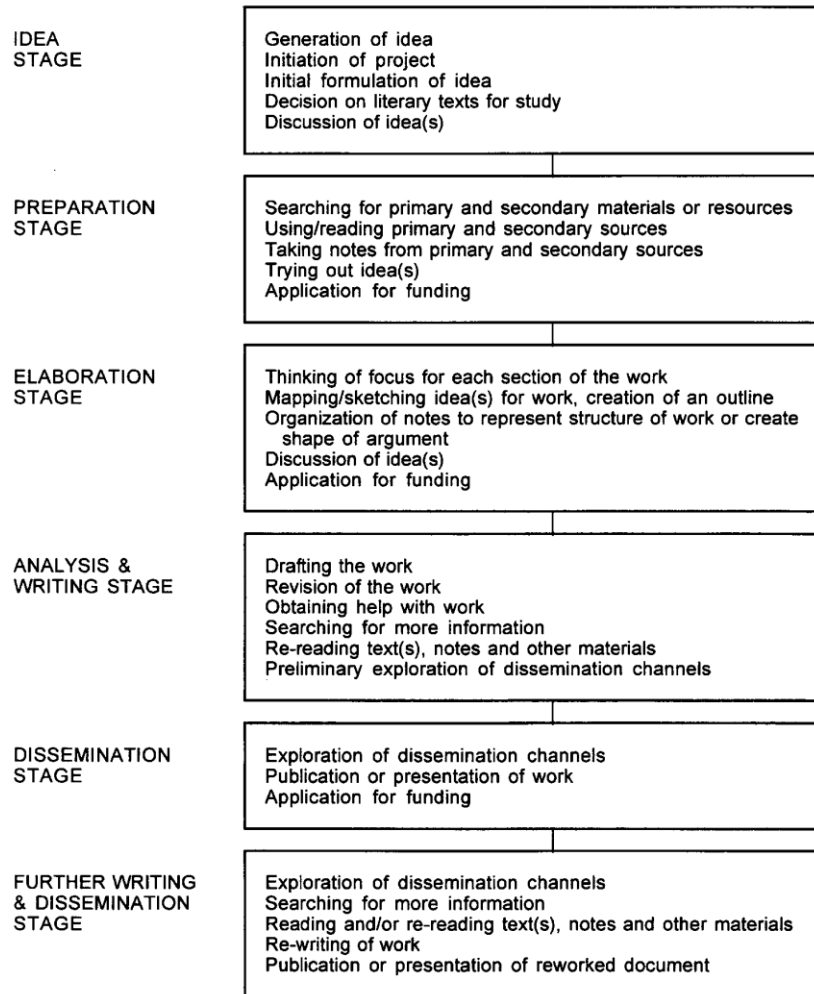
Working environments, as well as institutional and disciplinary norms and traditions, underpin scholars' research practices and their adoption of technology. The following section focuses on characteristics of the research process and practices.

3.3. Research process

Academic research is information-intense work in which information-seeking and use is integrated in all research stages. Information activities are an intrinsic part of the research development and some models of the research process reflect the close connection among research and information activities. The research process in different disciplines in the humanities is likely to have the same general patterns considering similarities between process models across time. For example, Uva's model of the research process in history, developed in 1977, was suitable as a basis for some revisions made by Gilmore and Case (1992).

Chu (1999) developed a research-phases model in the work of literary critics based on a study of scholars who worked in a wide range of fields. She described characteristics of each stage and functions of information in the process. Chu's comparison of this model with Stone's model of research phases in the work of humanists and Uva's model of research projects in history identified comparable parts of the project development. Figure 4 presents stages in Chu's model and their characteristics. Chu's model will be used later as a basis for considering the development of the research process in this study.

Figure 4. Research phases model (Chu 1999, 259)



Dynamic process

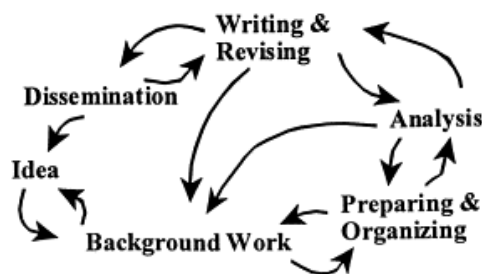
Most models of information-seeking and the research process show phases in sequential order, but Case (1991) found that stages do not present the reality of historians' research process, and that various stages 'can go on concurrently, both within and across individual projects' (79). Palmer and Neumann (2002, 99) wrote about 'long, unpredictable' paths of inquiry in the humanities, which 'often overlap from project to project' (99). This practice 'creates a relatively unique path of information seeking for each project' (Palmer and Neumann 2002, 99).

Some of the models presented in the literature either described or directly included the dynamic nature of the process in the model. Foster compared information behavioural

patterns of interdisciplinary scholars with ‘an artist’s palette, in which activities remain available throughout the course of information-seeking’ (Foster 2004, 228). Byström and Hansen considered the dynamic nature of the information-seeking process and found that ‘the ISP model is, in certain work settings, suitable as both a work task model and a model for the information seeking task’ (2005, 1055). It is the case with the academic research process as an information-intensive task with information-seeking, use and knowledge production as its integral parts.

Chu stressed that phases in her model were not meant to be strictly sequential (262). Brown (2002) found significant similarities between Chu’s model and research processes of music scholars, and attributed the differences between the two models to the nature of the work of literary and music scholars. Brown also stressed that the process is ‘iterative, not sequential or linear in nature’ (Brown 2002, 90) and represented the process as a free movement between the stages (Figure 5).

Figure 5. The research process of music scholars (Brown 2002, 88)



The dynamic nature of the research process in the humanities underpins traditional and electronic research practices, often described as random and serendipitous because of their unpredictable patterns.

3.4. Research practices

Individual interpretation has traditionally been a defining characteristic of humanities research and is offered as an explanation of why scholars in the humanities work alone. A scholar who works alone and reads, usually in the privacy of his or her own

home or office, is often portrayed in the literature (Hopkins 1989, 114; Wiberley and Jones 1989, 639; Stone 1982, 294).

Individual contributions in the humanities are not superseded in the same way as in the sciences, which makes old materials valuable in the humanities. In the sciences new knowledge replaces old, in the humanities new knowledge supplements the old (Mullings et al. 1996, xi). Considering that scholars investigate all historical periods and need access to historical scholarly work for their own interpretation, it is understandable that they need direct access to a wide range of historical and contemporary materials. Ellsworth described a humanities professor 'as a person who constantly educates himself by poking around in the junkyards of civilization for treasures he may cherish or even find useful' (1993, 58). 'Poking around' refers to the exploration in which browsing is very important and many discoveries are perceived as serendipitous.

Finding aids that enable bibliographic access are essential in searching for dispersed documents (Fulton 1991). Scholars' demands for improved bibliographic access noted in older literature (Stone 1982; Stieg 1981) have not been fulfilled. A third of the archival and manuscript collections in the US have not been processed (American Council of Learned Societies 2006, 22), and it is likely that a similar situation exists in Australia and other countries. Scholars appreciate help from archivists who know their collections, but they normally do not express a need for services and assistance (Talja 2002; Wiberley and Jones 1989; Stieg 1981; Corkill and Mann 1978). A historian commented that many problems of academic research 'are part and parcel of this scholastic process' in which problems and obstacles are often 'essential to the broadening and maturing perspectives' (Corkill and Mann 1978, 58).

3.4.1. Browsing and serendipity

The importance of browsing and serendipitous discovery has been repeatedly mentioned in the literature (Delgadillo and Lynch 1999, 253; Massey-Burzio 1999, 629-630; Fulton 1991, 190; Stone 1982, 295). 'Serendipity, when the meaning of the word is

extended beyond the dictionary's definition as the gift of finding something valuable that was not sought to include the finding of something not known, but hoped for, plays a significant role in historical research' (Dalton and Charnigo 2004, 410).

Browsing means scanning library shelves or electronic materials 'in an area that was a logical, but not guaranteed, location of information' inviting serendipitous discovery (410).

Despite many stories of fortunate serendipitous discoveries in the research process (for example, Cavalier 1993), what appears as a serendipitous information encounter may be based on systematic search rather than a fortunate turn of events. Case (1991, 79) did not find that historians' research was serendipitous, but well-organised and methodical. Duff and Johnson (2002, 494) wrote that historians' practice seemed unsystematic and discovery of relevant materials accidental, but they found that the historians were systematic in the way they built the context. The preparation happens throughout the seemingly unorganised information-seeking. Watson-Boone (1994) compared the humanists' information-gathering to 'grazing' not as much through collections and catalogues as through their colleagues' minds and especially through texts. Foster and Ford pointed to Cory's view that serendipity in the humanities has a role in revealing hidden links and promoting the development of creative connections (Foster and Ford 2003, 322).

There are some indications that browsing may have a varied importance. Hopkins (1989, 114) found that browsing was of limited assistance to literary scholars, and Ellsworth noted that 'European scholars seem to have done rather good work in their closed stack libraries' (1993, S6). Most special collections do not provide open access either, but they are still the most valuable sources of materials. Although the value of browsing may depend on the topic, and browsing shelves may be substituted by the assistance of staff and browsing finding aids, it is still a widely held opinion that browsing is an important aid in discovering information in not always obvious places.

3.4.2. Information sources

In a wide range of historical and contemporary materials, textual sources are the most commonly used in the humanities. Investigation of a piece of writing may require all available manuscripts, all printed editions as well as all interpretations of the work, in addition to documents about the period when the work was written. The importance of a source may depend more on an individual project and interpretation than on any objective assessment of its significance. A web site on popular culture may have the same importance as an archival document (Palmer 2005, 1146; Palmer and Neumann 2002, 99).

Books and bibliographic tools are highly valued by the scholars. A British study showed that the first four types of materials rated as essential were books and current publications; printed refereed journals; bibliographic tools, abstracting and indexing services; and rare books and manuscripts (RULOIS 2002, 20). More than twenty years earlier, Heinzkill (1980) studied references in academic English literary journals and arrived at similar conclusions. Dalton and Charnigo (2004, 404-405) followed up a study conducted by Stieg (1981) and found that historians' ranking of the most important materials remained the same in the later study, except that scholars had become more open to sources other than print.

The need for certain types of materials does not exclude others. Scholars need materials from all locations as well as local sources (Sze and Ngah 1997; Wiberley and Jones 1989). Although old materials provide valuable sources of information, current materials are also important (East 2005, 137), including current journals (Dalton and Charnigo 2004, 406-408).

Important information sources are found in scholars' personal collections, which are used on a regular basis for everyday and current awareness needs (Cavalier 1993, 22; Hopkins 1989, 114). An Australian study (Houghton, Steele, and Henty 2003, 98) and a British study by Education for Change et al. (2002) confirmed that personal collections remained an important source of information.

The investigation of human thought and creation includes work with materials in different languages. Many historians worked in languages other than English (Andersen 1996; Stieg 1981, 556), although Stieg found that more than half of her respondents did not try to keep up with foreign language material and some did not know the language of their main research area. A study of Argentinean scholars in the humanities and social sciences showed that a high percentage spoke two foreign languages, and many spoke four languages (de Tiratel 2000, 349). A study of citation patterns (Kniesel and Kellsey 2005, 147, 155) confirmed the importance of materials in foreign languages, particularly in history.

Humanists also rely on sources from other fields. Palmer (2001, 128) found that in an English department in a university, most academic staff were actively drawing information from several disciplines. Palmer's study of subject interactions in literary studies indicated a heavy reliance on publications in the field of history, then sociology, philosophy and arts (Palmer 2001, 129). The scholars' reliance on direct access to a broad range of information sources found in library, archival and personal collections, as well as in any other place, has been one of the most persistent characteristics of the humanities research, and one of the greatest challenges for information provision in any form.

Primary materials

Primary sources are the most important for a large part of humanities research. Primary materials provide an essential basis for historians' interpretation (Tibbo 2003b, Introduction; Delgadillo and Lynch 1999, 257) and some historians 'described their use of primary sources as the heart of what they do' (Case 1991, 74). Fulton (1991, 191) also noted the importance of manuscripts and unpublished sources for research in literary and historical studies, although this may depend on the topic. Stern (1983, 208) noted that primary sources are less important in literary theory.

The most frequently used sources of primary information in history are archives and special collections as well as materials such as manuscripts and books (Dalton and

Charnigo 2004, 405). Magazines and newspapers are also frequently used (Houghton, Steele, and Henty 2003, 86; DLF 2002). Primary sources are usually retrieved through finding aids, footnotes, catalogues and archives (Dalton and Charnigo 2004, 407). The importance of web sites as primary sources is unclear. Only seven out of 278 respondents in Dalton and Charnigo's study mentioned web sites as sources, but Houghton, Steele and Henty (2003, 88) found that a range of Web resources were perceived as essential, which included resources discovered by generic search engines such as Google.

Direct access to originals is repeatedly mentioned as crucial, because scholars need to investigate various details of originals to detect clues required for the research. Steedman asserts that '[t]he historian's massive authority as a writer derives from two factors: the ways archives are, and the conventional rhetoric of history writing, which always asserts ... that you *know* because you have been there (Steedman 2001, para 39).

Direct access to primary materials, although very important to many scholars, is often very difficult for a number of reasons. Trips to distant locations where scholars can view originals are costly and time-consuming. The problem is aggravated by the fact that large parts of special collections are not easily identified. Another problem in accessing primary materials is related to acquisition policies. A historian was concerned that '... there must be a whole field of what was important to people at one time that for a variety of reasons didn't get into academic libraries in the late nineteenth century' (Case 1991, 73).

The provision of bibliographic tools for discovery of a variety of materials, particularly primary sources available in research collections and anywhere else, addresses a central need in humanities research. Browsing and interaction with a range of materials enable establishment of connections among information and ideas.

3.5. ICT in the humanities

Complex research practices were transferred to the electronic environment with the mixed success. This section will discuss a range of issues of ICT in the humanities: adoption and acceptance of ICT, issues related to the use and adoption of electronic texts, as well as electronic research practices and the required support. The use of e-texts is considered in the context of ICT adoption in general for two reasons. Firstly, this approach provides a broader view to position the adoption and use of e-texts. Secondly, studies focused on e-text use in humanities research are so rare that they cannot provide a basis for a coherent insight into various aspects of their adoption and roles in scholarship.

Although scholars in the humanities have appeared to be on the margins of technological changes for a while, a short historical overview in the following sections will show significant transformations in scholars' practices in less than three decades. The use of electronic finding aids and textual sources have played a significant role in the change.

3.5.1. Adoption of ICT

Humanists were initially slow and reluctant adopters of new technologies and even when they used computers, it was mainly for word-processing. Stieg (1981, 553) wrote that most historians ignored computers while Stone observed that 'the impression is given at times of humanists as rather inadequate individuals unable to face up to technological change' (Stone 1982, 300). Humanists' need for a wide range of materials and finding aids as well flexible searching across full-text documents made the first databases of bibliographic records of limited use to scholars.

As digitisation projects provided an increasing number of documents and finding aids online, electronic collections became increasingly useful. Dalton and Charnigo (2004) followed up Stieg's study and found an increased use of electronic catalogues and indexes to identify sources of information. Electronic bibliographic tools and reference

works became a preferred format (Palmer and Cragin in press; Summerfield, Mandel, and Kantor 2000). Despite the limited availability of materials and ability of current technologies to respond to humanists' needs, scholars in the humanities have made extensive use of electronic sources (The British Academy 2005; Brockman et al. 2001). In the preface to the report prepared by Brockman et al., Greenstein wrote that the study 'demonstrates the extent to which scholars are able to harness information technologies to tried, tested, and somewhat traditional research functions' (2001, vi).

As suggested by a number of authors (Gardiner, McMenemy, and Chowdhury 2006; Palmer 2005, 1144; Wiberley and Jones 2000; Andersen 1996, 219), the content and scope of online materials, the speed, savings in scholars' time and convenience are critical issues in the adoption. A recent list of main challenges shows that limited access and the availability of materials are some of the main obstacles to adoption (The British Academy 2005, 41-42). Dalton and Charnigo (2004, 412-414) reported participants' comments that 'sources were not international enough, or as some put it, too anglophone' (412), and that foreign-language materials were absent or difficult to use. A third of the study respondents were dissatisfied with the indexing terminology or indexing in general. Problems identified that related to the equipment or software included poor search engines, slow response time, difficulty in navigation, and frequent format or interface changes. Problems also concerned the absence of international standards and scholars' own lack of knowledge. Ellis and Oldman (2005, 35) also indicated technical and training limitations as obstacles to the adoption of some technologies. Technological advancements have made ICT more suitable and acceptable for humanists, but a range of problems related to access, availability of sources, technical limitations and scholars' knowledge remain.

Acceptance of ICT

The adoption of ICT depends on its usefulness but also on its acceptability to scholars. Personal beliefs, generational changes, the stage of scholars' careers, and influences of formal education all have some effect on the acceptance of ICT. Personal beliefs about

computer use and the perceived results of the use may be the strongest factor influencing the acceptance among academics (Davies 1997, 385). Peer pressure may determine academics' perceptions of the system and their decision regarding whether they would try to use them, suggested Davies.

Since the advancement of widespread use of personal computers, new generations have been integrating computers in their lives from a younger age. The common wisdom suggests that younger people are more adaptable to using computer technology, but studies provide contradictory evidence. Tibbo (2002, 6-7) found that younger scholars and women were more likely to visit repository web sites. More electronic technology strategies were reported by academics who had worked for less than ten years. Similarly, Buchanan et al. (2005, 223) found that digital libraries were used more often when scholars were new to a field, especially when they were in the early stages of their careers, and when a new project had started. The report by The British Academy (2005, 58) suggested that senior, even retired, researchers were often as electronically active as junior ones. It seems that the first indications of age differences, such as in a study reported by DeLoughry (1993), became less relevant as the oldest group of respondents retired over a period of ten years. Reported differences in the adoption of ICT depending on age are indicative, but they may be connected with some other, possibly more important factors such as the career stage, experience and type of tasks scholars performed. When it comes to substantial use of electronic sources that affects research approaches, ICT may be less acceptable to junior scholars.

An important influence on future scholars is education, which reinforces dominant research cultures. In Tibbo's study (2003b), 48—56 per cent of respondents said they recommended various electronic sources to their students, but only seven per cent recommended two most comprehensive sources of data on archival collections in the US. Considering a pattern of other instructions, Tibbo questioned how doctoral students learned about finding aids (under 'Faculty and the next generation of historians').

In the changing and complex field of academic research, the literature does not provide a comprehensive explanation about the different factors that influence the adoption of ICT. It seems that the usefulness of existing sources for a particular field, as well as influences from the academic environment and some personal factors, are possible influences that shape the adoption.

3.5.2. Applications and adoption of e-texts

Since the text is the basic working material for research in the humanities, the provision of text in an adequate electronic form is crucial for the qualitatively new employment of computer technology in the humanities. Word and concept retrieval across full texts, multiple uses of a text, integration of resources, flexible and remote access are some of the developments associated with electronic texts that directly address a variety of the researchers' information needs, while opening new possibilities.

It is not accidental that the first attempt to apply computer technology to the humanities in the middle of the twentieth century and the consequent advancements in the digital humanities research have been based on work with text. The appearance of personal computers in the 1980s and the widespread use of the Internet in the 1990s were major developments that brought a computer to the office of the humanities scholar. The appearance of widespread scholarly text in the electronic form was enabled by the development of the WWW as a popular medium and flexible delivery mechanism, SGML (Standard Generalized Markup Language) as a metalanguage for defining methods of representing texts in electronic form, and TEI (Text Encoding Initiative) as a system for encoding scholarly text (Hockey 2004; Ide and Veronis 1995). The advancements in the digital imaging technology for popular use in the 1990s have also contributed to the provision of pictorial resources in conjunction with the electronic texts.

In considering the adoption of e-texts, it is important to bear in mind that the still-developing basis for a widespread use of scholarly e-texts has existed for less than

twenty years, which is a moment in the lifetime of the humanities, one of the oldest fields of scholarly endeavour. The following section will consider applications of e-texts in scholarship, and will then discuss the adoption of e-texts.

E-text applications in digital scholarship

Different ways of using ICT in research all affect scholarship in some way, but digital scholarship relates to uses that directly influence knowledge production. Digital scholarship in the humanities has become more elaborate in the recent years, and now it refers to several related forms of scholarship:

- a) building a digital collection of information for further study and analysis;
- b) creating appropriate tools for collection-building;
- c) creating appropriate tools for the analysis and study of collections;
- d) using digital collections and analytical tools to generate new knowledge, interpretation, understanding; and
- e) creating authoring tools for presenting these new ideas, either in traditional forms or in digital form (American Council of Learned Societies 2006, 10).

The report cited above identified (d) 'as the core meaning and ultimate objective of "digital scholarship"' (10). E-texts play a significant role in digital scholarship because of the scholars' reliance on textual sources. The main uses of e-texts in the humanities are based on the text retrieval and analysis:

The computer is best viewed as an aid to scholarship, a machine which can help with many repetitive tasks and which can assist with detailed investigations or help to provide an overall picture which would be impossible to obtain by other means. Many humanities electronic text projects which are more than simply putting material on the Web have been based, in one way or another, on word searching, frequency lists, and concordances (Hockey 2000, 6).

The main areas of e-text applications are:

1. concordances and text retrieval programs for text-analysis
2. dictionaries and lexical databases

3. literary and linguistic analysis
4. stylometry and attribution studies
5. electronic editions and archives (points 1-5 based on Hockey 2000)
6. electronically born literature and media art.

The first five points were discussed by Hockey and I added the last point in response to the growing interest and advances in electronic literature and art. The purpose of most of the listed applications is rather self-evident, but stylometry and attribution studies and electronic editions require a brief elaboration. Stylometric analysis serves two purposes: to build an overall picture of a collection of materials and to provide concrete evidence to test a hypothesis about the material (Hockey 2000, 104).

Authorship studies are often based on testing a hypothesis by teasing out stylistic features of writing.

The value of electronic editions for textual criticism and a wide multi-purpose use has been discussed more often than any other application of electronic texts. Electronic editions and archives can provide large amounts of dispersed materials, different versions of the text, images of originals, scholarly annotations as well as links to context-building information. The presentation of e-texts includes some forms of specialised services, such as presentation of text in different languages, an option to reconfigure the same materials for different purposes, online help and contact details for enquiries, to name some possibilities.

Many advantages of working with e-texts arise from the speed of processing. Hockey pointed out that work that had taken years and decades in traditional ways could be performed more accurately in a matter of minutes or even seconds. Some types of investigation are hardly possible without the aid of the computer, which 'will provide an overall picture which would be impossible to derive accurately by manual methods. It can also pinpoint specific features within a text or collection of texts and lead the researcher to further areas of enquiry' (Hockey 2000, 66). Hockey also noted that computer-aided analysis can also provide concrete evidence to test a hypothesis about the material.

Although e-texts may have a great potential for scholarship, it appears that they have not been widely accepted. Palmer (2005, 1144) suggested that the effects of interrogation of the full-text corpora were appreciated in literary, linguistic and cultural fields where these interrogations guided formulation of research questions, interpretation and textual analysis, but these methods were not widespread. Hockey suggested that the reluctance of scholars to adopt these methods had been based on the perception that they are alien to the nature of the humanities research:

Scholars are unhappy about the apparent quantification of literature, and have taken issue both with what is being quantified and with the interpretation of the results. Some critics are deeply suspicious of numbers, which they feel are alien to their normal way of working, yet even simple counts can help to reinforce a feeling about a text or show that what intuitively seems rare or very frequent is not in fact so (Hockey 2000, 66).

Scholars affiliated with digital humanities discuss their practices and methodologies at gatherings such as *Digital Humanities* conferences and in specialised publications such as *Literary and Linguistic Computing*, but there are very few clues to how other literary and historical scholars engage with e-texts.

Adoption of e-text

In the first decades of the existence of the humanities computing during the second half of the twentieth century, the advancements in e-text development were not readily accepted outside of a rather small group of scholars belonging to or aligned with the field of humanities computing. Olsen (1993, 309) wrote that ‘the role of electronic text in literary research remains surprisingly limited’ and provided an overview of relevant literature as an evidence.

A number of editing and digitisation projects since the 1990s provided a base of e-texts that made their way into mainstream research. The studies have indicated the growing, but uneven adoption. In a study by Wiberley and Jones (2000), only two out of thirteen participants used primary materials in e-form. Summerfield, Mandel and Kantor (2000, 46-47) found that monographs and texts for the humanities were not heavily used, but

the use had been growing. The users usually browsed books online, printed them for reading and searched them to find a quotation or a citation. Scholars in Massey-Burzio's study (1999) did not respond enthusiastically to technological advancements, but their view of full-text databases was very positive.

Searching provides the critically important functionality. Few participants in the study conducted by Brockman et al. (2001) used full-text databases that were available to them, but those who did were very satisfied with them, particularly with products that provided access to primary materials: 'The thoroughness with which searching is possible across any of the corpora covered by these databases means that once they have been recognized by a group of researchers in a particular field, their use is obligatory' (16). Davies (1997, 387) found that the way 'computers can "crunch" through texts, comparing usage of given words or idioms, has completely altered the questions which humanists can ask'. The ease of searching allows students to ask questions by interacting with e-texts that were once answered only by reading and experience (Ruhleder 1995, 49).

A shift from print to online texts affects the way scholars work, which in turn affects beliefs and expectations about the work process (Ruhleder 1995, 48). Cherry and Duff (2002) studied the use of Early Canadiana in research and teaching and found that the main advantages of using the collection were access to remote and dispersed materials, convenience of working from one's own office and searchability. The electronic collection facilitated the discovery of new resources and information related to texts.

The main obstacles to the engagement with e-texts identified by the studies concern scholars' trust in the scholarly standards of electronic collections, availability of materials with contextual details and the lack of direct access to sources. Flanders (1998) found that users of the Women Writers Project appreciated the availability of materials that were difficult to find in hard copy, but they were concerned about scholarly standards and the nature of e-texts. The survey respondents expressed a strong wish for rare and non-canonical texts. Researchers in the humanities did not think that a critical mass of relevant materials was available (RULOIS 2002, 38). The

latter study found that scholars were very interested in e-texts of manuscripts and primary documents, but the tradition of physical contact with objects and manuscripts was noted as an important factor influencing interactions with e-texts. Andersen (1996, 220) noted that historians needed to check original primary sources, even when they were found in a print version. According to Andersen, documents represented in electronic and microform were helpful in providing content, but they did not provide the context of the document.

A study of e-book use (Levine-Clark 2007, 11) showed that the acceptance of e-books varied among humanistic disciplines. Historians consistently preferred print, while almost a third of participants in languages and literatures indicated their preferences for electronic form. As noted earlier, the importance of physical access to primary materials may depend on the topic. Scholars in literary and linguistic studies are presumably more inclined to value e-texts because of the importance of the analysis based on full-text searching, although it is possible that some historical studies based on intense work with a smaller number of documents use similar methods to those of literary scholars.

Many questions and assumptions about non-use, disciplinary differences and the way in which e-texts are used have not been clarified. The majority of studies mentioned above asked questions about e-text use as part of a broader investigation of other issues. Although primary materials are the most important in humanities research, very few studies investigated their use in electronic form. A small number of studies surveyed users of a particular collection of primary materials (Cherry and Duff 2002; Noguchi 2001; Duff and Cherry 2000; Flanders 1998). While they provided valuable pointers, objectives of these studies did not allow deeper investigation of users' interactions with e-texts. Interviews conducted by Ruhleder (1995) with users, tool developers and editors of *Thesaurus Linguae Graecae* elicited interesting results about various aspects of the use of the source, but this study was conducted twelve years ago, focusing on one of the first large electronic projects. The existing knowledge of humanists' interactions with primary sources in electronic form is very limited.

3.5.3. Electronic research practices

This section will consider how scholars discover and evaluate information electronically. Considerations of information-seeking, particularly online searching, informal networks and information evaluation and use will include comparisons between traditional and electronic practices. Issues of authenticity will be considered in relation to scholars' decisions to cite electronic documents as evidence of information use. Finally, some issues of support for electronic research practices will be considered at the end of the section.

Information-seeking

Information-seeking is an integral part of the research process. Unsworth (2000) used the term 'scholarly primitives' to 'refer to some basic functions common to scholarly activity across disciplines, over time, and independent of theoretical orientation' (para 1). Discovering was identified as one of the primitives.

Some established practices used for information discovery were transferred to the electronic environment. The preference for library catalogues and finding aids remains, reported the Digital Library Federation (2002, Introduction). The library had been consistently identified as a very important place for information discovery, but it has been changing since a number of library resources, particularly catalogues, can be accessed remotely. Historians visit repository web sites and use search engines to look for material: 'Visiting a repository Web site may be a bridging behavior, much like searching one's OPAC. Going directly to a Web site is much like contacting a repository for information, a tried-and-true historian's methodology' (Tibbo 2003a, 23).

Various materials have been traditionally used for information discovery. Scholars use citations in books and journals, consult colleagues, and prefer informal and semiformal channels to find information (de Tiratel 2000, 349-352). Historians also use newspapers contemporary to the event (Tibbo 2003a, 19). Neumann (2001, 77) found that academics had an extensive knowledge of information-searching tools, but they 'generally did not

know the names of different tools or systems available, and were often unable to describe definitively the tools that they used’.

The use of citations in information-seeking is a well documented practice. Ellis called it chaining and defined it as ‘following chains of citations or other forms of referential connection between material’ (1993, 483). Palmer and Cragin (in press) identified chaining as one of the best examples of an information work primitive (see Unsworth above). Tibbo (2003a, 19) found that 98 per cent of primary materials were found by following leads in printed sources. Brockman et al. (2001, 9) wrote that chaining helped scholars ‘maintain a conceptual network of the field into which they envision their own work being placed’. Buchanan et al. (2005) wrote that the provision for browsing in digital libraries was inadequate, but chaining was used often and replaced browsing.

Electronic searching

Full-text searching is a particularly prominent way of electronic information-seeking. The lack of semantic responsiveness was a problematic aspect of the older generation of online databases, which did not provide neither an adequate mechanism for searching intangible and vague topics (Fulton 1991, 190) nor rich vocabularies. Adequate provision of searching for the humanities has to take into account that these disciplines use broader vocabularies than those of scientists and social scientists. Schachter et al. (1994) found that scholars in the humanities used more words in their lectures and professional publications, but the difference between humanists and other academics was not noticeable in interviews with scholars. The study indicated that the subject matter was the reason for a more diverse vocabulary in the humanities.

Considering the broad terminology and the focus on the work of individuals, it is hardly surprising that names are prominent search terms. Wiberley and Jones (1989, 643) wrote about the importance of name searching while Duff and Johnson (2002, 485) wrote about the practice of collecting names related to research. Bates, Wilde and Siegfried (1993) found that personal names, geographical and chronological as well as

disciplinary terms were used more in the humanities than in a comparative science sample.

Duff and Cherry (2000) investigated the use of a full-text database and found that full-text searching was the most prominent strategy. Users of e-texts did not use traditional book components such as the table of contents, footnotes and index nearly as much as users of the same material in a microform or a paper form. Wisneski (2005, 125) found that keyword searching was initial strategy of academic staff in English. The two studies confirmed the observation that abstracts had limited value without full-text documents (Gilmore and Case 1992, 676). While it seems that humanists conduct online searching in a similar way to scholars in other disciplines (Vakkari and Talja 2005), there are no recent studies focused on humanists' online searching for different purposes to document their searching strategies. Studies indicate that a number of information-seeking practices have been transferred to the electronic environment, but it is not clear how, if at all, electronic access and searching have affected these practices.

Informal networks

The image of a lone scholar used to be associated with relative isolation. Earlier studies argued that humanists did not participate in developed invisible colleges and informal networks (Hopkins 1989, 115; Stieg 1981, 553). However, a number of later studies showed that colleagues were important as a source of information and help in defining research questions for historians (Case 1991, 79), while colleagues and students provided intellectual and informational help to literary critics (Chu 1999, 265). Weedman (1993) found not only that interpretive communities were important for literary scholars who shaped their ideas in conversations with colleagues (760, 770), but scholars who participated in an invisible college were also more senior, published more and were more likely to have their work identified as influential (Weedman 1993, 749).

Some recent studies have indicated that ICT has influenced the strengthening of informal networks and even collaboration. Number of British humanists who rated

colleagues, conferences and research networks as essential information providers was very close to that of scholars in social sciences and sciences in the study conducted by Education for Change et al. (2002). East (2005, 137) noted that discussion lists were not a major source of information, but they were important for networking and current awareness. Humanities scholars value scholarly mailing lists more than scholars in other disciplines (Talja, Savolainen, and Maula 2004; Houghton, Steele, and Henty 2003, 88-89, 120). The preference may be attributed, at least partially, to the importance of informal networks in the humanities.

Genoni, Merrick and Willson (2005) studied the impact of the Internet on invisible colleges. They related the concepts of weak, strong and latent ties to the Internet communication. The authors described the concept of weak and strong ties, originally established by Granovetter, in the following way: 'Weak ties enable the sharing of diverse information since they offer the opportunity of connection with a more heterogeneous range of individuals than is possible with strong ties' (Strong, weak, and latent ties, para 1). The concept of latent ties, based on Haythornthwaite's description, includes 'individuals working within the same occupational or professional group, who may be aware of each other by name or reputation, but who have not had previous personal contact' (under 'Strong, weak, and latent ties'). Genoni, Merrick and Willson conducted a survey of academics at the Curtin University of Technology and showed that over 72 per cent of respondents used the Internet to activate latent ties. Unsworth suggested that the 'intensification of informal communication is bound to have an impact on the culture of the humanities, epistemic or otherwise' (2003, under 'I Informal communication and social capital').

The studies indicate a role of online communication in information-seeking. The dynamics of online networks, the contribution of online searching of full-text documents with options for interactions, and their impact on scholarship in general and on information behaviour in particular, have not been sufficiently investigated.

Citation as evidence of information use

Scholars search and read a variety of sources to find information that can contribute to their work. The use of information involves some form of its integration in research. The integration is evident mostly in writing about research, which contributes to intertextuality as visible and invisible connections among texts. Because it is difficult to anyone except the researcher (and sometimes not even to her or him) to follow complex intertextual relationships in a research project, scholars' intellectual engagement with texts is often traced through citations as a readily available measure of the use of ideas. If citations are the main measure of intellectual engagement, e-sources do not rate highly in humanists' work. Knieval and Kellsey (2005, 147) found that books represented over 74 per cent of all citations in a range of humanities journals published in 2002, while Internet sources represented only 0.3 per cent of all references. Graham's study (2000) showed that investigated publications in history had fewer than 2 per cent of references to e-sources. A study of 80 articles in the period between 1997 and 2000 found that only three articles included references to electronic sources (Graham 2001). Graham (2002) found that in the opinion of historians, their colleagues did not respect citations of electronic sources and digitised documents were not equivalent to the original. Graham suggested that these two reasons explained why historians preferred to cite print.

Scholars in American literature valued searchable texts because they allowed them to make 'intellectual connections that were previously impractical, if not impossible' (Brogan and Rentfrow 2005, 21). However, '[f]ew are willing to use digital texts (outside e-journal articles) as the "text of record for a scholarly article" — even those digital resources (texts and archives) produced by their peers, by university libraries, or by otherwise credible publishers' (21). This finding was supported by a survey of relevant print scholarship, which showed that few scholars cited the electronic Rossetti Archive although it is an authoritative edition (McGann 2005, 184). It may be that electronic materials have been important for a limited range of literary projects, but it is also possible that scholars avoid citing sources that are not backed up by a publishing authority.

Weedman pointed out that humanities scholars cite and co-author less frequently than scholars in other fields, and 'these formal relationships are not by themselves adequate measures of the intellectual exchange in the field' (Weedman 1993, 771). This point seem particularly relevant in considering the citations of electronic sources, which is a largely uninvestigated phenomenon.

Authenticity

A major obstacle in the use of electronic texts seem to be researchers' doubts about their reliability and authenticity. Considering the meaning of authenticity, Bearman and Trant wrote:

At its extremes, authenticity carries with it all the philosophical problems of truth, but here we will try to confine the assertion that something is 'authentic' to a number of more 'provable' claims: that it is unaltered from the original; that it is what it purports to be; and/or that its representation is transparent (the rules are stated and, possibly, reversible) (Bearman and Trant 1998, under 'II Asserting and Assessing Authenticity').

The authors stressed that convincing scholarly arguments depended on judgments about the authenticity of source materials — their origin, completeness and internal integrity (under 'I Introduction').

Since the judgment of authenticity of source materials is a necessary part of scholarly work, the question is why it is posing particular problems when materials are in electronic form. Part of the answer relates to the quality of these materials. Electronic documents can be published by anyone and, as noted by Bearman and Trant (1998), because forgeries are much easier. The first full-text databases chose out-of-copyright editions rather than the best ones, which made users rightly suspicious of their quality (Warwick 2001).

On the other hand, electronic documents provide minute details, which are not accessible to most people. Reading Chaucer in the manuscripts 'is baffling — you are encountering a whole world of cultural codes, expressed in the letter shapes, the

layout, organization, and decoration of the manuscripts. To give people images of this quality is to give them the exhilaration of the original' (Robinson 1993, 13). Detailed presentation of digital facsimile editions with capacities for image manipulation sometimes make an electronic image superior to seeing the original in a good light (Duggan 1996, 79). In addition to viewing fine details of original materials, there are links to documentary texts, descriptions and notes: 'Within a single large, hypertextually linked archive, scholars may interrogate the entire textual tradition of the poems' (Duggan 1996, 80).

An obstacle in using and publicly acknowledging rigorously developed electronic sources is the lack of widely accepted criteria for evaluation. The quality of print editions varies significantly, but scholars regularly use a set of criteria to judge the quality of these editions. Critically important for judgment of the authenticity of an electronic document are its provenance and a detailed declaration of transformation identifiable in metadata (Gladney and Bennett 2003), but this information is not always available.

While systematic and exhaustive documentation would play a significant role in assuring reliability, it is unlikely to resolve all different requirements for authenticity. If it is possible to establish the original, that work is the measure of trustworthiness of any representation. The authenticity of electronic editions is often judged by print editions, even when electronic editions provide unique functionality. This is not the case with electronic projects such as *Electra*, which presents some women's works for the first time: 'In this instance it offers an unlikely route into authenticity, or rather to that earlier moment of inauthenticity which as editors and textual critics we have decided to label the real thing' (Sutherland 1993, 65).

Authenticity, authority and virtuality of a text are often perceived in the context of scholars' quest for origin, described by Derrida as archive fever:

The *trouble de l'archive* stems from a *mal d'archive*. We are *en mal d'archive*: in need of archives. Listening to the French idiom, and in it the attribute *en mal de*, to be *en mal d'archive* can mean something else than to suffer from a sickness, from a trouble or from what the noun *mal* might name. It is to burn with a

passion. It is never to rest, interminably, from searching for the archive right where it slips away. ... It is to have a compulsive, repetitive, and nostalgic desire for the archive, an irrepressible desire to return to the origin, a homesickness, a nostalgia for the return to the most archaic place of absolute commencement (Derrida 1996, 91).

As Derrida argued, the archive is the place where things *commence*, but also the place 'where men and gods *command*, *there* where authority, social order are exercised' (Derrida 1996, 1). An uneasy fit of the place of commencement and the place of commandment become evident in considering the meaning of authenticity, particularly in the electronic environment. An important question concerns who presented not only an electronic copy but also the 'real thing', and how these were presented. The official authority of the author, publisher or a curating institution is often important in establishing the trustworthiness of information, but it does not necessarily guarantee authenticity. Authoritative institutions often represent those who, for some reason, cannot speak for themselves, but official authority does not necessarily guarantee authenticity. As Haraway pointed out, representation is rarely a reproduction. Haraway used an example of the jaguar and the foetus, which cannot represent themselves: 'Both the jaguar and the fetus are carved out of one collective entity and relocated in another, where they are reconstituted as objects of a particular kind — as the ground of a representational practice that *forever* authorizes the ventriloquist. Tutelage will be eternal' (Haraway 1992, 312). When Haraway questioned the right of a scientist to represent 'the nature', she questioned representation authorities. The question is particularly acute in the framework of electronic environments, in which a variety of representations with different origins keeps open questions of who represented something, in what way and for what purposes. The understanding of trustworthiness of representation that arises from Haraway's perspective concerns the reliability of reproduction as much as ideologically charged contexts of representation.

Support for electronic research

The complexities of research practices in the humanities and uncertainties related to the use of ICT indicate a need for significant research support. This section considers some key aspects of support, which concern

- authenticity
- the development of flexible, user-defined systems for searching text
- support for and curation of digital resources developed by scholars
- provision of information and research services.

Authenticity cannot be ensured by any single measure, but documenting authenticity and developing criteria for assessing trustworthiness of electronic documents are key factors for the use of electronic sources.

Flexible, user-defined systems for searching text have been a topic of a significant body of the computer science literature, but the aims described by Belkin remain:

... we require facilities for dynamic, user-defined, large-scale patterns in text. Furthermore, such patterns, as created, should be usable for partial, rather than exact matching on the text collection as a whole, and should be capable of being related to other portions of the texts through dynamically established clusters or links (Belkin 1994, 487).

Digital resources developed by scholars were discussed by Palmer (2005, 1149), who commented that libraries were not systematically acquiring digital resources produced by scholars. Palmer suggested that research libraries should take some responsibilities such as technical support for scholars, collections of materials prepared by scholars, and metaindexing of access resources.

Information and research services are required to meet information and training needs. The need for training was frequently reported by a number of authors (American Council of Learned Societies 2006, 45-49; Ellis and Oldman 2005, 31, 35; Tibbo 2003b; McKnight and Price 1999; Andersen 1998; Ruhleder 1995), but it is not clear what is the most appropriate way to meet these needs.

Nature and forms of assistance

The questions about adequate training and assistance relate to the provision of information and research services. The discussions about the assistance of information professionals evolve around two issues — the form and the nature of assistance.

The first group of views does not doubt the value of assistance, but argues that the form of assistance is very important for the scholars. Wiberley and Jones (1989, 640) found that scholars were reluctant to admit a lack of knowledge and ask questions at the reference desk. Cool (1993, 276) explained that a defining aspect of professional identity is 'professional expertise', which involves 'knowing the literature'. Researchers seemed to be satisfied with librarians' assistance when they used their help (Wisneski 2005, 125-126; Massey-Burzio 1999, 627). Academic staff in English in Wisneski's study reported stated that their workload was an important reason why they did not attend workshops when they were on offer. According to these views, the form in which the assistance is offered and what is required of a scholar to get the required assistance are important. General workshops and service from the reference desk may not be the most helpful form of service, either because the scholar has to come to the reference desk and seek help or because (s)he has to find time to come to training when it is on offer.

Another group of views evolves around the idea that scholars need help from highly specialised people. Archivists are usually viewed as very helpful, because they have detailed specialist knowledge of their collection. In the study conducted by Delgadillo and Lynch (1999, 251), history graduate students thought that reference staff lacked expertise for their level of queries. Talja (2002, 154) found that scholars rarely sought information from librarians because they did not need help with general or technical searching skills. Scientists who consulted a particular librarian did so because of that person's scientific training. The expressed need for the assistance of people with linguistic skills is a demand for a specialised service.

It was suggested that the training for scholars should be discipline specific (Chappell and Wissenburg 1998), and that historians preferred individual, hands-on instruction

from colleagues (Andersen 1998). The report by Education for Change (2002, 36) suggested that the word 'training' was viewed negatively. The recommendations for individual and practical instruction, which would not be identified as 'training' tally with the considerations of the form of assistance, while the preference for colleagues as instructors relate to the preference for specialised nature of the instruction.

The increasing adoption of ICT and electronic texts has influenced changes in practices such as information-seeking, networking and evaluation of information, and further transformations are to be expected. There is a strong indication that various forms of support, including consultation and education are much needed, but the provision of successful services requires careful consideration.

Chapter summary

Research in the humanities, particularly in literary and historical studies, has been viewed in the context of main influences from research environments. Scholars' work is characterised by dynamic research process, complex practices and a reliance on a wide variety of sources, particularly primary materials. Textual sources play a central role in their work. Studies indicate that electronic texts, particularly primary sources, are much appreciated by scholars who use them, but it seems that the practice is not widespread. The lack of investigation into the use of electronic text makes it difficult to assess their roles in research. Considerations of the adoption of ICT and research practices in the electronic environment have shown that scholars interact with electronic sources extensively, but there are still many obstacles to their efficient use. Different forms of support for electronic research have been considered as well.

Gap in knowledge

This and the previous chapter have reviewed the literature related to electronic textuality, the information framework and research in the humanities, identifying two main areas where there is a gap in our knowledge: the understanding of research

practices and processes involving interactions with e-texts, and the understanding of texts used in the humanities for purposes of processing by information systems.

An overview of issues related to research practices in the humanities, particularly to the use of ICT, shows a lack of in-depth understanding of issues of online searching, particularly across full-text sources, networking and the use of information sources. Although textual sources, particularly primary materials, are of central importance for humanities research, our current understanding of researchers' interactions with e-texts is rather limited. Information processes in general and in the humanities in particular are not well understood. In consideration of a holistic view of information, it was stressed that conscious rational thinking as well as unconscious processes and feelings take part in understanding. The current state of our knowledge is insufficient to explain different forms of understanding, and the roles of feelings, particularly aesthetic emotions, in information processes. There is a need to understand research processes that involve the use of electronic texts as well as to understand implications of social dimensions of research for the scholarly practices. Scholars' citation of electronic resources is one of the intriguing, but little investigated areas.

Analysis of the literature in the previous chapter identified a lack of clarity in our understanding of text, which is necessary for its effective representation in information systems, particularly for processing by computers. A clearer understanding of electronic text as an entity in information systems could enable more efficient ways of supporting scholars' research practices.

CHAPTER 4. METHODOLOGY AND METHODS

This chapter explains the rationale for the study and the way the project unfolded. It consists of three parts. The first two sections provide an overview of methodological approaches. The first part presents the hermeneutical approach, and considers its presence in information studies as well as relevant hermeneutical concepts. The second part describes the research design and the third part outlines the details of conducting the study.

The aims of the study are to explore roles of electronic text in research enquiry in literary and historical studies, and to deepen the understanding of the nature of scholars' engagement with e-texts. The following research questions guided the development of the study:

- How do academic researchers interact with e-texts?
- What do e-texts contribute to their research projects?
- What are some of the challenges and aids influencing the interactions with e-texts?

4.1. Hermeneutic approach

Hermeneutics is a discipline that traditionally dealt with interpretation of text, particularly religious texts. During the twentieth century it became 'the art, theory, and philosophy of interpreting the meaning of an object (a text, a work of art, social action, the utterances of another speaker, etc.)' (Schwandt 2001, 115) and it refers both to the philosophy and to the research method. Hermeneutics as a philosophical tradition based on studying text is particularly relevant for the study, considering that this study investigates interactions with texts, and that interpretation and text define scholarship in the humanities in many ways.

Hermeneutics is grounded in the philosophical thoughts of Husserl and Heidegger, as well as in the tradition of phenomenology. It has a strong presence as a theory and practice in the humanities and social sciences, where it is used in different forms in traditions from positivist to deconstructionist. Hermeneutical approach in this study is based mainly on the thought of German philosopher Hans-Georg Gadamer, presented in his work *Truth and method*, and a French philosopher, Paul Ricoeur.

Hermeneutics as a methodological approach is based on its philosophical premises. Close links between hermeneutics and phenomenology and their shared views have been emphasised in hermeneutic phenomenology: 'The phenomenological project does not result in an objective description; rather, it is a project that seeks to move beyond the subjective experience of individuals to describe underlying structures or essences in that experience' (Sharkey 2001, 19).

Hermeneutic understanding of interpretation, based on the role of tradition, and the hermeneutic circle provide a framework for understanding scholars' interpretative processes as well as a method for developing the interpretation of research data in the study. Hermeneutics provides a philosophical framework for considering issues of tradition and change in scholarly research. The concepts of horizon and the hermeneutic circle link personal construction of meaning with broader influences. The concept of play gives an approach to investigating active roles both of e-texts and scholars in the study of scholars' interactions with e-texts. This concept also provides an approach to understanding issues of subjectivity in research. After considering the relevance of hermeneutics for information studies, the rest of this section will discuss the central hermeneutical concepts on which the methodological approach is based.

4.1.1. Hermeneutics, LIS and computer applications

The hermeneutical approach has attracted the interest of researchers in information studies, particularly in information science, in recent years, but the approach has had a longer history of influence. Fonseca and Martin (2005) overviewed literature that applied hermeneutics to information studies and demonstrated the influence of this

philosophy over a period of four decades on views that emphasise the role of understanding, interpretation and the relation between the system and the user. Benediktsson wrote 'that hermeneutical interpretation, coupled with new technology, might revolutionize LIS practice' (1989, 203) through the application of hermeneutical qualitative methods. In recent times, literature in information science has provided some evidence of movement towards interpretive approaches because they 'facilitate deeper probing into the subtleties of context' (Trauth and Jessup 2000, 44). Klein and Myers (1999) and Myers (2004) explained hermeneutical concepts and discussed their relevance for information science. Central hermeneutical problems of understanding and interpretation are of interest for fields that deal with information and knowledge. Hansson (2005, 110-111) saw hermeneutics as a bridge between different interests and views in LIS:

Being firmly rooted in a modern conception of science and knowledge production, however, hermeneutics can work as an epistemological bridge between the modern and the postmodern by enabling us to grasp new realities in their individual expression and still maintain the possibilities of a critical perspective that may reveal social stratification and hidden power structures...

Burnard (2001, 33) established that hermeneutics has a social function 'not simply in broadening and enriching individual experience of the world, but also in motivating social coherence and social change', and discussed the relevance of semiotic aspects of hermeneutics for the field of text encoding. For computer science, hermeneutics provides a framework for thinking about some fundamental problems of system design. According to Fonseca and Martin (2005b, 54), the 'key is to see that a database, as well as the world to which it refers, is itself an object of interpretation, and that as such, those who use it are engaging in hermeneutic activity'. Chalmers (2004, 218) saw 'hermeneutics as a useful tool in changing system design practice at a fundamental level'. Discussions at the end of this work will revisit issues of applying hermeneutical concepts to information theory and the implications for system design.

4.1.2. Concepts of hermeneutics

The main hermeneutical ideas of relevance in this context concern views about history and tradition, concepts of the hermeneutic circle and horizon in relation to the development of understanding, and the idea of play and its role in understanding. History and tradition are not only powerful external influences, but hermeneutics explains how they shape individual construction of meaning. The hermeneutical view of understanding that includes history and tradition provides a philosophical and methodological ground for considering tradition and change in scholarly research, as well as an underpinning for the broader view of information processes.

The concepts of the hermeneutic circle and horizon explain the interpretative process and the developing knowledge. These concepts articulate ideas with a long tradition in philosophy in a view of the interpretative process. The idea of play relates to the nature of interpretation and provides a conceptual framework for considering interactivity in information systems. These concepts are fundamental for applying the hermeneutic method to the study.

History and tradition

Tradition and a historical moment define every person and every act of understanding. According to Gadamer, the formation of an individual is determined by connections with social circles and, through them, with historical life:

Long before we understand ourselves through the process of self-examination, we understand ourselves in a self-evident way in the family, society, and state in which we live. The focus of subjectivity is a distorting mirror. The self-awareness of the individual is only a flickering in the closed circuits of historical life (Gadamer 2004, 276).

Gadamer related the historical positioning of every being to Husserl's life-world, which means 'the whole in which we live as historical creatures' (Gadamer 2004, 247). For this study, it means the acknowledgment that study participants and I as the interpreter have numerous connections with our time and traditions, which define the

way we see the world and, consequently, shape everything we do. Gadamer's insight provides a philosophical grounding for the study, which investigates a period of change in which old and new co-exist on different levels. Gadamer explains the presence of tradition and the way it contributes to the change:

Even the most genuine and pure tradition does not persist because of the inertia of what once existed. It needs to be affirmed, embraced, cultivated. It is, essentially, preservation, and it is active in all historical change ... Even where life changes violently, as in ages of revolution, far more of the old is preserved in the supposed transformation of everything than anyone knows, and it combines with the new to create a new value (Gadamer 2004, 281).

Information technology may appear to push forwards in the way that it breaks away from the tradition, but tradition determines technological innovations and uses. As Fonseca and Martin (2004) pointed out, Gadamer's view suggested that historically predetermined assumptions determine what investigations are carried out. These assumptions cannot be arbitrarily changed and they remain part of technological design.

Education depends on maintaining strong links with tradition and custom, which 'has an authority that is nameless', and which 'always has power over our attitudes and behavior' (Gadamer 2004, 280). Universities exist to ensure the continuation of existing knowledge and production of new knowledge based on scholarly traditions. In these institutions, which provide a setting for the study, authority often comes from an association with tradition.

Interpretation and understanding

Understanding and interpretation are closely connected in the hermeneutical view: 'Interpretation is not an occasional, post facto supplement to understanding; rather, understanding is always interpretation, and hence interpretation is the explicit form of understanding' (Gadamer 2004, 307). According to Heidegger, the development of understanding is called interpretation, a process that does not exist independently from a person who understands (Heidegger 1962, 188, 192).

Since every person has strong links with traditions regardless of his or her awareness of the connection, interpretation is always situated in a particular historical moment and tradition: 'We happen upon a conversation which has already begun and in which we try to orient ourselves in order to make our own contribution to it' (Ricoeur 1975, 91). Common tradition enables understanding to some extent, because it allows the interpreter to follow the conversation, but there is also a distance between the text and the interpreter. The familiarity and strangeness of the text are always seen against the interpreter's background. In the hermeneutic tradition, the author is an interpreter like everyone else who encounters the text.

A phenomenological view that enables a better understanding of interpretation is that every thing has numerous aspects, but one person cannot see them all. What a person can see is described by the concept of *horizon*:

The horizon is the range of vision that includes everything that can be seen from a particular vantage point. ... A person who has no horizon does not see far enough and hence overvalues what is nearest to him. On the other hand, 'to have a horizon' means not being limited to what is nearby but being able to see beyond it. A person who has an horizon knows the relative significance of everything within this horizon, whether it is near or far, great or small (Gadamer 2004, 302).

While all interpretations depend on the interpreter and his or her horizon, it does not mean that all interpretations are equal. The process of understanding develops in the *hermeneutic circle* formed in the movement between part and the whole. Each sentence makes sense as part of the whole text. Meanings formed from the position of prejudice, meaning the initial judgment, give early impetus to the analysis, which moves from an idea to validation and back to new ideas. The misunderstanding of a part cannot persist without affecting the meaning of the whole. However, fore-meanings can remain unnoticed if there is nothing that can contradict them (Gadamer 2004, 268). 'Guess and validation are in a sense circularly related as subjective and objective approaches to the text. But this circle is not a vicious circularity' (Ricoeur 1973, 107). Ricoeur wrote about the procedures of validation in which arguments were seen as

more or less probable in the light of what was known. He compared it with the way interpretations are weighed in the legal process:

In front of the court, the plurovocity common to texts and to actions is exhibited in the form of a conflict of interpretations, and the final interpretation appears as a verdict to which it is possible to make an appeal. Like legal utterances, all interpretations in the field of literary criticism and in the social sciences may be challenged, and the question 'What can defeat a claim?' is common to all argumentative situations. (Ricoeur 1973, 110).

In this study, participants were interpreters of their situation and their encounters with e-texts through their discussions in interviews and other data that they provided, and I have been an interpreter of various texts, including those produced by participants. Our interpretations are framed by the particular moment which defines our horizons. I am aware of the relative limitations of the participants' and my vantage points and took precautions to keep my horizon open by questioning assumptions and repeating the process of moving in the analytical circle and, eventually, interpretive spiral. While I was making sure that my interpretation was valid and highly probable, I accepted the historical positioning of this vantage. It is necessarily limited, but also valuable because this interpretation will not be possible from a future position that will open a different horizon.

Play

The concept of play explains an aspect of understanding, which can develop beyond the limitations of one's own subjectivity. Play happens in the space between the partners, it does not belong to and cannot be controlled by any player. Interpretation, like play, happens in the space in between, in the dynamic movement back and forth. The fusion of horizons happens in an encounter between text and interpreter:

Metaphors like play and conversation point to the interactive and responsive nature of that encounter. The encounter is so engaging that the participants get lost in a creative middle space where their own ideas and horizons are brought

into a creative fusion with those of the text. It is in this middle space that understanding unfolds and the text is heard for what it has to say in the context of those who seek to interpret it. The fusion of horizons between text and interpreter is a dynamic and broadening process (Sharkey 2001, 24).

A hermeneutic task unfolds in a dialogue with text. Like electronic text, the hermeneutic task is changeable and dialogical by nature:

The hermeneutic task is not presented as one where an interpreter (with a fixed horizon) seeks to understand the fixed and objective meaning of a text (also with a fixed horizon). The hermeneutic task is presented as one where the meaning of the text opens up in an encounter that is best described, as mentioned, as contextual, playful and dialogical (Sharkey 2001, 24).

Gadamer stressed that players took their game seriously. In the same way, serious researchers are immersed in the content of their research. A serious engagement is playful in its essence because it opens a space between the researcher and the research content where insights can emerge. This dialogical engagement is also a way of stepping out of one's own subjectivity.

The hermeneutic explanation of interpretation, which develops in relation to tradition and in a dialogical encounter with text, relates to Kristeva's interpretation of intertextuality, in which every text has a dialogical connection with the tradition through its relationship with other texts (see p. 17). The connectivity and interactivity of electronic texts provide a fertile ground for applying and experimenting with hermeneutic play and dialogical connections between texts and people, which will be considered again in the final two chapters.

4.2. Research design

The study was envisaged as an exploratory investigation of scholars' interactions with e-texts, aiming at a broad investigation of participants' experiences and issues related to their work with e-texts. The study focused on scholars in literary and historical studies because they are known for their intense and refined work with textual materials. It was discussed in the previous chapter that scholars associated with the field of digital humanities focus on the innovative use of technology in research and present the results of their research through their publication channels, but our understanding of scholars' engagement with e-texts outside this field is very limited. This was the reason for excluding projects aiming to develop computer applications in the humanities from the discussions in this study.

Primary materials were identified as the main source of information for many scholars in literary and historical studies. The literature indicated that electronic collections of primary textual materials are particularly relevant for the scholars. A variety of primary materials used in the humanities has been a challenging aspect of information provision. These were the reasons for focusing investigation in this study on interactions with primary materials.

For the purposes of this research, the term 'electronic text' means any textual material in electronic form, used as a primary source in literary and historical studies. Primary electronic materials, or electronic texts (e-texts), are usually poetry, stories, novels, plays, and a variety of historical documents — government, public or private. Digitised archival copies of magazines and newspapers or web sites could be electronic texts when they are used as primary sources. Electronic texts could be written or spoken (for example, oral histories), digitised or created electronically, stand-alone documents or part of electronic databases and editions.

This section will outline the study design and explain choices made for the study. It provides the rationale for the study, and the next section will provide details about conducting the study.

4.2.1. Methodological approach

The study used a qualitative methodology, which is suitable for its exploratory nature and for uncovering meanings from participants' perspective (Ezzy 2002). Wilson (2002, 201) wrote that in 'phenomenology, with its emphasis on understanding the person's experience of the world and his/her situation, the research methods are the methods of philosophy', and identified 'hermeneutical method and praxis' as one of them. The open-ended nature of hermeneutic exploration as a 'theory, or an interpretive framework, provides a unifying account of events observed in the world, that is temporary, uncertain and limited' (Ezzy 2002, 28). Hermeneutics as the 'art and science of interpretation' (Robson 2002, 196) is suitable for a study in which the main research task is the interpretation of phenomena in a broad sense. As discussed in the previous section, hermeneutic concepts are closely aligned with the nature of investigated phenomena.

Common characteristics of different approaches to qualitative enquiry, including hermeneutics, distinguish them from quantitative research theories and methodologies. Moustakas (1994, 21) wrote that qualitative research approaches, which study human experiences, search for meanings rather than measurements and explanations, and view 'experience and behavior as an integrated and inseparable relationship of subject and object and of parts and whole'.

In the study, interpretation replaced theory-building as explanation and prediction. The exploratory approach to the study aimed to probe into different aspects of investigated issues. Denzin (1989, 39) explained the meaning of 'thick descriptions', the term coined by Geertz: 'A *thick description* is one that goes beyond the mere or bare reporting on an act (that is, that individual A did B). This is a *thin description* (Ryle, 1968, pp. 8-9). A thick description describes and probes the intentions, motives, meanings, context, situations, and circumstances of action'. On the basis of a thick description, the researcher diagnoses, or interprets, those events within an evolving theoretical framework.

Grounded theory techniques used for analysis were the main tools in the development of thick description in this study. Both hermeneutics and grounded theory have significant connections with the phenomenology and can be applied to the same data. Grounded theory provided tools for deriving general concepts (Punch 1998) while the hermeneutical approach kept analysis connected with participants' personal meanings and processes. The use of analytical techniques will be discussed in more detail later in this chapter.

4.2.2. Approach to data-gathering

Data-gathering aimed to illuminate participants' perspectives as much as possible and practicable. The hermeneutical approach guided data-gathering by enquiring about details and the broader context of participants' interactions with e-texts, aiming to illuminate participants' interpretive position.

The study had two stages. The first stage included in-depth semi-structured interviews and other forms of data-gathering, such as examination of participants' published works. Participants were asked to discuss two projects: a finished and a current project in which they had used e-texts at least once. The focus on the particular project enabled a better understanding of e-text in the research process and provided a distinct framework for discussions.

The second stage involved a small group of academics drawn from the participants in the first stage who recorded detailed information about one of their current projects. Finally, the participants talked about the details of the research project and their view of electronic texts in the research process in the second interview.

A two-stage research design enabled a prolonged engagement with the field of study. Denzin pointed out that 'the passage of time also signals changes in observers and those observed. Self-concepts change, intents of the investigation may shift, and symbols may take on new meanings' (Denzin 1989, 23). In the study, which investigated the research phenomena in the context of the research process, it was critically important to use techniques which could capture common patterns without

losing sight of the individual process and development. It was also important to observe any changes in participants' views and practices during the period of data-gathering. Triangulation of data sources, methods and perspectives allows revelation of different aspects of reality (Denzin 1989, 25) and it was particularly important in this study, which tried to capture various aspects of a relatively unknown phenomenon of scholars' engagement with e-texts during the research process. A more detailed account of the research process is provided in the following section *Conducting the study*.

Choice of data-gathering methods

Interviews were the main form of data-gathering, but participants' published works and pre-publications, data-gathering forms and self-recording on audio-tapes provided additional data.

Interview as a data-gathering method

The study focused on participants' interactions with electronic texts and the way they make sense of their engagement, so the research instrument had to capture participants' perceptions and experiences. Interviews were conducted at both stages of data-gathering. The in-depth semi-structured interview was used because it enables understanding of 'the experience of other people and the meaning they make of that experience' (Seidman 1991, 3). Gillham's list of studies that require face-to-face interviewing corresponds to characteristics of the proposed study: '[m]ost of the questions are "open" and require an extended response with prompts and probes', '[d]epth of meaning is central, with only some approximation to typicality', '[r]esearch aims mainly require insight and understanding' (Gillham 2000, 11). The interviews were loosely structured to cover questions required to inform the study but with enough flexibility to allow participants to express their views and raise issues important to them.

Silverman found that interviews were so pervasive in our society that we could say that we live in 'an "interview society" in which interviews seem central to making sense of our lives' (2000, 90). While it makes the interview a rather natural form for participants to express their views, it is also a value-ridden form. Experience of medical, job and media interviews may influence the way participants approach a research interview, which makes probing necessary to uncover participants' perspectives as much as possible.

Cognitive interviewing techniques were used in pilot interviews to reveal how participants understood, mentally processed and responded to questions (Willis 2005, 3). Willis described cognitive interviewing as a combination of think-aloud and probing procedures aiming to test any material that provides information to or gathers information from people (3, 57). As Willis noted, even when interviews relied on verbal probing, interviewees tended to engage in a considerable amount of thinking aloud, which was the case with participants in the pilot study. A recommendation that verbal probing should use unbiased phrasing to avoid suggesting certain outcomes (Willis 2005, 56) was implemented during the pilot interviews.

Other forms of data-gathering

Participants' accounts of their experiences were supplemented by examination of their published works and manuscripts with the intention of seeing how they incorporated results of their interactions with electronic texts. I attended some workshops and seminars either because they related directly to participants' research projects discussed in the study or because I wanted to gain a broader understanding of potential issues and uses of e-texts in academic context and/or literary and historical studies.

Data-gathering forms were designed as a memory aid for participants in the second stage. These participants also had an opportunity to record comments about any interesting aspect of their encounters with e-texts on audio-tapes. Since it was not possible to know in advance when they would have meaningful or interesting

interactions, I asked them to record comments about sessions as they occurred. If a tape recorder was not at hand or participants did not feel like talking while working, they could record what happened as soon as they were able to do that. This process seemed less intrusive for participants and more practical for participants and me than observation. It is important to note that although my research did not focus on participants' skills in using electronic resources, participants might have felt that they should 'perform' if I was watching. Tape-recording allowed them to be comfortable in exploring and 'making mistakes' and then reporting on aspects of interactions that contributed to their sense-making. Participants had a great deal of freedom to decide what they would record. Considering the exploratory nature of the study, this method allowed participants to talk about aspects of their interaction that were not discussed in the interviews if they had had a novel experience or remembered something after the first interview. The second interview provided an opportunity to further discuss participants' choices and the recording.

4.2.3. Approach to data-analysis

The integration of data collection and analysis is practised by a number of qualitative research traditions such as ethnography, participatory action research and grounded theory. Ezzy (2002, 61) advises researchers to collect and analyse data simultaneously, which helps in uncovering and pursuing unanticipated issues: 'It allows the analysis to be shaped by the participants in a more fundamental way than if analysis is left until after the data collection has been finished'.

Inductive reasoning is often associated with qualitative research, but the analytical process in this study moved between induction and deduction in a way that is in agreement with both the hermeneutical approach and grounded theory. Strauss and Corbin described the process of inductive and deductive reasoning in analysis:

Although statements of relationship or hypotheses do evolve from data (we go from the specific case to the general), whenever we conceptualize data or develop hypotheses, we are interpreting to some degree. To us, an interpretation is a form of deduction. We are deducing what is going on based

on data but also based on our reading of that data along with our assumptions about the nature of life, the literature that we carry in our heads, and the discussions that we have with colleagues (Strauss and Corbin 1998a, 136-137).

Interpretations need to be constantly validated against the data. Grounded theory techniques described by Glaser (1998), Strauss (1987), Strauss and Corbin (1998b; 1998a) were used for a large part of the analysis.

The study involves understanding of the interplay between texts and scholars. Considering that the study approach includes the hermeneutic idea of play, e-texts were not viewed as passive objects, but the challenge is to capture and analyse the roles of e-texts. One approach is to focus on participants' comments about what technology 'does to them'. Another approach is to compare what happened before interactions with a technology with what happened after the interactions. The first approach was used by focusing on participants' discussions of the influences of e-texts on their work, which were arising during their reflections on the research process. The second approach was possible in a limited way by focusing on participants' statements about their intentions for a particular research project and discussions about interactions with e-texts. Their views were compared with their published work to identify any influences of e-texts described in interviews. I also attempted 'to give a voice' to e-text by actively focusing attention on its presence and roles.

4.2.4. Credibility of a qualitative study

The credibility of a qualitative study can be established by outlining carefully considered research methods and processes, which are likely to ensure trustworthy results. Another view of credibility is focused on accounts rather than on research methods and procedures. The realist conception of validity 'sees the validity of an account as inherent, not in the procedures used to produce and validate it, but in its relationship to those things that it is intended to be an account of' (Maxwell 2002, 39). In either case, establishing the credibility of a qualitative study is not a matter of

following set procedures. Ricoeur emphasised the difference between validation and verification:

To show that an interpretation is more probable in the light of what is known is something other than showing that a conclusion is true. In this sense, validation is not verification. Validation is an argumentative discipline comparable to the juridical procedures of legal interpretation. It is a logic of uncertainty and of qualitative probability (Ricoeur 1973, 107).

One of the central issues in assuring the credibility of interpretation is how to account for the subjectivity of the interpreter. Glaser's understanding is that the subjectivity is not an obstacle but part of emerging categories:

As constant comparing generates a pattern, which is named as a category, research biases are also corrected by the same process. A concept based on impression or just one incident can be very biased. As many incidents are compared the pattern of behavior emerges and bias just becomes another property of the category however conceptualized (Glaser 1998, 142).

Glaser's observation applies to the analysis in this study, but a number of other aspects are suggested for consideration in judging the credibility of research. They will be considered in the section on ensuring credibility in the study.

4.2.5. The researcher as an interpreter

Like most social studies, this study is based on a double interpretation. Participants in the study were interpreters of their work and environment while I was an interpreter of their accounts and other data. Both participants and I as a researcher brought our values to interpretations. An important part of my values that could have had some effect on the study came from my professional background. I worked as a librarian in a university library where I perceived certain information behaviours as more effective than others. As someone who spent considerable time developing electronic sources and helping students and academics to use information technology, I adopted a common professional view that a sophisticated use of technology in conjunction with

traditional methods is more useful than traditional 'pen, paper and book' humanities research.

On the other hand, I grew up with books, and a formative part of my education did not involve digital technologies. The majority of study participants commented on the 'old ways' of working with books. While participants and I share many assumptions characteristic for people of our time, which limit what we see and discuss, a participation in similar traditions made our communication easier. Our interpretations, like the entire study, are shaped by this moment in time.

My keen interest in electronic texts was certainly not shared by all of the study participants. Admittedly, this important drive behind the study is a possible source of bias. The aim of the study from the outset has been to explore issues of scholars' engagement with e-texts in an open manner. The Call for Participation in the study stated that participants' interactions with e-texts would not be evaluated. I made every possible precaution to remain neutral during the interviews by probing into different motives and experiences, and asking open or unbiased questions. I minimised bias during analysis by making sure that any categories and later study results were based on data. A reduction of possible bias through the attempted neutrality explains only part of my interaction with the participants and data. Another part is that keen interests evoke curiosity, and the nature of curiosity lies in wanting to know what is in the phenomena. In Gadamerian terms, my interest as a drive behind the project enabled play that always happens in between, in the space that goes beyond enclosed subjectivity.

4.3. Conducting the study

This section presents details of the research process by establishing a time-frame and outlining different aspects of the process, from the testing of some data-gathering instruments to the analysis. It outlines the process of identifying participants, data-gathering, analysis and measures that ensured credibility of the study.

4.3.1. Process

The study was designed during 2004 and the UTS Human Research Ethics Committee granted Ethics Approval (Ref. No. 2005-007A) in February 2005 (*Appendix B*).

In March 2005, I conducted a small pilot study to test the interviewing protocol for the first research stage. The second stage was planned to involve in-depth data-gathering over a period of time so it was not suitable for short-term pilot testing. Final interviews at the end of the second stage were envisaged as having a range of questions about individual projects and experiences, which could not be pre-tested adequately. Results of testing the interviewing protocol for the first stage explored potential themes and provided information needed for interviewing at both research stages. The usefulness and the design of forms used in the second stage could not be adequately tested over a short period of time either.

Three researchers participated in the pilot study. They satisfied some of the criteria for study participants. The intention was to find suitable interviewees without excluding potential participants for the research study. My Principal Supervisor and a senior researcher from the Faculty of Humanities and Social Sciences at UTS recommended participants in the pilot study as people who might be able to provide informative feedback. Although the pilot study involved a small group of people from the same institution, their experiences were sufficiently varied to cover a range of experiences and issues of participants with different interests and at different stages of their careers. Details about the pilot interviews will be presented in the section on methods of data-gathering.

The research study started after obtaining results from the pilot study. I conducted interviews for the First Stage of the study from April to September 2005 and gathered data by other methods throughout 2005 and 2006.

A subset of the First Stage participants contributed data to the Second Stage of the study. These participants received from me a package containing a letter with brief instructions, a copy of the Consent Form for participation in the second stage of the

study, a labelled tape, five stamped envelopes with the return address and ten data-collection forms printed on coloured paper for easier identification. Tapes and forms were marked with the participant's code. Each tape sent for self-recording carried the date when it was sent. Envelopes were enclosed in case participants wanted to post forms and tapes when they finished recording instead of giving them to me in person at the time of the final interview.

The participants and I had the final interview when it was convenient for them and when they had either completed the project under investigation or completed a significant phase of that project. The interviews were conducted between December 2005 and November 2006.

4.3.2. Data-gathering: participants

Sixteen researchers from six universities in Sydney and Canberra, and one participant from a university in the USA participated in the First Stage of the study. Four of them, all from universities in Sydney, continued their participation in the Second Stage. They discussed thirty research projects. The following section explains the process of identifying participants and provides some details about the participants and their projects.

Identifying participants

Criteria for identifying participants were that they were academic researchers in areas of literary and historical studies and that they had used electronic texts at least once in a current or finished project, which did not aim to develop computer applications. Doctoral studies were excluded from consideration because they had to satisfy specific requirements that might be different from other research projects and the researcher had to consider supervisors' suggestions in a way that may not be the case in other projects.

Participants in the First Stage of the study

I initially identified five universities in Sydney that had departments of literary and historical studies and approached Deans for approval to identify potential participants among the faculty staff. Deans received a message by electronic mail with a copy of the letter (*Appendix C*) and the Call for Participation attached (*Appendix D*). I followed up initial messages by electronic mail and telephone. Deans' approvals were received in the form of electronic messages.

When Deans granted their approval, I approached heads of relevant departments and asked them to forward the Call for Participation to academic staff or to identify suitable participants. Department heads received a standard message with a summary of the study (*Appendix E*) and the Call for Participation. The summary in the message was provided to aid quick decision-making and refresh academics' memory in subsequent communication regarding the study. Some department heads volunteered for an interview or recommended suitable staff members, whom I contacted by electronic mail. Most participants were identified in this way. Very few participants responded to calls sent to staff electronic mailing lists. During the initial interviews, some additional participants were recommended by study participants and other university staff. All participants signed a copy of the Consent Form (Stage One) (*Appendix F*).

Participants in the Second Stage of the study

At the end of the first interview, some participants had an option to decide whether they wanted to continue with participation in the Second Stage of the study. The criteria for selecting participants for the Second Stage were that they were conducting a current project in which they used e-texts in a way that warranted further data-collection. If participants rarely used e-texts in a current project and thought it was highly unlikely that they would increase their use, these projects were not included in further investigation. Most participants who were approached in this way agreed to continue with their participation. They signed the Consent Form (Stage Two) (*Appendix G*).

Four out of seven initially selected participants remained in the study. Three participants who withdrew from the study stated the following reasons: one person did not have direct interactions with e-texts because this task was delegated to a newly appointed research assistant; the second person had rather limited and very infrequent interactions with e-texts and felt that there was nothing new to be added to the first interview; the third person had been working on a current project that was at the writing stage and the project was finished soon after the first interview.

Theoretical sampling

Data-analysis started at the time of first interviews, which informed further data-gathering. According to Strauss and Corbin (1998a), theoretical sampling evolves during the research process: 'The aim of theoretical sampling is to maximize opportunities to compare events, incidents, or happenings to determine how a category varies in terms of its properties and dimensions' (Strauss and Corbin 1998a, 202). They advised that theoretical sampling should be guided by evolving categories, and their dimensions and properties. Theoretical sampling aims 'at developing, densifying, and saturating those categories' (203).

The interviews with the initial group of participants revealed a variety of issues in their interactions with digitised materials, but there was a point when theoretical sampling was required to explore further interactions with electronically born literature. I identified a small group of potential participants, mainly through recommendations, and contacted them by electronic mail. Two participants from Canberra and the United States were identified in this way and they extended the sampling for the first stage of data-gathering.

The subsequent analysis proved that the theoretical sampling was successful because it provided additional variety to the data. The decision that no further interviews were required was based on the judgment that the main categories were sufficiently saturated. Strauss and Corbin suggested that a category was saturated when no new information emerged from data, but they stressed that there was always a chance that

something new could emerge. 'Saturation is more a matter of reaching the point in the research where collecting additional data seems counterproductive; the "new" that is uncovered does not add that much more to the explanation at this time' (Strauss and Corbin 1998a, 136).

Protecting participants' privacy

In order to protect participants' anonymity, numerical codes have been used instead of names to label all data gathered during the study. The labels are in the format 1/1, 2/1, 3/1 or 1/2, 2/2 etc. where the first number indicates the number of the participant and the second stands for stage 1 or 2 (for example, 2/1 means participant 2 in stage 1).

Keys to codes have been kept in an electronic document protected by a password.

I would like to acknowledge that numerical codes may have the effect of constructing participants as peripheral to the study: 'The labels we choose, consciously or not, construct research participants in particular ways and reflect deeply held, and perhaps not thoroughly examined, theoretical positions on the part of researchers' (McKechnie et al. 2006, under 'Introduction'). The choice of numerical codes in this study was based on two considerations. Firstly, it ensured an effective way of labelling data gathered in two research stages without identifying participants who continued their participation. Secondly, pseudonyms imply gender and ethnicity, which were not relevant in this study. An occasional use of a personal pronoun when presenting views of a participant makes gender less prominent than it would be the case if a pseudonym was repeatedly used to identify the participant. Numerical codes are not meant to construct a participant as a faceless entity.

All data has been kept in a secure place. In order to protect participants' privacy, indications of participants' research topics were removed from all passages that have been included in the presentation of research results. In some instances participants referred to their research ideas in a way that could not necessarily identify the topic of their research, but could endanger an intellectual ownership of their scholarly ideas. For example, when participants talked about making unexpected connections between

ideas, the discovery of the connection was part of their intellectual contribution to the scholarly field. One of the study participants specifically asked me not to include this person's original scholarly ideas mentioned during the interview when presenting study results, because these ideas could not be tracked back to the researcher and could become public property. A simple removal of some key identifiers protected participants' ideas without affecting the point they wanted to make in the interview.

Participants' profile

All participants were active researchers and, with one exception, they all held doctoral degrees. Although this group was not representative in any way, it comprised people with different characteristics as may be expected. There were nine female and seven male participants at different stages of their careers. For the purpose of the group description, I considered participants to be early-career researchers if they had obtained a doctoral degree in the five years prior to the study. These study participants were not associate professors or professors. Mid-career researchers were participants who had attained a doctoral degree more than five years prior to the study and held positions of Lecturer or Senior Lecturer. Participants who held positions of Associate Professor and Professor were considered to be senior researchers. The majority of participants were senior researchers; the group comprised two early career, five mid-career and nine senior researchers. The two disciplines were relatively evenly represented: seven participants researched in literary and nine in historical studies.

Table 1. Study participants

Total number	Gender	Field	Career stage
16	9 female 7 male	9 historical studies 7 literary studies	2 ERC 5 mid-career 9 senior

Participants researched a wide range of time periods and topics from a variety of disciplinary orientations. One of the participants researched contemporary issues and

events using historical methods. When I asked this researcher to discuss one of the finished projects with a historical perspective, she responded:

Well, it depends what you mean by historical perspective. I am one of the people on the editorial board of [historical journal] and we have this argument every meeting. I believe that if you do a piece of work which looks at a snapshot of attitudes as, for example, the ... paper did, covering the [contemporary] period, I think, even if there is a very concentrated snapshot, that that is historical work (Participant 9/1, 2).

I accepted this approach because it reflects a historians' view of her discipline.

Most participants had not produced electronic texts or software applications for public use at the time of the study although three participants had published electronic texts and media works in projects that were not the focus of this research study. In one instance, publication of a major multimedia work resulted from a study, which initially envisaged traditional output only. This work was considered with all other outputs from investigated projects. Publishing traditional academic papers in electronic copies of journals and conference proceedings was not considered as publishing an electronic text.

There is a question of whether study participants were more likely to use e-texts than their colleagues who did not volunteer to participate in the study. The study participants repeatedly mentioned that they were not sure about the way their colleagues used e-texts, but they thought that most researchers in their department had used e-texts. The act of volunteering for the study does not have any special significance in judging the participants' use of e-texts. A number of potential participants initially said that they were willing to help, but they were not sure whether their use of e-texts warranted participation in the study. In some instances, initial communication included my reassurance that there was no particular expectation regarding the quality or frequency of interactions and that a single encounter with e-texts for a particular project was sufficient for an interview.

Considering that this study did not aim at investigating a representative sample, it is reasonable to say that this group of participants consisted of a range of scholars of both

genders, at different stages of their career and a variety of disciplinary interests, without making any assumptions about their use of e-texts in comparison with other groups.

Participants' projects

Sixteen participants discussed thirty research projects. They discussed a finished and a current research project from the time when they started thinking about the project to either the final stage of the project or the stage they had reached at the time of the interview. Literary scholars discussed projects in a time range from Old Icelandic literary studies to biographies of contemporary authors, and a variety of fields from creative writing to criticism of electronic poetry. Historical projects included, for example, studies in religion, cultural studies and eighteenth-century English history.

Participants discussed individual and collaborative; purely academic and creative projects with some examples in between; projects that were finished in two or three weeks and projects that spanned over many years. In the case of very long projects, the projects were defined by milestones such as the start and finish determined by conditions of a research grant or the beginning and end of preparation of a book. Even when projects were defined in this way, some lasted more than a decade. One project had lasted discontinuously over a period of twenty years. Participant 12/1, for example, talked about a project that was based on years of scholarly expertise:

It's not the sort of book you write when you're beginning as a researcher in a particular area. It comes from having thought a long time about a number of these issues already and having, to some extent, written about them. And then wanting to put them together into a bigger picture (3).

Participant 4/1 referred to a collaborative project when she described how she replaced an editor of a scholarly edition of a novel. The participant offered to step in because of her long-lasting interest in the novel. When trying to remember when the project started, she said: '... we did have an ARC [Australian Research Council] grant but it might've been in 1978, '79 or something like that. So, certainly it's quite a long time that one's been working on this project' (3).

Answers about frequency of interactions with e-texts

A question about frequency of interactions with e-text in the first interview included multiple-choice answers. The frequency of the interactions with e-texts ranged from irregular and infrequent to everyday use. The participants answered a multiple-choice question about the frequency of e-text use in the last year in the following way:

- not used in the last year (two participants)
- monthly (one participant)
- weekly (one participant)
- daily (four participants)
- intensively over a short period of time (eight participants)

The two researchers who had not used electronic texts in the last year said that they were not regular users normally. One of them used electronic texts regularly for current awareness purposes, but he described the use of only one text for a particular project. The other participant who had not used e-texts over a period of a year said that he had intense short-term interactions when required. His answer about the frequency was counted as 'not used in the last year'. Researchers who mentioned that they normally used e-texts monthly or weekly also said that there were periods when they used e-texts daily. Although all options may include intense use over a short period, this frequency was counted only when it was offered as the first choice by a participant.

The main reasons for working with e-texts as defined in the study given by the participants were to check a detail quickly, discover sources or find information that did not exist or could not be obtained in hard copy, stimulate ideas, explore the topic or conduct text analysis. A need to maintain current awareness was an important reason for regular interactions with e-texts available online (for example, modern poetry that may not be available from other sources). These interactions did not depend on a particular project, but they provided background information for participants' projects so they were taken into account.

4.3.3. Data-gathering: methods

Interview was the main data-gathering method, but other forms of data-gathering were used as well. This section provides details about gathering data in the pilot study and then during the two research stages. Two main sections are organised by the stage of the study under the headings *Interviews* and *Other methods of data-gathering*.

Interviews

I conducted all interviews, recorded them on audio-tapes and took notes as a back-up in case of recording failure and to write some observations immediately after the interview. Three interviews were conducted in the pilot study to test interviewing protocol, but pilot interviews were not part of the study. Data was gathered from twenty interviews during the study: sixteen were conducted in the First Stage and four in the Second Stage.

Pilot study

A draft version of the interviewing protocol was tested in pilot interviews by using the cognitive interviewing techniques described in the previous section. Participants' feedback at the end of pilot interviews contributed to the subsequent improvements of the interviewing protocol.

Participants pointed out that they needed a more elaborate introduction and orientation to the topic of the interview. A preliminary definition of electronic texts also needed some improvement because it was not clear enough to everyone. Based on participants' understanding of electronic resources, I adjusted the definition of electronic texts to avoid any confusion and to include examples which clarified the concept and promoted recall of electronic texts that participants used. The Call for Participation (*Appendix D*) included the adjusted definition.

Some interviewees suggested that questions about participants' background should be included to monitor possible influences of previous experiences on the way people use

electronic texts. While these comments were relevant, they could not be adequately explored by this study considering its aims and the time-frame. I took these comments into account by adding more specific questions about factors which promote use or act as barriers to the use of electronic texts (see question 23 in the interviewing protocol in *Appendix H*).

Questions about the use of materials in print and electronic form arose spontaneously during the first interview and then I repeated them in two subsequent interviews. Answers to these questions and participants' comments indicated that this line of questioning had the potential to elicit relevant responses. Although the relationship between print and electronic form was implicitly present in the first draft of interviewing questions, I decided to include at least one specific question asking participants to compare the way in which they worked with e-texts and hard copies (see question 22 in the interviewing protocol).

Finally, one response pointed to the need to introduce a new option to the list of frequency of the use of electronic texts. One researcher mentioned the 'intense use of electronic texts over short periods of time' so this category was introduced, anticipating that further probing would be needed for clarification. The range used in pilot interviews took into account respondents' tendency to view the middle category as 'usual' behaviour (Willis 2005, 39). The introduction of the new category did not affect the balance of the frequency options.

All researchers who were interviewed in the pilot study provided feedback as study participants and referred to their experience in conducting research interviews when they made comments based on their professional expertise.

The First Stage of the study

Interviews were conducted in participants' offices, with two exceptions when it was more convenient for participants to meet me in a café. In both cases, interviews were conducted in places where the participants and I had sufficient privacy and minimal disruption. In the First Stage interviews, participants talked about some general issues

relating to their engagement with electronic texts, and they discussed one finished and one current research project. The interviews lasted approximately 65 minutes on average. The shortest interview lasted 40 minutes and the longest 1.5 hours. The interviewing protocol is provided in *Appendix H*.

The interviews started with some general questions and proceeded to a discussion about a finished project with the idea that a completed project may appear clearer and easier to talk about than a current project, which can still have a number of open questions. After that, participants talked about their current project in which they were using e-texts and, finally, they talked about some general issues related to the use of e-texts. Participants who had used e-texts only in a finished or a current project talked about one project.

I took every possible precaution to remain an engaged, but neutral interviewer, asking open-ended questions or providing alternative options for non-suggestive questioning. For example, whenever I asked about preferences, the question offered alternatives. I was also probing different options and trying to go beyond what was said or appeared obvious. According to Gadamer, the horizon of the question determines understanding. 'If we go back behind what is said, then we inevitably ask questions beyond what is said' (Gadamer 2004, 370). I was aware that behaviours that participants took for granted may be of high theoretical interest (Denzin 1989, 97) so I probed into participants' routine or assumed information behaviour patterns and research practices. I also probed into my understanding of participants' accounts and assumptions whenever I was aware of alternative interpretations.

After the interviews, I occasionally contacted the participant by electronic mail to clarify some points, especially when I felt during the analysis that alternative interpretations could be removed easily by a brief clarification. For example, one participant used the expression 'word-processing' for a variety of text transcriptions in different formats so I confirmed with the participant the meaning of particular references. I did not ask participants to verify transcripts nor did I discuss the data analysis with them, accepting the view that participants' interpretation would be only

one of possible interpretations: 'Not just occasionally but always, the meaning of a text goes beyond its author' (Gadamer 2004, 296). The hermeneutical view is that any interpretation will be understood differently in time, which includes a change of participants' opinions.

The Second Stage of the study

The Second Stage interviews were slightly longer than the initial interviews. They lasted approximately 1 hour 15 minutes on average. The shortest interview lasted around 65 minutes and the longest 1 hour 20 minutes. They were loosely structured to clarify some issues emerging from the first interview or examination of participants' work. The structure was devised on a case-by-case basis. Some questions aimed at tackling issues arising from analysis of interviews from the First Stage, but the biggest part of these interviews followed participants' sense of what was important in their engagement with electronic texts.

Other methods of data-gathering

Participants' published works and manuscript versions of prospective publications, data-gathering forms and self-recorded audio tapes provided additional data for the study. E-texts used by the participants as well as seminars and workshops that related to participants' projects provided background information, which was gathered whenever possible.

The First Stage of the study

I familiarised myself with participants' work, at least in general terms, before the interview. I looked at their biographies and *résumés* when they were available online and sometimes examined their published work, especially when participants suggested particular titles before the interview during the initial e-mail communication.

After the interview, I examined **participants' published works**, including traditional publications and multimedia works, relating to projects in the discussion. I read **manuscript versions** of future publications when participants offered to give me access to these papers. I read all shorter pieces in full as well as a couple of books. I examined the remaining books by reading the acknowledgements, notes, references and bibliographies, and browsing the rest of the content. Published works provided data about participants' writing practices, which could be compared with the data gathered in interviews (for example, comparison of statements about referencing practices with references included in final works). The examination of participants' publications has provided me with insights into the ways in which they incorporated results of their interactions with electronic texts into their final publications. In a number of cases, I checked **electronic sources** participants mentioned during the interview to clarify what they had said and to develop a sense of which sources they found useful.

All notes about participants' works were added to the documents with transcripts from the first interview. Comments about electronic texts used in the study were noted in the same place if necessary, but examination of e-texts usually aided interpretation of certain passages.

I also attended some **workshops and seminars**, either related to participants' work or potentially relevant for my understanding of disciplinary issues in literary and historical studies. Most attended seminars cannot be identified, in order to protect participants' privacy. The study participants were either participants or organisers of these unidentified seminars. Some events related to participants' research were based on their work in multimedia, which included electronic text. Two general events that I attended were *Writing the Story of the Future: a one-day seminar on the author in the digital age* organised by The Australia Council for the Arts on 29 November 2006 and a seminar, *Word & Image in Contemporary Fiction* on 18 October 2006. Both events took place at UTS. All these events gave me an opportunity to deepen my understanding of issues discussed during the interviews, but they did not provide data that was used for coding and analysis.

The Second Stage of the study

Four participants recorded data in ways that suited their individual projects and work patterns. The participants were asked to record brief details about e-texts they used on the **data-gathering form** (*Appendix I*). Two participants completed data-gathering forms. One of them listed various e-texts, mostly primary, but some were secondary sources. The reasons for this were explained in the second interview with the participants who said that some e-texts and primary data were discovered in secondary sources. Another participant listed e-texts used for a number of current projects based on the participant's memory of what had happened over a period of several months. The other two participants did not complete forms either because their use of e-texts only consisted of checking factual information or because all relevant interactions were with one source during a limited period of time, so the participant recorded comments on an audio-tape.

In one instance, data-gathering was reportedly affected by changes in the participant's work patterns influenced by technology. This participant had intended to develop a web site for the current project but blogs had become more popular in the several months between the two interviews and this person planned to start a work related blog, which would serve the function of a research journal. The blog had not become available by the end of the analysis. The completion of data-gathering forms was affected by the participant's newly acquired laptop with wireless connection. In a period of several months, the use of technology had changed participants' work patterns. This participant mentioned that the forms had remained uncompleted in the office for a long time.

Participants were also asked to record their **comments on audio-tapes**, reflecting on any interesting aspect of their interaction with electronic texts. Tapes with comments were recorded by two participants, both academics in historical studies. One of them said that she used the form as a guide to what to address in the comments. Considering the way in which comments were structured, it appeared that another person who recorded comments had done the same. Only one participant completed data-gathering by using both the form and the tape.

Researchers who completed forms and/or recorded comments discussed the recorded information in the final interview. It is highly likely that forms and tapes served the purpose of a memory aid.

Table 2. Data-gathering summary

Stage of the study	Method	Number of participants
Pilot study	Interview	3
First Stage	Interview	16
	Examination of participants' works	15
	Examination of e-texts	If possible
Second Stage	Interview	4
	Audio-tape with comments	2
	Form	2
	Examination of participants' works	3
	Examination of e-texts	If possible

4.3.4. Analysis

The analysis phase of the study commenced during data-gathering to aid my developing understanding. The results of the analysis alerted me to issues to be addressed in the subsequent interviews. Immersion in data through repeated listening to the recorded interviews was part of the early stages of analysis. Even this early form of approaching the data promoted my understanding of common threads in the interviews and, in the long run, helped me in dealing with large amounts of data. Punch (1998) noted that qualitative designs were more likely to delay conceptualising and structuring of the data until later in the research.

Data-gathering and analysis were closely connected processes, not only because the analysis informed data-gathering but also because interview questions structured the data for analysis, which was particularly important in the early stages of analysis. This section describes the processes of transcription and analysis.

Transcriptions

Two transcribers and I transcribed all the audio-recordings of the interviews. One of the transcribers worked on one interview only. Transcribers signed a copy of the Confidentiality Agreement (*Appendix J*). I checked all transcriptions for accuracy and compared them with the notes made during the interviews. I transcribed two tapes with comments received from participants in the Second Stage of the study. Each transcription carries the participant's code and date of the interview or the date when the tape was given to the participant.

Analytical process

A variety of data formats was used during the analysis. Data from interviews was used in audio and written form simultaneously through a large part of the analytical process. I listened to the tapes repeatedly to gain a sense of the whole interview and allow data to 'speak for itself' in context. After that, I proceeded to the initial coding of transcripts. Once I had developed an initial coding scheme, I started using the NVivo software and coded the written transcripts while listening to the tapes. Working with data in a variety of forms aided the process of answering questions suggested by Strauss and Corbin (1998a): 'What is going on here?' and 'What makes this document the same or different from the previous ones?'

Understanding developed in considering part and whole in the hermeneutic circle, which Schwandt described as a method:

The method involves playing the strange and unfamiliar parts of an action, text, or utterance off against the integrity of the action, narrative, or utterance as a whole until the meaning of the strange passages and the meaning of the whole are worked out or accounted for. (Thus, for example, to understand the meaning of the first few lines of a poem, I must have a grasp of the overall meaning of the poem and vice versa) (Schwandt 2001, 114).

A few layers of coding developed at different levels of abstraction in the process of comparing parts and whole, and checking interpretations against data. Grounded

theory techniques were used for coding. Open and axial coding were used in earlier stages of analysis and, later, coding for process and selective coding. Open coding involved detailed line-by-line analysis, coding the sentence or paragraph and thinking about the whole document to identify the main concepts. 'The *purpose of axial coding* is to begin the process of reassembling data that were fractured during open coding. In axial coding, categories are related to their subcategories to form more precise and complete explanations about phenomena' (Strauss and Corbin 1998a, 124). Coding for process involved the focus on descriptions of sequences of actions and interactions as they evolved over time (Strauss and Corbin 1998a, 163). The purpose was to outline the development of a particular research project and trace interactions with e-texts in the process. Selective coding involved the process of integration and refining of the analysis.

Analysis through comparisons was aided by the use of the flip-flop technique, which means asking the same question from the opposite direction (Strauss and Corbin 1998a, 94), such as asking what was helpful and what was not helpful in an interaction with e-texts.

4.3.5. Ensuring credibility

All steps in the research process were carefully considered to ensure the credibility of the study and the trustworthiness of research results. Different methods were used to reveal 'different aspects of empirical reality ...This is termed triangulation' (Denzin 1989, 25). Triangulation provides the basis for phenomenological attempts to view phenomena from different perspectives. Triangulation of data sources and methods, suggested by Denzin, was used in this study. Data were gathered from different sources, such as interviews with people, their written works and information sources used in their research projects. Triangulation of methods was ensured by different data-gathering methods and analytical techniques, such as grounded theory techniques, the hermeneutic approach and purposeful shifts in analytical focus between researchers and e-texts.

Prolonged engagement with the field of enquiry, avoiding the danger of 'going native' and building trust with participants are some ways of ensuring credibility (Lincoln and Guba 1985, 301-328). Prolonged engagement with the field of enquiry was provided by my work in a university library with similar groups of researchers, a previous degree which included a major project dealing with e-texts, a period of several years before the study during which I gathered information about the field and, most importantly, by data-gathering in this study, which happened over a period of almost two years. Persistent data-gathering about participants' projects was ensured by using every opportunity to follow relevant developments in the projects under study, so I examined all relevant materials that were available, and attended seminars and workshops related to participants' work when opportunities arose. Persistent and prolonged engagement maximised opportunities to deepen my understanding of the roles of e-texts in research projects. The danger of 'going native' was avoided by the fact that I did not belong to participants' disciplinary communities. Participants' trust was based on their familiarity with binding research agreements such as ethical conduct, my openness to their experiences and refraining from judgment.

Documentation of the research process also contributes to credibility. Referential adequacy (Lincoln and Guba 1985, 313) and descriptive validity, which concerns factual accuracy of researchers' accounts (Maxwell 2002, 45), were ensured by taping and transcribing interviews and participants' comments. Participants' published works also provided a reference point. Lincoln and Guba (1985, 327) recommended that the researcher writes a reflexive journal about the research process and method to provide data about the research instrument. Procedural and reflective memos were written during the study. Procedural memos were used to keep a record of the research process. Reflective memos were used to support the development of ideas by writing about them. Occasional reading of memos aided the establishment of connections between ideas and ensured that various aspects of the developing understanding were not lost in the large amount of data.

Maxwell's approach to validity 'refers primarily to accounts, not to data or methods' (Maxwell 2002, 42). According to Maxwell, understanding is more fundamental than

validity in qualitative research, but our experience cannot be validated independently of the observer (39-41). Interpretive validity relates to interpretation of participants' perspectives. 'Interpretive accounts are grounded in the language of the people studied and rely as much as possible on their own words and concepts' (49). Interpretations of other people's accounts go beyond words to examine aspects that may be invisible or concealed by people who are giving the accounts. Triangulation and analytical techniques in this study were used in a way that strengthened interpretive validity. The presentation of findings in the next chapter includes numerous accounts in participants' own words to provide evidence of interpretation.

In a qualitative study such as this one, external validity cannot be specified and the researcher 'can provide only the thick description necessary to enable someone interested in making a transfer to reach a conclusion about whether transfer can be contemplated as a possibility' (Lincoln and Guba 1985, 316). A detailed account of the research process and findings provides material for anyone who wants to consider possibility of transfer.

As stated in the first chapter of this work, a limitation of the study is that it cannot be generalised. 'Generalizability refers to the extent to which one can extend the account of a particular situation or population to other persons, times, or settings than those directly studied' (Maxwell 2002, 52). Maxwell referred to Yin's view that the usefulness of a theory may be 'in making sense of similar persons or situations, rather than on an explicit sampling process and the drawing of conclusions about a specified population through statistical inference' (53). Thick description in this study can be useful in understanding similar groups of academics at the time of the study.

Chapter summary

A hermeneutical approach provides the philosophical and methodological basis for the study. Hermeneutic concepts of tradition, the development of interpretation in the hermeneutic circle and the concept of play provide a framework for understanding the development of individual understanding within a broader context. These concepts

provide a framework for understanding scholars' interpretative processes as well as the method for developing the interpretation of research data in the study.

The exploratory study aimed to interpret roles of electronic text in research enquiry in literary and historical studies, and to deepen the understanding of the nature of scholars' interactions with e-texts. The study used qualitative methodology to investigate research projects in which e-texts have been used and the nature of academics' interactions with these texts. It has dealt with the use of electronic texts as a resource and tool, as opposed to projects that aim to produce computer applications. The focus was on the use of e-texts as primary sources.

Participants from six universities in Sydney and Canberra, and one participant from a university in the USA (altogether 16 participants) participated in the study and discussed thirty research projects. The investigated projects covered a wide range of time periods and disciplinary orientations. The study has had two phases. The first phase included in-depth semi-structured interviews, examination of participants' manuscripts and published works, as well as examination of some e-texts they mentioned during interviews. The second phase involved detailed data-gathering from a group of four academics drawn from the participants in the first phase. Grounded theory techniques and a hermeneutic approach were used for analysis.

CHAPTER 5. RESEARCH RESULTS

The study results are organised in three sections, which answer three research questions. *Interactions with e-texts* provides answers to the question ‘How do academic researchers in literary and historical studies interact with e-texts?’ *Contributions of e-texts to the projects* answers the question ‘What do e-texts contribute to the research projects?’ by considering uses, functions and roles of e-texts. In *Challenges and aids*, aspects that promote or inhibit engagement with e-texts are considered to answer the last question ‘What are some of the challenges and enhancers influencing the interactions with e-texts?’

References to interviews with participants are marked by participants’ codes and, in the case of quotes, by a page number from an interview transcript. When a quote comes from participants’ self-recorded tapes, it is marked by words ‘taped comments’ and a page number from a transcript.

The chapter finishes with considerations of credibility and the contribution of the research results to filling the knowledge gap identified at the end of Chapter Three.

5.1. Interactions with e-texts

This section answers the first research question, ‘How do academics work with e-texts?’ It commences by discussing participants’ understanding of e-texts and then considers their interactions with selected texts. Participants’ engagement with e-texts for the purposes of investigation of the topic and presentation of research results is considered, as well as their experiences of working with e-texts.

5.1.1. Understanding of e-texts

All participants used a variety of sources in different formats because they were interested in obtaining any relevant material. Books, historical documents, private correspondence, magazines and newspapers, photographs, maps, old catalogues, electronically born poetry and multimedia works as well as memory, gossip, landscape and anything touched by human culture were all stated as primary sources of information. Primary sources were sometimes found embedded in secondary documents (for example, primary sources such as statistical data, references to and facsimiles of primary documents). Interactions with e-texts happen in the context of working with a variety of electronic and analogue materials.

The consideration of participants' understanding of e-texts focuses here on their perception of what constitutes the boundaries of e-text. The definition of electronic texts as primary materials (see *Appendix A*) was communicated in different ways to the study participants. Although I have been aware of the mutable nature of electronic textuality, I expected that occasional clarifications were all that might have been needed, considering that the participants have had a very clear understanding of the nature of primary materials and worked with them on a regular basis. As it turned out, any definition provided only loose boundaries once people started to talk about their experiences with e-texts. I retained the original definition throughout the study, but I included the participants' broader views of e-texts outlined in this section when it was necessary to understand their perceptions of e-texts and their interactions with these sources.

Fluidity appeared as one of the most essential characteristics of electronic textuality. The participants talked about the ubiquitous nature of electronic texts and referred to them as if they had a gaseous or liquid state of aggregation: '... it becomes like the air you breathe. It's very difficult to talk about because it's everywhere' (Participant 10/1, 17). A number of participants compared electronic texts with a rich and unpredictable ocean. It is a 'vast ocean of information out there and I can draw on that when I feel like it' (Participant 9/1, 10) or exploration of a textual database is like 'going in fishing,

pot luck to see what turns up' (Participant 6/1, 11). A researcher would go to the Internet 'just to see what it threw out' (Participant 1/1, 5).

The fluidity of electronic texts embraced different formats and media, such as bibliographic records, transcribed textual materials, page images and visual materials — sources that do not belong together in traditional divisions of material types. Although bibliographic records are not normally seen as primary materials, Participant 6/1 used bibliographic records as a primary source in one project, but this was not common in other projects described by the participants. However, bibliographic information found in catalogues becomes part of searching, leading to electronic texts or other sources of information and it was sometimes described as an integral part of the interaction. Google and anything produced by Google and other search engines tend to be seen as 'electronic text'. Participant 6/2 talked about online retrieval of information, and said 'all of which is somehow electronic text for me' (9). Many other participants demonstrated the same understanding by the way they talked about finding e-texts. Different types of materials are meshed in results 'thrown up' by search engines. A possible reason for this perception was described by Participant 6/2: 'I treat the Google search engine as ... perhaps not a database but an entry point into many many possible databases or many many configurations of text' (3).

It is often difficult or irrelevant for the researcher to differentiate between page images and transcribed texts. At the same time, images without linguistic content tend to merge with textual sources. This happens either because images are part of digitised pages and/or because the search process does not require that they are perceived as different formats. For example, one participant worked extensively with images of archival maps which had important hand-written inscriptions on them. In her use of all sorts of images, she found electronic catalogue records to be an important and integral part of her research — records 'textualised' images, 'put searchable language onto images' (Participant 3/1, 5). This participant combined various searching techniques to bring together materials in different formats (for example, images and transcriptions of manuscripts, photographs and annotated maps) to help her in making connections and seeing patterns. In this case, annotations on the maps as well as bibliographic records,

which 'textualised images', merged with other materials, all of which could be searched and retrieved at the same time for the same purpose.

When asked what e-texts were used in the project, Participant 5/1 answered: 'Basically, I'm thinking here of digital images of the engravings that are on library and other archival web sites' (3). Participant 13/1 also referred to visual and textual sources when he talked about e-texts used in a project. I asked the researcher about the place of e-texts among other resources used in the project, and he responded:

... I have grown, through the project, I became more and more reliant, really, on search engines. Not for the final conclusive material necessarily but to help me see patterns, to search on a particular set of search words or look for a particular piece of evidence or try to trace a character (Participant 13/1, 3).

Even when electronic texts are clearly textual sources with linguistic content, other media are intrinsically present. The best example from the study is electronic poetry, in which words become kinetic and visual elements are integral part of the poetic text. The linguistic nature of textuality changes, and one of the participants commented that 'you're writing a kind of picture' (Participant 16/1, 8). The relationship with music is easily established in the environment in which written words are often associated with sounds, which will be discussed in some detail later in this section in relation to the experience of working with e-texts.

Sometimes it is even difficult for a researcher to distinguish between analogue and electronic texts because the difference blurs in the use. One participant thought it was ironic that a rare book library offered printouts of scanned pages, but digital images of pages were not on offer: 'So, in fact, all of the things that I've now got that look like photocopies are, they could've given them to me electronically, that wasn't on offer though' (Participant 7/1, 8). In this case, an archive digitised a page from an old copy to avoid photocopying and gave a printout to the researcher. The printout served as a hard copy of both the analogue and electronic formats.

The multiplicity and fluidity of e-texts had to be taken into account in the analysis of participants' interactions with e-texts. While bibliographic records and images, for

example, do not belong to the definition of e-texts on their own, they contribute to the process of interacting with e-texts in a way that could not be always separated from interactions with primary textual sources, because of the way sources are presented and used electronically. In order to develop a holistic understanding of engagement with e-texts as well as a clear view of its various elements, in the following presentation of results I described participants' broader view of e-text when it was necessary and provided a detailed description needed for the identification of elements contributing to the interactions. Blurring the boundaries between different formats and types of materials is essential for understanding many aspects of working with e-texts.

5.1.2. Interactions with selected e-texts

The texts selected from online sources were usually bookmarked and then the researcher would read them on screen and/or print. This section describes how researchers discussed these interactions, and how they worked with e-texts in audio-form. Interactions with selected e-texts included downloading and organising copies on researchers' computers. This section finishes by considering researchers' collections and databases of their own e-texts.

Reading and printing

Different types of reading are an essential interaction with e-texts that enables either assessment of the retrieved text for further use or intellectual engagement. Most researchers who read e-texts on screen did that to scan read. They mentioned speed-reading a whole book from less than an hour to maximum two hours (for example, Participant 4/1 read a novel in this way). A few participants practised reading from the screen even when they read in a more focused way and for extended periods of time. Participant 6/1, for example, usually read from the screen while taking notes. He found reading from computer screens quite comfortable in comparison with reading from microforms.

The majority of participants, however, tended to make printouts for reading, either for in-depth reading or for speed-reading of longer texts, because they felt that reading from the screen was very tiring. Participant 8/1 acquired an electronic reading device to carry a large number of texts in a portable format with the intention of reading on long trips between home and work, but he found reading from the screen very uncomfortable and abandoned any further attempt to use the device. Some researchers preferred to take printouts home to read in an armchair rather than at their desk and talked about a different physical setting required for focused reading (for example, participants 1/1, 7/1, 16/1). Considering that a number of participants did not have fast Internet access at home and they were often interrupted in the office, they preferred to find e-texts while working in the office, print them and read at home.

Another reason for printing was mentioned by participants who found it difficult to intellectually assimilate material in electronic form. Participant 2/1, for example, felt that she had not read the text properly if she read it on screen. Participant 13/1 needed to make printouts at some point for synthesis because it was easy to keep adding files without any intellectual grasp of that material. According to this participant, printed text was easier to grasp because of the inadequate computer display. The printed text was usually marked and annotated.

It was useful to print e-texts while working in physical collections. Participant 7/1 described how she worked in overseas archives. She would conduct a catalogue search and save it for a day, and then she would start ordering materials in hard copies. While waiting for hard copies to arrive, she explored their electronic representations or used e-texts to make printouts. Participant 6/1 said that he would save time in the archives by finding an electronic copy of a book page to print rather than making a trip to another archive or waiting for a librarian to confirm whether printing was permitted from that particular volume.

Working with oral e-texts

The interaction with e-texts in oral form depended on what was permitted by the electronic system. If texts were presented as simple audio-files for listening, the researcher would transcribe whole documents or summarise documents and transcribe particular sections. Participant 10/1 tended to read out the content of documents into a tape-recorder in situations when he could not make photocopies. He would transcribe the tapes and use electronic copies of the transcriptions as e-texts.

Participant 2/2 used audio-files in archives. One particular archive had a database, which provided text transcriptions as well as sound waves for some of the recordings. There were also keywords marking sections of the audio-file, which aided retrieval:

... [it] is really a different way of interacting with the text completely because usually with audio you may have some written text, which is coming up in front of you on the screen while you are listening to it from the tape or whatever. But in this, it is actually integrated into the file so the way I can explain that is that you can search by keywords and so on actually in the file while it's there in front of you (Participant 2/2, taped comments, 1).

The access to sound waves was very useful because it enabled more options in interaction with texts and provided the means for more efficient marking of relevant sections: '... it's actually a bit like being an editor because you can go backwards and forwards, highlight things, skip around, you just interact with the audio in a very different way (Participant 2/2, taped comments, 1).

Making and organising electronic copies

The majority of participants (13 participants) reported downloading or copying the whole or part of e-texts to their personal computers. When they discovered materials in archives, they sent electronic copies to their e-mail address or archivists made electronic copies for them. These files were stored and named in a way that made sense to the researcher, often in predetermined ways that organised the whole lot of data for a project. The downloaded e-texts were used in conjunction with all other materials in

the personal library. Some participants mentioned using written notes or cards to organise access to these files. For Participant 13/1, cards were the first step in synthesising downloaded texts.

The extent and frequency of adding e-texts to the personal digital library varied. Participant 2/1 maintained a very large and elaborate digital library, accessed through the bibliographic software EndNote. This researcher downloaded e-texts and other files in various formats. She would normally cut and paste all details into EndNote, index the file by keywords devised for personal use, and then type either her own notes or copy excerpts from the text into the record. EndNote records had links to files' locations on the computer. This participant usually had her laptop computer when working in physical collections, so she added records and annotations as she worked with materials. The researcher developed a very extensive library that required a great deal of effort in backing up the files, culling the hard drive and maintaining links from EndNote records to files' locations, but she found that the benefits of easily accessible and well-organised materials were worth the effort.

Developing collections of own e-texts

E-texts written or prepared by the researcher provided important materials in some projects. Participants mentioned producing and using e-texts in two ways, which were relevant for this study:

- they produced textual databases or collections for their own use for purposes of the particular project or
- they published e-texts in one project and then used them as primary materials in another project, which aimed to produce traditional output.

Four participants (6/1, 8/1, 10/1, 12/1) prepared their own databases to be used as tools in the particular project. In another four instances (participants 12/1, 13/1, 15/1, 16/1), they used their own e-texts produced in previous projects. The interactions with e-texts produced by the participants in a previous project did not differ from working with any other e-text, so it does not require any special consideration. In this section, the

focus is on the first group of projects, when textual databases or collections were prepared to provide a tool for information retrieval and analysis in the particular projects. These databases and collections were not publicly available. The content and the use of the database varied, depending on a particular topic and the researcher's sense of how s(he) wanted to conduct the research. The following two examples outline different projects in which participants developed textual databases for their own use. Unlike e-texts retrieved online, these collections were not normally used for reading and printing but for searching.

Example 1: Working with a collection of digitised documents

Participant 10/1 wrote a biography of a writer and read everything written by the writer, including unpublished works and any material of autobiographical significance. He also recorded over a hundred hours of interviews with the subject of his research in addition to interviews with various people who were connected with the writer in some way. The researcher found that 'the only way for that [that is, collected data] to be searchable is to enter into the electronic form so I could search the name of somebody, find references to them, cross-references and so on' (2). The production of a searchable database was a major digitisation project in which the researcher transcribed all interviews and numerous other documents. None of the library holdings that the researcher used were digitised.

The researcher handled all of the primary materials in electronic form by using a word-processing program. He had electronic folders according to the material type (for example, interviews, letters etc.) and inside each folder there were alphabetically arranged files under various names. These e-texts were used in conjunction with photocopies of various documents arranged by date and then by name.

Example 2: Working with a database of literary motifs

A database of literary motifs was developed to support research into a national folk literature. Participant 12/1 explained that the purpose of the database was ‘compiling a database of these, of motifs that recur in this literature. And also to compare it with existing analyses or compilations of folk tale motifs because a lot of these motifs appear in folk tales too’ (12).

This participant did not normally use keyword searches in electronic editions of works she regularly consulted or in the database of motifs, because she thought that keyword searching of primary materials was ‘a rather low grade’ (12). The researcher felt that she needed to know texts very well and to understand how motifs fitted in the whole narrative, so there was no substitute for reading. The database allowed the researcher to explore connections between texts and motifs:

I mean, in some cases, I knew that material very well and so I could go into it directly. In other cases, my research assistant read the thing through and made a précis of plot summary... It’s a relational database so you can check for other instances of such a motif in other texts and so forth. It’s quite a useful tool (12).

5.1.3. Investigating the topic

The multiplicity of sources, formats and textual information that could be quickly brought together form a basis of exploration that allows scholars to see different meanings and aspects of the topic. The participants talked about the process of exploring traditional and non-traditional sources, and experimenting with different approaches online, when connections and patterns emerge.

The researchers, particularly if they were working on a relatively new topic, started with an Internet search to learn about the background of a topic, discover main bodies of materials and build a bibliography. After the initial orientation, they started exploring their research questions by investigating events, particular works, issues and ideas in depth. This section will firstly describe ways of discovering and evaluating e-texts and then discuss the ways in which discovered texts were used to investigate research topics.

Searching

Participants described searching for primary sources of information as a constant movement between online and hard-copy sources, indexes and full-text documents. Participant 2/1 said that searching was a 'survey of all different sources I can get my hands on' (2). Searching for information sources included electronic searching, examination of editions that gather materials in different ways, consultations with archivists, searching through card catalogues and sending advertisements to particular groups to invite people who might have relevant information. Reading and travelling to collections and sites of interest was also part of information-gathering. An important part in some projects was finding access to memories or experiences of particular groups of people by conducting interviews, initiating informal conversations, and reading blogs, discussion lists and bulletin boards.

A number of participants started with online search to gather information about bodies of material or to find a lead, and then moved to physical collections. Once relevant bodies of analogue and electronic materials were discovered, researchers spent considerable time on in-depth searching, reading and analysing that material. Sometimes the process goes in the opposite direction, so Participant 3/1 talked about starting with known sources to discover leads to new sources.

Searching for e-texts

Depending on the purpose of searching and available materials, participants described different approaches to searching for e-texts: searching the Internet, web-surfing, searching databases, monitoring, identifying information embedded in various sources, and using a combination of electronic and analogue sources. Contacting people online and posting questions on discussion lists was also part of online information-seeking.

Searching the Internet was widely used for the discovery of bodies of material, as well as for finding particular information. Searching by keywords or personal names, a standard practice in historical research, was often used for online search. Google was

often mentioned as a starting point for an Internet search. When the researcher wanted to discover what was available, (s)he would type a name or a keyword, aiming for a rather broad but manageable search. Participant 9/1 talked about going for a very broad search with too many hits and then narrowing it down by searching within the results. This researcher would quickly narrow down the last rather large subset by skim reading. A similar process was described by Participant 14/1:

... women and temperance ... would give you about a billion found items, it's no good. You need to narrow that down by, if you type in 'woman's Christian temperance union' or something, you're going to get a smaller number. You're still going to get a lot. But [...] I type in 'woman's Christian temperance union' as a sequence and then I kind of add the author or whatever it is to narrow it down further, but I just spend quite a lot of time just going through and rejecting all of the crap that still comes up (7).

Almost all participants mentioned online searching for specific information when they either went to trusted editions of particular works to check some details or did a Google search by using specific keywords, which would be likely to produce highly relevant recall. For example, Participant 4/1 would use some unusual words to retrieve a line of poetry.

Web-surfing starts from a subject gateway or a well-known site on the topic and develops by following links. Researchers in literary studies (for example, participants 10/1, 11/1 and 16/1) described a regularly conducted process where they would start from a journal of electronic poetry or a writer's web site, then they would go to other sites where works of interest were published and follow links to discover new literary works. The practice includes browsing and searching at several different sites.

Database searching is a regular starting point for interactions with e-texts for some researchers. Many researchers had one or two favourite databases, which they used often (for example, JSTOR, EEBO: English Books Online). Researchers interrogated these databases to discover any relevant e-text, but some researchers, like Participant 6/1, usually consulted known works or searched for specific authors and works.

Monitoring can be a part of interaction with the database when it provides information that a certain text was not available, but digitisation was in progress (for example, EEBO). Some researchers found that information useful because they would check periodically to ascertain whether the text had become available (for example, Participant 6/1). Participant 5/1 regularly monitored certain web sites to follow a digitisation process and find out which works had become available online.

Information embedded in other sources was used to retrieve relevant primary materials. Participant 1/1 talked about instances of searching JSTOR when she discovered some primary texts referenced in secondary sources. The researcher retrieved primary and secondary sources during the same searching session. Participant 5/2 found information about e-texts or content of primary sources embedded in secondary sources like books or journal articles. Researchers found it very useful when databases provided access to both secondary and primary sources.

A combination of searching electronic and analogue sources sometimes leads to e-texts. Participant 14/1 used e-texts to find leads to analogue materials, so he examined summaries of particular historical documents available from a database as an indication of where he could find required information. Participant 2/2 described the way she worked in an archive of audio-recordings kept in analogue and digital formats and retrieved them through different systems available in the archive. Some of the retrieved materials were e-texts held in one of two separate systems. Archivists had a crucial role in the discovery of materials in a complex system. The researcher would try to think laterally and to understand the reasoning behind the retrieval system, but it was easier when a professional acted as an intermediary: '... you need to understand protocols that they have made up for indexing and database, how it works. You still need the person, I think, at the end of the day. You still need someone who knows the database' (Participant 2/2, 10).

Some researchers also needed a professional who could aid in the retrieval and selection process. Participant 7/1 worked on a project about a well-known historical personality and found that any search had exceptionally high recall. This researcher

talked about a need for information specialists with in-depth knowledge about primary materials from a rather narrow period who would be able to provide specialised assistance in identifying relevant primary sources. Any system of retrieval and organisation adds an intervening layer to the material, so participants stressed that they needed to know systems of representation, and some participants, like 5/1 and 6/1, needed to have direct contact with material as much as possible.

Searching retrieved e-texts

Participants searched retrieved e-texts for various purposes: to find out whether the particular document(s) had the needed information, to retrieve particular sections of the text(s), to explore ideas in relation to the text(s) and to analyse text(s). Database search engines were used for these purposes, but a number of participants downloaded relevant e-texts and used search functions on their computer.

Netchaining

The discussions about scholars' interactions with electronic texts uncovered a number of converging and transformed practices of networking and information-searching. These transformed behaviours are based on traditional practices of networking, chaining and browsing, which were discussed in the chapter *Research in the humanities*. I have used the word *netchaining* to name a combination of information-seeking practices occurring on the Internet, which integrates aspects of networking, chaining, browsing and web-surfing in a new pattern. Netchaining is about establishing and shaping online information chains, which link sources and people.

Netchaining as an Internet behaviour combines all of the above practices in traditional and new ways. Chaining is a traditional form of following references, but on the Internet, another source may be only a click away if there is a link or it may require a brief additional search to retrieve the referenced source. Participant 1/1, for example, talked about finding references to primary sources in academic journal articles and moving from the journal article to a primary source during the same searching session.

The researcher also visited the web site of one of the particularly interesting authors and accessed additional e-texts where links were provided. Similar searching patterns are possible in physical collections, but the speed, immediacy and the ease of finding information about people changes the online interaction.

Participant 16/1 talked about web-surfing, searching or browsing journals and visiting authors' web sites:

Well, if I'm looking for say cyber poems or whatever on the net, I do a lot of surfing and I go from one site to another so maybe I look up the journal *BeeHive* on the Net and then I might find somebody that I think is interesting there and then I'll perhaps go and look at that person's web page or other places where they've published (Participant 16/1, 14).

The practice of browsing in the electronic environment may include browsing of distinct digital collections as well as web-surfing as a way of looking for relevant information by searching and following hyperlinks in a range of sources. Chaining is often combined with searching, browsing and web-surfing. Participant 2/1, for example, talked about doing a keyword search online, retrieving e-books that were used as primary materials, examining web sites of some people recommended by colleagues or identified online, examining blogs and participating in online discussions in order to find more information about a research concept. Participant 5/2 had favourite web sites created by communities of research interests. This researcher would go to web sites to retrieve relevant e-texts through searching and browsing and to visit the bulletin boards and discussion sections. A combination of these practices in a single session is netchaining.

Communication with people can be part of searching for and working with e-texts. It can be part of an online search for information (for example, asking how to obtain documents), interaction with materials (for example, clarifying details from a document) or networking (that is, connecting with people). The common practice of searching by personal name has been widened to include checking various details about a person and, possibly, communication by electronic mail. Establishing a chain of information online can include communication with the author whose contact

details appear as part of the reference or the linked e-text. According to Participant 16/1, authors of electronic poetry, for example, were usually more responsive than authors of print-based poetry, and willing to reveal requested information about technical aspects of their work because they were interested in discussing their technical solutions.

In many cases, networking happened as part of finding and checking information, which all happen relatively quickly. In the following situation, netchaining consists of informal communication about information found in an e-text and networking. I asked the participant what she liked about e-texts:

... I guess the immediacy. So when you found someone in particular who had written something you really like and then written it in the last two years and their e-mail address was at the bottom so you could actually also realise you could go and talk to them. And then if you like them, you could connect them in with your [name of the topic] network. So that whole people-publication actually humanly connecting with them thing works.

So you contact them and what happens then?

Well, then you'd say, look, I really like this article, can I just check, when you said 1838 did you mean that or so was that the 39 one, just little details like that. And, you know, you're going to come to Australia, we're thinking of having a conference and, you know, that sort of thing (Participant 7/1, 13).

In traditional chaining, a reference in a footnote would be used as a lead to another document. In the situation described above, a note at the bottom of the screen provided an e-mail address, which led to interaction. As the participant suggested, immediacy makes this communication different.

Another participant (9/1) used web sites and online discussions to keep in touch with communities that were a subject of her research, which was not possible in other ways. For this researcher, electronic materials discovered or created in the process of communication provided unique primary data.

Four main reasons that motivated netchaining activities involving other people in some way were: to find information, to aid access to a physical collection, to confirm

information and for the purposes of current awareness. All these activities are related to researchers' interactions with e-texts.

To find information. An example of contacting people to find additional information is already mentioned in relation to the participant who contacted authors of electronic poetry to check technical details:

I ask them, yeah, how they made the work, what the technology was. I mean, sometimes it's not absolutely clear what kind of technologies they've been using. Yeah, that mainly, just about the process, and I don't usually ask them for their interpretation of the work ... (Participant 16/1, 16).

To aid access to a physical collection. Participant 2/1 talked about contacting an archivist to aid access to a physical collection after examining digitised materials. The archive in question provided e-texts as samples only and the researcher contacted the archivist by using the e-mail address provided on the web site to find out more information about the collection. This researcher talked about a trip to another archive made after discovering the collection online and how it helped her in organising the project:

I actually found out because I looked on their web site and I'd emailed them ages ago before I even left Australia, before I was planning the trip and applying for funding and so on. So I had a, I had that in my head which I probably wouldn't have if I'd just been working only with the written copies. Like I would never have even seen their records. [...] Because definitely when I put in the funding application, I said: 'Look, I've already looked at this online and therefore there is a reason for me to do this trip' (Participant 2/1, 15-16).

To confirm information. The excerpt from the interview with Participant 7/1 above provided an example of contacting the author to check information. Participant 2/1 mentioned situations when information looked suspicious, but an alternative source did not exist or was not readily available. Communication with people on a discussion list and electronic correspondence with the author can be used to confirm information: 'I would ask colleagues or post it on a discussion list or check it with, like I said before, check the contact person or the copyright' (Participant 2/1, 16).

For current awareness. A number of participants mentioned certain web sites they checked regularly for current awareness purposes. One of the participants (10/1) regularly checked a web site of a poet's fan because the poet tended to publish his new works there. Participant 15/1 commented that being connected with people online contributes significantly to his information-seeking and general awareness. In other cases, a secondary document may lead to primary materials as well as providing a link to information about the author, which is used for current awareness rather than for the satisfaction of immediate information needs:

... if an article is really fascinating, and there are some writers on [topic] who write so well and so interestingly, I would look up their web site, find them, e-mail them, you know, make a note of them for future potential research stream (Participant 1/1, 13).

Communication with other people is not necessarily part of netchaining as illustrated by examples where netchaining included a combination of other techniques. The following table summarises why participants initiated netchaining activities that involved approaching other people at some point. Reasons and netchaining activities can be combined so one reason can include several netchaining activities from the same category. In the first category, *To find information*, contacting another person is the first step.

Table 3. Reasons for initiating netchaining activities involving other people

Reasons for netchaining	Netchaining activities
<i>To find information</i>	
• interested in further information about a document • to confirm detail(s) from e-text • if information is crucial • if author's authority could not be discounted • interested in technical details of electronic literature • if curious	• contacted a person who may know • looked up author's web site • made a note for future use • contacted the responsible person and asked question(s) • connected that person into own network, invited to a conference

Reasons for netchaining	Netchaining activities
<i>To aid access to a physical collection</i>	
- to confirm details about a collection - to arrange a visit to an archive	contacted archivist listed on the web site
<i>To confirm information</i>	
when worried about trustworthiness of a document	- posted a question to a discussion list - contacted the responsible person
<i>For current awareness</i>	
coming across new work, wondering what other people do	- contacted the author - initiated online discussion about the type of work people are doing - contacted people outside the discussion list

Netchaining reinforces and widens connections based on authority. The participants contacted people perceived as authoritative in certain respects (for example, the author, archivist) to check information. These connections were also widened by contacting people who ‘sounded interesting’ (Participant 2/1), maybe involving them in some professional activities or discussing issues outside formal forums. The immediacy is an important part of the ability to make these connections (see Participant 7/1, 13 above). A possibility to communicate informally widens connections and makes them easier, so a researcher may contact someone to seek information without a specific purpose, or, out of curiosity.

The significance of netchaining for participants ranged from an occasionally useful practice to the perception that this was a critical element of their professional identities. When asked about contacting people online, Participant 13/1 answered: ‘If I found the information to be absolutely crucial to what I was working on and ... I couldn’t discount their authority or if I was curious about it, yeah, I would try that’ (4). On the other hand, Participant 15/1 talked about a network intelligence formed by linked data and artistic and intellectual agents. For him, netchaining as a form of participation in the network intelligence meant ‘mainly just who I am’ (Participant 15/1, 14).

Evaluation and selection of e-texts

The described evaluation of e-texts happened in two ways, essentially by answering the questions, 'Is this source trustworthy?' and 'What does it contribute to my understanding of the topic?'

Trustworthiness

Participants established trustworthiness by confirming the authenticity and reliability of the source. They compared digitised e-texts with manuscripts and/or originals, checked provenance, context and details in the text. In most cases, researchers would verify e-text against a print version, but in some instances the process of verification worked in the opposite direction, depending on which source is considered to be closer to the original. Original publications and primary materials in the original form were highly valued whenever they were accessible. Participant 8/1 worked with well-established written translations of prayers in print version as well as with transcriptions of oral prayers in the original language, available from a database of e-texts on CD. In this case, e-text was considered to be more trustworthy because it was closer to the original:

I've got a modern translation of it [in print form]. But, you know, you can trust most of it, but when it comes to the important stuff that you're looking at, you need to go back to the original material, go back to the primary source. And what we've got here is the primary source [on CD] (Participant 8/1, 8).

Cross-checking information in a variety of sources such as different types of sources, formats or editions was mentioned as a common practice. Some participants checked other sites to confirm reliability of the text, while others did not feel they could rely on online sources for the final confirmation. Online sources were more trustworthy than a print edition where they provided several reliable versions of a text. For example, Participant 10/1 regularly checked one web site, which provided the means for comparison of the Biblical text in several languages. In this instance, the web site provided quality editions and the researcher was able to establish meanings of a passage by comparing expressions in different languages.

Some participants confirmed information with colleagues, in person and on discussion lists, and with people who were perceived as authorities. People like the author, a colleague, a librarian or an archivist were often perceived as reliable sources of information. Reputable people and organisations can act as guarantors for a source. Institutions and organisations were perceived as reputable because of their history of being trustworthy and the high quality of their editorial practices (participants 10/1 and 13/1). Participants tended to trust big publishers, government and academic institutions that had produced a reputable source in the field.

The lack of trustworthiness was associated with the lack of clear authority of the author, which is often the case with anonymous sources and e-texts authored or prepared by amateurs. It was also problematic if the reliability of editorial practices or the motives for publishing were not established. Participant 14/1 talked about searching for information on Martin Delaney 'who was a kind of back to Africa sort of person in the 19th century' (17). The researcher had found some good web sites, but kept ordering print materials on interlibrary loan to check information. He explained why web sites were not sufficient sources of information:

Because I realise that Martin Delaney is a politically very — like a lot of these characters — is very politically sensitive. And people who are interested in promoting black pride may only give the most favourable quotations from Martin Delaney ... They do quote whole speeches but there's a question surrounding whether Martin Delaney was really a separationist or an integrationist or what combination of that and therefore it's necessary to go to the full — it's just what the historian has to do all the time, go to the full range of sources (Participant 14/1, 17).

Since the credentials of authors and publishers often remain unclear on the Internet, scholars generally tended to be very careful with the use of information found online outside reputable academic sources. I asked Participant 10/1 what made a publisher reputable and he responded: 'History. The fact they've been reputable over a century or they have a reputation for accuracy. In other words, you trust their reputation the way you would an individual and you grant the trust by the fact they were

trustworthy in the past' (15). When I asked whether the lack of tradition of trust on the Internet was the main problem, the researcher said:

It's partly that and partly the fact that everybody looks the same on the Internet; a large company's web site could look exactly the same as a factory running from the backyard. [...] And that's the problem with the Internet. You have the sense of anonymity, almost impossibility of picking up what is trustworthy from what's not (Participant 10/1, 15).

A number of participants said that they would take unverifiable e-texts into account as an idea, but they would avoid quoting it or to building an argument based on it. Even when sources were reputable, digitisation processes were seen to be leaving too large a margin for error. Participant 14/1 talked about verifying passages from e-text published on reputable sites, because scanning was not completely accurate.

When a reputable publisher published an electronic and a print edition of a work, e-text would be more reliable because the electronic edition would be updated more often if currency was an issue (Participant 10/1). Participant 10/1 gave an example of a reference work, but the same was the case with trusted online sources of contemporary poetry in comparison with their print counterparts. Electronic search engines were not only quicker than people, but they provided a more reliable and accurate search mechanism for some types of queries. Participant 14/1 (5—6) talked about repeating searching that had been done with traditional sources when they became digitised: 'But when I went back, as I increasingly began to use the electronic form, I would go back to do it more, because you can actually do it more systematically'.

The following table summarises characteristics of trustworthy and untrustworthy e-texts.

Table 4. Characteristics of trustworthy e-texts

	trustworthy	untrustworthy
facts	• factual information • reputable source	• inaccurate facts • source not reputable
authenticity (based on closeness to the original, can be verified)	• text 'without adulteration' • material that can be cross-checked	• web sites where people summarise material • any substitute
accuracy	• originals • regular updates • accuracy of online searching	• any record describing materials • transcriptions

Contribution to the topic

While traditional indicators of authority such as a reputable publisher or trusted institution had a significant role to play in establishing trustworthiness, there were many instances when the value of e-text lay in providing information that was not available from official sources, including reputable print editions. One participant talked about a book, which was banned for a period of time awaiting a court decision. The book appeared on a web site of unknown origin during the period of prohibition without the author's consent and disappeared when the book became officially available, providing an alternative, although illegal, dissemination channel. The participant was in a position to judge that the illegal online copy was a trustworthy reproduction of the book. In another case, online publishing provided a document which was omitted from print editions. Participant 11/1, for example, talked about a particular work of an author under study which contained some extreme statements and was not included in collected works of the author. The participant valued access to this text because it enabled deeper insights into the author's thought.

Scholars who worked on topics that explored cultural and contemporary issues valued direct access to memory, opinions and experiences of different people contained in blogs and online discussion forums. Participant 7/1 said that she would not expect historically reliable information 'from an article that someone puts up on an informal

web site saying that [historical personality] was in love with his cabin boy' and added that, in a way, the historical accuracy was not important for a project exploring cultural phenomena:

Because the context of where something emerges like that, whether it's false or true or whatever isn't my project. [...] And that would be a story in itself about why someone wanted to have something that they wanted to call authentic for themselves ... (18).

The presence of searchable information systems containing a wide variety of texts and willingness to go beyond authoritative sources could be explained as an indication of a postmodern mentality:

That people are no longer basically trustful of single authoritative disposition, single authoritative discourse, they want to be able to cross reference, cross check, find a secondary opinion, etc. etc., and come to their own belief rather than just accept an authorised view. And that, I think, is partly to do with the amount of change or the amount of instability or the amount of contradictory or multifarious belief systems that everyone encounters now in their everyday life (Participant 13/1, 10).

The need for accuracy and authenticity varied significantly, depending on the discipline and topic. The researchers working in interdisciplinary areas were more likely to need indexes and catalogues to help them in negotiating a large amount of materials, even if they became intermediaries between the researcher and a document. The researchers working on specific historical topics required very accurate e-texts, whereas their colleagues who investigated topics that involved contemporary perceptions or cultural memory appreciated access to all sorts of materials. Previous experience in working with historical documents in microform helped some participants to feel comfortable with digitised materials from trusted sources, because they were familiar with different forms of representations of primary materials such as images of manuscript pages on microfilms.

The value of a variety of e-texts, regardless of their trustworthiness, is in helping the researcher to explore the topic, stimulate ideas and feed his or her creativity.

Participant 16/1, for example, valued e-texts that brought new aesthetic quality and looked for pieces that did something 'linguistically subversive'. Participant 1/2 talked about searching and browsing on the Internet because 'it allows me to feed an imaginative process' (7) when writing a fictional work. Participant 15/1 talked about writing with 'no umpire or referee in mind' (7), based on free experimentation with electronic media. In situations when a variety of e-texts of uneven quality was accepted and even welcomed, the evaluation criteria evolved around the question 'What does this text contribute to my understanding of the topic?'

Investigation of research topic

Participants' investigation of their research questions through interactions with e-texts took four main forms:

- exploration of patterns and connections by searching and comparing diverse bodies of electronic texts
- production and/or interrogation of textual databases to explore research questions
- exploration as part of academic research to be used in creative writing
- investigation of electronically born literature.

Exploration of patterns and connections

This is a prominent online practice described by researchers in historical studies. The researchers searched for a variety of materials from different sources to build a profile of the topic. Critically important aspects of the search are search engines, which retrieve information in a systematic way and provide access to a wide variety of genres. The following passage refers to a search for information about a historical personality known in Aboriginal oral history:

But also what often happens now as a blogging kind of culture emerges more and more strongly, something like oral history often gets captured in the blogging culture. So if one did a search on [name], one might find a few blog

entries on him, as well as one might find not so much blog entries as local historical society online postings about him. There you've got a whole range of different registers of different genres of text all turning up in the electronic version (Participant 13/1, 5).

Electronic access to large amounts of materials from different sources allows a scholar to make comparisons and see connections, which were not possible before:

Now, we couldn't have even begun to do those searches with the limited amount of time and resources, if we were doing it in hard copy. And we wouldn't actually have imagined making those sorts of links because it wouldn't be simple to do, so we wouldn't have even bothered (Participant 3/1, 6).

Newly established connections point to other possible directions and the scholar keeps moving 'backwards and forwards between a whole range of sources' (Participant 3/1, 7), including digital and analogue materials.

Although some scholars found that digital environments were not conducive to browsing and serendipitous discovery, others found that they allowed new forms of serendipity to emerge, revealing some aspects of the topic and unexpected connections. One participant is a researcher in both literary and historical studies, sometimes combining these disciplines in the same project. He described a search when he had two browsers open while working on a historical project, and he noticed what he thought to be surprising information related to another research interest in literary studies. To divide the two threads suddenly emerging, he opened other windows to follow the second thread. Finally, he downloaded a large number of poems related to the literary project for future investigation. These poems were not available in hard copy. In the process, he realised that there was a strong connection between the two different research interests. The participant talked about the value of this discovery:

... I could start with the gardens and within three or four minutes end up looking at an American, a Black American's poetry writing. But it is very strongly related and I love that sense of how — if I would have just said to you, 'I've got a couple of topics I'm interested in, Zen gardens and the late writing of [author]', we wouldn't have seen a connection at all. But ... just through the

quest of finding him, I can actually understand very clearly how [author's] final stage of being a writer is actually very directly related to Japanese aesthetics. ... in a way that, that link logic, that hypertextual kind of logic helps one understand relationships ... quite well (Participant 6/2, 10).

Serendipitous discovery also happens by opening several windows on the computer desktop.

... when you've got your computer going and you've got a couple of different documents open and you're cutting and pasting or you're toggling between two or three documents, ... you're just feeling ideas come out of this idea, idea no. 1 and idea no. 2, when they pop up against each other often completely other idea, idea no. 25 will, sort of, turn up out of that (Participant 6/2, 5).

Some serendipitous discoveries emerge in moving relatively quickly through large amounts of diverse materials when juxtaposition of ideas and information trigger novel combinations.

Production and interrogation of textual databases

Production and/or interrogation of textual databases to explore research questions are described by scholars in both literary and historical studies. The aim is a focused in-depth exploration of a limited range of texts. Although it is possible to work in this manner online, all participants who referred to interrogation of textual databases worked offline, either because they worked with a stand-alone database or because it was easier to examine downloaded texts.

The simplest use of textual databases or editions is to check a detail and compare different versions of a text, which was reported by some participants, but this is not seen as a practice that contributes directly to the exploration of research questions. Interaction with a full-text database, however, can change the way exploration unfolds. Participant 12/1, for example, did not conduct keyword searching, but a database of literary motifs with added intellectual value was useful to the researcher because it supported searching, clarifying ideas and exploration of connections (see p. 137).

In some projects, keyword searching was an essential part of exploring hunches and providing a basis for further analysis. Participant 8/1 developed his own database and found the process of constructing the database an important part of developing research questions. The researcher used this database to explore links between certain concepts and to prove his hypothesis that a widely held view in his field was not quite correct. His ideas came from the field of cognitive psychology and the textual database helped him to apply these ideas to the field of studies in religion. It was hardly possible to prove his understanding by using more traditional research methods. Not only did the required texts exist only in translation in a print version at the time of his study, which was not adequate, but word counts would take a long time and the slowness of the process would not allow the exploration of all possibilities, so the researcher decided to develop his own database. When a more extensive readily available database of relevant primary materials appeared later, the scholar started using it to explore initial thoughts about his topics. Printouts from these initial explorations aided his work with quite cumbersome print editions of primary materials.

Similar to explorations of large amounts of diverse materials, in-depth exploration of a small number of texts allows researcher to investigate connections. Participant 6/2 talked about his interrogation of a particular version of the Bible. He would search for certain phrases, make concordances and then make comparisons by examining the electronic version of the Book of Common Prayer. Although these texts are available in the library, there is an advantage in exploring electronic versions: 'And so, it just feels to me that ... it's a world where I can ... much more easily than I would have been able to twenty years ago, where I can understand relationships amongst bodies of knowledge' (Participant 6/2, 7).

The use of textual databases depends on their availability and the match between the scholar's needs and what the particular database can provide. Participant 6/1 noted: 'It's not straightforward because certain things will not become apparent unless you're asking the right sorts of questions. The program really isn't written with my questions in mind so it will have its limitations' (Participant 6/1, 11).

The exploration of research questions aided by interactions with e-texts, either as a focused interrogation of a limited number of texts or a broad exploration of large amounts of materials, was valuable because it enabled academics to see connections, deepen their analysis and test hypotheses. Another significant but less tangible benefit was that e-texts allowed scholars to follow half-formed ideas, to explore them in a fluid movement among search queries, sources and links:

What I do love about the electronic text world is, you can get a kind of half of an idea or a hunch or a sort of tip-of-the-tongue feeling about an idea that's not quite come yet but you kind of, you might be able to form that idea and I do often do it by sort of Boolean searching, you know, by just going 'Ah, it's this, it's red and it's blue and it's sharp and it's slow, you know' [laughter] and then you think, 'Ah, give me a whole lot of other things that are like that!' (Participant 6/2, 7).

The speed of retrieval enables the investigation of hunches:

And you can do that, you can chase that quite quickly whereas I can remember having those kind of hunches 25 years ago ... but to chase those would take literally 36 hours and by that time that hunch is gone, you know, that tip-of-the-tongue feeling is gone (Participant 6/2, 7).

Exploration of e-texts for creative writing

Literary scholars talked about two other forms of online exploration: exploration of e-texts to support traditional creative writing and analysis of electronically born literary works.

Exploration of e-texts as part of academic research to be used as support for creative writing for print is led by the scholar's own sense of what can be used creatively.

Participant 1/2 talked about her research project at the point when she finished all research in archives and libraries and then searched the Internet to go beyond print and find details that were not available in hard copy. She looked for any source that could shed some light on the experiences of people who lived in the time and space of

her writing. The search was broad and open-ended because various pieces of information could be used in novel ways:

... the battle sites and ... they were important, not from a military point of view but because of things like the fact the [nationality] called their ... hmm ... camps, they gave their camps women's names, so little things like that were actually imaginatively used. I had the children in the book calling their dolls after these camps, you know that kind of thing. So it was useful not because it was a military information but because it was something I that could turn into what I wanted to do with it (Participant 1/1, 4).

Interactions with e-texts contribute to building a background on the topic. In some instances, it may be just to give character a thought rather than to develop a full argument that would be required in academic genres. A variety of historical and personal information on the Internet allows the researcher to develop a sense of what is possible.

Investigation of electronic literature

Investigation of electronic literature involves on-going searching to discover new literary works on the Internet. In most instances, works such as electronic poetry cannot be explored offline, especially not outside the electronic environment, so investigation of electronically born literary works necessarily happens online.

Participant 16/1 would watch the work, inspect the code and then repeatedly watch the same short section to aid analysis. The main interest in this investigation is in revealing different meanings enabled by the multisensory experience of interaction with electronic literature and understanding the experimental nature of the work.

5.1.4. Presenting the research findings

The impact of e-texts on the presentation of research findings was observed in two areas:

- writing styles and formats
- referencing practices, which included any acknowledgement of e-texts in written works

Both aspects have been considered by combining participants' explanations of their practices with the examination of their written works, which provided some evidence of what scholars do in addition to their interpretation of their practices. The examination of written works also allowed some insights that were explored further in the second interview with participants in the second stage of the study.

The examination of writing styles often involved comparisons of publications with participants' accounts, so if a participant said that visual and non-linear forms of display of print text were used because of the influence of e-text, I identified these displays in print text and considered their appearance in relation to the content of the whole interview and participants' research practices. In one case, I read a participant's book and thought that the style was not traditional for the genre. In the consequent interview, I asked the participant about the writing style, which led to a discussion about tradition and change and it turned out that the style of the book was, in participant's opinion, an example of some of the discussions we had had about interactions with e-texts. Particular aspects of these discussions have been presented in relevant sections.

This section has two parts. The first part, *E-texts and writing*, considers the use of e-texts in writing and their influence on writing styles and genres, and the second part discusses referencing.

E-texts and writing

E-texts were used in the writing stages when they influenced writing techniques and styles. Some participants said that interactions with e-texts had an impact on their thinking about and choices of forms and genres for the presentation of research results. They discussed their need to develop new electronic genres, which was limited by existing academic standards and traditions.

Writing techniques and styles

E-texts were used by the majority of participants to copy and paste excerpts into their own writing, but some researchers typed notes and quotations because they did not feel that their computer skills were good enough for a confident manipulation of e-texts in writing. While there was a danger that a researcher might get confused about which part was copied if the quotation marks were not inserted promptly (Participant 2/1), all participants who used this method found it quicker, easier and more accurate than retyping quoted passages.

The ease of manipulating text leads to new ways of using e-texts in writing. 'Mix and match', 'remix' and 'montage' were some of the expressions used to describe ways of manipulating texts into novel combinations. Considering that the experience of working with e-texts was compared with playing music, it is hardly surprising that Participant 15/1 described what he called 'remixing methodology' in the following way: 'It's like a DJ who has a stack of records that they mix in a live performance so I do that with my virtual stack of writing, it's just spinning and sampling from and coming up with the essay, with the narrative construction around this innovative path' (5).

Another participant talked about digital montage, which becomes part of an exploration of ideas and creation. When I asked this researcher to give me an example of digital montage, he explained the meaning of the practice by comparing it with a particular musical practice:

... in the 1960s and right up to the present if you happen to be in Jamaica you don't have much money but you've got a radio, you've got a radio with a reasonable good antenna on it you can work up and down the dial and you can get music from Cuba, many South American countries, Miami, Texas ... as well as all of the African traditions that are already in Jamaica itself and you can hear that Jamaican music has been formed out of that comfort that people have [clapping rhythms] with all these different styles coming together and you can — and many, many Jamaican musicians talked about how often when they're just trying to get their ideas formed they'll often just move down the dial quickly and get a little grabs of different stuff and in those conjunctions some sort of new set of ideas turns up (Participant 6/2, 5).

Traditional genres emphasise the division between creative and academic styles, which have different conventions of what and how should be presented. Participant 1/2 talked about using e-texts differently for different kinds of writing — 'emotional resonance' is required for creative writing, while rational argument is needed in academic writing:

You're using it for the kind of emotional resonance of it whereas in academic writing you're brought up — always when you're doing academic studies to kind of get rid of all that stuff. I don't know that's always right to do it but academic writing has to be coldly, thoughtfully presented in ways that scour off all of the emotional stuff. Whereas in fiction you want it, you deliberately use it to create a reaction for your reader (Participant 1/2, 8).

In some instances, researchers did not want to maintain the division between intellectual and emotional or fictional and theoretical. Participant 6/2, for example, wanted to write an 'emotionally and intellectually moving' scholarly book. The division between different genres started to disappear for some people interested in experimenting with new forms of textuality.

I saw myself also writing fiction and the fiction becomes theoretical and I saw myself writing artist theory and the artist theory becomes fictional. So all these different kinds of styles and modes of writing were starting to mix into the merge and I decided that I would explore that (Participant 15/1, 6).

The process of change is not contained in the boundary areas. The experience of working with multiplicity and moving between ideas and texts in different directions is brought into traditional forms of academic writing. I asked one of the participants to comment on his historical book in which, according to his and my perception, he used literary and academic writing styles:

I think in an indirect way the existence of electronic texts and certainly the existence of the Internet, and digital forms themselves, I think the existence of all of that means that I and a lot of other people are now quite used to ... overlaying and mixing and putting into conjunction with each other, things [that] would have a slightly different tone or a different mood or a different voice or a different set of protocols and I think a lot of people have realised that that process of putting those differences together, if well managed, can be quite stimulating of thinking (Participant 6/2, 5).

The researcher thought that living and working in the 'climate of digital montage, montaging and overlaying just sets the conditions for thinking, 'Uh, I could write this book this way I don't have to write it in one voice necessarily' (Participant 6/2, 5).

Genres and formats

The process of bringing qualities of electronic media into writing for print happens on different levels and for different reasons. A number of researchers commented that traditional academic formats did not provide the right fit for the presentation of research based on multimedia sources.

The researchers interested in experimenting with new media and styles stressed that similar experimentation existed before, but computer technology provided new means for exploration. However, academics still need to present research results in standard academic formats. It is similar to writing for print about cinema or music:

... there's always that problem that I'm writing on a page about some powerful experience that doesn't happen on a page. Usually what you have to do is describe the piece of music and then reflect on it. And similarly, with this kind of material, if you're writing for a book (Participant 13/1, 12).

Participant 2/2 commented that if a researcher was working on television or radio history, it would be appropriate to produce an academic output for the same media rather than write for print. Participant 16/1 talked about writing for print about multimedia work:

I mean, it seems silly to have an article about mixed media work, multimedia work where it's just on the page and then people have to go, put the URL in, it's much easier for them if they can link back to — so I am interested in that. And having, and sometimes having illustrations. So I have had articles where I've had illustrations either to multimedia works or just visual screens (Participant 16/1, 11).

Academic writing for electronic media has not significantly changed, but possibilities and interest exist:

... when I'm writing for the Web it has to some degree changed how I do things. It doesn't necessarily make much difference to my actual argument, my argumentative style but it does mean I link in more to other things on the Web or have visual elements or sound examples. So, yes, it does impact on it quite a bit. It doesn't necessarily make me put the argument together in a totally different way, but it could do ... I can see there are a lot of possibilities which I would be interested in exploring (Participant 16/1, 11).

The same participant showed examples of introducing visual non-linear elements in her academic book by using the page layout to emphasise different aspects of the subject and to bring different examples without following a strictly linear structure. The researcher attributed the decision to present material in this way to the influence of the visual appearance of text on the computer screen.

Print media provide very limited options for the development of new academic styles. It is easier to bring sound and visual aspects into conference and live presentations. Participant 2/2, for example, said that it was easy to include audio-files in conference presentations. Manipulation of text from audio-files supported her thinking about the issues and demonstrating the points for the audience. The audience appreciated the inclusion of audio-files: 'I think when I presented papers, people have been really

pleased to hear the audio. That just wouldn't be possible without the digital side of things' (Participant 2/2, 15).

A number of participants talked about presenting research results in different formats. They started with the idea that they wanted to write books or journal articles, but then realised that they would not be able to present part of their research and decided to add a piece in digital format. The reason may be to present some of the gathered material. For example, Participant 7/1 planned to develop a web site to make a series of images and oral texts available. Another reason for thinking of alternatives was to find a better way of analysing connections and presenting results. Participant 3/1 wanted to link materials in different formats into a multimedia work, which would allow her to explore connections and later present them to the audience. Participant 6/2 talked about the decision to prepare a book and add a multimedia presentation to do justice to different aspects of the research findings. The researcher described the reasons for adding a multimedia work:

So, there, I look at the material and I say, 'Well, this is extremely moving and important material, it's extremely narrative but it's inconclusive, you'll never put a kind of an "Amen" to all of this, it will always be stimulating possible narratives.' Therefore, in order to attend to or bear witness to that quality of the material I need to make something which is organised and authored and persuasive but endless and inconclusive. And explicitly inclusive, so that leads me to think, 'Oh, that needs to be a computationally driven and delivered thing of some kind' (Participant 6/2, 6).

The part of the research that could be presented as a full argument was written as a book:

With the [book] it's 'Uh, here's a [topic] which can be understood in several different ways and from several different personal and historical perspectives, several different personal or class or race or ethnic perspectives but also can be understood from several different chronological standpoints.' So, it's very contentious what I need to say about it, but I also feel that I can be conclusive, I feel I can put an argument that, sort of, comes to a rest, you know, and say 'This is where I stand!' Even though I acknowledge all of the dispute, and all of the

many facets here I'm gonna write a book because I actually want to put a full stop to the argument (Participant 6/2, 6).

For other researchers, the decision on how to present their work is driven by the reality of job demands to produce books and journal articles:

I have to produce written material, that would be the first point, that's refereed journal articles and book, monograph books, that's what will get the another job or ... I know that, it's simply straightforward. Then if I had extra time or extra funding or something, it would be extra to make an audio thing (Participant 2/2, 17).

Although the research output has been changing, it is still dictated by existing publishing options:

I suppose one of the problems at the moment is that sometimes I'm writing an article and I don't know whether it's going to be electronically published or published in a print journal so I'm being fairly conservative about the way I do it. But as more and more journals become electronic then, and I know that that's going to be the format, I'll probably get less and less conservative about that (Participant 16/1, 11).

Referencing

The study focused on research projects that aimed to have output in traditional formats. In some cases, when participants produced creative multimedia works as well, I examined these works to aid my understanding of participants' accounts and reflections. However, since traditional output was of interest from the perspective of the study design and since electronic works did not have references and bibliography, they were not counted for the examination of references.

The traditional academic output consisted of twenty-two works — mainly scholarly books, book chapters and journal articles, but also a novel and a conference paper. The novel was based on academic research and contained an acknowledgment of the main sources of information, so it was included in the research output. Published works or, in a few cases, manuscripts for published works, were available from fifteen

participants. One participant did not have any written output from an investigated project during the period of this study. A number of current projects did not have any finished publications at the time of the study. Manuscripts were considered when they were in the final stages and included references. References to e-texts were followed by examining acknowledgements, notes, reference lists and bibliographies. I read all the shorter pieces and two books in full, and browsed the content of other books in case the authors mentioned an e-text in an informal way, but that was not the case in any of the examined works.

Of the 22 works, half did not mention electronic texts in any way and another half did refer to an e-text at least once. Works that did not mention e-texts included a novel. The other two works in this group had one reference to an online source each: one referred to an institutional web site and another referred to a well-known reference source. These references did not count as e-texts because they did not fit the definition of e-texts investigated in the study (see *Appendix A*).

Eleven works that did refer to e-texts included four works in which the only reference was to e-texts created by the author. One of these four works mentioned a database created by the author in the methodology chapter and in an appendix. This researcher did not create e-texts, but he digitised texts and authored the database. This was the only examined work that mentioned the use of participants' own database. Only seven works referred to e-texts that were not created by the author. These seven works were written by five participants. In all of these works, with one exception, e-texts represented a very small part of all references. The exception was a journal article, in which 24 per cent of references were to e-texts. The article was published in an academic journal.

The references clearly did not represent the extent of e-text use in the research. All of the participants who discussed their referencing practices said that they made decisions what to include in final works based on their perception of trustworthiness of e-texts that they used and the sense of what was an acceptable practice. Some participants talked about their uncertainty about acceptable practices:

I think the good questions is, you know, is it legitimate to cite web pages in a theoretical paper and how often should we do this and should it be balanced with journals and other texts. Can you do a whole research paper based on web sites other than if you are writing about web sites? So those kinds of things would be good to ask or even just use as a discussion point around contemporary research in any area. That's the sort of thing I might like to discuss (Participant 1/1, 14).

Practices used by publishers served as an indication of what was the right approach in some cases. Participant 1/1 mentioned that researchers would solve questions about referencing on their own and with the publisher. Participant 14/1 did not like how references to online sources appeared on the page. The researcher had problems with making long addresses fit neatly in a line, but he mentioned that publishers knew how to deal with formatting the text: 'I hate looking at that. And when I'm submitting it for publication I have all these sort of fears that they won't know what to do with it either. But they seem to have mysterious ways of actually handling that that I don't know about' (Participant 14/1, 8).

There were concerns about the trustworthiness of e-texts. A number of participants checked e-texts against hard copies and cited hard copies. Participant 5/1 mentioned that she would refer to a reliable digitised work if she did not consult the hard copy, but in most cases she managed to check the hard copy. Participant 14/1 had the practice of finding an e-text, checking and citing a print copy, and using the e-text to copy and paste passages to his own writing. He cited e-texts if he fully trusted their reliability.

Some other researchers always cited original works in hard copy regardless of the mode of access:

I always cite the originals and the way I date them too is, I put the original date and at the end I put the date of the reprint. So in this case, I put the original but I didn't put the web site or whatever.

Is there any particular reason for that?

When I think back, I think at the time there might've been that sort of ... I suppose ... oh, I am trying to look at my own subconscious, it might've been a

feeling that the electronic site was not as authoritative as the original itself. But I suppose normally, I ... the bibliography can be seen as a working tool. But, you know, I suppose it's the traditions of our field, you know, the reference to original source, no matter how we access it (Participant 11/1, 6).

The practice of citing originals without indicating electronic access was often mentioned in relation to citing e-texts available as .pdf files because they look like print publications. Participant 1/2 would cite .pdf as print except in the case of rare original materials, and Participant 5/2 would cite e-texts and hard copies when both were consulted.

Out of five participants who cited e-texts that were not authored by themselves, two worked with departments of media studies, and three were historians whose projects included some aspects of media history or contemporary topics. Researchers associated with departments of media studies cited e-texts when they thought they were the most appropriate source and seemed to be less reluctant to acknowledge the use of e-texts. These two researchers and a historian who worked on contemporary topics often used e-texts that did not exist in any other form. Considerations of established disciplinary practices were important part of researchers' decisions about which sources to include and how to present their published works.

5.1.5. Experience of working with e-texts

Study participants talked about the nature of their experiences, and thoughts and feelings associated with interactions with e-texts. This section presents participants' comparisons of interactions with e-texts and other media, and then it provides participants' accounts of positive and negative thoughts and feelings, which shed some light on what interactions with e-texts meant to them.

E-text and other media

The section *Understanding of e-text* presented participants' perception of e-text as a fluid entity, which includes different formats, media and genres. It outlined a range of

media and formats that were included in researchers' perception of e-texts. The focus here is on their experience of working with e-texts, which also defines their understanding from a different perspective. Participants often described their interactions with e-texts in relation to other media and art forms.

E-text and the print

The section on the nature of e-texts in Chapter Two presented print as the dominant medium in recent centuries. The study participants, whose education and a large part of work developed within the print culture, defined e-texts in relation to print and traditional libraries. The meaning of the 'word' and 'text' was strongly associated with the print in some statements made by the study participants. The 'written word' is associated with the traditional library and the book in the comment that 'if you've come through that kind of arts, literature study you kind of ... there is a little tag that still pulls you back to the old library and the book and the written word' (Participant 1/1, 15). Participant 4/1 talked about possibilities offered by electronic editions and said that 'you can do it in a text as well, to include facsimiles and so on ...' (6). In this comment 'a text' refers to print editions.

The book appears as a reference point that defines e-texts, but does not necessarily indicate a preference for one or another. Saying that 'my non-electronic books arrived' (1), Participant 7/1 turned the common expression 'electronic books' around by calling hard copies 'non-electronic books', and Participant 8/1 said that 'a database is just essentially a shelf of books on one particular thing' (15), describing e-texts in terms of books.

The nature of working with e-text is explained by comparing interactions with e-texts and books. One of the participants discussed different experiences of establishing connections in electronic and print text. In the following passage, Participant 13/1 talked about the interaction with a book, which was marked by numerous post-it notes during the reading. The notes marked the researcher's interpretation of the book:

So that one is already doing that cross-referencing and jumping and making one's own connections and forcing patterns out of the book and one's own

mind, that relationship between oneself and what the book is proposing. The book also is wonderful for giving you ... allowing you to hold onto a handrail of the linear account that the book, the author offers you (14).

The handrail and the web are metaphors used to describe structured and linear versus unstructured and investigative interactions with the text. Both the handrail and the web are present in the book and e-text, but to a different extent:

... so the handrail and the web are available in the book, it's just that the handrail is more strongly present I think. In most electronic texts, the web is more strongly present. And it's actually — well, the handrail only kind of runs for a certain, limited amount and then you're onto another page usually and it's a question of whether, it's page after page after page in a determined, predetermined way or whether at the end of each page or each run, each line, you usually have some choices — do you want to go to red, green, blue or yellow rather than just the inevitable other page. So the handrail is much less prominent I think in most of the electronic, born electronic material (Participant 13/1, 14).

The researcher acknowledged the difference in interactions with the two media without stating a preference:

... it's seamless in as much as I move from one to the other without anxiety but I'm also very aware that the conditions of encounter are quite different. To encounter a book and to think in relation to a book or to encounter a printed photograph on photographic paper in your hands is a different encounter from encountering a photograph digitised on the screen (Participant 13/1, 17).

Print was used as a reference point to position the understanding of e-texts or to describe the departure of e-texts from the book. While electronic media provide an increasing number of options to incorporate technology in the research process, physical aspects of the interaction with print are an important part of the experience, so some participants thought that print was likely to be used regardless of the e-text development. While some participants, like Participant 5/1, doubted that electronic scholarship will ever be able to completely replace work in physical collections, others appreciated the physical aspects of the book and would not like it to disappear,

regardless of its practical use in research. Participant 9/1, for example, felt comfortable with using e-texts, but did not want them to supersede the book, even if it were possible: 'I never, ever, ever want to see the book go, I love books, they're beautiful objects' (Participant 9/1, 12).

Non-textual experience in interactions with e-texts

The understanding of the e-text included a variety of media and formats, and the experience of the exploration with e-texts was sometimes distinctly 'non-textual'. The engagement with electronic texts connected verbal with intuitive and sensory ways of knowing. Some participants talked about similarities between working with electronic texts and playing music, particularly about the resemblance to jazz improvisation emphasising exploratory nature of interactions with e-texts and the existence of a range of skills that enable creative investigation. Participant 13/1 talked about quick jazz-like explorations in which the scholar 'jumps' to possible relationships elsewhere, then comes back to the main theme and its variations. Participant 15/1 also used a comparison with jazz improvisations to answer a question about the creative process of producing an academic text based on e-mail messages:

... it's like asking a jazz musician, how did you come up with that improvised solo in the middle of that last set. You know, you have certain skills and you play your instrument. In this case, the instrument is, the artist is the instrument, which is playing with whatever source material is available at any given time. In this case that would be a cluster of e-mails (Participant 15/1, 4).

Interactions with e-texts promote the use of other senses and exploration of ideas that are only partially formulated on a verbal level. Following 'tip-of-the-tongue' feelings is an example of how the search may start with a vague verbal definition, which often becomes better defined in interactions with e-texts. In some instances, interactions with e-texts support sensory rather than verbal ways of knowing. The experience of interaction and the process of knowing are perceived as intuitive and multisensory, as described below in relation to the exploration of half-formed ideas:

And multisensory and also temporarily, like, emerging and losing in time, emerging and disappearing in time. That's the other thing I think, that's what the [database] is trying to explore in a way, this feeling that ... that tip-of-the-tongue sensation in a way that 'Uh! Just for a moment I knew something and then it went away' (Participant 6/2, 12).

The intuitive or non-discursive type of knowledge has different qualities, but it can be systematically developed, similarly to the knowledge acquired by dancers and musicians:

And, that doesn't mean therefore it was useless knowledge, it actually was just an intense momentary way of knowing. And, I think dancers and musicians know that very well and I think it's knowledge ... it's not discourse, it's not discursive knowledge, but it's knowledge of some kind. And it's knowledge that isn't mystical, it's knowledge that is trained and rigorously developed and it's very disciplined. It's just different knowledge, I think, from textual knowledge (Participant 6/2, 12).

Another participant was focused on different systems of meaning in different media that come together in electronic textuality. In the following passage, Participant 16/1 talked about poetry, but this comment can be applied to other participants' experiences of interacting with e-texts in other genres:

So it's, to some degree it's bringing together different systems of meaning. It's bringing together music as a system and writing as a system and it's saying that kind of logical sense isn't everything, that there's the sound to the words and to the way we immerse ourselves in text (Participant 16/1, 5).

The task of a literary scholar who analyses electronic literature moved beyond textual analysis and now includes analysis of aspects of different media and technical aspects of electronic literature such as coding. The way writers work with text for the electronic presentation includes strong visual aspects:

... you think of it in a spatial way and you think of writing in a spatial way so to some degree you're almost writing, you're writing a kind of picture. I mean, this has been done, of course, on the page with things like concrete poetry and visual poetry, that existed far long before the Internet but it's brought it, I think

it's really brought it to the fore a lot so you don't, you can start at any point and you think of people reading that they might make any kind of connection. And also, of course, the main thing about it is that it's kinetic and that you think about what can happen when a word goes from one point, moves from one point of the screen to another point in the screen (Participant 16/1, 8).

When Participant 15/1 compared himself to an instrument playing with any source material available in any media, he stressed that performing with different materials on different grounds (that is, media and environment) produces a different sort of music.

Researchers' responses to e-texts

A range of thoughts and feelings accompanied interactions with e-texts. Some participants found work with e-texts to be predominantly a positive experience, which enabled them to do more than before. Work with e-texts and the participation in electronic networks of people contributed to a sense of identity for Participant 15/1. Participant 3/1 felt empowered by new possibilities:

I find it enormously empowering, for both access to secondary analysis and for access to those texts and images which have been digitised. I know there's a lot out there that hasn't been and it won't be and I know there's a lot of political decisions about what does get digitised, but there is with libraries and hard copies as well. And I have access to far more than I ever did before (16).

Participant 5/1 relocated from a place where she had regular access to research materials, but e-texts provided a convenient way of working and made her feel more confident about continuing research away from primary materials in their original form. An additional benefit is that 'it probably allows me to look at more sources in a shorter amount of time because it's very easy to do that' (Participant 5/1, 8). The researcher commented that e-texts made her feel closer to the sources of her research:

Well, I suppose it makes me feel less distant from the sources. In other words, I don't have to think, oh, I won't be able to look at an eighteenth century text until I get back to the British Library, for example. That I know I can look it up

online, even though I may choose later to also go back and check it (Participant 5/1,8).

The researchers' perception of the adequacy of their own skills was an important factor in how they felt about using e-texts. Some participants expressed confidence in their skills. Participant 8/1, for example, said: 'I am an old surfer of the Web' (1) when he talked about his familiarity with digital resources, and Participant 9/1 stated 'I think I'm quite good at that sort of thing' (5) when she talked about selecting e-texts from a large number of hits. Participant 12/1 commented:

I mean, there have been some queries raised by some people about you have to be careful what kinds of electronic texts you use, make sure you've got editions as well, that's the sort of thing I say to my students. But, I mean, I think I can usually determine for myself whether the source is reliable (15).

On the other hand, a number of researchers were not sure about the adequacy of their skills and practices, which was sometimes a source of confusion and insecurity. Participant 1/1, for example, found that some parts of the citing protocols were confusing: 'But I do enjoy using it, I think it is just more the way the process and the protocols in a way that are kind of being more confusing to me than anything else' (16). Participant 14/1 was not sure how to present web addresses neatly and commented in a light-hearted manner: 'But this reflects, of course, my ignorance, no doubt' (9). A number of other participants were not sure what they were supposed to know or do either. Participant 10/1, for example, was not sure whether he should have taken more interest in electronic editions while Participant 5/1 thought that she probably was not good at doing a particular task, and commented: 'But I certainly wouldn't describe myself as someone who is really all that familiar or, indeed, confident about using them' (14). Most participants were not sure what the standards were and what their colleagues were doing. Some opinions were accompanied with statements indicating the lack of certainty about what the acceptable answers may be. Participant 1/1, for example, was asked what she did not like about e-texts and she answered: 'Portability – and I know it sounds ridiculous ...' (12). The participant meant by 'portability' that e-texts could not be physically moved around easily.

The interactions with e-texts sometimes caused feelings of being out of control in situations that ranged from the handling of particular tasks to defining the research project. Participant 13/1 said it was easy to be 'lost in that tunnel that the computer is' (6) scrolling up and down. Participant 7/1 had a sense that an overwhelming amount of available materials was a threat because it became difficult to contain the project within certain boundaries:

Yeah, I guess another sense that, you know when you can search and see that so many things are available that there's a bit of that sense of being overwhelmed. But as if you're, once upon a time, you were just allowed to be interested in a modest, small thing, you know, we're each a little human being and we just had our little research interest and, you know, we're following the whole passion of academia where you could just be contained. And there's something about the proliferation of electronic texts that makes that impossible.

How does it affect you?

I think that ... I just can't ... almost like they're a threat. That somehow or other all that stuff will get you or will slip into your little project or something (Participant 7/1, 17).

This researcher also had a 'fear that if it's electronic, it can be wiped. Entirely' (Participant 7/1, 14). Even if it were only a matter of speech, it is indicative that some other participants mentioned fear: Participant 14/1 in relation to handling references to e-texts or Participant 6/1 in relation to e-texts, 'I'm terrified by these things' (12). Some participants commented on being impatient or frustrated by interactions because something did not happen as expected or as quickly as expected (for example, Participants 6/1 and 16/1).

Considering the sense of insecurity and the lack of control, it is hardly surprising that some participants felt more comfortable with the book (for example, Participants 5/1 and 6/1). While talking about the usefulness of e-texts, some researchers stressed their love of books (for example, Participants 8/1 and 9/1). Participant 2/2 talked about a more intimate relationship the researcher establishes with a physical object found in traditional ways:

But there is definitely in hard copies, you feel more intimately — there is an object there that you find, and you feel like, ‘Oh, I found this tape’ rather than just going through a database. [...] I guess it’s feeling like you went and found that rather than the database found it for you [laughs]. You know, you actually have a relationship to it by finding it. And maybe using index or something, but you actually went, made the step to find the object whereas in an electronic version it’s all the same. The file, the .mp3 file, has within it the metatext, which tells you where it is, just magically comes up (Participant 2/2, 9).

At times, there was a sense of contradiction between different responses. Participant 7/1 explained how she was immersed in the electronic world while feeling it was threatening her ability to determine the development and boundaries of her own project:

... once I start thinking about it and articulating it, everything I do is an electronic text. Each e-mail I send, each effort to build bridges around my project is done electronically, like ‘don’t send me that’, that’s sent by an e-mail. [...] So I’m completely in an electronic world. But, there is ... a sense of, I guess, ... I become anxious about not being able to tell the difference any longer between what I want to know and what I should know. Or what they or the force of all that electronic production thinks I should know (17).

The lack of boundaries was also an issue in attempts to understand the research process. E-texts have become part of everything researchers do, which made it difficult to reflect on the experience of working with e-texts:

Increasingly almost every text is electronic [...] after all, anything one reads now, has to be digitised and has been in electronic form. For example, it has been printed from a scanned version back to the hard copy so it becomes like the air you breathe. It’s very difficult to talk about because it’s everywhere (Participant 10/1, 17).

Despite confusion, insecurity, frustration, and the difficulty of pinpointing different aspects of interactions, most participants expressed in some way their openness to using e-texts. To some extent, it was due to the attitude of openness to the research enquiry. When asked about a certain use of e-texts, Participant 4/1 responded: ‘Well,

it's quite possible I might at some future stage, yes, because with this research you never quite know where it might take you' (5). Another researcher commented: 'I think that I am really committed to research, and I am quite happy to research in all sorts of ways' (Participant 1/1, 14). Researchers demonstrated their attitude of openness to e-texts by investing considerable time and effort in preparing their own databases and digital collections to aid their research, by deciding to develop electronic works to be able to present some aspects of their findings, and by stating their openness to learning about e-texts and using them in the future. The vibrant tone in participants' descriptions of interactions that enabled insights and creative explorations provided vocal evidence of their engagement with e-texts and open-ended research enquiry.

5.2. Contributions of e-texts to the projects

The second research question: 'What do e-texts contribute to the research projects?' will be answered by considering the uses of e-texts by researchers as well as functions and roles that e-texts have in research projects. The first part of this section considers research as a process and provides the context for considering the uses of e-texts and the roles they play. It briefly explains the adoption of a research process model from the literature for the presentation of research findings, and notes some relevant aspects of the development of the projects discussed by the participants. The second part outlines different uses and considers them in the framework of the research process. The third part presents functions and roles of e-texts based on their integration in the research projects. It also considers functions and roles in the research process. Uses refer to what scholars do with e-texts while roles refer to the ways in which e-texts support the development of the projects.

5.2.1. Research process

The development of research projects considered in the study follows a general outline of Chu's model (1999) of research phases in the work of literary critics, which was discussed in Chapter Two. Although some other models, such as Foster's, were also

appropriate for the study data, Chu's model provided a more detailed and specific framework for considering data in the study.

Chu identified the following stages:

1. Idea Stage
2. Preparation Stage
3. Elaboration Stage
4. Analysis and Writing Stage
5. Dissemination Stage
6. Further Writing and Dissemination Stage.

Some study data are presented in the framework of Chu's model in *Appendix K*, which provides a comparison between the use of primary sources in Chu's model with uses of e-texts in this study. A comparison of Chu's model with the study data showed that the model was applicable to descriptions of both literary and historical projects carried out by researchers in the study.

The study data about the discussed projects strongly supported views from the literature that the research enquiry develops as a dynamic rather than a sequential process. Chu's observation that the Idea Stage can be based on previous research was confirmed in this study. The initial idea can start in unexpected ways in situations outside the context of a specific research project. Participant 8/1, for example, initiated a long-term project as a result of broad interdisciplinary reading. This academic found that an idea from the field of cognitive psychology can be applied to his field of studies in religion and he devoted a number of years to the search of evidence for the initial hunch that became his working hypothesis. Long-lasting projects were often initiated in situations when the researcher did not work at all, such as holiday trips. Participant 1/1, for example, started a project that lasted for a number of years and became a life-long interest during an overseas trip when she was taking photographs and wondering about the nature of connections between different national cultures. Participant 7/1 saw an intriguing picture on a poster during a holiday trip, then kept the poster at home, collected pictures and read around the topic for ten years before she formally started

the project when she received a research grant. These researchers did not know where the initial ideas would lead while they collected information, but significant ideas were often formed long before researchers were formally engaged in a research project. A common theme in the study was the openness to the process of investigation. The researchers said that they would follow a lead in their project wherever it took them, and that they would do whatever needed to be done. They had to observe limitations in time and resources, but they generally approached research as an open-ended process.

In the Idea Stage, the researcher would initiate an enquiry by collecting information to find out what is available and explore initial hunches, while in the Preparation Stage, the emphasis would be on intensive collecting of material that may have some relevance to the topic. Some researchers started to prepare their own textual database for further interrogation at this stage, and used e-texts to familiarise themselves with holdings of physical collections and organise trips to these collections.

The Elaboration Stage is mostly a mental process, but e-texts were used to aid the formulation of the research focus. Some researchers worked on formulating an approach to interrogation of textual databases while they were making decisions on how to investigate the topic. This involved some experimentation with searching textual databases.

A variety of investigation becomes important during the Analysis and Writing Stage. Although researchers knew the focus of their projects, they were actively looking for a wide range of evidence, including alternative and contradictory sources. During the Writing Stage, some researchers looked for information that would be incorporated in novel ways and they worked in creative ways with e-texts they had. This was particularly the case in creative writing projects, but the process of assembling a piece of academic writing was often described as exploratory too. Some participants decided towards the end of the project that they needed to present their findings in different forms (for example, electronic outputs as well as traditional academic papers) to be

able to present different aspects of their work. Conclusions arising from the collected information remained unsettled until the last stages of the project.

Uncertainties remaining at the end of one project may initiate the start of another project. Distinct projects were often interlinked and initial stages of one project could have been completed during the previous project. The research phases could not be completely omitted, but they could be repeated at any time and in any order.

Some changes to the last two stages of Chu's model were made after analysing the study data. For the purposes of this study, Chu's Stage 4, Analysis and Writing, was renamed as Analysis and Presentation of Results, because scholars discussed the presentation of research results in different formats, such as journal articles and books as well multimedia works and exhibitions.

The last two stages of Chu's model: the Dissemination Stage (5) and Further Writing and Dissemination Stage (6), were contracted into one, called Dissemination and Further Presentation of Results. A large part of the data from this study related to current projects, which had not reached the final stages to contribute data for the understanding of two separate stages of dissemination. Data about finished projects did not suggest that a distinction between different phases of dissemination was significant for purposes of this study. These were the reasons for the decision to collapse two stages into one. The research stages used to present findings in this study are:

1. Idea Stage
2. Preparation Stage
3. Elaboration Stage
4. Analysis and Presentation of Results Stage
5. Dissemination and Further Presentation of Results Stage.

Projects conducted by the researchers in the study generally went through outlined stages of the process, but some stages could have been completed earlier as part of another project. Tasks undertaken in different projects can be combined to complement

each other so stages from different projects could be connected. Participant 12/1, for example, talked about a project based on years of research in the same subject area. The researcher said that she wanted to write a book in which she could put insights from previous projects into a bigger picture. The work on the book was complemented by another parallel project on a textual database. This researcher explained the connection between the book, her previous projects and a current complementary project in acknowledgments in her book. Participants 15/1 and 16/1 talked about academic and creative work in different projects that used results of one project to approach them from a different perspective in another project. Strong links between different projects were described by a number of other participants as well. Although linear representation of the research process does not show its dynamic nature, it will be used to make the representations of uses and roles of e-texts in the process clearer .

5.2.2. Uses of e-texts

This section presents four types of uses of e-texts and then it considers these uses in relation to their different levels of complexity in the research process. The section also considers thoughts and feelings, which featured in participants' discussions about uses.

Types of uses of e-texts

The following four types of uses were found in the research projects:

- 1. Supplementing** a document, when e-texts were used to supplement or replace primary material in hard copy.
- 2. Locating**, when e-texts were used to locate relevant information and documents.
- 3. Exploring**, when e-texts were used to investigate ideas and evidence contained in a range of documents. Researchers accessed as many documents as possible and brought these documents together to reveal patterns and common threads.

4. Analysing text, when researchers worked with one single text or a thematic textual database to investigate connections between ideas and linguistic expressions in the text. Analysis may involve stylistic analysis or tackling various linguistic expressions to reveal ideas. The focus is on revealing connections and meanings in the text.

Supplementing

E-texts were used to supplement or substitute for hard copies. Researchers, who used e-texts as a supplement, said:

I used electronic texts a reasonable amount, actually, a reasonable amount, to supplement the books that I was using (Participant 6/1, 1)

... it was still a supplement to my own original research in the archives (Participant 5/1, 5)

Participants who used e-texts in this way searched the text for a particular passage, browsed the content, read online and printed it. E-texts provided the content of the document, and it was used in a very similar way to hard copies. In this use, evaluation of e-texts was often based on the comparison with hard copies. Participant 11/1, for example, described using an electronic copy of the book as a substitute for a hard copy, which was not available to the researcher. The researcher described reading the whole book on screen and printing some parts. In this case, the researcher did not see a hard copy, but since e-text appeared as a reliable reproduction in a .pdf file available from a library site, trustworthiness was not an issue.

E-texts were used to supplement work in physical collections, and to examine archival materials when the researcher was away from the archives. Certain web sites were visited regularly to monitor the appearance of new texts, which would supplement or substitute for hard copies. Examples of references to these uses are provided in *Appendix L*.

In four out of thirty projects, e-texts were used only to supplement hard copies. These were three historical and one literary project described by three participants. Two participants said that they normally used e-texts in this manner.

Locating

The use of e-texts by researchers for locating relevant information and documents aided the research process. In this type of use, participants searched a variety of sources to find relevant documents and information. Locating use involved searching, netchaining in a form of an online version of traditional chaining, evaluation and selection, reading on-and off-screen, printing, downloading of retrieved e-texts or preparation of researchers' own e-texts, investigating the topic to support traditional creative writing, and copying and pasting of text in writing. Researchers also used e-texts to locate factual detail, to compare details of different versions of a text and to find evidence for their argument. Some details about this use are provided in *Appendix L*.

Locating provided a convenient way of searching for and accessing information. Sometimes e-texts provided texts that were not available from other sources, but the use did not change the intellectual engagement with the topic in comparison with working with hard copies. Participant 10/1 used e-texts extensively to locate particular information and textual passages, and described the advantage of this type of use of e-texts: '... it is much easier to both store, and search and access materials in electronic form than it was in a handwritten form. But the key techniques are very much the same' (Participant 10/1, 6).

The difference between searching in Locating and Supplementing is that for Supplementing, researchers went to a specific source, usually a trusted database such as the Early English Books Online, where they expected to find a particular document. Searching in the Supplementing use involved a search to retrieve that document or to find a particular passage in the document. Locating involved searching across a variety of sources to find relevant documents and information in them that might not have been known in advance.

In six projects in literary studies, e-texts were used for locating information and documents. Supplementing uses occurred as well.

Exploring

E-texts were used by researchers for exploring when they directly contributed to their investigation of research topics. Exploration of patterns and connections described in *Investigating the topic* is found in this category of projects (see p. 137). A broad range of available sources and search engines enabled different approaches to the exploration of research interests. This type of use can involve all interactions described in relation to the first research question, including the full range of netchaining activities, not only electronic form of traditional chaining, which was the case in the Locating use.

Exploring was used to follow half-formed ideas in interactions with e-text, and retrieval of large amounts of materials from different sources aided investigation of connections and patterns of information. This type of use also promoted the introduction of different voices and perspectives into academic writing. Some examples of this type of use can be found in *Appendix L*.

In Supplementing and Locating, retrieved documents and information aid the research process and provide needed texts, but investigation of the topic is not aided by interactions with e-texts in a way that would not be possible by using hard copies. Participants' descriptions of the process suggested that thinking happened 'outside the screen'. In Exploring, investigation and thinking happens through searching and interaction with e-texts. Researchers who used e-texts for exploring described how they interacted with e-texts:

So there's a movement backwards and forwards between a whole range of sources, not a substitute ... (Participant 3/1, 7).

... through the project I became more and more reliant, really, on search engines. Not for the final conclusive material necessarily but to help me see patterns (Participant 13/1, 3).

E-texts were used to explore ideas and evidence, and to establish patterns and connections in twelve historical projects. Locating is a necessary part of the Exploring type of use. Supplementing appeared in these projects as well.

Analysing text

Text analysis is a study of textual material aided by a digital representation and encoding. Text analysis as a research method constitutes the use of e-texts called Analysing text. Although various tools for text analysis can be used to find words, patterns, generate statistics or create visualisation, study participants reported the use of a search engine only.

Investigation of the topic included the production and/or interrogation of textual databases as well as exploration of electronically born literature. Some participants talked about text analysis as an ongoing activity. For example, the analysis of e-poetry has been a regular activity for a literary critic (for example, Participant 16/1), interrogation of a textual database happened whenever a researcher had a question on mind (for example, Participant 8/1) and a database created for an earlier project was regularly used to support thinking (for example, Participant 13/1). Interrogation of a textual database enabled a search for occurrences of certain words, which enabled investigation of textual patterns and aided the initial exploration of ideas, analysis and search for evidence to confirm a hypothesis. When printouts with pointers from interactions with e-texts were used to aid interaction with cumbersome hard copies of primary materials, these pointers provided a form of an analysis and aided access to information in hard copies (for example, Participant 8/1). An example of working with the database of literary motifs described in the *Developing collections of own e-texts* in the previous section, belongs to this category of use (see p. 137). This type of use also involved text manipulation in creating a new work. Further details with examples are available in *Appendix L*. The Analysing text use aids intellectual engagement with the research topic.

E-texts were used for Analysing text in eight projects: three in historical and five in literary studies. Some participants created databases for their own use to support text analysis. All other types of uses were reported by participants who discussed this use.

Textual databases developed by researchers were often used for Analysing text, but these databases could support other uses as well. Figure 6 below shows examples of

different uses of digital collections and databases developed by researchers. The Supplementing use does not appear in the comparison below, because researchers who used e-texts only for supplementing did not talk about developing their own digital collections.

Figure 6. Different uses of researchers' own digital collections

Locating. Participant 10/1 has had a large collection of primary materials in electronic and analogue forms. He used transcribed interviews and other e-texts to locate information and find pointers to retrieve documents in analogue form (for details about the collection, see p. 136).

Exploring. Participant 3/1 developed a collection of transcribed interviews, downloaded e-texts and other materials. Her main interest is in exploring connections between a wide range of materials. The researcher worked with transcribed interviews to reveal ideas. She also used her digital collection to locate information.

Analysing text. Participant 8/1 used a textual database to aid the exploration of ideas. He looked for linguistic expressions in the texts and analysed their distribution to provide evidence for a hypothesis. He also used the database to aid information retrieval in materials in analogue form.

Complexity of e-text uses

The level of e-text use grow in complexity. Supplementing is the basic use type of use. In a small number of projects e-texts were used only to supplement hard copies. In some projects in which e-texts were used for Locating, Supplementing was described as well. In projects that used e-texts for Exploring and Analysing text, all four types of uses were reported as well.

Four types of uses make contributions to the projects by assisting in: 1. finding particular documents and information (Level One: Supplementing and Locating), and 2. finding patterns and connections (Level Two: Exploring and Analysing text).

Finding particular documents and information means that a researcher used e-texts for some input needed for research, but intellectual engagement with the topic is not changed by the unique functionality of e-texts. Finding patterns and connections, on the other hand, relates to uses which directly contribute to the understanding of the topic. The unique characteristics of e-texts enable intellectual engagement with the topic that is not possible or is too difficult to be practical by using hard copies. Level Two uses included Level One uses as well. The following diagram represents the growing complexity of e-texts uses, which does not relate in any way to the complexity of projects.

Figure 7. Two levels of e-texts uses

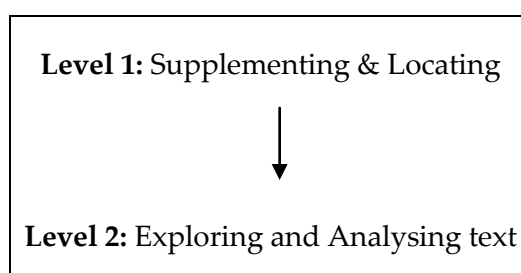


Table 5 below shows how different aspects of use contribute at different stages of the research process. Research phases used in the table are my modification of Chu's model, which has been explained in this section in relation to the research process. The table was developed by overlaying two levels of use with research phases. Uses are divided within the stage to outline the growing complexity of interactions. For example, e-texts may be searched to find relevant material in Level One uses. On Level Two, they can be also searched to find trends and explore ideas. Some contributions appear in Level 2 uses only. Ongoing activities are added to research phases because they may inform all projects conducted by a researcher. A more detailed outline is provided in the table *Uses of e-texts in projects (detailed outline)* in Appendix L.

Table 5. Uses of e-texts in projects

	Uses of e-texts: Level 1	And	Uses of e-texts: Level 2
1. Idea Stage	Search e-texts to see what is available	+	Search to get trends, explore ideas
			Use of e-texts from previous work
2. Preparation	Search e-texts to gather relevant material	+	Netchaining; selecting e-texts authored by the researcher to gather relevant material
	E-texts used to complement work in archive; prepare and work with own e-collections	+	Use of online collections to prepare visits to physical collections; use pointers in data from textual analysis to work with hard copies
			Explore research topics
3. Elaboration	Choosing search strategies for more focused search to retrieve documents and information	+	Choosing search strategies for analysis
			Elaboration while analysing pilot interviews and searching Locating information that will support own argument
4. Analysis & Presentation of Results	Checking and clarifying details Monitoring appearance of e-texts Filling in gaps and background		
	Working with own digital collection to retrieve documents & passages	+	Working with own digital collection: all possible searches to support analytical processes
	Analysis: e-texts read, checked to refresh memory	+	Analysis: combination of information gathering, analysis and writing; word occurrences to confirm hypothesis; analysing patterns in searches; analysing e-poetry
	Writing: copying passages; ordering materials	+	Writing: bringing different voices into writing; elements of electronic textuality in traditional writing; remix methodology
5. Dissemination & Further Presentation of Results			Adding primary data from testimonials and blogs

	Uses of e-texts: Level 1	And	Uses of e-texts: Level 2
Ongoing activities	Monitoring for current awareness Checking details	+	Ongoing netchaining

Uses and accompanying thoughts and feelings

The uses of e-texts have been considered in relation to comments about a particular use, in the context of a whole research project and in relation to the categories with data about participants' attitudes and affective responses. The analysis showed that participants' comments about some thoughts and feelings featured in relation to different types of uses.

An attitude of openness to different research approaches and positive feelings associated with the use of e-texts were reported in relation to all types of uses. Participants who used e-texts mostly for Supplementing and Locating perceived traditional research methods and analogue materials as the most important in their research. Although many participants mentioned their love of books, some researchers who used e-texts as a supplement to hard copies also said that they were more comfortable with materials in analogue form. For example, Participant 5/1 said: 'I feel more comfortable looking at the hard copy' (6) and explained that mistakes in e-texts make her cautious. Some of the participants who used e-texts for Locating, discussed their belonging to the 'old school', which promoted values of the traditional library and book. In some instances, the authoritative academic research and a sense of the participant's own research is associated with traditional methods and sources because of a number of reasons explained during the interview.

Participants who used e-texts in the way that aided their intellectual engagement with the topic (that is, Level 2 type of use), discussed the limitations of traditional research and some distinct advantages of electronic sources in general and e-texts in particular. They also explained the emergence of new disciplines and academic styles in relation to the use of e-texts (Participant 15/1).

Various responses associated with dealing with a large amount of information were mentioned by people who used e-texts for Exploring. Participant 2/2, for example, commented: 'Sometimes there are guides and things written but Internet search can be very frustrating. You don't find what you want, you can get overwhelmed with all the other options, and you cannot sort through' (10). Participant 9/1 commented in a similar vein: 'What I dislike most about retrieval of electronic text is that there's a lot of real rubbish out there and you have to exercise energy in getting rid of the rubbish and identifying the quality products' (6). On the other hand, as mentioned before, researchers who worked with large amounts of materials appreciated the richness of available e-texts. They had various views and expectations related to the availability of materials, which will be discussed in more detail in the final section of the findings in relation to aids and challenges in interactions with e-texts.

Feelings about the inadequacy of the researcher's own skills were mentioned by participants in all types of uses except Analysing text. People who used e-texts mainly for analysis were more likely to express impatience and frustration when something did not work as expected in relation to any interaction with e-text:

It isn't really that I can't do it, it's just that I might be a bit impatient about it ...
I mean, most of them actually are quite straightforward but sometimes I just go in quickly and I get a bit put off by something (Participant 16/1, 20).

Participants 6/2 discussed his frustration with e-texts at times. When asked when he felt frustrated, he responded:

When the system isn't working for me. Which is usually because I've done something wrong. I'm a very fast but very bad typist and I can very easily key in the wrong thing and then takes a while to unravel that. But that's about it (Participant 6/1, 9).

A table *Uses, thoughts and feelings* in Appendix L summarises types of thoughts and feelings that were mentioned in relation to four types of uses. In summary, four types of uses, Supplementing, Locating, Exploring and Analysing text, describe the ways in which e-texts were used in the projects. Their contributions to the project are in finding

particular documents and information (Level One: Supplementing and Locating), and in finding patterns and connections (Level Two: Exploring and Analysing text).

5.2.3. The functions and roles of e-texts in research projects

Various interactions with and uses of e-texts have a certain function in the context of the whole research project. Functions refer to 'tasks' or 'duties' that e-texts perform, and roles relate to the ways in which e-texts support the development of research projects. The functions and roles were identified during the analysis when the attention was shifted from what scholars do with e-texts to what e-texts do in the project.

This section considers functions of e-texts in the project. These functions have two main roles in the projects, which will be discussed in this section. Roles will be also considered in the research process.

Functions of e-texts in projects

Functions of e-texts in the projects are realised through scholars' interactions with and uses of texts. Four main functions of e-texts emerged from the study.

1. Support in finding documents and information. Computer search capabilities combined with the provision of full-text documents aid information discovery. E-texts provide support in information retrieval and discovery of primary materials; they lead to other sources and aid in working with analogue sources; supplement hard copies and contribute to the current awareness.

This is the most fundamental function. All participants who discussed interactions relating to the following three functions used e-texts for retrieval of documents and information. Not only do information discovery and retrieval provide a basis for all other functions, but the nature of scholars' interaction with e-texts during the retrieval underpins other functions to a large extent (Function 3, for example).

2. Aid in managing the research process. Access to e-texts allows scholars to plan visits to remote collections; aids the publication process and provides sources for some

research activities (for example, ordering digital images, confirming publication rights, and exchanging files with collaborators and publishers).

3. Aid in investigation of the topic. The multiplicity of sources, formats and textual information that could be quickly brought together is a basis of exploration that allows scholars to see different meanings and aspects of the topic. Investigation of research topics through interactions with e-texts took four main forms, which were discussed in relation to the first research question:

- exploration of patterns and connections by searching and comparing diverse bodies of electronic texts
- production and/or interrogation of textual databases to explore research questions
- exploration as part of the academic research to be used in creative writing and
- exploration of electronically born literature.

4. Contribution to writing and presenting research results. E-texts allow copying and pasting of passages, which improves the speed and accuracy in writing. Traditional academic writing was affected by electronic textuality, which influenced a range of changes from subtle alterations in presenting the argument to more radical combinations of academic and creative writing styles. Interactions with e-texts also encourage considerations of alternative modes for presenting research findings that do not fit traditional academic genres.

These functions contribute to the development of a project in a number of different ways. Support in finding documents and information enables a faster search or revealing information in the document content. E-texts aid the discovery of primary materials because e-texts provide primary sources that are not available in other ways, such as obscure documents and texts generated by online communities. E-texts also supplement hard copies and contribute to current awareness by providing unpublished materials.

An example of an Aid in managing the research process is when e-texts assist in the planning of visits to remote collections. The planning is enabled by access to digitised

materials and online communication with staff in physical collections. Another example is when the publication process is aided by using e-texts to identify details about images and publication rights.

E-texts as an Aid in investigation of the topic contribute by helping scholars to identify trends, recognise issues, explore hunches, and work on formulating and confirming hypotheses by text analysis, for example. A range of online materials that does not exist in any physical collection sometimes provides support for argument or evidence for a point of view that is difficult, if not impossible, to identify in other ways.

Contribution to writing and presenting research results is apparent in encouraging new styles of writing, which tend to blur traditional distinctions between emotional and rational, creative and academic styles. The production of e-texts becomes an option for presenting research results that cannot be presented in other ways. Further details are provided in the table *The functions of e-texts and their contributions to the projects in Appendix M*.

Roles of e-texts in projects

It was discussed in relation to uses of e-texts that some uses support research, but they do not essentially change engagement with the research topic while others are directly part of the investigation of the topic. The way in which scholars use e-texts determines the functions of e-texts in projects. As mentioned before, functions are realised through interactions and uses. The four functions of e-texts have two roles in research projects, depending on how they support the development of the project. They have roles of:

- aid in providing basis for research (support roles) or
- aid in exploring the topic and presenting research findings (substantive roles).

Support roles

E-texts provide the basis for research, or play support roles, when they make some aspects of the research process quicker, easier and more accurate. The speed and convenience, or frustration sometimes associated with working with electronic sources,

may influence the process, but they normally do not affect the scholar's intellectual engagement with the topic in a significant way. The first two functions, Support in finding information and Aid in managing research process, have support roles. The fourth, Contribution to writing and presenting research results, has a support role when e-texts help in improving the speed and accuracy. Figure 8 provides some examples of comments about Support roles.

Figure 8. Comments about Support roles

'To reproduce that [electronic search for information in e-texts] on paper version will take years of searching and you'll still probably miss most so there are certain kinds of searches which you can do electronically and only electronically' (Participant 10/1, 8)

'I think it's made ... it hasn't influenced my interpretation. It hasn't influenced my methodology or interpretation I think at all. What it has influenced is the level of accuracy' (Participant 14/1, 10).

'... if I wanted to be absolutely sure when I have the page proofs in front of me, I'll just zap into the Internet and check a date or a spelling or a title or something like that' (Participant 1/1, 2).

About an electronic edition used to check the textual details: 'I don't think that the fact that the standard edition was available in electronic form made me work in any different way from what I would've done had I used it only in print form because in the form I have it, it's not interactive' (Participant 12/1, 5).

Substantive roles

E-texts aid in exploring the topic and presenting research findings, or play substantive roles, when they take part in shaping the scholar's thinking process. Interactivity is an essential element in following hunches, testing hypotheses and making connections in a way that was impossible or impractical without e-texts. The scholar's thinking about the topic develops in the interplay with the e-text and this experience can influence the

presentation of research results. The third function, Aid in investigation of the topic, has a substantive content-oriented role. In Contribution to writing and presenting research results, e-texts play a substantive role when they influence the writing style and presentation of research results. Figure 9 provides some participants' comments about Substantive roles.

Figure 9. Comments about Substantive roles

'Now, we couldn't have even begun to do those searches with the limited amount of time and resources, if we were doing them in hard copy. And we wouldn't actually have imagined making those sorts of links because it wouldn't be simple to do so we wouldn't have even bothered' (Participant 3/1, 6).

'... one of the things that electronic text does allow is pursuing the sort of question that just'd be so uneconomic to ask, going in fishing, pot luck to see what turns up' (Participant 6/1, 11).

'But even in those days, it allowed you to ask questions you wouldn't bother asking otherwise because it would take too long to find out and you wouldn't know whether the answer was significant' (Participant 6/11, 12).

The roles in research phases

E-texts play a role in each phase of the research process. Three functions (Support in finding documents and information, Aid in managing the research process and Aid in investigation of the topic) are present in all phases, while the fourth, Contribution to writing and presenting research results, is apparent during the phase Analysis and Presentation of Research Results.

In the Idea stage, e-texts in Support role aid information retrieval while e-texts in Substantive roles enable identification of trends and following half-formed ideas and hunches. During Preparation, e-texts substitute for unavailable hard copies, enable information-gathering and assist in organising trips when they play Support roles. In

Substantive roles, they aid exploration of relationships and support decision-making about research.

E-texts do not play a Support role during Elaboration, but interactions with e-texts have a Substantive role when they contribute to the formulation of research focus through preliminary text analysis. The phase of Analysis and Presentation of Results is supported by interactions with e-texts for supplementing and information retrieval, for example, when e-texts play Support roles. E-texts in Substantive roles aid understanding of the topic and influence writing at this stage. In Dissemination and Further Presentation of Results, e-texts play Support roles by providing additional information.

Table 6 below outlines Support and Substantive roles in the research process. Numbers indicate the specific function with '(1.)' indicating 1. Support in finding documents and information, and then 2. Aid in managing the research process, 3. Aid in investigation of the topic, and 4. Contribution to writing and presenting research results.

Table 6. Roles in research phases

Stage	Support roles	Substantive roles
Idea stage	(1.) IR (broad)	(3.) Aids initial exploration to formulate project – identifying trends, following hunches and half-formed ideas; insights for reflection
Preparation	(1.) Substitute for unavailable hard copies; supplement archival material (1.) IR (detailed; collecting scattered texts in own database) (1.) Lead to information and aid work with hard copies (after interrogating database to explore ideas) (2.) Aid in assessing physical collections and organising trips	(3.) Aids exploration of relationships, presences and absences, issues, comparison (3.) Support decision-making during preparation of own textual database (3.) Help in formulating or disregarding hypothesis
Elaboration		(3.) Aid in formulating focus (selection, preliminary analysis)
Analysis and Presentation of results	(1.) Supplement/substitute for hard copies (checking details, refreshing memory) (1.) Provision of current information	(3.) Provides material for thinking about ideas (after locating) (3.) Support exploration of ideas and

Stage	Support roles	Substantive roles
	through monitoring (1.) IR – checking details, finding additional information, alternative point of view; search own database (2.) Support ordering materials, confirming copyright; provision of sources (4.) Copying quotes and bibliographic details	connections during analysis; analysis of e-poetry; confirmation of hypothesis; analysis of patterns in results of searches (text-analysis) (3.) and (4.) Aids the combined process of information gathering, analysis and writing (4.) Influence on writing – remix methodology; introduction of different voices; non-linear elements (4.) E-text used to present results
Dissemination and Further Presentation of Results	(1.) IR – additional info., primary data	
Any stage	(1.) IR – current awareness (1.) Provision of primary data (testimonials, online forums)	(3.) Provision of insights for reflection

The consideration of uses, functions and roles of e-texts has shown different ways in which interactions with e-texts contribute to all stages of the research projects by aiding a range of research activities and processes. The contributions to particular projects differ in the extent and significance, but e-texts contributed in more than one way to each investigated project. The roles of e-texts are realised under a number of influences from research and electronic environments.

5.3. Challenges and aids

This section responds to the third research question: ‘What are some of the challenges and aids influencing the interactions with e-texts?’ Researchers work in a complex environment in which a number of inter-related issues influence the way in which they engage with e-texts. Participants’ discussions revealed factors in electronic and research environments that have an effect on the way they interact with e-texts. Some of these influences, such as working conditions and disciplinary cultures, relate to the broad context of their work, but they underpin a number of scholars’ decisions, including those related to interactions with e-texts.

In this section, the first part, *Electronic environment*, commences by considering electronic searching for information and then discusses availability, accessibility, presentation of e-texts, technical aspects and skills needed for work with e-texts. The second part, *Research environment*, considers aspects of the work setting and research cultures which participants identified as challenges or aids to their interactions with e-texts.

5.3.1. Electronic environment

This sections starts with participants' discussions about their search for information, particularly what constitutes information in e-texts. Participants' views of information in e-texts will be revisited in the following chapter in a discussion of text in the information framework. Interactions with e-texts are aided by a range of available materials, which are easily accessible and presented in a way that aids the engagement enabled by researchers' skills and supported by technical services. However, each of these aspects is complex and imposes a number of challenges as well.

Search for information in e-texts

It was established that knowledge and information are contextual; what constitutes information depends on the particular person in the particular situation. Considering that researchers in the humanities tend to work with a wide variety of materials to form their own views, it is hardly surprising that the study participants found informative different aspects of e-texts. The participants perceived e-text as a fluid entity, which tends to include a variety of media and formats. Their perception of information in e-texts was very broad, including anything that can inform them in some way. Various aspects of text that inform a researcher were seen as information. In the process of netchaining, information and e-text can be seen as essentially the same: 'I use all of that information, all of which is somehow electronic text for me' (Participant 6/2, 9).

Information can be contained in anything — from personal experiences to ‘seemingly banal things, like a box of toffees called Captain Cook Toffees’ (Participant 7/1, 4).

Everything a researcher reads and sees forms the background that becomes a source of information. Participant 1/2 discussed the collection of background material and said:

In the past, if I'm researching a novel at home, I have a filing cabinet full of folders with things I cut out of the newspaper, with photos of people that I think my characters might look like, with addresses and maps and all sorts of things that I used to create a kind of portfolio background material. So I would use the Internet in a very similar way to that (9).

Participant 1/1 talked about ways of looking for particular information and said: ‘Most of my family information I've got just from my own imagination’ (4). Considering this participant's explanation of the process, ‘information from imagination’ relates to the long process of collecting a variety of information in many different ways, and then building the fictional structure for a creative work based on invented but plausible information. In the context of a creative text, information is something that informed the writer, but it is also something that contributes to the fictional development and informs the reader.

For the researcher who investigates tragedy either as a period, event or a text, it is important that tragedy has a certain structure in which information works in a certain way: ‘When you look at narrative systems ... tragedy usually has a particular pattern or shape to how its information and emotions work, etc., etc., so always looking at patterns or structures’ (Participant 13/1, 2). This researcher also talked about looking for overlapping information as a way of discovering patterns.

Text analysis is a way of investigating patterns in which retrieved textual passages become information: ‘I was able to interrogate the database by putting in those three terms and getting all the information out of the database’ (Participant 8/1, 7). What constitutes information in a particular text depends on the research project, the researcher's interest in a particular aspect of the topic and her or his interpretation of a pattern.

The search for relevant information becomes the search for particular aspects of texts that may not be easily identified. Participant 1/1 talked about the difficulties of finding key texts that could not be discovered by searching bibliographic records. This researcher mentioned the discovery of a key literary text with a part of the narrative that revealed a particular aspect of the research topic, but could not be discovered by doing any of the standard searches across a bibliographic record or even a plot summary. Participant 7/1 talked about searching an online newspaper archive and discovering a picture and accompanying text, which became a key source in the project, not because of their meaning in the original context of the newspaper story, but because the source provided a ground for the researcher's interpretation. 'Search beyond the obvious' is a way of describing the search for texts with 'subtle focus' and 'hidden use', as Participant 1/1 called it:

... if the book was called *Sue Smith's dilemma* and there was nothing in the blurb that suggested her father was, for example, a [war] veteran and this was critical to the text, then it would fall through the web, so what we would need to do once we get this initial bibliography done, really go out and **search beyond the obvious** (Participant 1/1, 10, emphasis by SS).

The researchers often searched in this way. Even a simple search for factual information may quickly move 'beyond the obvious' when the researcher becomes interested in interpretation and different contexts in which factual information appears. Flexible searching across full-text documents supports the search for information, but various boundaries of disciplines and ownership impose limitations to searching:

And it was always a fantasy that electronics and digitisation would help break those down but where you've broken down a kind of a discipline or a field category, then what's intervened is the power of a publishing corporation to say well, we're not going to let you have that for free or we're going to keep that all to our journal and you can only search this journal and you have to go to another process to search that one ... (Participant 7/1, 13).

While the disciplinary lines have been often reinforced, the line between data, information and creative work may be difficult to establish and maintain. Participant

15/1 talked about poetic metadata and described creative work based on available sources as a way of creating metadata:

Well ... you have the data and then you remix it and shape it in your own stylised signature effects, which you bring to the Net. And by doing that you're, being self-aware of the way you are doing it, you're creating some kind of metadata experience (Participant 15/1, 15).

When the creative work is based on mixing and reshaping sources, it becomes more evident that the creative use of data says something about data, so the researcher called the creative interpretation poetic metadata.

Availability

In considering aids to the use of e-texts, the central question is what e-texts are available and how they are made available. Participant 12/1 saw the availability of scholarly sources as the central issue when she discussed barriers to the use of e-texts:

Well, something acting as a barrier would be if the material wasn't available exactly, and either totally or in a reliable form or ... through the university's networks. Things that promote use of electronic resources are obviously good databases, relevant texts, good resources such as online dictionaries, bibliographies and so forth (13).

Participant 10/1 talked about a particular web site on which the Biblical text was available in several languages, with commentaries and oral recordings. The researcher pointed out that the single web site replaced the whole theological library. The availability of relevant sources can compensate for various limitations encountered during the use of e-texts. Participant 11/1 talked about the lack of flexibility in interacting with the particular text that he used and the physical discomfort of reading from the screen, but the fact that the text was available compensated for the limitations.

The participants appreciated the availability of different editions of the same text (Participant 12/1) and original documents rather than specific editions (Participant 7/1). Researchers preferred to have page images to examine details of the original as well as

searchable transcriptions. Participant 3/1 talked about an online newspaper archive and said that the limitation is the lack of the whole context of the page with the layout, advertisements and other details, but searching across the database is valuable.

Transcripts and images have their advantages, depending on the material. For some material such as manuscripts, both transcription and high quality images are required:

And some types of documents, like handwritten archives, you really need both.

It's just important to be able to see how inaccessible, for example, the handwriting is. But you don't want to then have to plough all the way through it. [...] You can distinguish all sorts of things like how quickly something was written or how carefully it was written from looking at the images, but you can then search it from the word-processing text. So it's just wonderful, but it's very labour-intensive work. I will never get to the United States to look at those materials but I can work on them very effectively on the Web here (Participant 3/1, 14).

It is preferable to have more than one way of seeing the text (for example, images and transcripts, different editions), though it was doubtful that e-texts can ever provide the variety that may be needed in research. Participant 6/1 said that at times he needed a particular copy of a book or manuscript because he was interested in the owner or particular annotations. Although the researchers needed a very detailed representation of texts, even abstracts and summaries were helpful in making a decision about ordering material.

The availability of a wide range of texts meant that there were lots of materials that were not perceived as valuable in any way. However, the variety was appreciated because it provided unique material, which was used to access different accounts of a story, view different perspectives and gather accounts of events or phenomena.

Participants also commented on the value of interacting with obscure documents and their surprise that these sources were available.

Although the researchers appreciated available materials and, at times, found them overwhelming, they often commented that the sources were related to a rather limited range of interests and national cultures. Participant 1/1 noted that material related to an

ethnic community in America was available, which was not the case with the ethnic community in Australia, but the American material had limited relevance in researching the Australian community. Participant 3/1 found that indigenous peoples' history was not well represented because there was not enough funding to digitise relevant sources and Participant 2/1 stressed that material she used was not available because it was not of national significance. The participants also discussed the politics of representing knowledge on the Internet. Participant 14/1 commented that the wealth of information on the Internet was restricted to some nations, but there was a 'poverty of knowledge about many areas of the globe':

I think that the use of the Internet is very much conditioned by certain kind of politics which is politics of access to knowledge and the politics of the provision of knowledge. [...] If I want to look up anything about American history, I can find it out very easily on the Net. And I think that encourages more knowledge about America. But, ... if I want to go back and I want to find out how the colony of Liberia was established and how Sierra Leone developed and freed slaves, etc., I'm much better off going back to books. There's a poverty of knowledge about many areas of the globe (22).

Accessibility

Easy access to available materials is another appreciated aspect of interactions with e-texts. Participant 3/1, for example, commented that online access to materials from office and home has made research much easier, especially in the case of archives regulated by restrictive rules:

... and to have access to those at home, any time of the day or night, is just magic. I might say this is related not to the nature of the original hard copy but to the nature of the rules for access at the Lands Department, which is horrendous. So trying to get access to the hard copies has always been very difficult, so access is a huge issue (14).

Online access was particularly valuable in viewing remote collections. Participant 4/1 talked about the importance of online access to Australian materials, which are rarely reprinted because of the small audience. Geographical distances made it difficult for

researchers to access these materials within the country, and it is particularly difficult for researchers overseas who work on topics related to Australia. Participant 8/1 talked about the value of searching easily accessible materials online when working from the libraries overseas.

Free access to sources was seen as advantage, but was not expected. However, some researchers commented on frustrating limitations to access, which were not always seen as necessary. Participant 7/1 found it particularly frustrating that, while searching for a full-text copy of a document on the library network, various databases offered the same bibliographic details rather than the full text, without an initial indication of what was available, so the search felt like going around in a circle. Participant 2/1 found that the request for payment in some archives was limiting access unfairly:

... a lot of the documents I'm working with are public documents, I mean, they've been funded by public money, they've been archived by public money and then to have to pay to use them or to have to have them be copyrighted, and inaccessible, I think is really appalling and I think they should be publicly available. If you're using them honestly and not ... trying to make money out of them (18).

This researcher was following developments of the Creative Commons initiative with hope and excitement. An easy access to e-text provides a convenient and easier way of working:

What promotes use of electronic texts are convenience and speed. I very rarely go to the library these days, which I think is quite funny because when I was an undergraduate and postgraduate, I almost lived there. But now you can do everything from here. ... You can download electronic texts from online databases, they get printed out in a mail room. So I almost never need to go there (Participant 9/1, 12).

Information overload

It was mentioned in relation to investigation of the topic that large amounts of materials enable investigation of connections and patterns. An outline of affective

responses to different uses indicated that feelings of being overwhelmed and out of control were related to the Exploring use, which involves interactions with a large amount of materials. The wealth of information promotes the use of e-texts, but it is also an obstacle to an effective use.

The opinion that 'one of the problems now with doing research, you know, the idea of being really on top of the field, it's not even in theory possible because there is so much material splurting out from every possible place' (Participant 9/1, 5). This view was shared by some researchers. Participant 14/1 found that an expectation that the researcher would know of constantly increasing writing in the field might impede creativity, especially of younger researchers.

One of the approaches to dealing with information overload may be some form of specialised assistance. Participant 7/1 worked on an interdisciplinary project that could be informed by a vast range of materials and the researcher desired help from highly specialised reference librarians who would recommend relevant material. The participant also needed a more efficient way of making selections from retrieved sources: 'And it's, again, if there could be an intervening index between these things somehow. So it's an irony, isn't it? On one hand we look to the Net for this incredible extension and on the other level all I want is an index' (Participant 7/1, 16). While dealing with the 'flood of stuff from everywhere' (16), the researcher was distrustful of the stability of the Internet and feared that available materials may easily disappear.

Presentation of e-texts

The way in which e-texts are presented within a collection or a database influences interactions by enabling some and limiting other possibilities of discovery and use. Organisation of e-texts is one of the first features researchers note when entering an online collection. They appreciated a collection where relevant texts can be found easily, without 'masses of searching' (Participant 1/1, 6). Flexible ways of searching were very useful. Participant 14/1 liked an ability to search by keywords, subject and author, and Participant 3/1 greatly appreciated that images were searchable by caption,

owner, date and location. The ability to save searches online for an extended period of time was mentioned as a very useful feature by participants 5/1 and 7/1. Full-text searching of a large document or a corpus was very useful, as well as a provision for searching and moving through audio-files.

Browsing and an ability to see a broader context of the text was valuable if it could be combined with different access points. Texts grouped in very broad categories were not helpful in aiding the retrieval. The provision of browsing periodicals by year allowed the same type of browsing that was possible in the library, but did not provide the unique functionality enabled by the electronic medium, and it was not perceived to be effective.

Participant 6/1 talked about the value of browsing in physical collections and gave an example in which discovery was enabled by browsing a bound volume of different pamphlets, which contextualises materials. This researcher compared electronic browsing with online shopping because in neither case was it possible to find things in an enjoyable way:

There's much I suppose the analogy I always think of, ... it's a bit like shopping. If I know exactly what I want to buy, I can buy it on the computer. If I want to go out shopping, I like to browse around the shops and that's part of the enjoyment because I never know what I'm going to see that I like. So, I regard libraries in much the same sort of way (Participant 6/1, 3).

Online collections present their materials in many different ways and some participants found that the general lack of standards was problematic (for example, participants 5/1 and 14/1). In some instances, the same collection would use several retrieval systems, analogue and electronic, that are not integrated. Participant 2/2 discussed research in an archive that had multiple retrieval systems, where the researcher needed lateral thinking and a background knowledge in digital editing to use the collection effectively:

I had to bring my background knowledge a bit to it because I have done digital editing before so I was ... If I hadn't have that background knowledge I think it would've been a bit daunting, especially if I wasn't familiar with searching

electronic text and basically I had to use three different catalogues to find this material and that was to my own lateral thinking that I came with some of these things, and the help of the researchers there (Participant 2/2, taped comments, 2).

The use of technical and library jargon did not mean much to the researchers. Terms that seem simple and straightforward to information professionals had ambiguous meanings to the participants. Terms like 'Boolean search' or even 'keyword search' do not come naturally even to scholars who are immersed in the electronic environment. Names of file formats and some technical terms such as 'high resolution' were difficult to remember or confusing to some participants in the study. As users of electronic sources, most of them are focused on the research process and results.

Technical aspects

Reliable networks that facilitate access to resources and a good computer were identified as an important technical basis provided by the institution. The participants mostly felt that their networks and equipment were adequate. Participant 8/1 talked about some bottlenecks in resources, such as a limited number of printers for the department, but he was satisfied overall because the technical resources had improved considerably over the years.

Some participants talked about problems caused by different platforms used by departments in the same institution. Participant 5/1 encountered problems when she had to apply skills on a Macintosh computer in her office after learning them on a PC at a workshop. Participant 10/1 could not use a program designed for PCs when the whole department used Macintosh. There were some problems in the use of equipment and software that were not easily solved because technical help was not readily available for specific problems in using the sources, such as display of images and the layout of printed pages.

Constant changes in hardware and software, and differences between the platforms made the researchers feel unsure whether they were aware of what was possible. Some

participants referred to the inability to search .pdf files and added that this was the case when they used them. Participant 2/1 talked about working with e-texts in an oral form and said: 'Only what would come up in your player, I think, which is just the title of the file. I don't think it has anything else indexed into it. There could, potentially, but my player doesn't show me that' (11). The researcher could not be sure whether the index was available, it was just that her player did not show it.

The design limitations affected the way scholars worked. The screen design made the work tiring after a while. Most researchers found it difficult to read from the screen, and Participant 14/1, who was able to read from the screen, did not like it that he had to keep clicking the mouse to be able to move from one page to the next. Participant 13/1 compared the screen with a tunnel, which did not aid a sense of orientation in the text:

... what isn't helpful is to, is when you get lost in that tunnel that the computer is where you're just scrolling up or down, up or down, trying to move through a particular text and that's, whenever that decision was made about how to show documents on screens, you know, with the toggle bar down the side ... that forms a huge issue for most people, I think (6).

Participant 3/1 talked about difficulties in working with images of maps and moving around the document:

... to get the handwriting, involves zooming in to quite a close level. And then trying to work out where you are on the map. It's a very cumbersome process. Theoretically, you can have a, there are sort of panorama views. I was using Macintosh and I don't think that works for Macintoshes. I haven't tried it with a PC. But the digitisation and the scale is fantastic. But the process, then, of moving around a very large-scale document, which is what these maps are, in hard copy, it's quite cumbersome and awkward and difficult (8).

Certain formats seemed to be suited for particular tasks. The participants liked .pdf because it looked like print and it was easy to print and cite, but formats such as .html were preferred for searching.

Some participants talked about desirable software and services. Participant 16/1 could explore electronic poetry only by watching sections repeatedly because it was very difficult to isolate and analyse parts of the work. A good voice-recognition program was needed, but researchers who talked about it were not able to find adequate software (participants 8/1 and 10/1). A technical solution for organising large personal digital libraries was sorely missed by Participant 2/1, but other participants would have benefited from having an easier way of managing their own e-texts as well. For example, Participant 13/1 had to be very careful with establishing a system for each project while Participant 10/1 maintained very big files to achieve clear organisation. Finally, there was a need for software for organising and managing collaborative work across distances and providing an efficient way of managing the team's digital collection.

Skills for working with e-texts

The main areas of knowledge and skills recognised by the participants were identifying and finding databases, searching efficiently, assessing the accuracy and authenticity of retrieved sources and using EndNote. The participants indicated that some other, often minor aspects of use, needed clarification too. None of the participants said that they were systematically trained in using e-texts and other electronic sources. A number of them indicated that they were not sure what they were supposed to know and to what standard (for example, participants 1/1, 5/1, 10/1, 14/1).

Some participants referred to a number of workshops and training sessions organised by the library. Even participants who attended these sessions or felt confident about their skills thought that there were a number of areas where training would not go amiss. They indicated a need for an overview of different aspects of retrieval and use. Participant 5/1 summarised what seemed to be a feeling shared by a number of researchers:

I suppose what would be helpful is if we had, say, a dedicated session, perhaps in the library, about using this, tailored to research, academic staff's interest.

Going through how one finds these texts and what one can do with them. I feel like I've sort of been learning on my own (Participant 5/1, 14).

Training in 'what one can do with them' seemed particularly important. However, the issue of training is more complex than organising a training session. In the following passage, Participant 6/1 indicated that successful training needed to be task-related:

I think there's a double bind involved here. If you're not sufficiently trained or taught how to use it efficiently, you can waste an awful lot of time being incompetent, as I suspect is the case with me. But in order to be trained and taught properly, you have to take time out from other things and so you tend not to do it. You think, well, I will learn how to do this if I'm learning how to do it in doing my own research. You tend to remember things if they're important to you. Whereas if somebody is just saying well, here's a program, you can do x, y and z with it and you can do this and this — that doesn't ... unless I want to do any of those things, I just forget it, it just means nothing to me (Participant 6/1, 18).

This researcher suggested that this problem may be solved in a generation, but a number of participants stressed that the current students have not been trained properly how to use e-texts, particularly how to evaluate e-texts:

I don't think that anything is done to promote the use of electronic media. Where this shows up is in teaching. There's not a single course that we teach in this department in which there is, which is devoted to history students or history graduate students learning about the use of electronic sources (Participant 14/1, 21).

Complex skills in working with different media were acquired either because researchers were interested in learning them on their own or because they happened to have previous education that helped them in dealing with electronic media (for example, education in music or media production). Participant 2/2 said that the majority of colleagues who studied media history did not know how to work with multimedia formats because they came from a background of education in history. On the other hand, few people who were able to combine theoretical research with practical media skills did not have historical education. The researcher found that good

combinations of skills happened accidentally rather than being fostered by formal training. Participant 15/1 explored different ways of working with electronic media and wanted to see a new generation being formally prepared for new types of intellectual and artistic work:

This is something that I think we can do in an educational context because we can start teaching new media writers, artists, theorists etc., a kind of critical media literacy that engages them in such a way that they learn to improve various stages of development so that they can become, I don't know, better performers, you might say, better performers of writing ... (8).

The discussions of skills showed that the researchers were thinking about the adequacy of their own skills, but they were also concerned with the long-term effects of inadequate and unsystematic skills development of younger people.

In their discussion of aspects in the electronic environment that aid interactions with e-texts, participants recognised the availability of a range of sources, different representations of the same text (for example, image and transcription), access to e-texts at any time anywhere, speed, flexible searching and browsing, as well as reliable networks and equipment, as helpful.

A list of limitations is longer. The use is limited by the range of available materials and obstacles to access. Interactions are negatively influenced by the lack of ability to search 'beyond the obvious', and across disciplinary and other boundaries, by the lack of provision for effective browsing, the lack of common standards and integration of finding aids, as well as by the use of jargon. Although more e-texts are required, information overload can be a problem. Large images are difficult to use and there are very limited options for analysing electronic literature. Differences in platforms, ineffective screen design, changes of software and hardware, and the lack of adequate software for some tasks were all noted as challenges to the use. Finally, inadequate technical support and researchers' skills were also recognised as limiting factors.

5.3.2. Research environment

Study participants discussed a number of issues from their work settings and the broader research culture that have some impact on their interactions with e-texts. Job demands and institutional support were significant factors in the work setting. Decisions related to the use of e-texts are determined in many ways by the dominant research cultures in which peers have an important role. The speed of interactions with e-texts, which is important both for information provision and use, and for work efficiency, is also an issue that underlies research cultures. Some expected changes are associated with the way in which younger generations of scholars use ICT. Participants also discussed changing research approaches in which e-texts have a role to play.

Work setting

The university is a scholar's immediate environment in which various factors promote or inhibit research in general and interactions with e-texts in particular. Organisational culture, technical support and the university library all have an impact on researchers and the way they go about their work.

Job demands

The participants at different stages of their career commented on increasing job demands, particularly that fast research is necessary for younger academics. A senior academic with many years of experience talked about increasing job demands:

I cannot imagine how my younger colleagues can do decent research without really burning out or producing inferior work because of all the other pressures they have on them. And I've spent most of my time in universities not even applying for grants because I could always get my research done. And carry a full teaching load. And being an administrator of the university, head of school and various other things. I think the pressures are very, very considerably greater than they used to be (Participant 6/1, 17).

Participant 9/1 commented that scholars in the early and middle stages of their careers could not afford to spend a long time on a project. Electronic texts were very helpful in speeding up the research process. Effective use of time was an important reason for some researchers to use electronic sources in short spurts:

... databases transformed my research [patterns] ... The responsibilities of Head of School and also of most academics these days, increasing administration and little time to go out and do research so ... you get to it where you can (Participant 11/1, 8).

It's quicker and easier if you've just got a little bit of spare time and you look up a few things to do it electronically. I mean, I could go over to the library and ... but then I've got to walk physically over to the library ... (Participant 4/1, 8).

The conditions of interactions in brief periods of available time do not promote full engagement with research. For some people, work in short spurts changes the interaction with text, which is perceived as spasmodic and stressful.

... it's a very different relationship with text, and the way in which you read text, and participate in text because it's much more interrupted. I don't go and block out two hours, sit in a quiet space and read. I go in and out of it all day, and that in itself to some extent is spasmodic and a bit more stressful perhaps, less focused. I think, actually, as the result of the Internet while it's great, I am also less focused in terms of sticking with a particular thing because it's just there (Participant 1/1, 15).

However, the use of electronic sources, including e-texts, has become a necessary part of any research career:

... last night, one of my very dear friends who is also maybe 66, 67, professor in Mediaeval History, he just said, 'You know, I'm no longer effective as a scholar because I cannot do all these things [use digital information technology] and I do not want to learn. And now I am retired, I can't draw upon resources like research assistants, so really, there's nowhere for me to go in terms of research.' So what he's doing is he's running things like interest classes in mediaeval Latin but he's not doing any serious research (Participant 9/1, 11).

Participants stressed job demands as an important reason for the use of electronic sources because they enabled faster research. At the same time, some of them (for example, Participants 6/1 and 9/1) saw a heavy workload and tasks that they did not perceive to be important as a barrier to research in general, including the use of e-texts.

Institutional support

Institutional support was seen as critically important for the effective use of digital technology. Some participants (for example, 2/1 and 13/1) mentioned a fast and robust network, computer, authorised access and a degree of knowledge as important aspects of the successful use of electronic sources. Access to sources on the university network, from home and office, has been essential for establishing flexible work practices.

Participants found that there was a general acceptance in their institutions that the Internet would be used for research. They were encouraged to use computers for different purposes. For example, Participant 10/1 said that the attitude of his institution and peers to the use of e-texts was 'strongly encouraging, very encouraging' (16). Participant 1/1 mentioned the university Research Office as very helpful. Participant 6/1 did not see any obstacles to the use of e-texts except unwanted duties.

Identified institutional blockages appeared in four areas: open communication about issues related to the use of e-texts in research; training and education of staff and students; equipment and conditions of access to online materials. Examples of unhelpful institutional culture did not indicate any visible barriers to the use of e-texts, but rather the atmosphere of neglect and the lack of discussion with little assistance for the scholars. The following excerpts came from interviews with participants who worked at two universities, had different disciplinary backgrounds and were at different stages of their career:

There is no in-service kind of training, there's no seminars, I've never heard of a staff seminar about this. [...] Historians are not terribly reflexive about their own practice. So they're all just using it kind of willy-nilly, everybody learns, noone ever told me to use them, noone ever gave me any instruction at all. And that's probably reflected in my serendipitous way of going about it. And my

ignorance of certain things. It's kind of like a benign neglect (Participant 14/1, 22).

In this area, we don't have a very good communication around research, which I find quite frustrating so there is not really anyone much I could go to and ask about these things. Although, our Research Office is really good and I would talk to the person in charge of research in the Research Office about it but just on a day-to-day basis, I would not really go and ask my supervisor, for example, about any of these stuff (Participant 1/1, 14).

The university library was seen as a major force in promoting e-texts. Organisational encouragement was observed in the way libraries worked: libraries preferred electronic forms, there seemed to be money for electronic resources, and library staff sent notifications about sources and organised seminars (Participants 10/1, 5/1). Considering participants' responses, there may have been significant differences in the way different libraries or even subject librarians communicated with academics. While no one criticised librarians, some participants emphasised how important service were they received from their subject librarians (e.g. training, circulated information about new sources, suggestions). Although a number of participants commented on the need for training and criticised the lack of relevant workshops and seminars in their institution, very few participants mentioned that they had attended official training sessions.

The range of available sources differed between participants' institutions. Academics in relatively new and poorer universities accepted the limitations of available information sources, while academics from institutions with more extensive libraries expressed their satisfaction and pride with their university collections. Participants mentioned initiatives to make some expensive sources available through academic networks to several universities as very helpful (for example, ARC Network for Early European Research). As the example of academic networks indicates, university policies, practices and culture provide an immediate environment for research projects, which are also influenced by wider scholarly context.

Research cultures

Participants' perceptions of the research culture in which they work underpinned decisions made during the research process, particularly the way in which they presented research results. The perception of peers' attitudes has had a critical importance in the way participants viewed the research culture in which they worked. The understanding of dominant disciplinary views provides a framework for considering issues of changing research traditions in which e-texts play a part. E-texts contribute to and are influenced by the interplay between tradition and change, which can be observed in relation to issues of generational change, speed and various aspects of academic change in approaches to research.

Peers

The success of a research project is often judged by peers' reaction. Participant 14/1 said that 'the only thing which would make it [research project] flop is the way historians, the profession receives what you write, what your research is' (12). Researchers discussed and demonstrated with their choices of how to present research results that they carefully considered peers' reactions. There was an element of anxiety because of possible harsh judgments: 'And for academics, there's always this anxiety around people dying to trip you up over something, that kind of anxiety academics have about competitiveness and all that stuff' (Participant 1/2, 18).

When asked about peers' acceptance of e-texts, most participants initially answered that e-texts were generally accepted and the use was supported, but further discussions revealed that the researchers were not sure what their colleagues were thinking about these resources and what they were doing with them. The perceptions of peers' attitudes were often based on clues rather than on open discussions or clear evidence. No one mentioned a formal discussion within a disciplinary group about the use of e-texts. As Participant 14/1 said, e-texts were 'something that might be discussed in the staffroom as a kind of lunchtime topic, along with plagiarism and whatever else ...' (22).

The perception that traditional academic historians were opposed to the use of e-texts was strong enough that one of the researchers wrote a book in which he avoided mentioning e-texts in order to keep this part of the audience engaged. Omitting e-texts from the references was a way of ensuring that more conservative historians remained focused on the argument. Although the researcher believed that some e-texts used in the research were serious and authoritative, and he did not have a policy of avoiding the mention of e-texts in published works, he did not want to cite e-texts in this particular book:

I didn't want to leave any distracting elements whereby the sorts of people whom I want to have an argument with the book, would argue over that issue which in fact is a minor issue, I wanted to make sure that ... if they wanted an argument with the book they had to argue with the key ideas and that I wanted to also show that these key ideas in the book could be put to them within their own protocols, if that makes sense (Participant 6/2, 3).

This particular book not only dealt with a controversial topic, but it was written in a way which combined the traditional historical with the literary style of writing and challenged traditional notions of an academic historical text. The researcher used e-texts extensively during the research process and they influenced his choice of writing style. When asked if the non-traditional academic style had anything to do with the decision to exclude e-texts from the book, the researcher responded:

... I knew that I was already pushing the edges and taking risks with the style that I didn't want to lose those people, I wanted to challenge them but keep them in the book. And ... I did think if I start to throw in sort of citations that are from a protocol that they don't agree with, it might be the way where they could just say, 'Uh, this book, I don't, I don't need to engage with it any more' (Participant 6/2, 4).

Peers' resistance was more a subtle feeling than an explicit pressure. Even the researcher who omitted e-texts to make sure that more conservative colleagues stayed with the book did not find strong evidence that peers were opposed to the use of e-texts: 'I'm feeling that that's the case, but I actually don't feel ... bullied by that at all'

(Participant 6/2, 4). For this participant, the presentation of research 'was a strategic question of writing in relation to authority' (3).

Another researcher talked about 'feeling uneasy' that research could be based on Internet sources:

But if you're writing your work, like at the moment I'm writing a kind of general synthesis and I could get a lot of the materials off the Internet but I would feel very uneasy about presenting that to a profession which would sort of look at it and say, oh I suppose would say, 'Oh, it's all just from Internet sources'. There is a prejudice against Internet sources (Participant 14/1, 9).

Some researchers talked about peers' mixed responses to e-texts. Participant 15/1 talked about different reactions to experiments based on e-texts, but a variety of responses seemed to be common in other areas of e-text use as well. When asked what colleagues thought about the researcher's experimental academic work, Participant 15/1 responded:

Like with everybody, I think it's mixed. There are some who don't understand it or don't see any value in it, because it doesn't really meet what they think of as the standard. Then there are many others who are interested in the experiments that are taking place and are interested in expanding the concept of ... what it means to write an academic paper ... (15).

Conflicting peers' responses were apparent in a situation when a researcher wrote an article on research based on a range of non-traditional sources, including e-texts. This was the article that had the highest number of references to e-texts found in the study. The article also referred to other unconventional academic sources. The project had a contemporary topic for which traditional academic sources did not exist:

And when I wrote the [topic] article, the two referees from the journal, one of them sent back a no, saying every source in this is a newspaper or magazine article or television documentary, it's not proper academic work. And the other one said, 'Cutting edge, deeply original, should be published' (Participant 9/1, 11).

The researcher changed the article so that it excluded part of the original research to include some academic sources. This article was the first academic response to a contemporary event and, as the researcher said, 'It's now been cited by at least half a dozen other people who are now working on [topic]' (11). The researcher's initial response was also that no one in the profession objected to the use of e-texts.

Although participants generally believed that peers made evaluations based on evidence, a number of participants preferred to cite e-texts as print publications either because they checked the originals or because .pdf files came from trusted sources and they were presented in a way that was faithful to print publications. One senior participant thought that there was a more positive attitude towards primary than secondary sources in electronic forms because of the limitations of physical collections:

I could say that the attitude towards using primary texts online is very different from the attitude of say learning to use Web materials and do online courses. I think the attitude is quite positive as far as primary resources are concerned because most people realise that we can't be the Library of Congress. But whether a great number of people actually use primary texts online, I couldn't say (Participant 11/1, 6).

A positive attitude to the practice of using e-sources may depend on the field and the quality of available sources. In fields where e-texts seemed to be accepted, originals were not readily accessible and scholars were used to working with facsimiles, transcriptions or translations. Where the major electronic editions were prepared by highly respected experts, discussions about e-texts evolved around these editions (for example, examples described by participants 8/1 and 12/1). Participant 12/1 referred to some of these sources in a published work, but the examined publication by Participant 8/1 predated the valued electronic collection. People working in relatively new departments such as creative communication or media studies did not seem to be affected by peers' resistance because they cited e-texts when appropriate, and they either did not discuss peers' attitudes or they said that they were not concerned with negative views. Participant 15/1, for example, said he wrote 'without an umpire or referee in mind' (7).

The discussed perceptions indicated that peers' negative attitudes or uncertainty about the peers' attitudes were a factor that inhibited a full engagement with e-texts, particularly citing them in published works. Peers' positive attitudes to the use of e-texts were only hinted at, but they were not discussed as an influence on participants' work.

Speed

The speed of interactions with e-texts was often mentioned as an important aspect of interactions with e-texts. The considerations of speed relate to other issues discussed so far in relation to aids and challenges in the electronic environment, the effect of speed on research choices and work patterns, as well as the views of speed from the perspective of research traditions, which all take part in shaping research culture.

The speed of interactions promoted the use of e-texts in some respects: 'Online is fantastic for speed, for getting in and out of something really quickly, being clear it's just not of any relevance and just moving on to the next one' (Participant 1/1, 12).

Participants expected that online sources were regularly updated and they felt frustrated if they could not interact with electronic databases as quickly as they wanted. One participant saw the digitisation project conducted by Google as the most exciting electronic text project, because it 'will mean instant Web access to millions of texts' (Participant 10/1, 15). On the other hand, electronic interactions have to be fast, otherwise they are frustrating. Slow Internet connection at home was a reason that some participants planned their work so they could interact with e-texts at work where they had faster connection (for example, participants 1/2 and 4/1).

Instant access to a large body of texts is a particularly important feature of e-texts, not only because it allows faster research, but it allows 'pursuing the sort of question that just'd be so uneconomic to ask' otherwise (Participant 6/1, 11). Quick interactions also enable exploration of half-formed ideas that was not possible in interactions with analogue sources (Participant 6/2). Participant 3/1 stressed that quick access to online source allowed browsing of dispersed collections, which were not used when research

was done in traditional ways, because most projects did not have the time and money required for physical access to dispersed materials. The speed enabled by e-texts and software tools makes some projects completed in traditional ways look tragic, as Participant 13/1 put it: '... it's tragic to go into a library and look at the old concordance books and see how some scholar spent 25 years making a Shakespearean concordance when a computer can do it now in a nanosecond' (18).

At the same time, research in the office aided by computer tools was described as a quick and easy way of working, but interactions with text were not deep. For Participant 1/2, the speed of interactions with e-texts was an element that contributed to the perception that 'you're getting something easily' and it did not feel right. The researcher elaborated:

It's [research] supposed to be bloody hard and it's supposed to be all that stuff around poring away in libraries for hours and hours and hours. And apart from the shift it's the pleasure of doing that when you do get a nice quiet library and it feels wonderful to have this lovely slow research. With the Internet it always feels slightly different. Maybe it's a bit like the slow food, fast food argument. Old-style research ... it's a bit more like kind of a cooking a meal that takes all day and the Internet's more like a hamburger (Participant 1/2, 14).

Relatively quick research did not feel like proper research: 'I think a lot of people worry that what they're doing in using the Internet is somehow Mickey Mouse or lazy or unethical in some way' (Participant 1/2, 14). A number of participants stressed that there was no substitute for reading a lot, which cannot be a fast process. Even a slow process of searching hard copies has its advantages because it allows reflection and a deeper understanding of the problem. As Participant 8/1 explained, 'you can ask a question, get an answer in ten minutes, what might take you in earlier days a year to get through. And the process of going through it, the question develops and deepens' (10). This researcher found that the process of creating a database was similar to the old style of research when a slow process allowed reflection, but then quick interactions allowed new ways of exploring research questions. The researcher found the process of constructing a database too time-consuming to repeat it in other projects, but found the

whole experience valuable and suggested that novice researchers would benefit from experiencing a long process of research. He compared different research processes with working with clay, by using a mould or doing everything by hand:

They've both got their aesthetic economy. I personally prefer, if you're going to work with moulds, I think it helps you if you've already worked with clay and you've worked with your hands. It's the same, I think it helps you if you work through the old method, if you go through the indices and searching by hand. It certainly helps you appreciate the computerised aid (Participant 8/1, 14).

Participant 9/1 said that fast research was considered shallow and not respected by peers, which is difficult to reconcile with academics' way of working nowadays:

If you took ten years to produce a book, even if it were a masterpiece, you would probably get sacked. Well, it's difficult to get sacked but, you know ... that kind of idea about being immersed in scholarship and being able to take time to think about what it is really that you think about your subject, that is a luxury that virtually none of us can afford (11).

The old skills and the old way of working became impossible with current job demands: 'And, of course, the sort of thing that used to be required, really being able to immerse yourself, to learn three or four languages, do the first-hand translations, it takes too long' (Participant 9/1, 12). The researcher thought that old skills and old ways of working could not be managed while working fifty hours a week on a range of academic duties.

Generational change

The researcher's age was repeatedly mentioned as a contributing factor that can influence the use of e-texts. Participants related the know-how of interactions with e-texts to age. Before considering participants' views of generational differences, I need to stress that I did not observe any difference in participants' attitudes to and descriptions of interactions with e-texts based on their seniority. I did not gather information about participants' age, but the only difference that I could note was that

the participation in online forums was mentioned only by some participants who were obviously younger researchers.

Since most participants were researchers as well as teachers, they repeatedly referred to plagiarism and an inadequate use of e-texts in students' assignments in relation to the authority of e-texts. Examples of the lack of critical evaluation in students' work were used as a way of explaining scholars' dismissive attitude to online sources:

So because we're not training our students in discernment in use of electronic sources, it's all getting downgraded. So you will say, we'll dismiss the whole Net on the basis of what our student — that'll be in our work, we don't really mean that, but that would be something you'd say that someone else would understand, 'all that crap from the Net' (Participant 7/1, 16).

The researchers did not want to be seen as similar to their young students. On the other hand, older academics needed training for effective use of e-texts, which became an obstacle in itself:

But for people like me, there's neither the appropriate training to exploit these things properly or else we resist it because we think there are other things to do ... And I think it's quite possibly a problem that will solve itself in a generation (Participant 6/1, 18).

There was also a perception that younger people were better suited for current job demands and the work with electronic sources, which often required fast work on more focused projects. Participant 5/2 talked about a large recently published book authored by an older academic and said: 'And that maybe is something to do with being, as they say, MTV generation, that you've got a bit of a shortened attention span, maybe. I mean, obviously, I can understand writing a 300-page book but a 700-page book ...' (17).

Some academics discussed that academia is going through a period of transitions, which unfold with a generational change:

... this school has only recently retired the last two people who didn't use a computer at all. Most of the younger people are extremely adept. I'm one of the oldest members of staff and the young members of staff are just using the stuff

routinely. In many ways it would've been better to talk to them than me, I am a transitional figure (Participant 14/1, 20).

The participants did not seem to share the same view about the point of a generational change when older age becomes an obstacle to the use of e-texts. Participant 1/2 thought that people 45 to 50 years old had a traditional education and still had a passion for the old process of research as well as outcomes, although this researcher talked about a positive attitude to the Internet in general. On the other hand, Participant 5/2 said: 'I'm not young but it's amazing how many people will say that being 40 something is comparatively youthful. It's because we live in a gerontocracy, it's the Peter Costello versus John Howard problem' (15). Whatever the cut-off point may be, a number of participants thought that older age may be a barrier to the use of e-texts.

There is a possibility that seniority may give more freedom from career demands: 'I may not write any articles at all because I don't, ... there's nowhere to be promoted to as a full professor, I have no reason to write things just for the sake of it, I have to write what I want to write' (Participant 14/1, 18). Older scholars were also more likely to be in a position of power from which they would promote traditional forms of scholarship. Participant 5/2 considered a role of academic authority figures in channelling changes in research practices:

And so the big guns have grown up in a different kind of scholarship and they're the ones who edit the journals and who run the big publishing houses. So another thing that's important is that you convince them that you really can do real scholarship the way they see real scholarship, even though you are moving into risky and different material, it's still real, it's serious, you know how to use a library and do proper footnotes and all that kind of thing. So those sorts of things are important. I think that's basically it. It's a kind of professional accreditation problem that people who work in really kind of out there fields are stuck with (16).

Changing research approaches

The acceptance of e-texts was seen as part of academic changes, which were, in turn, perceived as part of broader societal transformations. The judgment of the authority of e-texts and attitudes to the use of variety of e-texts from different sources happens in the context of the changing attitude to authority in general. Participant 5/2 commented that people were not interested in institutions and their long traditions any more, but how something related to their own life. Participant 13/1 said that people were no longer 'trustful of single authoritative disposition, single authoritative discourse, they want to be able to cross-reference, cross-check, find a secondary opinion, etc. etc., and come to their own belief rather than just accept an authorised view' (10).

It was discussed earlier that some participants perceived e-texts as an influence on their academic writing. The way of developing an argument has been changing from dealing with firm propositions to representing the complexity of possible views and approaches. The changes in the way people research and want to present their argument promote the use of e-texts, while some traditional practices tend to inhibit the use. The participants commented on connections between changing research approaches and the engagement with e-text in the following areas:

- research topics and resources
- genres and disciplines
- publishing options.

Research topics and sources

In the dynamic field, traditional sources of information do not have the same exclusive value as they used to, because new sources of information have become relevant as well: 'We find out about things on CNN, off the web sites, out of blogs, just think of how important blogs have been during the Iraq war, and journalists and magazine staff writers can actually produce really significant material' (Participant 5/2, 13). A quickly articulated response to some of these materials can be valuable for an understanding of current events.

Online textual materials have contributed to investigation of contemporary topics. I asked Participant 5/2 what had changed in academic practice, considering that some important events were happening during the twentieth century as well and people knew about them. Participant 5/2 responded: 'It was just accepted that the kind of sober, reflective study would come later. And also, academics didn't work so much on really contemporary material' (14).

The choices of research topics and information sources are interlinked. E-texts have become part of a negotiation between new academic interests and demands, on one hand, and the tradition, on the other. Work on contemporary topics was not a traditional practice in historical research, but an increasing number of scholars nowadays want to research current phenomena. Some participants commented that it had become common that academics gather at conferences and seminars to reflect on recently published books, contemporary events and topics from popular culture. The described reasons were twofold. Firstly, the research of contemporary topics was faster, so it has become necessary to satisfy job demands and provide output required for career advancement. In the opinion of Participant 9/1, bodies that govern research grants were in favour of fashionable interests. Secondly, it is important to historicise current issues and events. Participant 14/1 talked about certain phenomena that can be observed on web sites and the need to document their occurrences and make a comment based on historical criticism. Participant 5/2 also talked about a need to make an academic comment based on researching current events, but she thought that more traditional historians did not accept this sort of research.

E-texts provide material for researching contemporary issues, but they are often dismissed with other non-traditional sources, such as newspaper articles and films, as inappropriate for academic research. Participant 5/2 (15) talked about 'dressing up' research on contemporary topics to make it more acceptable to traditional colleagues. An accepted disciplinary theory and references are the main tools used for 'dressing up', as well as demonstrating 'that things that used to be thought of as ephemeral or transient can now have greater importance for people' (15). The main purpose of 'dressing up' is to connect the research with 'an existing discourse. That's important.

To convince those in power in the discourse' (Participant 5/2, 15). When asked about the role of e-texts in the shift to contemporary topics, the researcher answered that web sites were the best way to access alternative communities and their documentation. Participant 5/2 saw changes in the selection of research topics and sources of information as signs of a collapse of high into low culture, which affected academic approaches to research.

The selection of more focused topics has already been mentioned in relation to the generational change. However, a trend of forming teams that work together, sometimes across distances, on more complex topics was also observed:

And I think that the science model coming to humanities is quite important, so research network funding from ARC, for instance, is all about that, like bringing more of a science-like approach, like laboratories and problem-solving into humanities. [...] And the problems are more complex as well, looking across national contexts or geographical contexts because there are many interesting works that come out because people are coming together and being engaged across different distances ... (Participant 2/2, 19).

Geographically dispersed teams rely on the use of technological tools and sharing documents in electronic form, including primary materials.

Genres and disciplines

The experience of interacting with multimedia has potentially far-reaching implications for the change of literary and academic writing. The convergence of textual, visual and musical forms into multimedia expression is enabled and promoted by some genres of electronically born literature:

I think we're getting into a new, more kind of multimedia kind of genre. I mean, if people create novels in the future I think they're going to be, have visuals and sonic elements, they're not just going to be screeds and screeds of words. And I think poetry, because it's a bit more minimal, minimalists as far as words concerned and because it lends itself to these kinds of typographies and spatial and is particularly suited (Participant 16/1, 9).

The emergence of new genres and new ways of dealing with different media and formats can become a ground for new disciplines to emerge. The emergence of peer networks formulates a sense of an emerging discipline:

English departments would sometimes be the last sort of refuge for people who are starting to get interested in other forms of study like film studies [...]. So it kind of makes sense that someone who's starting to bring their text values to more interactive online spaces like the Internet, they would see the work become more like multimedia art or something like that. It's just that when you're one of the first ones to do it, you're not aware that that's what's happened until you start getting various kinds of feedback, ... emerging network of contacts you realise, oh, it's no longer English space, it's now something else (Participant 15/1, 3).

In the emerging field, the researcher formed his work without considering possible views of existing disciplinary authorities: 'In other words, I'm not trying to write with an audience of referees in mind hoping that they will accept my argument. I'm just writing ...' (Participant 15/1, 7). Experimentations with e-texts seem to promote the emergence of new styles, genres and, eventually, disciplines, which, in turn, promote the further use of e-texts.

Publishing options

A number of participants mentioned that electronic journals were perceived as less prestigious than print journals, which may be a sign of a negative attitude towards online publishing: 'So I do think there's that lingering kind of prejudice amongst academics about, that online publishing in general, but I think that that's changed (Participant 11/1, 7). The observation that 'anybody can set up an electronic journal' (Participant 14/1, 14) invokes discussions about its lack of authority.

The issue of publishing relates to the use of e-texts in the sense that researchers decide to use e-texts in their writing in a way that is suitable for the dominant forms of publishing. As discussed earlier, publishing options determine the choice of formats for the presentation of research results. Participants 16/1 and 2/2, for example, talked

about writing in a traditional way because they expected to publish in a print publication. However, a publisher's interest in the inclusion of multimedia also encourages the researcher to think about different ways of including e-texts in final works. Participant 2/2 wrote a traditional academic work for print but found that the publisher wanted to relate multimedia elements to the print publication: 'It was quite exciting to hear that the publisher say they are interested in doing that, then I know that is something they are thinking about multimedia' (17). Researchers noted publishers' approaches to referencing of e-texts, as well as the way they wanted to deal with multimedia in published works as an indication of how to shape research practices.

In the complex research environment with a number of conflicting influences, interactions with e-texts are aided by institutional support and encouragement, in which the efforts of university libraries are notable. Job demands are an important reason for using e-texts. Participants perceived younger age as a factor that has positive influence on the interactions. Disciplinary acceptance and changing research approaches, with interest in contemporary issues and a variety of sources, the emergence of new writing genres and new disciplines oriented towards e-sources are all aspects of the research environment that aid interactions with e-texts. New forms of publishing that include electronic media aid the inclusion of e-texts in publications.

Institutional negligence and a lack of communication about the use of e-texts were viewed as challenges in the working environment. Significant challenges are related to research cultures in which participants perceived peers' resistance to the use of e-texts. Negative attitudes were supported by students' non-discriminatory use of e-texts, as well as by the perception that fast research promoted by e-texts is less reflective. The persistence of traditional publishing options inhibits the influences of e-texts and other electronic media on academic writing.

Summary of research results

A variety of research projects provided the context for considering interactions with e-texts. The participants' perception of e-texts as fluid entities, which can include a variety of formats and media, underpinned their discussions of the engagement with e-texts. The ways in which the researchers worked with e-texts were overviewed by considering how they searched for e-texts, evaluated them and worked with them throughout the research process. Interactions with e-texts promoted converging forms of information practices named as netchaining, and influenced approaches to the investigation of research questions as well as writing styles. A number of study participants gathered their own digital textual collections and developed textual databases for their own use in a particular project. References to e-texts in participants' published work do not reflect the use of e-texts during the research process. The participants associated the experience of working with e-texts with interactions with other media, and discussed their thoughts and feelings related to the interactions with e-texts.

Research projects discussed in the study were compared with Chu's model of the research process. The study uncovered four types of e-text uses in projects: Supplementing, Locating, Exploring and Analysing Text. E-texts have four functions in research projects: Support in finding documents and information, Aid in managing the research process, Aid in investigation of the topic, and Contribution to writing and presenting research results. Depending on their function, e-texts can have either Support or Substantive roles. Support roles aid in providing the basis for research, and substantive roles aid in exploring the topic and presenting research findings. Both roles and uses were considered in phases of the research process. Study findings highlighted the multifaceted contributions of e-texts to the research projects.

Challenges and aids in working with e-texts were recognised in electronic and research environments. The main challenges and barriers in the electronic environment are the limited range of available materials and obstacles to access as well as limitations in searching and browsing, the lack of common standards and integration of finding aids.

Although more e-texts are required, information overload can be a problem. Some limitations in software and hardware, and in researchers' skills were also noted as challenges to the effective use. Aspects of the electronic environment that aid interactions with e-texts are the availability of a range of sources, different representations of the same text, access to e-texts at any time and anywhere, speed, flexible searching and browsing as well as reliable networks and equipment.

In the complex research environment, challenges and barriers are imposed by institutional negligence and the lack of communication about the use of e-texts. Significant challenges are related to research cultures in which participants perceived peers' negative attitudes to the use of e-texts. The persistence of traditional publishing options inhibits the influences of e-texts and other electronic media on academic writing. Interactions with e-texts are aided by institutional support and encouragement. Job demands are an important reason for using e-texts. Disciplinary acceptance and new research orientations, as well as publishing options that include the use of e-texts, aid scholars' interactions.

Credibility of the study

Credibility of the study was discussed in the chapter *Methodology and methods*. In this section, I will comment on the way in which methods used to ensure credibility of the study contributed to the research process. Triangulation of research data and methods was valuable to ensure that researched phenomena were viewed from different perspectives. It was mentioned earlier that examination of participants' publications, for example, provided insights into their practices in addition to their explanation of their practices provided in the interviews.

Prolonged engagement and persistent monitoring of developments in participants' projects enabled a better understanding of the roles of e-texts in their research. After initial interviews and data-gathering over a period of time, the second interview was an opportunity to explore further issues which arose from data-gathering and analysis. Even in cases when participants did not participate in the Second Stage of data-

gathering, the prolonged engagement provided further insights. For example, a participant who discussed issues of dealing with exceptional amounts of e-texts in the first interview and who agreed to participate in the Second Stage of data-gathering, withdrew from participation because interactions with e-texts were largely delegated to a research assistant who was employed after the first interview. An insight into the development of the project, specifically the decision to delegate dealing with e-texts to a research assistant, provided additional evidence that very high recall in searching was a challenge in this particular project.

Documentation of the research process provided reference points for developing understanding of the researched phenomena. Audio-recordings and transcripts were valuable for grounding interpretation in data. Research memos provided evidence of developing understanding and served as a reminder of some useful ideas that could have been lost if they had not been recorded. Research memos also provided documentation of the process, which was used during the writing of research findings.

The largest part of the data was gathered during the interviews. For many participants, the interview was a rare opportunity not only to talk about their work with e-texts, but also to reflect on that work. For some participants, interviews triggered insights into their own working practices. Participant 6/1 was recommended to me by another study participant and he accepted participation after explaining that his use of e-texts was very limited. At the end of the interview, when I asked Participant 6/1 if he wanted to add any further comments, he responded: 'No, I didn't think until you started interviewing me, I didn't think I really used it enough to justify your being here, actually'(18). He said that he accepted the interview because of his colleague's recommendation and added:

Again, it's a matter of the question you ask that drive and in thinking of saying no, I won't do it, I can't be very helpful, I was automatically pre-empting the questions that you were asking. In fact, it was only through the interview that I realised that it [e-text] plays a bigger part in my life than I thought. That's interesting, that's revealing, yes (Participant 6/1, 19).

This comment meant to me that the interviewing enabled revealing, but also it also reinforced the awareness that questions may influence participants' and my understanding. Some participants mentioned that talking aloud had some influence on the way they thought about research possibilities. Participant 16/1 talked about the influence of e-texts on writing and said:

It doesn't necessarily make me put the argument together in a totally different way but it could do. I mean, you know, as I'm talking to you I can see there are a lot of possibilities which I would be interested in exploring (Participant 16/1, 11).

This researcher also said: 'I suppose these things are a slow process and you – I mean, talking to you now will be really interesting because that will actually impact probably on what I'll do. Like I'll probably think about it more' (11). These comments indicate the possible influence of the study on participants, but the comments also point towards possible roles of open disciplinary discussions about new research practices in shaping interactions with e-texts.

Probing was an important part of going beyond initial responses. Triangulation of data and probing enabled some insights, such as an understanding of referencing practices and perceived research cultures.

Interest in the researched phenomena proved to be a powerful drive that led me outside the bounds of subjectivity. The influence of my subjective views during analysis was minimised by grounding interpretation in data, and the process of verification that is part of the hermeneutic circle.

Research results and knowledge gap

At the end of the literature review, a knowledge gap was identified in two areas: the understanding of research practices and processes involving interactions with e-texts, and understanding of texts used in the humanities in information systems. Research results presented here contribute to filling the knowledge gap in the area of the

understanding of research practices and processes involving interactions with e-texts. The study focused on primary materials, which are particularly diverse and significant in research in the humanities, but the understanding of interactions with these materials in electronic form was only marginally investigated. Research results contribute to understanding how scholars interact with e-texts and integrate the results of interactions in the research process contributing to the understanding of scholars' research processes in general and their engagement with e-texts in particular. The study identified a range of experiences related to interactions with e-texts, including participants' thoughts and feelings, which contribute to holistic views of information processes and practices. A consideration of participants' referencing practices contributes to the understanding of the absence of electronic sources from published works identified by previous studies. Study findings that indicate influences from electronic and research environments contextualise the understanding of interactions with e-texts and promote insights into social dimensions of research practices.

The second gap relating to e-text as entity in information systems will be addressed by the discussion in the following chapter.

Chapter summary

This chapter has presented research results in three sections and each section provided answers to one research question. The closing sections considered the credibility of research results and considered how findings contribute to reducing previously identified knowledge gaps.

CHAPTER 6. DISCUSSION

Discussion in this chapter will reflect on research results and revisit theoretical issues. The chapter has three sections. *E-texts in research projects* focuses on the discussion of research practices and contributions of e-texts to research projects uncovered in the study. *E-texts in scholars' information processes* relates theoretical frameworks of information and hermeneutics to each other, and considers the study findings in the context of social dimensions of information. *Electronic textuality* relates some experiences of working with e-texts to theoretical issues considered in the *Nature of electronic textuality*.

6.1. E-texts in research projects

The ways in which scholars engage with e-texts in their projects is an indicator of what they see as valuable aspects of e-texts. This section will discuss core aspects that distinguish interactions with e-texts from other forms of research and net chaining as an online information-seeking behaviour with a novel pattern, both relating to research practices. Engagements with e-texts will be considered in the context of the research process, and some issues arising from findings about uses and roles will be discussed as well.

6.1.1. Research practices

Interactions with e-texts are determined to a large extent by their unique complexity and interactivity enabled by computerised search and speed rates, in which diverse sources are brought together. The Internet provides loosely ordered environments, which gather sources that traditionally do not exist in the same space. Quick electronic

searching across large and diverse body of materials enables scholars to establish connections between a variety of materials.

Core aspects

A number of practices reported in *Research results* can be observed in traditional research environments, but the core aspects that provide the unique functionality of e-texts distinguish interactions with e-texts from working with analogue materials. Participants' discussions about the way they had interacted with e-texts uncovered three core aspects of e-text functionality:

- availability of e-texts
- electronic searching
- speed.

The importance of availability and speed confirms indications from the literature that the content and scope of online materials, convenience, the speed and savings in scholars' time are critically important for the adoption of ICT. The literature also indicated the importance of online catalogues and full-text searching, which relates to searching as one of the core aspects.

Electronic searching

The study participants searched metadata and full-text documents to retrieve specific information or explore the topic. In most cases, they perceived searching by a search engine as more reliable, because it was more thorough and accurate than searching performed by people, although there were situations in which the assistance of a human intermediary such as archivist was desirable or even necessary. Electronic engines provide a unique facility for retrieval of dispersed information. Participants 10/1 and 12/1, for example, emphasised the importance of searching across different types of dictionaries that covered historical language uses, which could not be adequately reproduced in other ways.

The reliability of electronic searching was so important to Participant 14/1 that he repeated searching, which was completed in traditional ways to make sure that he did not miss anything. Although he had big files with photocopied materials that he had explored over the years, he repeated searching when these sources became available in one of the large databases of primary materials. Electronic retrieval across bibliographic records and other forms of metadata as well as full-text documents provides results that could be hardly achieved by searching in traditional ways.

Availability

The functionality of electronic searching is based on the availability of e-texts. A wide range of e-texts provides:

- basis for searching, text analysis and manipulation
- a substitute for materials that are not readily available in hard copy
- obscure and unique materials.

Access to electronic copies of materials that are available to a researcher in hard copy is valuable because of electronic searching and the convenience of working from one's own home or office. Researchers often worked with hard and electronic copies for their unique advantages. In many cases, hard copies were not readily available, so electronic copies were substitutes which enabled work with the text until the time when a hard copy could be inspected if needed. Researchers were able to identify these materials through bibliographic aids or they already knew about their existence.

Obscure and unique sources such as original documents and materials that are not available in print are either difficult to identify or the researcher would not attempt to find them if they were not available online. They allow the researcher to go 'beyond books' (Participant 1/1, 2) by providing interaction with obscure digitised documents and materials that have never existed in hard copy. The value of obscure sources was illustrated by Participant 11/1, who found on the Internet a copy of a work that contained more extreme statements than other works of the author under investigation. This title was not included in printed selections of the author's work, but

it provided important insights for the participant's study. Study participants used e-texts to find personal information about people from the past that was not available in archives and libraries, oral stories contained in blogs and online postings as well as information about people and communities that could be obtained only in direct communication or online. Unpublished literary works that exist only in electronic form and electronic literature are unique sources of information for a literary scholar.

The availability of e-texts influenced the formulation of a research focus and exploration of the topic. The provision of e-texts and the gaps in provision form a pattern that can inform the exploration. Participant 14/1 found that electronic searching across available materials is valuable because 'you can get a few things, and you can trace absences as well as presence, if you like, the presence of a particular research topic' (5).

Access to sources of information is a key aspect in any research enquiry, but the study participants who explored their topics online suggested that availability of e-texts and the way search engines retrieved information might have particular significance in affecting the development of the enquiry. Participant 1/2 expressed concerns that Google and the way it retrieved available sources may take the researcher in a certain direction. The same is the case with analogue sources, but the impact of the availability of e-texts can be attributed to different ways of interacting with print and electronic texts. Participant 13/1 found that interactions with electronic sources required the researcher to assume a more active role. Rather than relying on the author of the book for guidance, the researcher formed his view through the interaction with available materials:

The electronic or digital presumes or requires a subjectivity which is more investigative than receptive, if that makes sense, that you're more delving into the thing, **putting together your own thesis in relation to the patterned information that's available**, whereas if you're in the presence of a really great book, you tend to allow the author to carry you along. Every now and then you'll pause and try to know your own mind in relation to the way the author is carrying you along (Participant 13/1, emphasis by SS).

This participant also discussed the usefulness of search engines that retrieve information in a patterned way. The researcher formed a view through a dynamic relation to patterns emerging from electronic searches and in relation to available information, rather than in relation to a path set by the author of a book, who may take the reader in a certain direction. In the electronic environment, the pattern emerging from searches is likely to have a stronger impact.

A variety of materials and representations as well as the breadth of contextual information were aspects that made available e-texts more or less useful. Participant 3/1 thought that the availability of a wide range of e-texts and other materials allowed her to compare different representations and make connections better than ever before, while Participant 6/1 commented that digitised materials did not provide sufficient contextual information, and Participant 14/1 stressed that different interest groups presented e-texts for their own reasons, so a special caution was required in evaluating from which perspective the e-texts were presented. The electronic presentation of materials with contextual details and transparent selection processes makes available materials more acceptable for research purposes.

Speed

Speed of access and retrieval aid quick searching for specific information and then the assessment and selection of sources. Fast retrieval of large amounts of information aids pattern recognition. It also aids tasks that would take a long time, such as the production of concordances or comparisons of passages in different translations.

Researchers used e-texts to explore questions that could not be practically investigated in any other way. A quick electronic search across a large amount of materials is enabling new research possibilities: ‘... to be able to search everything that relates to a particular topic over some decades and across a number of newspapers is just fantastic. And it gives a whole added ability to make comparisons and to do better research’ (Participant 3/1). Exploratory interactions with e-texts — compared with playing jazz, partially because of quick, sudden moves, sometimes in a seemingly random fashion

— were dictated by the unfolding of investigation and the researcher's interest. Speed enables following hunches and tip-of-the-tongue feelings that would change or disappear in a longer process.

Hayles (2003, 215) wrote about the critical importance of speed for the development of understanding: 'When information enters in a short time-frame — a few seconds — it can be stored as a block. When it enters more slowly, much more effort is required to integrate it with existing information'. On the other hand, e-text can make intellectual processing more difficult as discussed earlier (see p. 26). The study participants printed e-texts when they wanted to gain an intellectual grasp of the content. Hard copies are easier to use for careful reading and reflection, which may be partially related to the fast interactive nature of working with e-texts.

E-texts also influence the use of time in other aspects of the research process. More effective organisation of the research process, quick retrieval of factual information and faster construction of a paper was possible because of the possibility of retrieving information, contacting people and manipulating text quickly and easily. Participants also pointed out that some intellectual aspects of the research process cannot or should not be fast.

Netchaining

The fluidity of e-texts, which allows a seamless movement between a variety of media and formats, electronic searching and fast interactions enable netchaining as a combination of networking and various forms of information-seeking. Netchaining was previously defined as a combination of behaviours occurring on the Internet, which integrates aspects of networking, chaining, browsing and web-surfing in a new pattern (see p. 141). Chaining has already been discussed as an established practice of following the chain of citations or any other referential connections between sources (Ellis 1993). The difference between browsing and traditional chaining often disappears online. If a reference to another source is provided as a hyperlink, it is difficult and irrelevant for most users' purposes to establish whether following the link is part of the

general browsing of an online collection, surfing the web or a straightforward online version of traditional chaining. Traditional browsing and chaining are ways of discovering materials that cannot be found directly through catalogues and indexes. Online variations of these practices have the same aim. However, the ease and speed at which the scholar can employ searching, browsing, chaining and surfing practices change the nature of the interaction and, more importantly, the ease of interaction with other people brings new aspects to the process.

The ease of contacting people strengthens informal communication and opens access to alternative sources of information. Traditional networking by participation in invisible colleges is practised through participation in online academic forums. However, netchaining includes communication with a variety of people in formal and informal ways. Palmer (2005, 1145) noted that 'networked information systems have made it easier for researchers to communicate and gather information informally, but what is of particular interest in the digital environment is how often these transactions are with strangers rather than colleagues'. According to Palmer, personal networks as 'invisible constituencies' are more open and heterogeneous than invisible colleges. Genoni, Merrick and Willson (2005) showed activation of latent ties between academics in online communication (see p. 81). Netchaining also indicates the existence of informal connections between people, which aid information-gathering and networking.

Not only it is easier to contact an archivist to arrange a visit or to find the e-mail address of the author of a particular work, but it seems that many people are open to informal online communication. 'Scholars usually regarded sharing information about potentially relevant documents between researchers working in different fields as signs of respect and that their work is valued' (Talja 2002, 152). Participant 16/1 found that authors of electronic poetry were interested in discussing technical aspects of their work.

Netchaining is an important way of gathering information by following broad and unpredictable information paths. It has the potential to contribute to interdisciplinary exchanges. Fast retrieval of a wide range of materials inevitably brings a variety of

materials to the scholar's attention. The ease of accessing information about other fields may encourage scholars to use e-texts from other disciplines. Participant 12/1 commented that she normally did not consult web sites unless they were in a disciplinary area in which she did not have sufficient expertise. The selection of suitable web sites was based on a colleague's recommendation in the case of this researcher, but it is equally possible that browsing authoritative subject guides online can have the same function. Study participants frequently searched the Internet to find and confirm information in a broad area of interest. Academic discussion lists often receive questions about fields and topics on which the enquirer does not have sufficient knowledge, which indicates that online communication contributes to information-seeking in areas outside scholars' own areas of expertise.

As in many other aspects of interactions with e-texts, netchaining does not include completely new information behaviours that could not be compared with anything that was done in traditional ways. However, the ways in which various information-seeking and networking practices come together for various purposes reveal a new pattern of electronic interactions.

6.1.2. Contributions of e-texts to the projects

The same heading in *Research results* presented findings related to the second research question. It presented interactions with e-texts in the research process, and discussed the uses, functions and roles of e-texts in research projects, showing a multiplicity of contributions of e-texts. The following discussion will consider some issues indicated in the study and possible explanations of some aspects of the findings.

Research process

Contributions of e-texts were viewed in the framework of Chu's (1999) model of the research process. Five stages of the process were used in the study instead of the six stages in Chu's model. Although Chu's and this study had different aims and employed different methods, there is sufficient ground for comparison. Chu's

characteristics of research phases are compared with data from this study in a table presented in *Appendix K*. A comparison of the use of e-texts with the use of information and primary sources in Chu's model revealed that some aspects of the use of e-texts were present that were not noted in Chu's study.

1. In the Idea Stage, Chu noted the use of information to define or develop one's ideas, but did not include the use of primary sources (Chu 1999, 259-261). Chu found minimal use of information at this stage. This study indicated that interactions with e-texts, particularly searching, have a role in supporting the development of ideas. Scholars searched e-texts to see what was available, to get trends and explore ideas while thinking about the topic. According to study participants, e-texts used or produced for previous projects also influenced researchers' thinking about a new project.

2. In the Preparation Stage, some additional aspects of the phase described by Chu were noted in relation to the e-text use:

- using online collections to plan further research
- additional support in working with hard copies and in archives
- preparation of own e-collections.

Text analysis is used for the initial exploration that would provide a basis for further work.

3. The Elaboration Stage included considerations of the ways to interrogate textual databases to explore questions.

4. In the Analysis and Presentation of Results Stage, Chu found 'extensive use of information with slight to moderate amounts of information searching' (261). Analysis in the study showed that

- more intense use of e-texts, including different types of searching, happened in this and the Preparation Stage
- researchers' analysis was based on interrogating textual databases in the use called Analysing text
- e-texts had a stronger and more direct role in writing than identified in Chu's model

- e-texts aided preparation of manuscripts for publication (for example, reproduction of images, confirmation of publication rights).

5. During the Dissemination and Further Presentation of Results Stage, online delivery of published works may provide an alternative dissemination channel.

This study indicates that e-texts aid some technical aspects of conducting a research project and have a more direct role in intellectual aspects of the research process such as formulation of research questions, refining a research approach, analysing texts and presenting research results.

Uses

Four main uses of e-texts were presented in the previous chapter: Supplementing, Locating, Exploring and Analysing text. The discussion here will consider some indications of disciplinary differences, and possible connections between research activities, thoughts and feelings with different uses of e-texts.

Disciplinary differences

The uses of e-texts indicated possible differences between literary and historical studies. Although it is also possible that they appeared accidentally, due to the relatively small sample of 30 projects investigated in the study, disciplinary differences are likely. They may relate to different research approaches and to limitations of existing e-texts and tools for certain type of uses.

E-texts were used for Exploring in historical projects, and for Locating in literary projects. The study did not explore reasons for the differences, but it is possible that they are based on different ways of working with primary materials in literary and historical studies. Literary scholars usually need to find particular texts and then analyse them in depth, either by conducting text analysis electronically or working from paper. Historians are often interested in everything related to the topic, so they can find connections, gaps and disagreements between different sources. It is possible that a literary historian or a literary scholar working on a theoretical project may want

a wider variety of materials in which (s)he would follow patterns in a similar way to how historians conduct their research.

There are two possible reasons why the literary scholars in the study did not use e-texts for Exploring. Firstly, there is a limited range of literary texts available online. Some literary scholars in the study (for example, participants 1/1 and 11/1) who worked on projects with a significant theoretical component and required a range of texts stressed that materials which they needed were either not available because there was not a great deal of interest in them or because copyright arrangements made digitisation impractical. Secondly, the existing texts have limited value for literary scholars if they cannot be brought together for searching and if special software tools are not available for analysis. Analysing text requires focused work with texts. It is indicative that the study participants in both disciplines conducted text analysis offline unless they worked with electronic literature.

Keyword searching may have a different value in literary and historical studies. The use Exploring involves keyword searching across a wide range of texts, which may be less useful in studying literature than history. For example, Participant 1/1 talked about 'searching beyond the obvious' and the inability to retrieve relevant information hidden in relationships between literary characters and their characteristics, which often could not be retrieved by keyword searching even if full-text sources existed. Participant 12/1 developed her own database of literary motifs to support her exploration of relationships that could not be revealed by simple keyword searching.

There is a limited provision for textual analysis of large bodies of materials online. Large online databases with special analytical tools such as Perseus Digital Library provide valuable resources and tools, but they are available in a small number of fields. Electronic literature is particularly difficult for investigation. It is often impossible to isolate a part of an electronic literary work for analysis, let alone retrieve information across a variety of multimedia works. More sophisticated ways of exploring a wide variety of texts would be useful in historical studies, but it seems that historians are currently in a better position to use e-texts for exploration than scholars in literary

studies. The use of specialised textual databases for Analysing text in both disciplines points towards a direction for further investigation.

Activities, thoughts and feelings

The uses of e-text may be related to some past and present research activities, as well as to accompanying thoughts and feelings. In the previous chapter, four uses of e-texts were presented on two levels of complexity:

- Level One (Supplementing and Locating): finding particular documents and information
- Level Two (Exploring and Analysing text): finding patterns and connections.

The research projects are part of researchers' past and present activities, which can inform the research process, so previous work that was undertaken in other research projects or teaching provides a background for new projects in which e-texts were used. Monitoring and current awareness activities contributed to the projects and to the use of e-texts.

Some activities were associated with certain types of uses. E-texts used in other projects conducted by a scholar were mentioned by the study participants only in relation to Level 2 uses. Netchaining had only a marginal place in projects that reported Level 1 type of uses, but it made significant contributions to some projects that reported Level 2 type of uses, particularly in developing current awareness. As discussed in relation to uses, full netchaining appeared only in the Level 2 type of uses.

Certain patterns of thoughts and feelings featured in descriptions of the four types of uses (see table *Uses, thoughts and feelings* in *Appendix L*). The study participants who discussed only Level 1 uses expressed either their preference for traditional research or talked about the advantages of traditional research, although they found e-texts useful and often enjoyable. The researchers who reported Level 2 type of uses, talked about the limitations of traditional research, advantages of electronic research, and the emergence of new academic styles, genres and disciplines, although they expressed

negative thoughts and feelings about e-texts and electronic scholarship as well. These differences associated with the two levels of use may indicate that Level 2 uses were associated with more prominent electronic forms of research, with a stronger integration of e-texts in different activities, and a greater likelihood of thinking of electronic research as a distinct form of scholarship.

Some differences in feelings can be associated with different uses. The study participants who reported using e-texts for exploring, also commented on the availability of e-texts and the feeling of being overwhelmed with the amount of information, possibly because of frequent interactions with large bodies of text. The researchers who talked about Analysing text felt impatient at times, but it was the only use that was not associated with feelings of inadequacy. Possible explanations are that only confident researchers undertake this sort of work or that any feeling of inadequacy disappears in this type of interaction. Intense work on a smaller range of text allows the researcher to have a sense of control and engagement, which may inspire feelings of confidence.

While all connections between uses of e-texts and research activities, thoughts and feelings are tentative, they point towards the need for a holistic understanding of research processes and further investigation of possible connections between practices, thoughts and feelings.

Roles

E-texts contribute to research projects by playing support roles in providing a basis for research and substantive roles in exploring the topic and presenting research findings. The presentation of these roles in the previous chapter showed that e-texts in support roles make research quicker, easier and more convenient without changing an intellectual engagement with the topic, while e-texts in substantive roles were part of scholars' engagement with the topic. In some projects e-texts had a minor role, while in others they determined the way project unfolded. However, even when e-texts had minor roles, there were many small ways in which they were employed in research.

None of the study participants, even those who initially thought that their interactions with e-texts were very limited, used e-texts in one way only. An assessment of the roles of e-texts, which does not take into account a variety of these seemingly simple engagements, is likely to miss their cumulative effect.

The unique qualities that e-texts brought to a number of research projects can be illustrated by the participants' use of their own textual databases and collections, and by their choices for the presentation of research results. Researchers' decisions to produce their own e-texts are indicative of a unique functionality of e-texts. Half of the study participants (eight) developed e-texts, and four of them put a great deal of time and effort to developing textual sources designed to support the investigation of a particular topic. Some of these databases and collections played support, some played substantive roles, but they provided a unique functionality for the researchers when they decided to put the time and effort required into the development of these sources, usually for personal use only. Palmer (2005, 1146) saw digital resources created by researchers as 'indicators of how scholars wish to engage information technology in their research' (1146). As this study indicated, thematic textual collections may provide a significant form of engagement with e-texts.

Production of e-texts and multimedia for the presentation of research results is another area in which researchers showed that e-texts brought some unique qualities to their projects. Some study participants produced or planned to produce e-texts to present findings that could not be adequately presented in traditional academic forms. Some researchers did not have any concrete plans to develop e-texts, but commented that they would like to do so in order to develop some research ideas or find an appropriate outlet for their work. It seemed that the interactions with e-texts brought a new dimension to research or emphasised the awareness that some aspects of research could be appropriately explored and documented only by electronic media. Although in some cases the awareness of new research possibilities may be attributed to the general discussions in the scholar's field, many of the study participants clearly stated that e-text use was not discussed in their area of research. Scholars' initiatives in using e-texts often related more to their own sense of what was needed in their research

rather than to any other influence. Although these are only tentative interpretations of the inconclusive data, the study provides indications of qualitatively new ways in which researchers want to use e-texts in their research. In the absence of conclusive data, these indications are among the very few signposts about the roles of e-texts in research.

6.2. E-texts in scholars' information processes

Information theory and the philosophy of hermeneutics will be revisited in this section to establish a connection with the understanding of information processes in general and in the humanities in particular. Previous chapters have considered a range of issues in the adoption of ICT in the humanities as well as ambiguities in thinking about text in the context of information systems. The lack of clarity about text as an entity and about processes involved in working with text are some of the key challenges in applying computer technology in the humanities. The first part of this section, *Text and information*, will argue for the application of information theories to text and textual studies aiming at theoretical clarity, which should have practical implications. The second part focuses on the relevance of hermeneutics for the understanding of information, while the third part considers social dimensions of scholars' information processes.

6.2.1. Text and information

Information was defined as a pattern of organisation that can be contained in any physical manifestation, and which is given meaning by a person under certain contextual conditions. This understanding of information, which is widely accepted in information theory, has not been adopted in discussions about text. The literature review pointed to research in information studies and psychology that showed an increasing acceptance that making sense of information includes conscious and unconscious thinking as well as feelings. In this section, I will argue for the application of these views of information to the understanding of text.

Text as information

When humanists in the study say that they have been informed by manuscripts, blogs, Captain Cook toffees and landscape, they indicate what information is in their projects. Although humanists consult a wide variety of artefacts and even information gathered from nature, text is one of their main sources of information. Researchers investigate physical characteristics of textual documents, factual information, linguistic expression including grammar and style of writing, readers' reactions, interpretations of other scholars and any other information related to texts of interest.

Text is an entity with numerous patterns of organisation, which provide information. Participants in the study often talked about electronic searching as an efficient way of recognising patterns in texts, although they did not usually specify what these patterns were. One of the participants called the results of full-text searching of prayers 'information': 'I was able to interrogate the database by putting in those three terms and getting all the information out of the database' (Participant 8/1, 7). He explained that he would compare results from different sources and 'try to work out some sort of system, see if a pattern comes out' (8).

When McGann (2004, 213-215) described elemental dimensions of textual fields as linguistic, graphical/auditorial, documentary, semiotic, rhetorical and social, he identified textual dimensions in which information can be found. What is identified as information depends on individual sense-making.

Text is a signifier like any other information and people interpret what is signified. The discussion in *Information framework* considered the views of both information and text as signs. When text is viewed as information, concepts of text, information and signifier can all relate to the same textual properties from different perspectives.

Text as representation

Text that signifies can be text that represents. Buckland argued that text in a broad sense may not be representation, but it has to be representative in order to be

informative (see p. 37). Buckland's distinction needs to be exploited further in order to understand textual phenomena in information systems. My interpretation of the distinction between 'being representative' and 'representation' will focus on aspects that may have practical implications.

'Being representative' has the same meaning as 'signifying' or 'being informative'. It has a broader meaning than representation, which is an image or a reflection of something. A stone on the beach may signify or be representative of geological changes and natural forces, but it is not a representation of these changes and forces. A shaped stone as a statue in an exhibition is a representation of ideas — the artist's experiences and creative ideas as well as curators' ideas about the topic of the exhibition and art in general. Representation involves a degree of intentionality and some articulated effort.

In considering text as representation and representative, the basis for establishing distinction lies in the relationship between text and document. It was established earlier that text sometimes means 'document', sometimes a textual part contained in a document (see p. 37). A document is a source of textual and non-textual information contained in bibliographic details, physical characteristics and contextual information about its origin, history, use, etc. Text in the document, its appearance, language and content, is also a source of information. For example, a stain on a book page provides non-textual information about the document and may signify the age of the book or the conditions in a room where the book was kept. The stain is not intentional so it is representative (that is, informative), but it is not a representation. The book as a particular document is a representation when its physical characteristics represent binding practices and typographic traditions, for example. A novel printed in the document is a representation of the author's ideas and may be a representation of a literary movement.

Text is also part of the reader's mental representation. Dalglish (2002) described the mind as an information-processing system, conceptualised around the idea of representation:

Information processing psychologists conceptualize the mind as a multipurpose processing system. Mental representations, which relate to or

designate structures outside themselves and ultimately relate to things in the external world, are acted on in the system by various cognitive processes (Johnson-Laird 1993). These processes manipulate and transform the representations and give rise to the range of psychological phenomena (Dalglish 2002, 661).

A digitised electronic text is a representation on different levels. It represents an analogue document, its content represents the author's ideas, and the electronic document and its content both take part in the reader's mental representations. E-text as representation is then a significant player in information processes, being a physical representation of other documents and acts of creation, thinking and feeling.

Information related to a document, its content or both may be required in different situations, but the distinction between being representative, and representation is often irrelevant for the person using information. However, the distinction is significant from the perspective of computer applications. 'Electronic text' usually refers to text as representation, but there are some situations when that is not the case. If text on the screen suddenly appears dim, it may be because the batteries of the laptop are low or because there are some problems with the computer monitor. In this case the dim appearance signifies problems with the machine, but it does not have anything to do with text as representation. However, dim appearance that is an intentional quality of a particular text is part of its electronic representation, which can signify any number of signifieds — from the qualities of a fading original in hard copy to an aesthetic effect in an electronic poem. The fading appearance of the hard copy due to its age is not intentional, so it is not representation, but it is representative. In electronic copy which intentionally reproduces physical characteristics of a hard copy, the fading appearance becomes representation.

For a historian such as Participant 14, the search for e-copies of documents involves judgments about intentions behind decisions to include or exclude certain documents from a website. For this historian, the selection of e-texts on a website may represent certain political views of the site's authors, and mistakes in the document may signify limitations of the current technology, an untrustworthy source or a good

representation of the original in hard copy. The historian's research unfolds in the process of judging the representational qualities of the text and its context.

The distinction between 'being representative' and representation provides grounds for asking a number of questions that are important for computerised systems of representation, such as 'What does this electronic document represent and how does it do this?' and 'Does this document represent what it claims to represent?' These questions provide an approach to considerations of textual authority. The concept of representation also provides a basis for considering some issues related to information systems, which will be discussed in the next chapter.

Aesthetic as informational

Popular and academic writings about text and information often make a distinction between information and literary texts. In the opposition informational — literary, the aesthetic qualities of a text are usually associated with non-informational. Many difficulties of working with literary text electronically lie in an apparent resistance of non-informational aspects of text to computers as information-processing machines.

It was established in the *Information framework* that emotions are part of people's information-processing. Aesthetic dimensions of text are perceived on the intellectual level, but they also involve sensory perceptions and feelings reflected in the expression 'a sense of beauty'. Emotions often motivate writers and artists to create. Their works express emotions, and great works of art and literature evoke certain emotions in their audience. Textual aesthetic works in a complex process of thinking and feeling during writing, perception and interpretation, which are all connected to aesthetic traditions of a particular time and culture. Emotional aspects of textual aesthetic seem particularly difficult to capture. Aesthetic emotions were mentioned earlier as an uninvestigated aspect of information processes.

Elusive emotions are an integral part of research in the humanities. Scholars' work involves studying a range of emotions described in texts and responding affectively to information in the process of understanding. Emotions and imagination are present in

a variety of ways in working with literary texts. They provide a structure or pattern that informs creative writing and academic research projects. Participant 1/2 talked about developing an emotional structure for a novel — about a ‘shift from the factual, that certain things happened or couldn’t’ve happened on certain days through to the sense that regardless of what true history is telling you that you have to create a kind of cyclical emotional history for your book to work as a novel’ (6). Participant 13/1 (2) looked at how ‘information and emotions work’ in narrative systems, and Participant 1/1 said, in relation to creative writing, that ‘most of my family information I’ve got just from my own imagination’ (4) pointing, probably unwittingly, to the connection between imagination, creative and information processes.

Aesthetic forms are results of subjective processes of creation; they are open to interpretation, but this does not make them non-informative. Poetical text is a complex sign and the scholar’s task is to interpret its structure, the way it works and what it signifies, but this sign is information nevertheless. Most poets and scholars may prefer not to think about their work as information, and other words may better describe what is important to them. However, information systems have to represent what constitutes information in a literary or a historical text in order to provide adequate sources and tools. If information is limited to factual information and computer data, information systems will never quite capture what it is that they are working with. A possible objection is that a too broad understanding of information cannot be helpful either. A discussion about the electronic environment in the next chapter will consider some ways of making this broad understanding of text as information useful for the purposes of computerised systems.

6.2.2. Hermeneutics and information processes

The application of information theory to text provides a way of thinking about text in the information context. The philosophy of hermeneutics, developed from the tradition of textual studies, provides a way of broadening the theoretical horizon of information studies, and connecting information theory and the study of e-text use with the philosophical tradition. In this section, the focus is on the links between the views of

information processes and the hermeneutical approach to interpretation and the process of understanding. Applications of the hermeneutical approach to information and computer studies have already been discussed (see p. 91), and they will be discussed again in relation to electronic information environments.

Understanding

The philosophy of hermeneutics and information theory adopted in this work share the same tenets: the importance of a personal situation in the construction of meaning and the inclusion of affective dimensions as well as contextual considerations in considering the phenomenon of understanding. The hermeneutical view that understanding and interpretation do not exist independently, but that 'interpretation is the explicit form of understanding' (Gadamer 2004, 307) is important in the context of research in the humanities, which is based on individual interpretation. The view that understanding 'must be conceived as a part of the event in which meaning occurs' (Gadamer 2004, 164), and the significance given to a historical moment and tradition relate to the view in information theory that contextual considerations are part of information.

The concept of personal construction of meaning relates to the hermeneutical concept of horizon and the view that a person knows the relative significance of everything in the horizon, which changes with understanding. The hermeneutic circle — the movement between part and the whole, and the process of guess and validation (Ricoeur 1973, 107) is a model of how complex understanding develops, supported by research into information processes. Ford (1999, 531) discussed creative thinking and processing of complex similarity relationships when complex understanding oscillates between holistic, analogical right-brain perception which forms tentative structures, and logical left-brain examination of the evidence. The study participants who followed hunches in interaction with e-texts and analysed text to prove a hypothesis moved in a hermeneutic circle of guessing and validation.

Aesthetics is included in the hermeneutical view of the process of understanding.

Gadamer argued that studies of aesthetics are part of interpretation: 'Aesthetics has to be absorbed into hermeneutics' (2004, 164). The previous argument for the inclusion of aesthetics in considerations of information is also based on the recognition that aesthetics is an integral part of understanding.

Hermeneutics recognised affect as a condition of understanding and knowing. Dilthey believed that 'only sympathy makes true understanding possible' (Gadamer 2004, 232). Sympathy is a form of love and a condition of knowledge:

Certainly there is knowledge involved in this real moral relationship, and so it is that love gives insight. But sympathy is much more than simply a condition of knowledge. Through it another person is transformed at the same time. Droysen makes the profound remark: 'You must be like that, for that is the way I love you: the secret of all education' (Gadamer 2004, 233).

Researchers' responses to interactions with e-texts provide important indications about their current and future engagement with e-texts. The unique functionality of e-texts and the ability to explore research questions in a way that was not possible before appeal to scholars. Their efforts in developing their own textual databases make a strong statement about their interest in finding better ways of investigating their research interests. Participants in the study talked of their excitement about new possibilities and their openness to unpredictable research paths. The way in which scholars show affinity for e-texts provides the main clues on how to approach future developments and training of current and future scholars for working with e-texts.

Ways of knowing

The study has indicated that the experience of working with the multimediality of e-texts strengthens sensory and non-linguistic ways of knowing. Study participants talked about the fading of the boundaries between theoretical and creative, rational and emotional, linguistic and non-linguistic in researchers' perceptions of e-texts and in the way they thought of the presentation of their research results. Participants'

accounts of non-textual experience in interactions with e-texts were presented earlier (see p. 169).

Although Gadamer emphasised linguistic ways of knowing, Ricoeur acknowledged the significance of other, particularly artistic, experiences:

Even if it is true that every experience has a 'linguistic dimension', and that this *Sprachlichkeit* permeates every experience, it is not however with the *Sprachlichkeit* that a hermeneutical philosophy must begin. It is first necessary to say what is brought to language. This is why philosophy begins with the experience of art, which is not necessarily linguistic (Ricoeur 1975, 98).

The recent scientific research supports the primacy of images in the formation of thought and indicates that in some instances verbalisation may impede insight. Further investigations of processes of 'bringing to language' what was not a linguistic way of knowing, and exploration of semantic transfers in encounters with electronic multimedia are needed.

Play

Play is a hermeneutical concept that has particular relevance for interactions in electronic environments, although existing systems provide limited possibilities for interplay. Considering that play develops in the middle space between partners in interaction, the word 'interplay' emphasises hermeneutic meaning of 'play'.

The concept of play applied to the electronic environment refers to a special form of interaction, which is dialogical and exploratory. It requires responsiveness from all players. The study showed that substantive roles of e-texts allow the scholar to think 'with the text'. Interactions which allow this sort of engagement relate to the hermeneutical concept of play, which provides a way of thinking about dialogical information environments.

Hermeneutics shares considerable common ground with information studies. Its main concepts are not only aligned with concepts and interests of information studies, but it

also provides a methodological and philosophical framework for approaching issues related to understanding of information processes and electronic environment.

6.2.3. Social dimensions of information

Social norms, behaviours and practices establish a context that influences information processes. Social dimensions include traditions and historicity, identified as significant influences on understanding by philosophers of hermeneutics. For scholars in the humanities, a historical moment is often a subject of keen awareness and deliberation rather than a hardly visible background influence.

Disciplinary traditions and academic institutions are significant factors that shape scholars' practices and attitudes. Disciplines and institutions can be both viewed in the context of Taylor's elements of information use environments (see p. 46), which determine how assumptions, which academics make about the nature of their work, are part of general academic and more specific disciplinary traditions. The kinds and structure of the problems considered to be important relate to disciplinary views, and the constraints and opportunities of typical environments in which academics operate are part of disciplinary and institutional settings. Disciplines influence not only norms and practices, but the construction of meaning as well. Brown and Duguid (1996) wrote about the dispersed, but connected 'community of interpretation' that constructs meaning of documents (see p. 46).

Social underpinnings provided by disciplines and academic institutions will be considered in some detail in the framework of Chatman's theories of a 'small world' and a 'life in the round', which showed how social settings relate to information processes. Chatman's theories enable an understanding of the mechanism, which connects social norms and group practices with individual information behaviour. Issues of authority and the current historical moment will also be viewed in relation to the social context.

Academic small worlds

Chatman's theories were based on studies into the information behaviour of groups of people usually considered as information poor, such as women in nursing homes, prisoners and women practising dirt-eating. Taken at face value, it is difficult to relate their information practices to academics as one of the most sophisticated groups of information users. However, Chatman's theory defines general principles applicable to any group whose life is defined by living in a small world. The strength of different disciplinary norms and traditions within academia is the reason for choosing the plural form in the expression 'academic small worlds'.

For scholars, their work is integral part of their life. In the section *Research in the humanities*, scholars were portrayed as people who spend long hours working from both home and office, and who feel committed to their job. In considering information processes in the study, the development of participants' research ideas was traced to various situations when a scholar did not work, such as holiday trips. As the literature considered in Chapter Two suggested, disciplinary norms and traditions have a defining influence on academic practices. Scholars' offices ornamented with discipline-oriented objects demonstrate their sense of identity (see p. 59). For academics, work occupies a significant part of their life and often defines who they are. This sense of belonging and identity is one of the defining elements of a small world (Chatman 1999). Scholars' 'life in the round' is about work 'as usual' when novelties such as new technology are gradually integrated into the way their small world operates.

Social types are central to normative behaviour of a social group (Chatman 2000). 'Legitimised others' are comparable with 'big guns', described by Participant 5/2 as academics in positions of power. They need to be convinced that a piece of research can and should enter the academic circle. Like scholars' peers, Chatman's 'insiders' are people who are in command of norms and they judge what is trivial or useless: 'They are the quintessential frame of reference for observing and controlling not only behavior, but also the information flow into a social world' (Chatman 1999, 212). When the study participants talked about 'students', 'young generation', 'traditional

historians', 'big guns' and 'people who work in out-there fields', they described academic social types that play a part in shaping information processes.

Secrecy and self-protective behaviours are part of living in a small world. Scholars choose to make their private information behaviours, such as the use of e-texts, public in relation to the norms, worldviews and possible reactions of their peers who have roles of 'insiders' and 'legitimised others'. An impoverished life-world is often related to self-protective behaviours. It does not relate to an absolute amount of information that has been shared, but rather to an undisclosed information need. Self-protective behaviour is apparent in situations when the need for information is recognised as potentially helpful but is ignored, often because of the desire to 'appear normal' (Chatman 2000, 7). The lack of discussion about uncertainties related to the use of e-texts and the unexpressed need for training in the study are signs of an impoverished life-world. The dismissive attitude of peers to the use of e-texts is evident in scholars' public discourse, summarised in 'all that crap from the net' as a conversation topic (Participant 7/1, 16). This discourse is quite likely to make an individual researcher reluctant to ask questions that would reveal the extent of her or his own use, which may be seen as unscholarly or unauthoritative. The majority of participants talked about an area where information about the use of e-texts was needed, but that information had not been sought.

Theories of a 'small world' and 'a life in the round' are interlinked, and Chatman's propositional statements that define the theory of a 'life in the round' are related to the theory of a 'small world' (see p. 48). According to Chatman, the 'result of establishing appropriate behavior is the creation of a worldview' (Chatman 1999, 214). For academics, the discipline is the main arena that determines a worldview. Although academics may use different paradigms in their work, and may exhibit different levels of unity in establishing common views and practices, there are worldviews shared within a disciplinary community.

Discussions in the study about perceived values of speed in research, for example, demonstrate the influence of disciplinary worldviews and attitudes. Traditional and

electronic research were compared with hand-made products, and with slow- and fast-cooked food. Although the speed of electronic research, enabled by interactions with e-texts, was convenient and beneficial, there was an uneasy feeling that fast research was less valued. Participant 14/1 said that peers would not appreciate research based on e-texts, and Participant 2/1 thought that it might be viewed as 'Mickey Mouse' or lazy. Participant 9/1 did not question value of a fast study but added: 'I wouldn't like to say this too loudly because I think a lot of the scholars would consider that it was a shallow attitude' (6). On the other hand, none of the scholars who worked for less traditional disciplines such as media and communication studies mentioned concerns about the speed of research and peers' perceptions of citations of e-texts. It seemed that this way of working was in line with dominant views in their fields.

Chatman's propositional statements of a 'life in the round' state that participants who live in the round will not normally cross boundaries of a 'small world' to seek information. When they do, it is because information is perceived as critical, there is a collective expectation that it is relevant and a perception that a life in the round is no longer functioning (Chatman 1999, 214). While these statements are still applicable to academics, they need to be elaborated and interpreted for academic context. Crossing boundaries will be considered in a framework of a 'small world'. The proposed explanation of boundary-crossing is based on insights gained in the study.

Information metropolis of villages

Academic disciplines define the norms and practices accepted by a disciplinary community and set boundaries of academic small worlds. However, disciplines do not function as isolated environments. It is increasingly common that scholars work in interdisciplinary fields, and belong to different disciplinary communities, negotiating their different cultures, traditions and expectations. Many study participants negotiate traditions of different disciplines, creative and theoretical, or experimental and traditional academic work. Even if they remain within the boundaries of a single discipline, they live in a vibrant information environment populated by international scholars. This vibrant environment can be seen as an information metropolis. At the

same time, academics follow rules of their immediate disciplinary communities, which form their small worlds. 'City of villages', a metaphor promoted by town planners, is used here to present some of the dynamics of living in disciplinary 'small worlds' or 'villages' within an information metropolis.

Scholars usually have a primary discipline, but they seek information in other disciplines if that is the requirement of their projects. The boundary-crossing usually happens according to the rules of the primary discipline. For example, Participant 12/1 worked in a well-defined discipline where she has been a recognised expert. The researcher has normally used established electronic editions designed for specialists in the field. A sense of authority is based on knowing sources very well. However, to satisfy the requirements of a particular project, she had to leave the established information paths and seek information in other ways in neighbouring fields. The process happened according to the dominant academic tradition by following the advice of a colleague in the other field. In other words, the researcher does not normally leave her village in search of information, but when she has to do that, it happens according to the rules of following well-established academic expertise.

For other scholars, negotiation of different disciplinary rules is an important and complex aspect of presenting their scholarly work. When Participant 6/2 decided to write a book aiming to open a dialogue with very traditional scholars, he excluded references to all sources that he felt would not be acceptable to these colleagues. However, he introduced a style of writing promoted by interactions with e-texts, which 'pushed the edges' of traditional scholarship. Participant 1/1 negotiated the requirements of creative and academic writing in different ways without being quite sure about the established standard. Both researchers negotiated rules of different villages where they spent significant time and which affected their work.

In some instances, negotiation is very difficult. Participant 9/1 conducted non-traditional historical research, which included unconventional sources viewed with suspicion in her discipline, and received contradictory peers' reviews. Participant 7/1 conducted a wide search including non-academic sources, which was accepted in her

discipline, but she had struggled with information overload. In terms of living in a metropolis of small villages, going to blogs, tourist web sites and discussion lists of people who believe in extraterrestrials meant leaving an academic neighbourhood to roam around the city and listen to the stories in dark alleys and under the bridges. For a study participant who worked in cultural studies, for example, the problem was not so much where the stories were coming from, but how to present them all. Scholars in more traditional disciplines had to overcome a major gap between their research and disciplinary norms. Stories from the underbelly of the city are often socially unacceptable in established disciplinary clubs in university quarters. Scholars who frequent the clubs, but cross the boundaries of academia, often learn from the 'dark stories' and consider how to present them according to accepted disciplinary conventions. In non-traditional fields within traditional disciplines, it means more or less successful 'dressing up' of research, which Participant 5/2 (5) described as a way of using disciplinary theories and citations to make unconventional research acceptable to the mainstream discipline. In more traditional literary and historical studies, it means taking unaccepted sources into account without referring to them openly.

Scholars who do cross boundaries against the rules of their discipline, would do so because information is perceived as critical or there is a perception that a life in the round is no longer functioning. Theoretical literature about electronic textuality and the participants' discussions about the benefits of interactions with e-texts provide evidence that interactions from e-texts are perceived as valuable. The literature presented in the chapter *Research in the humanities* about rapid changes in academia, inconsistent systems of promotions and evaluation of scholarly work, as well as conflicting expectations, indicate that the academic life is functioning with a number of difficulties. Contradictory influences were discussed by study participants as well. Participant 5/2 talked about a number of differences in circumstances, mentalities and values between older and younger generations of researchers. Participant 15/1 (7) talked about experimenting 'without an umpire' in mind in the environment in which some peers are interested in experimental work with e-texts while others do not think that it meets scholarly standards. According to this participant, scholars who work in

new fields start within a traditional discipline and gradually split away when another community takes shape.

In a metropolis, news travel fast and it is impossible to maintain local customs untouched, but that does not negate the existence and influence of small villages.

Akhtar's view that migration, globalisation and cultural diffusion via the Internet are a threat to the tribal and regional (see p. 28) is relevant in this context. Trends towards globalisation can be compared with trends to merge boundaries between disciplines, scholarly and unscholarly sources, theoretical and creative writing, which are supported by e-texts. Fundamentalism as an opposing trend, discussed by Akhtar, has limited parallels with academia, but it still indicates a force in maintaining traditional disciplinary boundaries and values. E-texts are hybrids, which enable intertextuality and fast movement across time and space, which promise to bring together what is separate, and open boundaries, but also threaten to destroy the order and traditions of small worlds. At the same time, the hybrid nature itself signifies the presence and influence of traditional norms and practices.

Authority

Issues of authority and trustworthiness have appeared as a theme throughout this work. They were discussed specifically in relation to knowledge (see p. 53), authenticity and trustworthiness (see p. 83), and research cultures in the study findings (see p. 147, 215). Throughout discussion from different perspectives, the authority and trustworthiness of e-texts emerged as a central issue in the acceptance and use of e-texts.

Social dimensions underpin issues of authority. Firstly, the criteria for judging authority are socially constructed. Secondly, judgments on authority often motivate practical decisions such as selection of information of good quality as well as information behaviours, such as secrecy and crossing the boundaries of small worlds. Thirdly, scholarly practices and a construction of the meaning of authority influence each other and any change can give an impetus to a shift in social norms. The focus

here is on the authority of documents and media, as well as on scholars' cognitive authority in relation to the social context. The construction of authority happens in the context of ongoing changes characteristic of this historical moment, which will be discussed at the end of this section.

Authority of documents

Trustworthiness of primary data is essential for any research project, but it has crucial importance in fields where scholarship is based on close investigation of primary materials. A scholar's belief that textual materials that constitute primary data are trustworthy is based on her or his judgment of text as representation, which can support the judgment that:

1. text as a document is trustworthy because its origins can be clearly established, and the characteristics of representation can be explained and understood. It is possible to answer with confidence questions such as, 'Does this text represent what it claims to represent?' and 'How does it represent it?'
2. the authority of textual content can be established. Questions about the content, such as, 'Who wrote the text?', 'For what purposes?', 'In what context?' can be either answered or understood in the context of textual production.

The two aspects are connected, but they are not the same. A digitised document may be a trustworthy representation of a print edition, but the selection of an edition for digitisation may be problematic, or editorial processes of selection and context-building may be questionable. Participant 14/1 talked about investigating hard copies of electronic documents to establish the full context in which they were used because electronic sources may promote one perspective only. In this case, e-text was viewed as a trustworthy document, but a questionable selection process made it difficult for a researcher to establish the meaning of the document. A detailed explanation of representation processes is critical for establishing the trustworthiness of an e-text.

A number of study participants talked about verifying e-texts against hard copies when they were available. For some of them, evaluation of all the characteristics of

these documents would help in identifying the most reliable source. The closeness to the original, as well as trust in established institutions and their publishing processes, are important factors in judging trustworthiness.

Authority of a medium

Study findings about citation practices showed that a number of scholars used the same text in print and electronic copy because both were trustworthy, but they preferred to cite print editions, which were regarded as more authoritative within the discipline. A possible explanation for the preference for one of two authoritative texts can be found in Gadamer's view of the primacy of authority that is grounded in tradition:

That which has been sanctioned by tradition and custom has an authority that is nameless, and our finite historical being is marked by the fact that the authority of what has been handed down to us — and not just what is clearly grounded — always has power over our attitudes and behavior. All education depends on this ... (Gadamer 2004, 280).

Authority can be a source of prejudice, which in the hermeneutical view means 'fore-meaning' or 'first' judgment rather than false judgment. However, it is more difficult to see that something authoritative is not true. This is the case with the authority of a written word:

But there is a special difficulty about this, since the sheer fact that something is written down gives it special authority. It is not altogether easy to realize that what is written down can be untrue. The written word has the tangible quality of something that can be demonstrated and is like a proof (Gadamer 2004, 272).

The study provided indications that 'written word' and 'text' are associated with 'print', which is related to the print as the dominant medium with tradition and authority. As Gadamer's view suggests, it is more difficult to see the lack of authority of the print. The 'tangible quality' of the written word becomes particularly problematic in considering the authority of e-texts, because of their lack of physical tangibility, which is viewed against the physicality of the book.

'It is not tradition but reason that constitutes the ultimate source of all authority', wrote Gadamer (2004, 272). This view was expressed by some scholars in this study and by historians in Whaples' study (see p. 59), although evidence was not always the main factor in the way participants assessed authority in either this or Whaples' study. In this study, social influences were often more important than evidence-based judgments of authority when it came to the presentation of scholars' research results. The lesser authority of electronic media is an important reason for the absence of e-texts from published works.

Scholars' cognitive authority

Cognitive authority is a critical issue in academic careers. If e-texts were viewed as completely untrustworthy or unacceptable from the perspective of demonstrating one's cognitive authority, it is likely that they would be simply avoided. However, researchers often 'trawl the net every day' (Participant 14/1) and use e-texts throughout the research process, sometimes with significant investments in time and effort. The reason for the investment is that e-texts help them to do better research and, consequently, enhance their cognitive authority. If scholars were using only trustworthy scholarly texts, it would be easy to assume that these texts would gradually become as acceptable as any other traditional source. However, scholars use a range of non-academic sources such as blogs, online discussions and various web sites, because these texts also help them to do better research and enhance their own cognitive authority.

Bartlett proposed that all original ideas are formed in the contact between different subject matters and people (Nelson 2001, 384). The study of roles of e-texts indicated that interactions with a wide variety of materials support thinking, and e-texts made interactions with a variety of texts easier. However, scholars have always had an opportunity to investigate and learn from non-academic sources. Academia has a long tradition of dealing with problems of acknowledging what is considered dispensable or unauthoritative. Nelson (2001, 386) referred to Shotter's idea of 'institutional forgetting' as a way of constructing a memory of a text. This process is relevant to

building a reputation in academia and, eventually, histories of human thought. Forgetting becomes easier when originators of ideas have never been promoted to the full view of academia, particularly when the originators are women, and people of less powerful social, racial and ethnical backgrounds. The resurrection of Foucault's subjugated knowledges may take the form of hardly visible undercurrents as long as power relations have a strong influence on knowledge claims, as argued by Lyotard (see p. 54).

On the other hand, 'and there is always "the other hand" with the Web', as a study participant noted, maintaining monopolies and making 'somebody a non-person' is increasingly difficult because of the multitude of possible sources (Participant 10/1, 16). Like a multitude of sources and academic styles, the notion of academic authority is becoming increasingly diverse. From references to groups of young scholars who follow online communication channels rather than official academic avenues, and interests in 'linguistically subversive' texts to occasional disregard for traditional disciplines and authority, and an example of an illegal publishing channel overriding legal processes — the study participants discussed subversive, or at least non-traditional, academic authority. 'The path charted between the two poles of dialogue radically abolishes problems of causality, finality, et cetera, from our philosophical arena ... More than binarism, dialogism may well become the basis of our time's intellectual structure' (Kristeva 1980, 89). The question of what constitutes cognitive authority becomes then a matter of a dialogue between different authorities, and the lack of the final answer becomes a sign of our time.

Historical moment

The changing academic tradition and the notion of authority happen in the context of wider changes in the society, which have particular importance for research in the humanities. Historical and literary research is in a constant dialogue with tradition, which is viewed from a horizon of contemporary people and their historical moments. When Participant 5/2 talked about historians' interests in contemporary topics, a different relationship between high and low culture and a different sensibility of

younger generation of researchers, and when Participant 13/1 discussed the significance of electronic searching in the context of the lack of trust in a single authority, they described societal changes which have had direct effects on research practices. The contemporary lack of trust and interest in traditional institutions and authorities contextualised some of the tensions between old and new scholarly approaches. When Participant 5/2 talked about 'dressing up' modern historical studies to make them acceptable for 'big guns' and to ensure the accreditation of younger scholars, she illustrated a way in which broader societal changes gradually influence academia. This is also the way in which a 'life in the round' changes.

A number of changes in modern academia are related to ICTs, which have already had a visible impact on scholarship. It can be argued that e-texts are not necessarily part of these observable changes, and that they can be adopted and incorporated in traditional scholarship without disturbing its structure. However, a number and a variety of small changes do affect overall structure and e-texts have already introduced a number of minor and significant changes in the way scholars go about regular work. Some of these changes are directly part of qualitative transformations of scholarship.

Gadamer wrote that the 'idea that everything can be reversed, that there is always time for everything and that everything somehow returns, proves to be an illusion. Rather, the person who is situated and acts in history continually experiences the fact that nothing returns' (2004, 357). Participant 5/2 made a similar comment in relation to a broader context of academic changes in which we see a resurrection of conservatism and an apparent return to traditional values:

And I think that like the attempt to revitalise reasonably conservative kinds of religion, sometimes people will think that those sorts of conservative social values suit them for the moment, but when their life changes and they no longer want those conservative social values, i.e., they want to get a divorce or they decide that they're gay or whatever, it's changed now, you don't have to fear that anyone will disapprove of you if you want to get a divorce or you want to form a same sex partnership. So you can't turn back the clock (4).

Chatman's observation that changes come to a small stage first (Chatman 1999, 212) is particularly acute from the perspective of the humanities as one of the oldest academic fields, defined by a dialogue with tradition. There were times when revolutionary changes seemed to be on the main stage of the discipline, but it was only for a short time. This small world can be transformed only through evolution, although it is important to remember that we are living in a historical moment marked by relatively fast changes. Even evolution has become faster.

6.3. Electronic textuality

Humanists who work with a wide variety of materials exploring changes and the multiplicity of meanings are in a position to investigate the nature of e-texts. The way they work with a variety of e-texts reveals some fundamental characteristics of electronic textuality, research in the field and contemporary thought. Academics who experiment with multimedial forms, critics and theoreticians who influence and respond to new artistic developments, historians of modern times — are all to some extent involved in creation of new tendencies and movements.

Considering the central role that text has in the humanities, it is very difficult for any researcher in the humanities to remain untouched by textual transformations. Resistance which reinforces tradition and norms, and innovative ways of working with e-texts, sometimes breaching existing boundaries, are conflicting responses that influence the change in practice. Humanists as sophisticated users and producers of text, grounded in textual and historical traditions, are in a unique position to make sense of textual transformations and give them a long-term direction.

At the same time, fluidity and materiality of e-texts underpins and determines the way in which scholars interact with e-texts, while the dialogical nature of the interaction with a variety of sources influences unfolding of the research process and the understanding what scholarly research is and should be.

In this section, considerations of electronic textuality are related to scholars' reflections and experiences revealed in the study. The discussion evolves around the fluidity of e-texts, and the relationship of multimediality and meaning. The dialogical nature of textuality discussed by study participants is considered in the framework of Kristeva's views of Menippean discourse.

6.3.1. Fluidity

The way in which study participants interacted with and talked about e-texts emphasised the fluid nature of these sources. While a 'vast ocean of information' (Participant 9/1, 10) exists in analogue forms as well as in electronic forms, and research in the humanities is often a serendipitous process that leaves the researcher with a feeling that some critical discoveries were due to 'pot luck' (Participant 6/1, 11), the speed in following hunches and patterns of information, combined with a lack of traditional reference points, underpinned some participants' perceptions of e-texts as a vast and rich, albeit unpredictable ocean.

The processes and elements involved in interactions with e-texts can hardly be distinguished from each other because of a constant and relatively quick iteration of search, retrieval and interaction with sources, all happening in the same physical space in which the user is working on a computer. In the electronic environment, physical boundaries and physical space do not exist, which promotes a sense of fluid movement through the electronic domain. According to the participants, not only is it convenient to access materials quickly from one's own home or office, and to gather materials scattered in many physical collections, public and private, but it is often easier to handle electronic files than large bound volumes or crumbling microfiche. While the users of a traditional library do not need to know about the fine details of the library system, they cannot help but recognise that they had stopped using the catalogue and physically moved to the stacks, or that they put a book back on the shelf and needed to play a video-tape. Because physical movements and interactions with different physical objects do not exist online, different formats merge into the perception of e-texts.

The distinctions between primary and secondary sources, which have always been provisional, are becoming increasingly blurry when a scholar can instantly retrieve a primary e-text from a secondary source, then go to an author's web site, which may become a source of primary data. The user's awareness of different material types and formats becomes fuzzy in the movement through the electronic domain.

6.3.2. Embodiment and materiality

The materiality of e-texts is defined by its physical characteristics and its material manifestations and processes. Textual materiality and the computer technology that enables it constitute a writing technology that has, like all previous writing technologies, close connections with human thought:

The reflexive character of each technology permits writers to find themselves in the texts they create and therefore to know themselves in a new way ... It seems almost inevitable that literate people would come to regard their writing technologies as both a metaphor for and the principal embodiment of thought. The mind comes to be understood as a writing surface, and thinking as the activity of inscribing on that surface (Bolter 2001, 189).

The unique materiality of e-texts underpins a particular understanding of the human mind. For producers and users alike, as Bolter's 'literate people', e-text embodies thinking in:

- the physical medium, which consists of technological processes and components
- its ambiguous materiality, demonstrated by its dispersed and fluid presence
- its meanings, which are constructed in a network of connections.

The elusive physical properties of e-texts do not provide a stable sensory evidence of the engagement with sources either for a scholar or for the outside world. They do not cause fever nor leave dusty trace on hands, which would prove an extraordinary feat of being in archives (Steedman 2001), nor do they satisfy archive fever as a quest for origin (Derrida 1996). E-texts cannot be held on shelves to mark scholars' academic

identity, nor can they be cherished as familiar objects of admiration and comfort. The electronic research space lacks the visible temporal and physical markers of careful craftsmanship. Participant 2/2 (9) talked about a sense of involvement in discovering materials in traditional ways, while in electronic searching a file just 'magically comes up'. The comments by Participant 10/1 that everyone looks the same on the Internet relate to the difficulty of determining e-texts as physical entities.

Technological processes and computer components determine the technology that enabled e-texts. Predictions of technological developments describe omnipresent electronic networks which will control various machines at our disposal and connect our cooking preferences, favourite television programs and personal libraries to an integral computer memory. The omnipresent capable machine continues fantasies about a controlling machine, which has many representations in film and fiction. The researchers' experience of the computer screen as a tunnel, fears that 'all that stuff will get you or will slip into your little project' (Participant 7/1, 17), and that it is becoming increasingly difficult to allow space and time for scholars' original thinking in the face of the abundant electronic production, all signify the lack of researchers' control over something that is imposed by a machine.

The absence of touch and smell in working with e-texts, the loss of physical markers of one's identity or the presence of a controlling machine are uneasy aspects of the textual embodiment that may be behind a sense of nostalgia for old readers' rooms or fears that the electronic environment will take over one's research project or, even worse, an ability to create. On the other hand, as Participant 10/1 noted, the multitude of possible sources makes it almost impossible for any single entity to have a control over e-text. The availability of materials and electronic searching are empowering because they enable research that is not possible otherwise. 'Like the air you breathe' (Participant 10/1, 17), e-texts are omnipresent and easily integrated in everything a scholar does.

6.3.3. Dialogue

A dialogue between the user and e-text is opening in the way that the text and its different readings are being revealed through search and use. If a user retrieves a portion of the original text relevant to her interests and then opens various interpretations or variations of the text, she brings different voices into the sphere of her individual situation. In electronic environments, a user can add his notes, initiate a dialogue with other users/readers and some of the authors. These dialogues resemble traditional ways of retrieving books from library stacks, discussions with people, and reading and selecting relevant ideas to write one's own text. Electronic tools and texts enhance and encourage the dialogical nature of the interaction.

A scholar encounters a variety of texts in all formats during the research process, but e-texts have a prominent role in bringing together a wide variety of texts, many of them from non-academic online sources. Texts from mailing lists and bulletin boards that discuss gossip and stories about historical personalities correspond to Bakhtin's Menippean discourse. Researchers in the study discussed how interactions with unauthoritative e-texts contributed to their understanding of the topic and influenced the inclusion of multiplicity of voices into scholarly writing (see p. 159). In Menippean discourse, '[a]cademic problems are pushed aside in favor of the "ultimate" problems of existence: this discourse orients liberated language towards philosophical universalism' (Kristeva 1980, 82-83). Historians who want to explore contemporary phenomena, who are interested in any voice that can contribute to their understanding of a topic, which they see as a real-life rather than purely academic issue, are open to Menippean discourse. Scholars' use of historical methods to investigate topics such as the religion of Jediism contribute to Menippean discourse by investigating texts 'from the underworld' and introducing them sometimes directly, but more often indirectly to academic writing. Like Menippean discourse, which is 'a kind of political journalism of its time' (Kristeva 1980, 83), these academic dialogues with unconventional texts document some contemporary tensions.

Dialogue is not only between the author and the text, but rather between the multiplicity of voices that shape research in what Participant 6/2 described as a poststructural field:

Because there's always several other perspectives to take on that proposition depending on one's view point depending on one's history, one's class and gender etc. etc., and that knowledge or the set of propositions that are available to us are in a field rather than along a line. And then, for me, the poststructural kind of idea is, well, that field is definitely there but it's not a stable field, it's changing all of the time as well. Things are coming into it and things are coming out of it all of the time (Participant 6/2, 2).

If text embodies the thought, e-text is particularly suitable for embodying dialogical and multifarious thought. Technological processes that bring the text to the researcher's screen, but keep it out of reach, enable the same to happen simultaneously on many other screens, influencing the perception of the unique and stable text. That word which moves in colour and sound, that old stain and the bright ornament of a codex manuscript always linger in a mutable dynamic field.

Contribution to filling a knowledge gap

The study of scholars' interactions with e-texts contributes to knowledge of research practices and scholarly production in new media environments. It shows a range of scholars' interactions with primary materials in electronic form that were not documented by earlier studies. The scholars' dependence on electronic sources for at least some of their research process, and often for its significant part, was highlighted. Working with electronic texts combines some traditional information and research practices into new patterns of information behavior described as 'netchaining'. The study also contributes to the understanding of disciplinary variations by providing some evidence of differences in information-seeking between historians and literary scholars.

The study has documented and analysed some aspects of scholarly communication. It has shed some light on citation practices as well as on questions of authority and trust. Various aspects of scholarly culture in the humanities have been documented in specific cases and contexts.

The discussion of the study's findings in relation to the literature in information studies, hermeneutics and electronic textuality connects insights from different fields and provides a deeper understanding of both text and scholars' information processes involving e-text in a broader context. Humanistic orientation of the study is particularly relevant for studying scholarly practices in the humanities. New methodological directions are arising from broader frameworks of engagement with e-texts in digital humanities, and from combining social and humanistic bodies of literature.

Chapter summary

The first part of this chapter discussed electronic searching, the availability of e-texts and speed as core aspects that enable unique functionality of e-texts, and considered a pattern of information-seeking described as netchaining. Contributions of e-texts to different phases of the research process that were not part of Chu's model of the research process were identified. Some uses were discussed in relation to possible disciplinary differences and connections among activities, thoughts and feelings. The contribution of support and substantive roles of e-texts to the projects was considered as well.

Theoretical foundations of the study were applied to defining text as information and identifying a common ground for hermeneutics and information theory. In defining texts as information, the text is considered as representation and its aesthetic qualities as being potentially informational. A common ground between information studies and hermeneutics was identified in their approaches to understanding and the hermeneutic concept of play. Chatman's theories of a 'small world' and a 'life in the

round' were the basis for a discussion of 'academic small worlds'. The 'information metropolis of villages' is an interpretation of scholars' boundary-crossing based on Chatman's theories. The concept of authority was viewed in the social context. Theoretical discussions about the nature of textuality, particularly its fluidity, physical characteristics and dialogical nature, were related to research results. The last section considered contributions of the study to filling the knowledge gap.

CHAPTER 7. CONCLUSIONS & IMPLICATIONS

The final chapter will draw conclusions from the study and consider its implications for the design of electronic information systems, support for research in the humanities and future research in information studies.

7.1. Conclusions

An exploratory approach to investigating scholars' interactions with e-texts uncovered a complexity of issues involved in the engagement with e-texts in research. A theoretical approach to the research phenomena enabled identification of a range of issues related to information-seeking and use, thinking and feeling that accompanied interactions with e-texts, as well as influences from electronic and research environments.

The study found that researchers in literary and historical studies interacted with e-texts in a number of ways that either provided support for research or aided the investigation of research interests. Many small contributions to research projects had cumulative effect, while substantive forms of engagement had a direct impact on scholars' research. Work in electronic environments and interactions with e-texts promoted new patterns of information-seeking described as netchaining. The use of e-text to explore research questions by investigating large bodies of textual materials online or focusing on text analysis of smaller textual collections enabled research approaches that were not possible in other ways. Interactions with e-texts also influenced academic writing styles and promoted blurring between academic and creative genres. However, e-texts were largely absent from scholars' published works, mainly because of the difficulties in establishing their trustworthiness and because of the influence of research traditions.

The research findings were related to the theoretical framework of the study. Foundations of the study in information theory enabled the conceptualisation of text as information, which is essential for successful processing of text by computers. Considerations of social dimensions of research processes and scholars' interactions with e-text took into account hermeneutical views of history and tradition and relevant views from information studies, particularly Chatman's theories of a 'small world' and a 'life in the round'. The concept of authority was also considered in a social context.

7.2. Implications

Study findings, the literature about research in the humanities and theoretical considerations have a number of implications for the design of electronic information environments and support for scholars, as well as implications for future research, which will be discussed in this section.

7.2.1. Implications for system design

A common objection to the traditional design of ICTs for the humanities has been that they are rigid and unable to respond to nuanced research approaches. Structured subject databases, as helpful as they are for some purposes, provide very limited options for information discovery and use. A step towards the ideal of a dynamic flexible system which would enable integration of different activities are current attempts in computer design to enable integrated working spaces in which the user could work on different tasks and use a variety of computer applications in a seamless fashion. Another requirement is the provision of dialogical systems.

Ideas of the hermeneutic circle and play provide grounds for thinking about electronic environments in which the user and text, rather than the system, would play the main roles. Environments designed for playful engagement between user and text would allow new meanings and connections to arise. The question is, how to provide the

system which will allow the engagement of the user and animation of the text needed for participation in interplay.

The multimedial nature of e-texts is a significant factor in the interplay with e-texts with a great potential for enabling exploration and creativity. Before the development of contemporary electronic media, Brooks accepted the importance of words in formulating knowledge, but recognised the importance of playful engagement in non-linguistic ways: 'There must be some "play in the gears" to allow space for imagination and adjustment in the light of new evidence. The words and the logic will harden as the knowledge structure grows' (Brooks 1980, 132). The product of working in the electronic environment may be a growing logic and verbal expression, but it may also be a discovery of knowledge that can be presented only in multimedial forms.

Manipulation of multimedial text will increasingly be part of the developing understanding. Discussions in the study about 'remix' methodologies in writing point towards the need to consider how to enable creation through text manipulation. The lines between creative and academic will continue to blur, at least partially under the influence of working with electronic media. The current practice of the use of electronic data and creative manipulation may lead to new aesthetic forms according to their internal logic, regardless of anyone's intention:

Meanwhile, the raw data that has initially suggested all of this proprioceptive movement in the first place, that was there before you could even *begin* to intend to do what you eventually realized you *wanted* to do, is still somehow being aestheticized into emergent forms of metadata regardless of what **you** end up doing. Meaning: the aestheticization process is waiting to happen and will occur anyway, *on its own terms* (Amerika 2007, 27).

Possible meanings of 'metadata' other than the conventional meaning of the term will be discussed in the following section. Difficulties of determining copyright and ownership of ideas are likely to become even more evident in these forms of research. Scholars or designers of electronic environments cannot solve the problems, which in many ways determine the realisation of new research opportunities, without the

participation of all other players, such as disciplinary associations, academic institutions and publishers.

The strengthening of dialogical interactions in electronic media is one of the reasons why hermeneutical concepts have attracted the interest of some system designers. Further investigation of the provision of dynamic textual configurations is needed to find solutions for the textual responsiveness and user-driven exploration required for interplay. The following section will suggest some possible approaches.

Approach to design

The electronic environment, seen in terms of Nardi and O'Day's information ecology, is characterised by complex relationships and diversity. 'Different parts of an ecology *coevolve*, changing together according to the relationships in the system" (Nardi and O'Day 1999, Characterizing Information Ecologies, para. 2). The design of electronic environments for the information discovery suggested here is an ecological system based on the following premises:

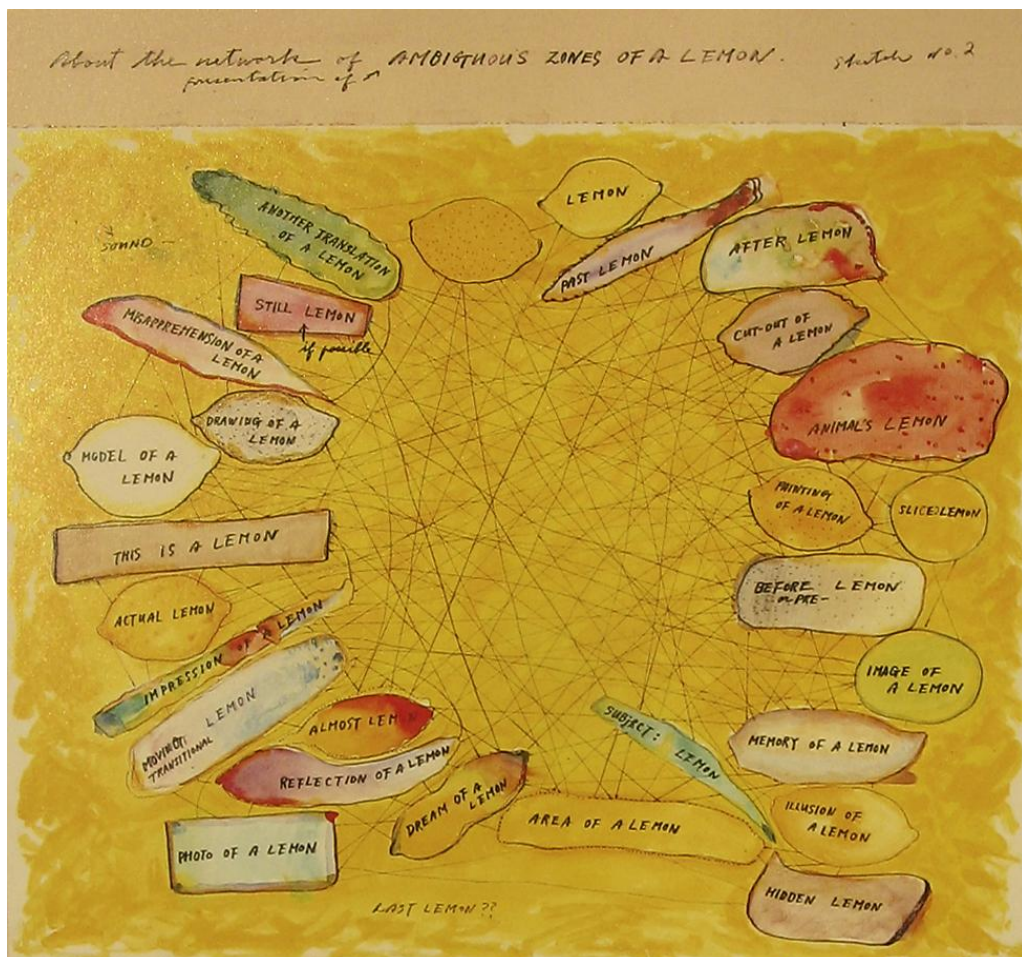
1. Anything in an information system that can be informative to a person is information, including the whole document and its various aspects.
2. The design for dynamic research has to integrate multisensory experiences and different ways of working that enable rational and affective ways of knowing.
3. Scholarly research requires integration of a variety of sources, formats and media for information discovery, as well as a provision for information use.
4. A goal is the interplay between the researcher and information rather than interplay with the system.
5. Flexibility and openness, and control and limitation are both needed.

The evolution of the proposed electronic environment is realised through flexible networks of connections that grow and change with use.

Information network

Information about a phenomenon or entity is dispersed and contained in many different forms. For scholars in the humanities, it is also contained in many different forms of representation, such as different editions of a text or variants of a manuscript. The image below (Figure 10) illustrates the complexity of establishing connections between information contained in different forms.

Figure 10. About the network of ambiguous zones of a lemon (Arakawa and Gins 1988, p. 21)



For computer systems, the image above illustrates challenges of representing and connecting numerous entities and their ambiguous zones of meaning. Three main aspects of the challenge concern a) trustworthiness of representation, b) establishing connections between related information and metadata, and c) identification of zones of meaning, which are nothing else but patterns of organisation of information. The

first challenge is to establish the meaning of the claims that something is a true representation. The last two issues relate to the identification and linking of all potentially relevant information.

a) Trustworthiness

An essential step in establishing the trustworthiness of a representation is documenting that the labels 'Photo of a lemon' or 'Image of a page' are true or, more often, in which way they are true. Documentation about representation processes and detailed metadata are often needed to demonstrate that the representation and represented are identical in every important way, so the trustworthiness of a document can be based on the strength of evidence that the representation is what it claims to be.

As discussed earlier, a more complex issue concerns the context of representation and questions about who represents something and how it is represented. The trustworthiness and authenticity of representation are then cultural and political issues, and as such, significant as topics for scholarly investigation. A comparison of different representations is a way of establishing what and how they represent. Inclusion of a variety of representations with different origins is a powerful way of strengthening the trustworthiness of the system. For example, a high-quality representation of a literary manuscript on a library web site can provide accurate details of the original document. The same document on web sites of an alternative acting group and a local historical society provide insights into the cultural framing of the manuscript. Mistakes and omissions in different representations can have informational value. Very often, characteristics of a particular representation can be assessed only by comparison with other representations.

b) Connections among information and metadata

In order to enable an investigation of the complexity of meanings and their relationships, it is necessary to establish connections between representations and related information. If the question is difficult in any situation, it is particularly

complex in the humanities, in which every text and its smallest part can be associated with a variety of meanings and other texts. The image above illustrates the difficulty of the task, but it also suggests that a solution may exist in establishing as many connections between information as possible and naming them through extensive metadata produced by humans and machines.

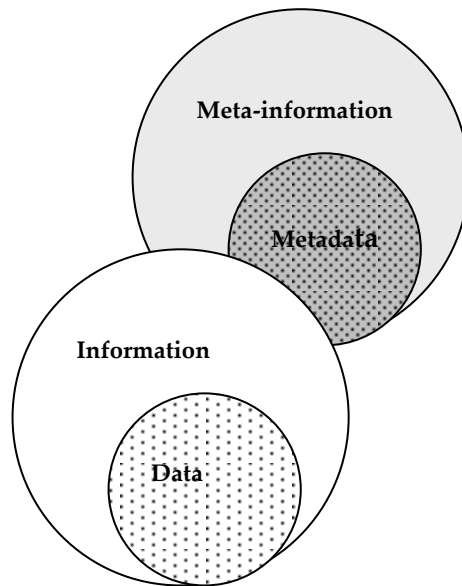
The difference between information and metadata is not necessarily clear. Information has been previously defined as a pattern of organisation, which is given meaning by a human being under certain contextual conditions. Data was defined as information produced, selected and/or assembled for further processing. 'Metadata' means 'data that describes other data' or, simply, 'data about data'. Metadata provides secondary information about data and, in information jargon, it usually refers to distinct forms such as bibliographic records, or Dublin Core metadata and TEI (The Text Encoding Initiative) headers inserted in electronic records.

From the perspective of an information professional who works with electronic media, differentiation between information and different metadata is relevant, but it does not address the complexity of their relationships. As the study participants explained, bibliographic records can become an integral part of the interaction with the text or, in some situations, they can become primary data themselves. In these instances, formal metadata does not necessarily have a distinct function of secondary information. Furthermore, metadata does not need to be a formal record. If a poem provides information, its bibliographic record is formal metadata, but metadata can also be anything that gives information about the poem. An essay, a song or a commentary in a blog written in response to the poem are also metadata. 'Poetic metadata', as Participant 15/1 called it, is then a special form of a secondary descriptor. Different media, formats and genres can play the role of metadata.

The same text can be either information or metadata, depending on the context. It could be useful to distinguish between forms of primary and secondary information, as well as between unselected and selected information:

- **information** is any pattern of organisation and **data** is information selected for further processing
- **meta-information** is any secondary information, and **metadata** is selected and/or processed meta-information.

Figure 11. Information — data and meta-information — metadata



The proposed distinction information — meta-information, data — metadata can assist in handling large amounts of information and their descriptors. One possibility is that researchers could assemble their own environment for a particular project in which they would assign different roles to the same object. A poem can become data or metadata depending on the intended use, and it can adopt a certain range of functions and connections. When Participant 1/1, for example, talked about searching ‘beyond the obvious’, she discussed different ways of identifying meta-information about literary works that related to her research interest in the connections between two national literatures. In some instances, bibliographic records did not reveal the relevance of some literary works, but knowing the storyline was helpful in identifying relevant works. In situations like this, parts of the storyline can be used as meta-information alongside bibliographic records. Elements of the storyline serving in the role of metadata need to be analysed differently from how they would be analysed if they were primary data for literary criticism.

This approach emphasises the problem of the enormous number of possible links. The problem can be addressed through an analogy with the human nervous system, which deals with billions of possible connections by strengthening used paths. If

‘information’ and ‘meta-information’ refer to informative potential and possible connections, ‘data’ and ‘metadata’ refer to selected information and used paths. Like the nervous system, the information network can promote differentiation between potentially strong and used paths from rarely used or unestablished paths.

Connections strengthened through use can serve as a constantly developing guide through the system, where both strong and weak connections may be required by the user. Although needed in many search situations, the used paths are not necessarily the most desirable ones. Weak connections may be more relevant for research purposes. If the researcher wants to find all instances of a hidden lemon, presented as weakly connected and on the margins of the picture above, established paths may be used to reduce a number of options by excluding strong and central connections. Well-established paths can also provide reference points so they can be used to direct searching outside strongly connected areas. All types of paths can aid the researcher’s investigation of patterns of connections.

c) Zones of meaning and granularity of information

Identification of the zones of meaning as a challenge in establishing information networks relates to the granularity of information. In order to achieve informativeness of all aspects of representation, information has to be presented on different levels: the physical document and its context as well as the content and its parts. The information profession usually deals with representations on the document level. At this stage, the informativeness of the whole document is usually described by bibliographic details. The provision of context develops through the provision of materials and links which can contextualise documents. This is a good beginning, but still far from what is required. Hockey (2006) referred to McCarty’s idea of the morselisation of information which would identify little morsels of information with their own metadata.

Connections between a wide variety of information and meta-information of different

granularity have the potential to provide powerful information retrieval and linking, as well as allowing manipulation of small segments for use.

Working with different levels of granularity of information imposes significant challenges for the retrieval and selection of vast amounts of information. Bates (2006) wrote about different types of information and suggested the development of information genres. Bates referred to Ingarden and Trosborg when she proposed that 'a given genre can be seen to be an expression of, and a vehicle for, a particular kind of communication' (2006, p. 1043). With a broadened understanding of the information and metadata required for more powerful and more flexible systems, the idea of information types and genres provides a way of dealing with complexity. The distinction information — meta-information, data — metadata is a step in that direction. Further differentiation between forms of metadata such as formal — interpretive, analytical — poetic may be the next step.

Meaning in the system

The personal development of understanding and meanings of the whole information system can grow together through different configurations of information. An example of a relatively simple research path may serve as an illustration of how the system could work for a researcher in the humanities.

The scholar would be able to identify large bundles and small morsels of information and meta-information, and then select them for further research and manipulation. The sources would be integrated to allow the scholar to establish her/his own path.

Information would be retrieved by word, shape, colour, sound, and, some way down the track, by smell and touch. While searching, (s)he would apply different filtering systems to target particular types of information and follow well-established or previously rarely used paths. If (s)he wants to do research on the history of the use of lemons, (s)he can decide to start from academic digital libraries to look at digitised manuscripts of diaries, which describe past travels by ship when scurvy occurred; find references to lemons in medical treatises from the Mediterranean area and China

through history with parallel translations; retrieve medical information about scurvy today; browse discussions of young people about the use of lemons during self-imposed diets; combine all different information about the taste and appearance of lemons, including images, songs and descriptions in the literature; exchange opinions with various people on the way and leave comments online. A perspective for each combination of information could be reconfigured so the researcher could look at information from a particular disciplinary point, consider a period in time or focus on one of the senses. (S)he would be able to select or exclude filters to browse information about lemons 'in the wild'. While doing the search, (s)he would establish some connections for the first time and strengthen others. Comments, evaluations, discussions and collaboration, as well as new products created by the scholar, would all contribute to the constantly developing information environment.

Allowing the system to trace someone's path, even anonymously, can be potentially problematic, so a number of issues have to be addressed for that to happen. One of them is that the system has to document its representation of strong and weak links between information. The researcher will not want to leave any visible trace of an innovative information path if individual originality is the most important measure of scholarly achievement, but scholarship may be measured by its contribution to the information environment. In this case, the scholar would want to keep records of her/his own information passage to learn from it and select parts that (s)he would include in an electronic portfolio to demonstrate her/his own contributions to the information environment. The potential of an open dynamic system of this kind is in the user-directed growth and a degree of self-maintenance balanced by a professional involvement in ensuring some regulation and goal-oriented development of the system.

Root or rhizome

The need for associative ability and flexibility of the network, as well as the need for some control and structure, suggest that both root-like and rhizomatic structures have their advantages. Very importantly, they are not mutually exclusive. As the originators

of the idea of rhizomatic structure suggested, a rhizome can be entered through the root-tree: 'A new rhizome may form in the heart of a tree, the hollow of a root, the crook of a branch. Or else it is a microscopic element of the root-tree, a radicle, that gets rhizome production going' (Deleuze and Guattari 1987, p. 16).

These two structures can complement each other or be exchanged as required. Like some computer applications, which allow the user to select different representation models to view data, it is possible to consider the design of a system which will allow a hierarchical or rhizomatic approach on demand. A user-directed selection of structure in addition to various options for filtering information would be part of the system's flexibility. A selection of hierarchical and non-hierarchical approaches in addition to the morselisation of information, the removal of artificial boundaries between information and metadata, and the availability of different levels of filtering would give a great deal of control to the user.

7.2.2. Research support

The study indicated areas where support is needed for effective use of e-texts. Significant assistance is required to ensure that scholars are able to take full advantage of electronic environments. This section points towards some aspects of the support required of academic organisations and the information profession. It is important to stress that a systematic and reliable support is essential and cannot be replaced by excellent short-term initiatives.

Support by academic institutions and organisations

In order to find novel approaches, the researcher needs time and space to experiment. However, time is a scarce resource for most scholars. Participants in the study often commented that younger generations of researchers were better suited for work with electronic media. The observation may be correct, but the reality of building an academic career makes early- and mid-career researchers the least likely to spend time

on exploration. Job demands and criteria for evaluating scholarship influence research approaches, particularly when researchers are in earlier stages of their careers.

Organisational culture may also encourage some types of research by providing conditions for certain choices. Considering that feelings are part of cognition, not just an accidental part of academics' lives which they carry with them to information processes, it is possible that the way academics feel at work has had some impact on their research. As the investigations of affect indicated, negative emotions may not impede researchers' ability to analyse and observe, but they are likely to have a negative effect on creative and exploratory approaches. Working conditions and managerial styles promote organisational cultures in which employees share similar feelings. Relatively recent studies have confirmed what many managers of knowledge organisations already know — the way researchers feel at work is likely to have some impact on their creativity. Organisational support is necessary not only in providing equipment, computer networks and training, but also for developing a culture conducive to innovation.

Researchers' discussions about needed skills and knowledge identified a range of areas where self-directed learning was not the most appropriate. Study participants stated that the current training of future researchers was not adequate for the effective use of technology in general, and e-texts in particular. Issues concerning the education of future scholars, and some common understanding of an adequate use of technology in research and an expected level of professional skills need to be addressed to aid the process of scholarly change.

An active involvement of humanists in ongoing changes is essential for at least two reasons. Firstly, scholars in academic institutions and disciplinary associations play the main role in opening discussions about their disciplinary practices. Systematic education and training that would prepare future scholars for effective use of ICT in research is unlikely to be implemented as long as it is unclear how humanists envisage the development of their scholarship. Secondly, the involvement of humanists is essential in order to historicise cultural changes and connect them with cultural

traditions. Reflective and investigative involvement of humanists can provide a direction for the future changes.

Support by information professionals

Information professionals in general and librarians in research libraries in particular can provide support by being involved in information provision, which includes dealing with a variety of information of different granularity, and by developing information services suitable for research in electronic environments.

Information provision

A wide range of materials is of critical importance for humanities research, but the proliferation of information sources has made the task of comprehensive information provision increasingly difficult for any single collection or institution. The problem has been partially addressed by integration of sources and co-operative initiatives.

A variety of materials has been traditionally used in scholarly research, but researchers increasingly find valuable information in non-academic online sources, which usually do not satisfy library criteria for preservation and description. While research libraries cannot work with all online sources, they need to find novel ways in which they can aid the integration of sources, and reconsider divisions on which they base their collection development and information provision.

Enabling access to information with different levels of granularity requires significant professional involvement. Some research projects in the humanities provided valuable sources by working with one particular text or with a thematic collection in which they identified and interpreted information of fine granularity. However, projects of this sort cannot provide access to large bundles and small morsels of information on a large scale. This is work that has to be done systematically by information professionals from the moment of conceptual design of information environments to decisions about treatment of the document content. The involvement of research libraries in providing information in different media and formats is critically important to ensure the transfer

and application of valuable library knowledge and skills to developing electronic environments.

Researchers' digital libraries and databases

Scholars constantly develop their own digital libraries by downloading texts and writing. They also develop their own thematic collections and databases for particular purposes, which require different forms of support that do not seem to exist at the moment. Few scholars mentioned any need for this sort of assistance, but it seems that they would benefit from advice about how to work with different electronic formats, digitise materials, and organise and maintain their digital collections.

Some of these collections are unique sources of information that could be used by other researchers in many years to come. For example, an extensive textual database developed by a biographer in the study that contains transcriptions of documents, interviews and various recordings needs to be preserved and maintained beyond the span of the particular project. Libraries and archives need to develop practices and policies for curation and preservation of researchers' collections. They also have to deal with ethical issues involved in curating data from research projects, such as the researcher's commitment to the privacy of the study participants. Incentives for researchers to give their digital collections to libraries are necessary. Long-term benefits of supporting and curating researchers' collections would be significant for libraries, as well as for scholars as producers and future users of these collections.

Information services

Scholars require individual and highly specialised services to provide consultation about issues, resources and tools in a particular project, and to assist with the use of foreign language materials. These services require time and librarians' specialisation that is beyond the means of most individual research libraries. However, large co-operative initiatives on the provision of online services would be able to respond to

researchers' needs for specialised individual assistance. The practice of netchaining indicates that scholars may accept online services.

Verbal communication from help files to reference services that require reference interviews have been the norm in the information field. The shift towards multimedia and multisensory processing suggests the need for adequate forms of support. Work in interactive environments with multimedia encourages non-linguistic ways of knowing and expression, which have to be supported in similar ways. Although verbal communication will continue to play its role in service provision, new forms of support for information discovery and insight will be required. The current knowledge about information processes beyond the conscious rational processing that allows verbalisation is very limited. Research in this area will provide the basis for much-needed innovation in information services.

A starting point for thinking about new forms of information services may be found in researchers' own descriptions of their experiences. They described the multisensory nature of the interactions with e-texts and compared the experience of electronic exploration with jazz improvisation. Exploring the research topic in electronic environments involves skilful development of the main musical theme and numerous variations away from and back to the main theme. A great deal of intellectual and technical skill may be required to develop and follow the meander of the main theme and variations. The previously used metaphor of the nervous system is also based on possibilities of establishing a range of connections in the information system. The future of service provision may be in enabling technical and intellectual support along the flexible path. The envisaged responsive systems require flexible searching across a wide range of materials as well as adaptable and seamless service provision.

7.3. Implications for future research

The understanding of text as information and the holistic approach to information processes indicate a number of areas that need further investigation. The current understanding of unconscious and multi-sensory information processes, and roles of

feelings is very limited, but it is particularly relevant for understanding research in the humanities. The understanding of aesthetic textual elements as information requires investigation of various aspects of aesthetic experiences and research practices that are based on aesthetic information.

Dynamic information systems, which would give active roles to the user and text rather than to the system have been recognised as a topic for investigation. A very important question is not only how to provide user-driven systems, but also how to provide dialogical systems, which would enable responsiveness of the text required for dialogical interaction.

Information studies need to focus on novel approaches to the service provision, including investigation of information services based on verbal and non-verbal forms of communication. Scholars' research practices in electronic environments, particularly practices based on electronic textual analysis, need to be explored further. There is also a need to investigate scholars' training needs and forms of training suitable for the scholars. Further research into the social dynamics that underpin and often determine information practices may provide significant insights into the processes of knowledge production.

Considering the central role of text in our culture and the significance of ICT in recent times, strong connections between theoretical knowledge and studies of recent trends in scholarly practice are needed to grasp the depth and breadth of the change.

Theoretical thinking about textuality, often based on experience in working with text, and the investigation of current changes involving textuality need to inform each other. Information theory can provide some solutions in considering problems of integration of scholarly practices and cultural artefacts in information systems. Finally, philosophical thought can give a deeper meaning and direction to the transformations. Changes involving textuality and humanists necessarily include the whole tradition of thinking and writing.

Appendix A: Definition of terms

data

information produced, selected and/or assembled for further processing — specifically, for further research, in the context of this study.

e-text

any textual material in electronic form, used as a primary source in literary and historical studies. Primary electronic materials, or electronic texts (e-texts), are usually poetry, stories, novels, plays, and a variety of historical documents — government, public or private. Digitised archival copies of magazines and newspapers or web sites could be electronic texts when they are used as primary sources. Electronic texts could be written or spoken (for example, oral histories), digitised or created electronically, stand-alone documents or part of electronic databases and editions.

history

‘the discipline that studies the chronological record of events (as affecting a nation or people), based on a critical examination of source materials and usually presenting an explanation of their causes’ (*Encyclopædia Britannica Online* 2007).

humanities

languages, literature, philosophy, religion, visual arts, performing arts, fine arts, history, archaeology, communication and media studies.

information

a pattern of organisation, which can be contained in any physical manifestation. It is given meaning by a human being under certain contextual conditions. The concept of information includes the physical manifestation, the process of making sense of that information or ‘being informed’, and contextual considerations.

literary studies

creative writing, literary theory, literary history and criticism.

text

autonomous linguistic chain (oral or written) that constitutes an empirical unit, fixed by writing or recording.

textuality

‘totality of the properties giving cohesion and coherence and that render a text irreducible to just a succession of utterances’ (Rastier 1997, 265).

Appendix B: Ethics approval

10 March 2005

Dr Theresa Anderson
CB02.7.58
Faculty of Humanities and Social Sciences
UNIVERSITY OF TECHNOLOGY, SYDNEY

Dear Theresa,

UTS HREC REF NO 2005-007 – Anderson, Dr Theresa, Kirk, Professor Joyce, Sukovic, Ms Suzana (PhD Student) — “Roles of electronic texts in research enquiry in the humanities”

Thank you for your response to my email dated 16 February 2005. Your response satisfactorily addresses the concerns and questions raised by the Committee, and I am pleased to inform you that ethics clearance is now granted.

Your clearance number is UTS HREC REF NO 2005-007A.

Please note that the ethical conduct of research is an on-going process. The *National Statement on Ethical Conduct in Research Involving Humans* requires us to obtain a report about the progress of the research, and in particular about any changes to the research which may have ethical implications. This report form must be completed at least annually, and at the end of the project (if it takes more than a year). The Ethics Secretariat will contact you when it is time to complete your first report.

I also refer you to the AVCC guidelines relating to the storage of data, which require that data be kept for a minimum of 5 years after publication of research. However, in NSW, longer retention requirements are required for research on human subjects with potential long-term effects, research with long-term environmental effects, or research considered of national or international significance, importance, or controversy. If the data from this research project falls into one of these categories, contact University Records for advice on long-term retention.

If you have any queries about your ethics clearance, or require any amendments to your research in the future, please do not hesitate to contact the Ethics Secretariat at the Research and Commercialisation Office, on 02 9514 9615.

Yours sincerely,

Professor Jane Stein-Parbury
Chairperson, UTS Human Research Ethics Committee

Appendix C: Letter sent to deans

Dear _____

I am approaching you to request your support of my doctoral research project and the participation of any academics from your faculty who might be interested in being involved in the project. I am a research student in the Faculty of Humanities and Social Sciences, University of Technology, Sydney, where I am conducting a doctoral study into the roles of electronic texts in humanities research. I would like to interview academics in the areas of literary and historical studies about their current and recent research projects.

The study investigates different stages of the research projects in which electronic texts have been used and the nature of academics' interactions with electronic texts. The study will be developed in two phases:

1. interviews with approximately twenty participants;
2. detailed data-gathering from a small sample of academics drawn from the participants in the first phase.

Participants in both stages will be asked to provide references to any publicly available works which resulted from the discussed research projects.

In the first phase, I shall discuss participants' recent and current projects to form a broad picture of research processes, issues, ways of gathering information, and issues involved in the use or non-use of electronic texts. Interviews of up to an hour's duration will be conducted in participants' workplaces. In the second phase, I shall explore a small number of current research projects in detail. Participants will be asked to disclose any research notes, reflective journals and research logs that they normally keep in the course of their research. Participants will also be asked to document in a simple way their research activities. Participants' observations may be included if necessary. Informal communication with participants will be periodically maintained during the second stage. Finally, participants will reflect on the research process in the final interview, which will last approximately one hour. Most data for the second phase should be gathered from materials produced by participants in the course of their regular research activities and should not require significant additional effort.

All research data will be confidential and reported results will not reveal any personal details. The departments in which participants work will not be identified in any way. The participants are free to determine their own involvement, and to select the information and materials they want to contribute to the study. Because the focus is on the nature of the interaction with electronic texts, the study will not evaluate any aspect of the research process or organisational setting. I have completed the pilot project for this study and obtained approval from the UTS Ethics Committee (UTS HREC REF NO 2005-007A).

If you agree to the involvement of volunteers in the project, I wonder whether you would mind forwarding the attached call for participation to academics in relevant Departments. Those who are interested in participation can contact me directly.

If you need further information, please contact me on (02) 9514 1959 or suzana.sukovic@student.uts.edu.au. You could also contact my Principal Supervisor, Professor Joyce Kirk, on (03) 9925 1095 or joyce.kirk@rmit.edu.au. If you wish to contact someone independent of the research, you can contact the Research Ethics Officer at UTS, Ms Hadiza Yunusa, on (02) 9514 9615.

Yours sincerely,

Suzana Sukovic

Appendix D: Call for participation

Roles of electronic texts in the research process in the humanities

My name is Suzana Sukovic and I am a research student in the Faculty of Humanities and Social Sciences, University of Technology, Sydney, where I am conducting a doctoral study into the roles of electronic texts in humanities research.

Since text is the basic working material for research in the humanities, the provision of text in an adequate electronic form is crucial for qualitatively new applications of computer technology in humanistic disciplines. This study investigates different stages of the research projects in which electronic texts have been used and the nature of academics' interactions with electronic texts. It also considers obstacles and aids in the engagement with electronic texts. The study deals with the use of electronic texts as a resource and tool, as opposed to projects that aim to produce electronic textual editions or enhance electronic texts in any way. This research will provide information needed for the development of electronic textual resources for the humanities.

The study seeks to explore the nature of researchers' engagement with electronic texts; it does not evaluate any aspect of the research process. Participants' involvement is critically important for interpreting the issues, benefits and problems relating to the engagement with electronic texts from researchers' perspective.

Background of participants

Volunteers are invited from broadly defined literary and historical studies to discuss their current and recent research projects in which they have used electronic texts at least once. Since the focus is on interactions between academics and electronic texts as a resource, I would like to exclude doctoral studies and projects aiming to develop computer applications in the humanities from the discussions in this study.

What is 'electronic text' in the context of this study?

The term 'electronic text' means any textual material in electronic form, used as a primary source in literary and historical studies. Primary electronic materials, or electronic texts (e-texts), are usually poetry, stories, novels, plays, and a variety of historical documents — government, public or private. Digitised archival copies of magazines and newspapers or web sites could be electronic texts when they are used as primary sources. Electronic texts could be written or spoken (for example, oral histories), digitised or created electronically, stand-alone documents or part of electronic databases and editions.

What will the participation involve?

The study will be developed in two phases:

1. interviews with approximately twenty participants;
2. detailed data gathering from a small sample of two to five academics drawn from the participants in the first phase.

The participants in both stages will be asked to provide references to any publicly available works which resulted from the discussed research projects (for example, published papers, books, web sites, media productions).

In the first phase, the participants will discuss their recent or current research projects in which they have used electronic texts. Interviews will take up to an hour and they will be conducted in the participants' workplaces.

In the second phase, I shall explore a small number of current research projects in detail. The participants will be asked to disclose any research notes, reflective journals and research logs that they normally keep in the course of their research. The participants will be also asked to complete a simple form about their research activities, and to record comments on some of their searching sessions on audio-tapes. Participants' observations may be included if necessary. I shall maintain periodical informal communication with the participants during the second phase. Finally, each participant will reflect on his or her research process in the final interview, which will last approximately one hour.

Most data for the second phase will be gathered from materials produced by the participants in the course of their regular research activities and will not require any additional effort. Other forms of participation such as completion of forms, audio-recording and communication with me are not expected to require significant time and effort, but participants are free to determine their own involvement. Participants are also free to select information and materials they want to contribute to the study.

All research data will be confidential and reported results will not reveal any personal details. The departments in which the participants work will not be identified in any way. Because the focus is on the nature of the interaction with electronic texts, the study will not evaluate any aspect of the research process or organisational setting. I have completed the pilot project for this study and obtained approval from the UTS Ethics Committee (UTS HREC REF NO 2005-007A).

What will happen if you decide to volunteer?

Initially, you will volunteer for an interview only. After the interview, you may decide if you want to participate in the second phase. You could withdraw from the study at any stage with no explanation.

If you want to seek further information or to arrange an interview, please contact me on suzana.sukovic@student.uts.edu.au or (02) 9514 1959. You could also contact my Principal Supervisor, Professor Joyce Kirk, on (03) 9925 1095 or joyce.kirk@rmit.edu.au. If you wish to contact someone independent of the research, you can contact the Research Ethics Officer at UTS, Ms Hadiza Yunusa, on (02) 9514 9615.

Your participation in this study will be greatly appreciated.

Thank you!

Appendix E: Message sent to department heads

Dear _____

I approached [Dean] for support of my research study on roles of electronic texts in the humanities. S/he kindly agreed to forward my call for participation to the academic staff.

I am wondering if you could help me in contacting potential participants from your school. The following excerpt from the call for participation will provide you with brief information about the study and background of suitable participants.

The study seeks to explore the nature of researchers engagement with electronic texts; it does not evaluate any aspect of the research process. Participants' involvement is critically important for interpreting the issues, benefits and problems relating to the engagement with electronic texts from researchers' perspective.

Background of participants

Volunteers are invited from broadly defined literary and historical studies to discuss their current and recent research projects in which they have used electronic texts at least once. Since the focus is on interactions between academics and electronic texts as a resource, I would like to exclude doctoral studies and projects aiming to develop computer applications in the humanities from the discussions in this study.

What is electronic text in the context of this study?

The term 'electronic text' means any textual material in electronic form, used as a primary source in literary and historical studies. Primary electronic materials, or electronic texts (e-texts), are usually poetry, stories, novels, plays, and a variety of historical documents — government, public or private. Digitised archival copies of magazines and newspapers or web sites could be electronic texts when they are used as primary sources. Electronic texts could be written or spoken (for example, oral histories), digitised or created electronically, stand-alone documents or part of electronic databases and editions.

Please find attached the call for participation, which provides additional information about the study. I would greatly appreciate it if you could forward the call for participation to the staff who may be interested in taking part in the study or provide me with their details so I can contact them directly.

Kind regards,
Suzana Sukovic

Appendix F: Consent form (Stage One)

CONSENT FORM (STAGE ONE)

I _____ agree to participate in the research project *Roles of electronic texts in research process in the humanities* (UTS HREC REF NO 2005-007A) being conducted by Suzana Sukovic of the University of Technology, Sydney, for the degree of Doctor of Philosophy.

I understand that the purpose of this study is to interpret the roles of electronic texts in the research process in literary and historical studies.

I understand that my participation in this research will involve my participation in an interview of up to an hour's duration and that this interview will be audio-recorded.

I am aware that I can contact Suzana Sukovic (tel. 02-9514 1959) or her supervisor Professor Joyce Kirk (tel. 03-9925 1095) if I have any concerns about the research. I also understand that I am free to withdraw my participation from this research project at any time I wish, without any consequences, and without giving a reason.

I understand that my participation in this research will not result in any evaluation of my performance as a researcher, and will have no impact on my employment.

I agree that Suzana Sukovic has answered all my questions fully and clearly.

I agree that the research data gathered from this project may be published in a form that does not identify me in any way.

_____/____/____
Signature (participant)

_____/____/____
Signature (researcher)

NOTE:

This study has been approved by the University of Technology, Sydney's Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer, Ms Hadiza Yunusa (ph: 02 9514 9615, Hadiza.Yunusa@uts.edu.au) and quote the UTS HREC reference number. Any complaint you make will be treated in confidence and investigated fully, and you will be informed of the outcome.

Appendix G: Consent form (Stage Two)

CONSENT FORM (STAGE TWO)

I _____ agree to participate in the research project *Roles of electronic texts in research process in the humanities* (UTS HREC REF NO 2005-007A) being conducted by Suzana Sukovic of the University of Technology, Sydney, for the degree of Doctor of Philosophy.

I understand that the purpose of this study is to interpret the roles of electronic texts in the research process in literary and historical studies.

I understand that my participation in this research will involve me in discussing my current research project with Suzana Sukovic. As far as possible, I undertake to complete data collection forms provided by Suzana Sukovic and provide her with my research notes, reflective diary or any other papers I develop in the course of my research as information about the research process for analysis. As far as possible, I also undertake to record comments on certain aspects of my research on audio-tapes provided by Suzana Sukovic. I understand that I am free to choose the documents and information that I shall contribute to the study.

I am aware that I can contact Suzana Sukovic (tel. 02-9514 1959) or her supervisor Professor Joyce Kirk (tel. 03-9925 1095) if I have any concerns about the research. I also understand that I am free to withdraw my participation from this research project at any time I wish, without any consequences, and without giving a reason.

I understand that my participation in this research will not result in any evaluation of my performance as a researcher, and will have no impact on my employment.

I agree that Suzana Sukovic has answered all my questions fully and clearly.

I agree that the research data gathered from this project may be published in a form that does not identify me in any way.

_____/_____/_____
Signature (participant)

_____/_____/_____
Signature (researcher)

NOTE:

This study has been approved by the University of Technology, Sydney's Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer, Ms Hadiza Yunusa (ph: 02 9514 9615, Hadiza.Yunusa@uts.edu.au) and quote the UTS HREC reference number. Any complaint you make will be treated in confidence and investigated fully, and you will be informed of the outcome.

Appendix H: Interviewing Protocol

Introduction

- This study investigates researchers' interaction with electronic texts. It looks into various stages of the research when electronic texts are used.
- This is the first stage of the research. I will ask you questions about your research and your use of primary materials in electronic form.
- *Show definition of electronic texts.* This is what we will call 'electronic texts' or 'e-texts' during the interview.
- Our conversation will be confidential. Are there any questions you would like to ask before signing a consent form?
- *Sign the Consent Form (Stage One)*

Questions

1. Could we start with some general information about your work? What is your position on staff?
2. What are your research interests now?
3. How many years have you researched in this area?
4. How often have you used electronic texts, as defined for this study, during the last 12 months:
 - a. once
 - b. several times
 - c. intensively over short periods
 - d. monthly
 - e. weekly
 - f. daily

Prompt: Intensively – how often?

5. Have you used electronic texts for your finished or current research project?

- *E- texts used regularly in a variety of projects — discuss the last finished project*
- *Irregular users — discuss a finished project in which the researcher used e-texts more often*
- *Used only in the current project — go to question 13*

Finished project

6. Could we talk about your finished project? When did you do the project? What was that project about?
7. How often did you use electronic texts for the project?

Prompt: *What types of electronic texts did you use for that project: literary works; letters and diaries; notebooks; personal, public or government documents; archival issues of journals and newspapers; other materials.*

8. When you think about the beginning of that project, what were the most interesting ideas and problems?
9. How did you explore these ideas?

Prompt: *Did you use electronic texts to explore your research topic?*

10. How did you go about finding e-texts?
11. How did you use the e-texts you found?
12. What happened then? How did your project develop? Did you continue to use electronic texts? How did you use them?
13. What did you like and dislike about electronic texts that you used?
14. Did you publish results of the research? In what form? Did you refer to electronic texts in your paper? Do you mind giving me a **reference** or copy of that article/report at the end of the interview?

Current project

15. Could we now talk about your current project? What is your current research project about?
16. Do you have any deadlines for this project? What should be the outcomes?

17. Where are you at with this project at the moment?

18. What interests you most about this topic/period/work? What are the problems?

Prompt: What types of electronic texts did you use for that project: literary works; letters and diaries; notebooks; personal, public or government documents; archival issues of journals and newspapers; other materials.

19. *Initial stage:* How are you exploring the topic?

Advanced stages: How did you explore the topic when you started?

20. How did you work with e-texts that you found?

21. What do you plan to do now?

22. Let's talk now about your use of electronic texts in general. When you think about the way you work with print and e-texts, what do you see as major differences?

23. What are the aspects of your working environment which act as a barrier or promote use of electronic texts?

24. How is the use of electronic texts viewed by your institution or your colleagues in Australia and overseas?

25. Is there anything you would like to add about your use of electronic texts?

- Could I have a reference or a copy of your article/report we mentioned earlier?
- *Ask about web address or CD-Rom details of electronic texts used if needed.*
- Would you be interested in participating in the second stage of this research?
Show the relevant section from the call for participation.

Thank you very much for the interview!

Appendix I: Data-gathering form

Topic: _____

Week/s starting (date/s): _____

How often did you use e-texts during this period? _____

E-text used (title, URL if possible)	Reasons for use	What did you find? (ideas/clues/information)	How did you use what you found? (e.g., printed, downloaded, followed up)

Appendix J: Confidentiality agreement

I have agreed to transcribe audiotapes of interviews for the project, *Roles of electronic texts in research enquiry in the humanities*. This project is being conducted by Suzana Sukovic who is an enrolled student in the Doctor of Philosophy program at the University of Technology, Sydney. The Principal Supervisor of the project is Professor Joyce Kirk.

I agree to the following undertakings and conditions of ethical research as they relate to transcribing audiotapes of interviews with Suzana Sukovic.

1. I undertake to protect the privacy of those people whose records of interview I am transcribing.
2. I undertake to maintain the confidentiality of the substance of the interviews.
3. I undertake to use codes in the transcripts to identify people and organisations. Suzana Sukovic has devised these codes.
4. I undertake to reveal the identities of the people and organisations named in the audiotaped interviews only if required to do so by law.

I understand that the UTS Research Ethics Committee has approved these undertakings and conditions.

Signed by

Date

Witnessed by

Date

Appendix K: Chu's model of research phases and e-texts

Chu's model (Chu 1999, 259-260)		Use of e-texts in this study
1. Characteristics of Idea Stage Generation of idea Initiation of project Initial formulation of idea Decision on literary texts for study Discussion of idea(s) <i>Minimal use of information</i>	Use of info. Define or develop one's idea(s) Identify which literary text(s) to use	Search e-texts ▪ To support thinking about ideas, "follow hunches" ▪ To get trends; see what is available ▪ To formulate project Netchaining to gather and clarify information To develop ideas over a long period of time
2. Characteristics of Preparation Stage Searching for primary and secondary materials or resources Using/reading primary and secondary sources Taking notes from primary and secondary sources Trying out idea(s) Application for funding <i>The highest use of information</i>	Use of primary sources To relate the materials to other known information To look for support for argument of the study, e.g., quotations, answers, images, themes To look for something specific in the text(s) because of the literary critical approach one uses To read from a different perspective in the second reading To familiarize oneself with the text in the first reading To understand the time period when text(s) were published To understand the time period covered by work To learn more about specific literary critical approaches To help in formulating questions	To gather material Text analysis • To locate information and work with hard copies • To explore ideas Explore broadly ▪ To follow hunches, possible relationships, compare contexts ▪ To find clues and pointers ▪ To clarify meanings of unknown words/names/events Work with traditional sources and e-texts ▪ To complement work in archives, supplement what is not available in hard copy To plan further research To prepare own digital library or database

3. Characteristics of Elaboration Stage Thinking of focus for each section of the work Mapping/sketching idea(s) for work, creation of an outline Organization of notes to represent structure of work or create shape of argument Discussion of idea(s) Application for funding <i>Mainly a mental process</i>	Use of info To determine what will be central and what will be peripheral to the study To focus more precisely on the exact area of interest	Parallel with the Preparation Stage or break during the Preparation ▪ To get intellectual grasp Selection of material to think about support for own argument To decide how to explore research questions by text-analysis
4. Characteristics of Analysis and Writing Stage (Chu) Drafting the work Revision of the work Obtaining help with work Searching for more information Re-reading text(s), notes and other materials Preliminary exploration of dissemination channels <i>Extensive use of info with slight to moderate info searching</i>	Use of info Re-reading Text(s), Notes and Other Materials To verify a citation To see if there are ‘connections’ which may have been missed To refamiliarize oneself with the information because time has elapsed between the last reading of materials and start of writing To obtain more support for argument of work, e.g., quotations, answers, images, themes Searching for More Information To know about something that is still unclear To obtain more support for argument of work, e.g., quotations, answers, images, themes To see if there are any new	Collect additional info., go back to material and notes from previous projects, go back to known e-texts, participate in online discussions about new issues ▪ To find evidence for argument ▪ To make connections and explore patterns ▪ To be used creatively ▪ To add factual details, additional point of view ▪ To fill in gaps, write explanatory notes, inform someone working on a section of a project Work with personal digital library and printouts: ▪ e-poetry – look over and over again; codes ▪ occurrences of certain words ▪ interrogate texts to explore res. question ▪ analyse text from printout To analyse To explore patterns To check different translations (combination of textual database and analogue materials) To aid document and information retrieval To check details, copy quotes and bibliographic details

	developments	Monitor digitisation projects and certain web sites Introduce various aspects of e-texts in writing, remix e-texts to combine creative and analytic processes; to enhance understanding Order pictures and confirm publication rights; check newspapers and images at book production stage
5. Characteristics of Dissemination and Rewriting Stage (Chu's 5 and 6 combined) Exploration of dissemination channels Publication or presentation of work Application for funding Exploration of dissemination channels Searching for more information Reading and/or re-reading text(s), notes and other materials Re-writing of work Publication or presentation of reworked document	Use of info To refine the argument of the study To improve the content of the study Reading and Re-reading Text(s), Notes and Other Materials To find more support for argument of work, e.g., quotations, answers, images, themes To see if there are 'connections' which you may have missed To verify a citation To refamiliarize oneself with the information To help in modifying argument Searching for More Information To see if there are any new developments To follow up on leads which have not yet been checked To search for critical work to incorporate	Use of e-texts Pirate online dissemination to provide alternative dissemination To find additional material To add primary material (testimonials and blogs)

Appendix L: Uses of e-texts

Darker shaded rows show a contribution of the use, and lighter shaded rows underneath indicate some specific aspects followed by some examples in white rows.

Supplementing use

1. to complement archival material
to complement work in physical collections (for example, searching, inspecting e-texts before ordering)
E-texts & bibliographic records used in library: ‘... what you can do in the British Library is set up your, say you’ve done a big search on a database and you’ve found 123 entries. You can actually save that then on your sort of own page for the day. [...] You could come back to those stored items and so keep on working on them and seeing if you wanted them and then the ones you’d want you’d print out or call up or send to your e-mail. And print. So I did quite a lot of that. <i>So it was basically working with the catalogue and primary materials simultaneously.</i> And not just the catalogue but the databases that you’d find off the catalogue.’ (Participant 7/1, 12)
- to supplement notes made during visits in archives - to refresh memory and analyse previously examined texts from home or office
‘I suppose that I was working primarily from my own notes and my own, the research that I’d carried out. And when I was reviewing my notes, if there were things I needed to check or jog my memory, then I would use the e-texts and the images’ (Participant 5/1, 5). ‘I was using it, it was there, but it wasn’t an emergency for me. So I thought, well, I can delay that, I can check that out later. So that was something that made the electronic information enormously valuable because it means you have your own book back in Sydney, effectively’ (Participant 6/1, 5).
2. to inspect and read when material was not available in hard copy
obscure material
There is a great volume of work of a nineteenth century philologist ‘but what I found in the electronic copy was examples of work that wasn’t as well known. [...] So that provided me with some very interesting material and also I discovered in the electronic copies some more of his outlandish statements. Excessive statements’ (Participant 11/1, 3).
current poetry not available in print
‘... web site set up by one of his fans in England and that was useful mainly because [poet] tends to make use of it as a place to publish some of his most recent poems. So that you could pick up on that site material that [poet] hasn’t published in accessible form anywhere else’ (Participant 10/1, 9).
known works
‘I would largely be looking for specific works that I wanted to look at and consult that I didn’t have’ (Participant 6/1, 7).
3. to check and order images that were going to be reproduced in publications

'... when I had ordered images and things from online resources' (Participant 5/1, 9).
4. to monitor the appearance of new sources (for example, monitoring progress of digitisation projects, appearance of new literary works)
'I knew the main archives which held this materially, so basically I was trying to pay attention to the archives progress because a lot of archives at that time were putting images online' (Participant 5/1, 4). <i>'What do you think it offers you in terms of current awareness?</i> Well, I mean, we're talking about accessing poetry that you might be able to get online which isn't available in a, readily, in print. So what it offers me is the text itself' (Participant 11/1, 7).

Locating use

1. to locate relevant material by searching bibliographic information and full-text materials
'National Archives of Australia is online, you can access their database online. So usually I would go in and look at their materials and pull out — because you can't see the actual materials on site, unless some samples have been put up [...] But there is some stuff now coming online, full versions [from archives in the UK]' (Participant 2/1, 2).
2. for netchaining that took the form of online version of traditional chaining (for example, following links from secondary journal articles to primary sources)
'... they're articles, that as you would say they're secondary, but they cite primary material ...' (Participant 5/2, 6).
3. to search for factual detail
to be used in academic writing
'But if I need to know on what date that bridge opened, the Internet is fantastic ...' (Participant 1/2, 10).
to write explanatory notes
'I've been using it for the [title] edition and trying to find information for the explanatory notes ...' (Participant 4/1, 1). Later on, the participant explained that she often looked for 'these references to rather obscure poems or novels which would've been rather well known in the nineteenth century when the book was written but it's much harder for a contemporary audience' (3).
to complete or support fictional development
'But you might have a character who's schizophrenic, who you then will need to check that their behaviour isn't totally out of keeping with someone who's in a florid episode or something' (Participant 1/2, 10).
4. to compare details in context of various versions of a text
'So if I really want to go and see all the nitty-gritty things about this verse text, then I have to go to the various manuscripts in which the verse has come down to us and often require a few, sometimes not, but in many cases there are four, five manuscripts or more' (Participant 12/1, 5).
5. to search for additional texts

to read as background
'So the kind of research you do around that, the research you do is often just kind of give a little bit here and there of additional background or additional colour or something' (Participant 1/2, 10). 'Well, there are a lot sites that are put up, some of them are tourist sites, some of them, I think, are sites that are put up by people who are interested in the area but, no, quite a lot of them are tourist sites with small bush towns and so on where these bushrangers were associated with— again, just put in the name of the bushranger and saw what came up' (Participant 4/1, 7).
to find information not found in hard copies
'I look for texts on the Internet that go beyond the kind of books that I might have access to or be aware of — things that often incorporate personal experiences, web sites that cover that kind of thing' (Participant 1/1, 2). 'I went and looked on informal tourism web sites from the UK and there's a guide called the Know-Where guides so that it implies that you know what's going on. And it had a whole sequence of fantastic personal testimonials of people who'd been to Glastonbury (Participant 5/2, 10).
6. to retrieve information in own database of primary materials
'I eventually recorded over 120 hours of interviews with him and the only way for that to be searchable is to enter into the electronic form so I could search the name of somebody, find references to them, cross-references and so on. So turning interviews into electronic form was a very important way of searching' (Participant 10/1, 2).
7. to find evidence to support own argument
'If I'm writing a paper or wanting some kind of additional factual material on something I'm writing for academic purposes then obviously it allows me to say, look, I'm not just saying it, someone else has said it. Or I disagree with what they're saying and that's why I'm going off on this tangent. It's a kind of balance, I suppose, in ways of doing things. It offers alternate points of view, it allows me to add gravitas or all those kinds of things I associate with research, academic research' (Participant 1/2, 7).

Exploring use

1. for netchaining
'I'll just be surfing, going from one sort of link to another, probably have a list of places I wanted to look at. And I'd be surfing on the Internet, basically. I mean, there are certain sites that are very kind of dense in certain things like if I wanted to look at sonic poetry I'd look at <i>Ubuweb</i> which is a very good site for that so I'd have certain places that I'd know would be — but then I'll do a lot of kind of just following links' (Participant 16/1, 14).
2. to explore hunches in online sources
'What I do love about the electronic text world is, you can get a kind of half of an idea or a hunch or a sort of tip-of-the-tongue feeling about an idea that's not quite come yet but you kind of, you might be able to form that idea and I do often do it by sort of Boolean searching, you know, by just going, "Ah, it's this, it's red and it's blue and it's sharp and it's slow", you

know [laughter] and then you think, “Ah, give me a whole lot of other things that are like that!”” (Participant 6/2, 7).
3. to retrieve large amounts of different document types from different sources to find information, reveal connections and explore patterns
‘We can look at [topic] over time and look at the diversity of types of things which are recorded as [topic]. Now, what we’re looking at is a combination of...archivists’ and cataloguers’ definitions of [topic] and we’re looking at photographic owners’ or photographers’ definitions. So we understand that we’re looking at artefacts. But what we’re getting is images of the diverse and changing social, socially constructed event called a [topic] in this particular area over time. And it allows us to look at changing family structures, allows us to look at corporate structures ...’ (Participant 3/1, 6). ‘Not for the final conclusive material necessarily but to help me see patterns, to search on a particular set of search words or look for a particular piece of evidence or try to trace a character’ (Participant 13/1, 3).
4. to analyse pilot interviews and online materials
‘We did some trial interviews with people in a couple of different communities with whom we had initial contacts. And we digitised those interviews, we had them transcribed, and we looked at the ways in which we could analyse those according to categories, like concept of nature’ (Participant 3/1, 11).
5. to repeat searching that was done in traditional ways to explore patterns of information
‘... if you’re searching it electronically by JSTOR then you’re not going to miss it. So ... I did go back and look at it again but the initial research, even there, was done, was by photocopying. I had ... big photocopying files of those things which are now available on JSTOR’ (Participant 14/1, 6). The same participant said: ‘... and you can type that into JSTOR and ... you can get a few things, and you can trace absences as well as presence, if you like, the presence of a particular research topic.’
6. to bring different voices into writing
‘... overlaying and mixing and, and putting into conjunction with each other, things would have a slightly different tone or a different mood or a different voice or a different set of protocols and I think a lot of people have realised that that process of putting those differences together, if well managed, can be quite stimulating of thinking. So to that extent I suppose that living and working and thinking in that kind of climate of digital montage, montaging and overlaying just sets the conditions for thinking, “Uh, I could write this book this way, I don’t have to write it in one voice necessarily”” (Participant 6/2, 5).

Analysing text use

1. to explore ideas in text analysis
‘So if you had a scholar in here, that had Sanskrit, Pali and Chinese and there’s a few instances like that, I think the Tibetan material was making its way into the content and actually do searches in all this material to say what particular set of ideas that interest you, if you had the talent you could, you call them up very quickly ...’ (Participant 8/1, 14).
2. to search for occurrences of certain words to investigate the topic or confirm a hypothesis

'But even in those days, it allowed you to ask questions you wouldn't bother asking otherwise because it would take too long to find out and you wouldn't know whether the answer was significant. If you could — I have found that electronic... text does allow that sort of — oh, what would happen if I asked this question ...' (Participant 6/1, 12).

'I pulled the King James version of the Bible off Gutenberg and put it onto my hard drive, particularly because I knew that I wanted to do a lot of concordance type work with it, I wanted to search particular words and find the phrases that had these particular words, I wanted to do a whole lot of kind of subject investigation of, of the King James version of the Bible in order to get themes and in order to get phrases and styles of language' (Participant 6/2, 6).

3. to work with a database of relevant literary motifs to search, compare and analyse

'I have done some work on it [...] to start compiling a database of these, of motifs that recur in this literature. And also to compare it with existing analyses or compilations of folk-tale motifs because a lot of these motifs appear in folk tales too' (Participant 12/1, 12).

4. to analyse e-poetry

'Probably watch, look at it, maybe not immediately, but at some point I'd look at it several times ... And try and analyse what's going on in it. I might look at the code or ask somebody else what they think and how they think it's been done, if I can't work it out. [...] And then I might pick out one little bit and go over and over that little bit and look at it. There might be some section of the work that I'm particularly interested in and I might hone in on that particular section' (Participant 16/1, 15).

5. to analyse search results

'These two here ... there is all the terms that I have chained the meaning ... This is the number of occurrences, it's only once for this one. Then that's all this stuff, that is all the occurrences here. This is the material here, the translation. I actually go to the references here and I can find it anywhere and I make comments as I go through' (Participant 8/1, 9).

6. to use pointers from interaction with e-texts to work with hard copies of translations

'I found all, where all the sources were and then I printed out the text in Pali. [...] The Pali was in electronic form but this allowed me to go to the hard copy and find the section that I wanted to look up then' (Participant 8/1, 5).

7. to manipulate e-texts to analyse the topic and create a new work

'That's just an essay and that's writing, and that's going through electronic files, looking at [own e-texts] then finding parts that seem most interesting and cutting and pasting them into a new document then starting to remix. There's a certain kind of, one thing that happens is that you become very fluid in your writing practice, becomes much more remix methodology ...' (Participant 15/1, 3).

Uses of e-texts in projects (detailed outline)

Legend

➔ Activity (new element)

□ a unique feature of the activity; a new feature on the same level of complexity as in the previous types

R□ repeated feature from the previous level (included if it is a main feature)

▣ feature with added complexity or new aspect

	Level 1: Finding particular documents and information		Level 2: Finding patterns and connections	
	Supplementing	Locating	Exploring	Analysing text
1. Idea stage	—	➔ Search □ broad — to see what is available, clarify ideas	▣ to get trends, formulate project	
			▣ explore ideas, 'chase hunches'	
			➔ Influence of e-texts from previous work □ previous projects	▣ all reading ▣ own e-texts previously created
2. Preparation	➔ Gathering □ find texts not available in hard copy	▣ detailed search to gather all relevant material	▣ netchaining	▣ selecting own e-texts
	➔ Working with hard and electronic copies □ complement work in archives	▣ preparing and working with own database: digitising, transcribing, editorial decisions	▣ assess collections online, get other info to plan trips to physical collections (<i>also aspect of netchaining</i>)	R□ digitising, transcribing, editorial decisions ▣ find pointers in data from searches to work with hard

	Level 1: Finding particular documents and information		Level 2: Finding patterns and connections	
	Supplementing	Locating	Exploring	Analysing text
				copies and translations
			→ Exploring research question in gathered e-texts ☐ exploring relationships ☐ looking at absences and presences ☐ comparing texts	☒ interrogating e-texts to explore research questions
3. Elaboration	—	→ Choosing search strategies ☐ decision about more focused search		☒ exploration and choice of best search strategies for analysis
			→ While analysing pilot interviews and searching in Stage 2 → Looking up what will support own argument → Storing texts that are not selected	
4. Analysis and Presentation of Results	→ Checking ☐ known works	☒ checking and clarifying details	R ☐ checking and clarifying details	

	Level 1: Finding particular documents and information		Level 2: Finding patterns and connections	
	Supplementing	Locating	Exploring	Analysing text
	→ Monitoring ☐ progress of digitisation project	→ Filling in gaps and background ☐ hard to find info to support fictional development ☐ obscure texts ☐ factual details ☐ alternative point of view ☐ reading for background info ☐ to feed imaginative process ☐ netchaining (from academic to archival journals – <i>like trad. chaining</i>)	☐ non-conventional sources ☐ evidence for own argument (<i>also Elaboration</i>) ☐ to inform a cartographer	
	–	→ Working with own digital collection ☐ search to retrieve documents and passages	☒ all possible searches for retrieval	☒ own database to support analytical processes
	→ Analysis (on its own or with writing) ☐ think about ideas in gathered materials ☐ e-texts used with notes to refresh memory		☒ combination of info. gathering, analysis and writing	☒ looking for word occurrences to confirm hypothesis ☒ analysing patterns in printouts from searches ☒ looking at e-poetry repeatedly, inspecting codes
	→ Writing ☐ ordering materials to be reproduced in a book	☒ copying quotes and bibliographic info for greater accuracy	☐ getting approvals to use online messages and images	☒ elements of electronic textuality incorporated in

	Level 1: Finding particular documents and information		Level 2: Finding patterns and connections	
	Supplementing	Locating	Exploring	Analysing text
			▣bringing different voices into writing	traditional academic writing ▣remix methodology
5. Dissemination and Further Presentation of Results Stage			➔Adding primary data □use of testimonials and blogs (<i>Similar as above</i>)	
Ongoing activities	➔Moving between e-texts and other formats			
	➔Current awareness □contemporary unpublished material		▣ getting to know people who participate in researched phenomena (<i>aspect of netchaining</i>)	▣from being online (<i>netchaining</i>)
		➔Checking □details		□quotes, anything outside own field

Uses, thoughts and feelings

	Supplementing	Locating	Exploring	Analysing text
Traditional research and hard copies preferred	✓	✓		
Comments about limitations of traditional and advantages of electronic research			✓	✓
Comments about participants' relation to the emergence of new disciplines and styles			✓	✓
Open to all sorts of research	✓	✓	✓	✓
Positive feelings related to e-texts	✓	✓	✓	✓
Negative feelings related to dealing with amount of information and feeling out of control			✓	
Inadequacy of one's own knowledge & skills	✓	✓	✓	
Impatience				✓
Expectations and interpretations of availability			✓	

Appendix M: The functions of e-texts and their contributions to the projects

1. Support in finding documents and information

Support in information retrieval

- Speeding up search, making it more systematic
- Revealing information in the document content through full text search
- Aid in focused information retrieval (for example, own database used for gathering scattered materials)
- Aiding access to information from another field
- Aid in finding factual information
- Support in creative writing
 - Provision of alternative information not available in other forms
 - Allowing easy search which leads to creative use of information
 - Provision of factual information for fictional development

Aid in discovery of primary materials

- Discovery of primary materials embedded in secondary sources
- Provision of primary data (for example, testimonials and blogs as primary data, involvement with online communities)
- Provision of alternative, obscure sources and sources for contemporary analysis

Lead to other sources and aid work with analogue sources

- Provision of netchaining paths to gather and confirm information
- Provision of information to assess physical collections
- Help in locating hard copies
- Results of search provide pointers for work with hard copies and translations (after interrogation of textual database aimed at exploration of the topic)

Supplement for hard copies

- Provision of alternative access to materials to check details and read

Contribution to current awareness

- Important web sites provide ongoing information and access to new unpublished literary materials
- Storing e-texts for background information and later use

2. Aid in managing the research process

Aid in planning visits to remote collections

Aid in publication process (for example, ordering images, confirming publication rights)

Provision of sources for some activities (for example, digital images to inform cartographer; getting approvals to use online messages)

Sending files to collaborators and publishers

3. Aid in investigation of the topic

Help in identifying trends

Aid in recognising issues (for example, analysis of pilot interviews; monitoring online communities)

Aid in exploration of hunches and half-formed ideas; trying out ideas to formulate research questions

Help in formulating, confirming or disregarding hypothesis by using text analysis

Decision-making while preparing material for own textual database aids understanding

Revealing patterns of information and connections

Provision of insights for reflection; basis for thinking about ideas in a way enabled by electronic format

Provision of instantly available versions of the same text to check and compare

Provision of basis for deeper insights based on depth and breadth of textual info. (for example, online dictionaries, contexts of words)

Provision of alternative point of view

Provision of evidence for argument

Aid in exploration of themes, styles, connections in concordance type of search

Contribution to understanding how far the limits of experimental writing have been pushed

Provide background material for creative writing, which feeds imaginative process

4. Contribution to writing and presenting research results

Improving accuracy and speed (copying, pasting)

Producing e-texts to present some research results

Aid in shaping of a new style (for example, reduced linearity, introduction of different voices; layered objects; emotional resonance)

Play part in negotiation with research tradition; questioning traditional use of information sources; what counts as research

Provision of alternative publishing and dissemination channels

References

Akhtar, Salman. 2005. *Objects of our desire: exploring our intimate connections with the things around us*. New York: Harmony Books.

American Council of Learned Societies. 2006. Our Cultural Commonwealth: the report of the American Council of Learned Societies' Commission on Cyberinfrastructure for Humanities and Social Sciences.
<http://www.acls.org/cyberinfrastructure/acls.ci.report.pdf>.

Amerika, Mark. 2007. *META/DATA: a digital poetics*. Cambridge, Mass.: The MIT Press.

Andersen, Deborah Lines. 1996. User driven technologies : assessing the information needs of history faculty as a special user population. Thesis (Ph. D.), State University of New York at Albany.

— — —. 1998. Academic historians, electronic information access technologies, and the World Wide Web: a longitudinal study of factors affecting use and barriers to that use. *The Journal of the Association for History and Computing* 1 (1).
<http://mcel.pacificu.edu/history/jahc11/Anderson/Anderson.HTML>.

— — —. 2001. "One or two is not a problem" or Technology in the tenure, promotion, and review process: a survey of current practices in U.S. history departments. *The Journal of the Association for History and Computing* 3 (3).

— — —, ed. 2004. *Digital scholarship in the tenure, promotion, and review process*. Armonk, N.Y.: M.E. Sharpe.

Andersen, Deborah Lines, and Dennis A. Trinkle. 2004. Valuing digital scholarship in the tenure, promotion, and review process. In *Digital scholarship in the tenure, promotion, and review process*, ed. D. L. Andersen. Armonk, N.Y.: M.E. Sharpe.

Anderson, Don, Richard Johnson, and Lawrence Saha. 2002. Changes in academic work: implications for universities of the changing age distribution and work roles of academic staff: Commonwealth of Australia.
http://www.dest.gov.au/archive/highered/otherpub/academic_work.pdf.

Arakawa, Shusaku, and Madeline Gins. 1988. *The mechanism of meaning*. [New 3rd] ed. New York: Abbeville Press.

Barthes, Roland. 1977. *Image, music, text*. Translated by Stephen Heath. New York: The Noonday Press.

Bates, Marcia J. 1989. The design of browsing and berrypicking techniques for the online search interface. *Online Review* 13 (5):407-424.

— — —. 2005. Information and knowledge: an evolutionary framework for information science. *Information Research* 10 (4):paper 239. <http://informationr.net/ir/10-4/paper239.html>.

— — —. 2006. Fundamental forms of information. *Journal of the American Society for Information and Technology* 57 (8):1033-1045.

Bates, Marcia J., Deborah N. Wilde, and Susan Siegfried. 1993. An analysis of search terminology used by humanities scholars: the Getty Online Searching Project Report Number 1. *Library Quarterly* 63 (1):1-39.

Bearman, David, and Jennifer Trant. 1998. Authenticity of digital resources. *D-Lib Magazine*. <http://dlib.anu.edu.au/dlib/june98/06contents.html>.

Becher, Tony. 1989. *Academic tribes and territories*. Milton Keynes: The Society for Research into Higher Education.

Becher, Tony, and Paul Trowler. 2001. *Academic tribes and territories: intellectual enquiry and the culture of disciplines*. 2nd ed. Buckingham: The Society for Research into Higher Education & Open University Press.

- Belkin, Nicholas J. 1994. Design principles for electronic textual resources: investigating users and uses of scholarly information. In *Current issues in computational linguistics*, ed. A. Zampolli, N. Calzolari and M. Palmer. Pisa: Giardini.
- Benediktsson, Daniel. 1989. Hermeneutics: dimensions toward LIS thinking. *Library & Information Science Research* 11:201-234.
- Bolter, J. David. 2001. *Writing space : computers, hypertext, and the remediation of print*. 2nd ed. Mahwah, N.J.: Lawrence Erlbaum Associates.
- Brockman, William S., Laura Neumann, Carole L. Palmer, and Tonyia J. Tidline. 2001. Scholarly work in the humanities and the evolving information environment. Washington, D.C.: Digital Library Foundation, Council on Library and Information Resources. <http://www.clir.org/pubs/abstract/pub104abst.html>.
- Brogan, Martha L., and Daphnée Rentfrow. 2005. A Kaleidoscope of Digital American Literature. Washington, DC: Council on Library and Information Resources, Digital Library Federation. <http://www.clir.org/PUBS/abstract/pub132abst.html>.
- Brooks, Bertram. 1980. The foundations of information science. Part I: philosophical aspects. *Journal of Information Science* 2 (125-133).
- Brooks, Terrence A. 1985. Private acts and public objects: an investigation of citer motivations. *Journal of the American Society for Information Science* 36 (4):223-229.
- Brown, Christine D. 2002. Straddling the humanities and social sciences: the research process of music scholars. *Library & Information Science Research* 24 (1):73-94.
- Brown, Gary J. 2001. Beyond print: reading digitally. *Library Hi Tech* 19 (4):390-399.
- Brown, John Seely, and Paul Duguid. 1996. The Social Life of Documents. *First Monday* 1 (1). <http://www.firstmonday.org/issues/issue1/index.html>.

Buchanan, George, Sally Jo Cunningham, Ann Blandford, Jon Rimmer, and Claire Warwick. 2005. Information seeking by humanities scholars. Paper presented at Research and advanced technology for digital libraries: 9th European Conference, ECDL 2005 Vienna, Austria, September 18-23, 2005 Proceedings, at Vienna.

Buckland, Michael K. 1991. *Information and information systems*. New York: Greenwood Press.

Budd, John M. 2001. Information seeking in theory and practice: rethinking public services in libraries. *Reference & User Services Quarterly* 40 (3):256-263.

Burnard, Lou. 2001. On the hermeneutic Implications of text encoding. In *New media and the humanities: research and applications: proceedings of the first seminar Computers, literature and philology, Edinburgh, 7-9 September 1998*, ed. D. Fiormonte and J. Usher. Oxford: Humanities Computing Unit, University of Oxford.

Burnett, Kathleen, and Graham E. McKinley. 1998. Modelling information seeking. *Interacting with Computers* 10:285-302.

Bush, Vannevar. 1945. As we may think. *The Atlantic Monthly* (July).
<http://www.theatlantic.com/doc/194507/bush>.

Buzzetti, Dino. 2002. Digital representation and the text model. *New Literary History* 33 (1):61-88.

Byström, Katriina, and Preben Hansen. 2005. Conceptual framework for tasks in information studies. *Journal of the American Society for Information Science and Technology* 56 (10):1050-1061.

Capurro, Rafael, and Birger Hjørland. 2003. The concept of information. *Annual Review of Information Science and Technology* 37 (1):343-411.

Case, Donald O. 1991. The collection and use of information by some American historians: a study of motives and methods. *Library Quarterly* 61 (1):61-82.

Cavalier, Rodney. 1993. Why worry? I'm not! In *Information literacy: the Australian agenda: Proceedings of a conference conducted by the University of South Australia Library held at Adelaide College of TAFE 2-4 December 1992*, ed. D. Booker. Adelaide: University of South Australia Library.

Chalmers, Matthew. 2004. Hermeneutics, information and representation. *European Journal of Information Systems* 13:210-220.

Chappell, Cressida, and Astrid Wissenburg. 1998. Scholarly exploitation of digital resources: a workshop for historians: workshop report: a report from the user needs workshop organised by the History Data Service and held at the University of Essex, 2nd and 3rd April 1998.

Chartrand, Tanya L., Rick B. van Baaren, and John A. Bargh. 2006. Linking automatic evaluation to mood and information processing style: consequences for experienced affect, information processing, and stereotyping. *Journal of Experimental Psychology: General* 135 (1):70-77.

Chatman, Elfreda A. 1996. The impoverished life-world of outsiders. *Journal of the American Society for Information Science* 47 (3):193-206.

— — —. 1999. A theory of life in the round. *Journal of the American Society for Information Science* 50 (3):207-217.

— — —. 2000. Framing social life in theory and research. *The New Review of Information Behaviour Research* 1:3-17.

Cherry, Joan M., and Wendy M. Duff. 2002. Studying digital library users over time: a follow-up survey of *Early Canadiana Online*. *Information Research* 7 (2).
<http://informationr.net/ir/7-2/paper123.html>.

Chu, Clara M. 1999. Literary critics at work and their information needs: a research-phases model. *Library & Information Science Research* 21 (2):247-273.

Coaldrake, Peter, and Lawrence Stedman. 1999. *Academic work in the twenty-first century: changing roles and policies*. Canberra: Dept. of Education, Training and Youth Affairs.

Cole, Charles. 1994. Operationalizing the notion of information as a subjective construct. *Journal of the American Society for Information Science* 45 (7):465-476.

— — —. 1997. Information as process: the difference between corroborating evidence and "information" in humanistic research domains. *Information Processing & Management* 33 (1):55-67.

— — —. 1998. Information acquisition in history Ph.D. students: inferencing and the formation of knowledge structures. *Library Quarterly* 68 (1):33-54.

Cool, Colleen. 1993. Information retrieval as symbolic interaction: examples from humanities scholar. Paper presented at ASIS '93: proceedings of the 56th ASIS Annual Meeting, at Columbus, Ohio October 24-28, 1993.

Corkill, Cynthia , and Margaret Mann. 1978. Information needs in the humanities: two postal surveys. Sheffield: University of Sheffield, Centre for Research on User Studies.

Cory, Kenneth A. 1999. Discovering hidden analogies in an online humanities database. *Library Trends* 48 (1):60-71.

Dalbello, Marija, Irene Lopatovska, Patricia Mahony, and Nomi Ron. 2006. Electronic texts and the citation system of scholarly journals in the humanities: case studies of citation practices in the fields of classical studies and English literature. Paper presented at Libraries in the Digital Age (LIDA) 2006, at Dubrovnik and Mljet, Croatia.

Dalgleish, Tim. 2002. Information processing approaches to emotion. In *Handbook of affective sciences*, ed. R. J. Davidson. Cary, NC: Oxford University Press.

Dalton, Margaret Stieg, and Laurie Charnigo. 2004. Historians and their information sources. *College & Research Libraries* 65 (5):400-425.

Damasio, Antonio R. 2000a. *Descartes' error: emotion, reason, and the human brain*. Repr. ed. New York: Quill.

— — —. 2000b. *The feeling of what happens : body, emotion and the making of consciousness*. London: Vintage.

Davies, Clare. 1997. Organizational influences on the university electronic library. *Information Processing & Management* 33 (3):377-392.

de Tiratel, Susana Romanos. 2000. Accessing information use by humanists and social scientists: a study at the Universidad de Buenos Aires, Argentina. *The Journal of Academic Librarianship* 26 (5):346-354.

Deleuze, Gilles, and Félix Guattari. 1987. *A thousand plateaus: capitalism and schizophrenia*. Translated by B. Massumi. London: Continuum. Original edition, *Mille Plateaux*, volume 2 of *Capitalisme et Schizophrénie*, 1980.

Delgadillo, Roberto, and Beverly P. Lynch. 1999. Future historians: their quest for information. *College & Research Libraries* 60 (3):245-259.

Denzin, Norman K. 1989. *The research act: a theoretical introduction to sociological methods*. Englewood Cliffs, NJ: Prentice Hall.

Derrida, Jacques. 1996. *Archive fever: a Freudian impression, Religion and postmodernism*. Chicago: University of Chicago Press.

— — —. 2001. Structure, sign and play in the discourse of the human sciences. In *Writing and difference*, ed. London: Routledge Classics. Original edition, London : Routledge & Kegan Paul, 1978.

Digital Library Federation, and The Council on Library and Information Resources.
2002. Dimensions and use of the scholarly information environment: a data set assembled by the Digital Library Federation and Outsell, Inc. Washington, D.C.: Council on Library and Information Resources.
<http://www.diglib.org/pubs/scholinfo/>.

DLF. 2002. See Digital Library Federation and The Council on Library and Information Resources.

DLF scholars' panel. 2004. Washington, DC: Digital Library Federation.

Duff, Wendy M., and Joan M. Cherry. 2000. Use of historical documents in a digital world: comparisons with original materials and microfiche. *Information Research* 6 (1). <http://informationr.net/ir/6-1/paper86.html>.

Duff, Wendy M., and Catherine A. Johnson. 2002. Accidentally found on purpose: information-seeking behavior of historians in archives. *The Library Quarterly* 72 (4):472-496.

Duggan, Hoyt N. 1996. Some unrevolutionary aspects of computer editing. In *The literary text in the digital age*, ed. R. J. Finneran. Ann Arbor: The University of Michigan Press.

East, John W. 2005. Information literacy for the humanities researcher: a syllabus based on information habits research. *The Journal of Academic Librarianship* 31 (2):134-142.

Education for Change Ltd, SIRU University of Brighton, and The Research Partnership.
2002. Researchers' use of libraries and other information sources: current

patterns and future trends: final report: Higher Education Funding Council for England (HEFCE).

Ellis, David. 1993. Modeling the information-seeking patterns of academic researchers: a grounded theory approach. *Library Quarterly* 63 (4):469-486.

Ellis, David, and Hanna Oldman. 2005. The English literature researcher in the age of the Internet. *Journal of Information Science* 31 (1):29-36.

Ellsworth, Ralph E. 1993. The changing role of the university library. *Library Journal* 118 (19):S6-S8. Originally published in *Library Journal*, April 1, 1963.

Erdelez, Sanda. 1997. Information encountering: a conceptual framework for accidental information discovery. In *Information seeking in context : proceedings of an International Conference on Research in Information Needs, Seeking and Use in Different Contexts, 14-16 August, 1996, Tampere, Finland*, ed. P. Vakkari, R. Savolainen and B. Dervin. London; Los Angeles: Taylor Graham.

Ezzy, Douglas. 2002. *Qualitative analysis: practice and innovation*. Crows Nest, NSW: Allen & Unwin.

Flanders, Julia. 1997. The body encoded: questions of gender and the electronic text. In *Electronic text : investigations in method and theory*, ed. K. Sutherland. Oxford: Clarendon Press.

— — —. 1998. Scholarly research and electronic resources. *WWP Newsletter* 4 (2).
<http://www.wwp.brown.edu/project/newsletter/vol04num02/scholarly042.html>.

— — —. 2002. Learning, reading, and the problem of scale: using *Women Writers Online*. *Pedagogy: critical approaches to teaching literature, language, composition, and culture* 2 (1):49-59.

Fonseca, Frederico, and James Martin. 2004. Newspeak or fusion of horizons? Looking for alternatives in information systems research. Paper presented at Pre-ICIS Workshop on Philosophy of Information Systems, at Washington, D.C.

Fonseca, Frederico, and James E. Martin. 2005. Toward an alternative notion of information systems ontologies: information engineering as a hermeneutic enterprise. *Journal of the American Society for Information Science and Technology* 56 (1):46-57.

— — —. 2005b. Toward an alternative notion of information systems ontologies: information engineering as a hermeneutic enterprise. *Journal of the American Society for Information Science and Technology* 56 (1):46-57.

Ford, Nigel. 1999. Information retrieval and creativity: towards support for the original thinker. *Journal of Documentation* 55 (5):528-542.

Ford, Nigel, T.D. Wilson, Allen Foster, David Ellis, and Amanda Spink. 2002. Information seeking and mediated searching: Part 4. Cognitive styles in information seeking. *Journal of the American Society for Information Science and Technology* 53 (9):728-735.

Forgas, Joseph P. 2002. Affective influences on attitudes and judgments. In *Handbook of affective sciences*, ed. R. J. Davidson. Cary, NC: Oxford University Press.

Forgasz, Helen J., and Gilah C. Leder. 2006. Academic life: monitoring work patterns and daily activities. *The Australian Educational Researcher* 33 (1):1-22.

Foster, Allen. 2004. A nonlinear model of information-seeking behavior. *Journal of the American Society for Information Science and Technology* 55 (3):228-237.

Foster, Allen, and Nigel Ford. 2003. Serendipity and information seeking: an empirical study. *Journal of Documentation* 59 (3):321-340.

- Foucault, Michel. 1980. Two lectures. In *Power-knowledge: selected interviews and other writings, 1972-1977*, ed. C. Gordon. New York: Harvester.
- Frohmann, Bernd. 2004. Documentation redux: prolegomenon to (another) philosophy of information. *Library Trends* 52 (3):387-407.
- Fulton, Christine. 1991. Humanists as information users: a review of literature. *Australian Academic & Research Libraries* 22 (3):188-195.
- Gadamer, Hans-Georg. 2004. *Truth and method*. 2nd revised ed. New York: Continuum. Original edition, *Wahrheit und Methode*, Tübingen, 1960.
- Gardiner, Donna, David McMenemy, and Gobinda Chowdhury. 2006. A snapshot of information use patterns of academics in British universities. *Online Information Review* 30 (4):341-359.
- Genoni, Paul, Helen Merrick, and Michele Willson. 2005. The use of the Internet to activate latent ties in scholarly communities. *First Monday* 10 (12).
http://firstmonday.org/issues/issue10_12/genoni/index.html.
- Gilbert, Nigel G. 1977. Referencing as persuasion. *Social Studies of Science* 7 (1):113-122.
- Gillham, Bill. 2000. *The research interview*. London: Continuum.
- Gilmore, Matthew B., and Donald O. Case. 1992. Historians, books, computers, and the library. *Library Trends* 40 (4):667-686.
- Gladney, Henry M., and John L. Bennett. 2003. What do we mean by *authentic*?: What is the Real McCoy? *D-Lib Magazine* 9 (7/8).
<http://dlib.anu.edu.au/dlib/july03/gladney/07gladney.html>.

Glaser, Barney G. 1998. *Doing grounded theory: issues and discussions*. Mill Valley, Ca: Sociology Press.

Graham, Suzanne R. 2000. Historians and electronic resources: a citation analysis. *Journal of the Association for History and Computing* 3 (3).
<http://mcel.pacificu.edu/JAHC/JAHCIII3/WORKS/Graham.html>.

— — —. 2001. Historians and electronic resources: a second citation analysis. *Journal of the Association for History and Computing* 4 (2).
<http://mcel.pacificu.edu/JAHC/JAHCIV2/ARTICLES/graham/graham.html>.

Greenaway, Peter [dir.]. 1997. *The pillow book*. [Great Britain?]: Columbia Tristar Home Video.

Greetham, David. 1997. Coda: is it morphin time? In *Electronic text: investigations in method and theory*, ed. K. Sutherland. Oxford: Clarendon Press.

Grigely, Joseph. 1995. *Textualterity: art, theory, and textual criticism*. Ann Arbor: The University of Michigan Press.

Hansson, Joacim. 2005. Hermeneutics as a bridge between the modern and the postmodern in Library and Information Science. *Journal of Documentation* 61 (1):102-113.

Haraway, Donna. 1991a. A cyborg manifesto: science, technology, and socialist-feminism in the late twentieth century. In *Simians, cyborgs, and women*, ed. London: Free Association Books.

— — —. 1991b. Situated knowledges: the science question in feminism and the privilege of partial perspective. In *Simians, cyborgs, and women*, ed. London: Free Association Books.

— — —. 1992. The promises of monsters: a regenerative politics for inappropriate/d others. In *Cultural studies*, ed. L. Grossberg, P. A. Treichler and C. Nelson. New York: Routledge.

Harmon, Glynn E., and Elissa R. Ballesteros. 1997. Unconscious cognition: the elicitation of deeply embedded information needs. In *Information seeking in context : proceedings of an International Conference on Research in Information Needs, Seeking and Use in Different Contexts, 14-16 August, 1996, Tampere, Finland*, ed. P. Vakkari, R. Savolainen and B. Dervin. London ; Los Angeles: Taylor Graham.

Hayles, Katherine N. 1999. Artificial life and literary culture. In *Cyberspace textuality: computer technology and literary theory*, ed. M.-L. Ryan. Bloomington: Indiana University Press.

— — —. 2003. Translating media: why we should rethink textuality. *The Yale Journal of Criticism* 16 (2):263-290.

Heidegger, Martin. 1962. *Being and time*. Translated by J. Macquarrie and E. Robinson. Oxford: Blackwell.

— — —. 1993. The question concerning technology. In *Basic writings: from Being and time (1927) to The task of thinking (1964)*, ed. D. F. Krell. San Francisco: Harper.

Heinström, Jannica. 2003. Five personality dimensions and their influence on information behaviour. *Information Research* 9 (1):paper 165.
<http://InformationR.net/ir/9-1/paper165.html>.

Heinzkill, Richard. 1980. Characteristics of references in selected scholarly English literary journals. *Library Quarterly* 50 (3):352-365.

Herman, Eti. 2001. End-users in academia: meeting the information needs of university researchers in an electronic age. *Aslib Proceedings* (Oct.):387-401.

Hockey, Susan. 2000. *Electronic texts in the humanities: principles and practice*. Oxford: Oxford University Press.

— — —. 2004. The History of humanities computing. In *A companion to digital humanities*, ed. S. Schreibman, R. Siemens and J. Unsworth. Malden, MA: Blackwell.

— — —. 2006. *Digital resources in the humanities: why is digital information different?*: Chadwick Lecture Theatre, University College London. Sound recording.
<http://www.slais.ucl.ac.uk/c21/Hockey/index.html>.

Hockey, Susan (Chair), Allen H. Renear, and Jerome McGann. 1999. Panel: What is text? A debate on the philosophical and epistemological nature of text in the light of humanities computing research. Paper presented at ACH-ALLC '99 International Humanities Computing Conference, at University of Virginia, Charlottesville, Virginia. <http://www.iath.virginia.edu/ach-allc.99/proceedings/hockey-renear2.html>.

Hopkins, Richard. 1989. The information seeking behaviour of literary scholars. *Canadian Library Journal* 46 (2):113-115.

Houghton, John W., Colin Steele, and Margaret Henty. 2003. Changing research practices in the digital information and communication environment. [Canberra?]: Department of Education, Science and Training.
http://www.dest.gov.au/sectors/research_sector/publications_resources/profiles/changing_research_practices.htm.

Huitfeldt, Claus. 1999. Text encoding, representation and interpretation. Paper presented at ACH-ALLC '99 International Humanities Computing Conference, at University of Virginia, Charlottesville, Virginia.
<http://www.iath.virginia.edu/ach-allc.99/proceedings/huitfeldt.html>.

Ide, Nancy, and Jean Veronis, eds. 1995. *Text Encoding Initiative: background and context*. Dordrecht: Kluwer Academic Publishers.

Igartua, José E. 1991. The computer and the historian's work. *History & Computing* 3 (2):73-83.

Immroth, John Phillip. 1974. Information needs for the humanities. In *Information science: search for identity: proceedings of the 1972 NATO Advanced Study Institute in Information Science held at Seven Springs, Champion, Pennsylvania, August 12-20*, ed. A. Debons. New York: Marcel Dekker.

Jakubowicz, Andrew. 2007. Bridging the mire between e-Research and e-publishing for multimedia digital scholarship in the humanities and social sciences: an Australian case study. *Webology* 4 (1).
<http://www.webology.ir/2007/v4n1/a38.html>.

Keep, Christopher J. 1999. The disturbing liveliness of machines: rethinking the body in hypertext theory and fiction. In *Cyberspace textuality: computer technology and literary theory*, ed. M.-L. Ryan. Bloomington: Indiana University Press.

Ketelaar, Eric. 2002. Archival temples, archival prisons: modes of power and protection. *Archival Science* 2 (3):221-238.

Kim, Hee-Woong , Hock Chuan Chan, and Yee Pia Chan. 2007. A balanced thinking-feelings model of information systems continuance. *International Journal of Human-Computer Studies* 65:511-525.

Klein, Heinz K., and Michael D. Myers. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly* 23 (1):67-93.

Kniesel, Jennifer, and Charlene Kellsey. 2005. Citation analysis for collection development: a comparative study of eight humanities fields. *Library Quarterly* 75 (2):142-168.

Kress, Gunther R., and Theo Van Leeuwen. 2001. *Multimodal discourse: the modes and media of contemporary communication*. London; New York: Arnold; Oxford University Press.

— — —. 2006. *Reading images : the grammar of visual design*. 2nd ed. London; New York: Routledge.

Kristeva, Julia. 1980. Word, dialogue, and novel. In *Desire in language: a semiotic approach to literature and art*, ed. L. S. Roudiez. New York: Columbia University Press.

Kuhlthau, Carol C. 1988. Developing a model of the library search process: cognitive and affective aspects. *RQ* 28 (2):232(11).

— — —. 1993. A principle of uncertainty for information seeking. *Journal of Documentation* 49 (4):339-355.

— — —. 1999. Accomodating the user's information search process: challenges for information retrieval system designers. *Bulletin of the American Society for Information Science* (February/March):12-16.

Lacewing, Michael. 2004. Emotion and cognition: recent developments and therapeutic practice. *Philosophy, Psychiatry, & Psychology* 11 (2):175-186.

Landow, George P. 1997. *Hypertext 2.0*. Revised, amplified ed. Baltimore: The Johns Hopkins University Press.

Latour, Bruno. 2005. *Reassembling the social: an introduction to actor-network-theory*. Oxford: Clarendon.

Levine-Clark, Michael. 2007. Electronic books and the humanities: a survey. *Collection Building* 26 (1):7-14.

Lincoln, Yvonna S., and Egon G. Guba. 1985. *Naturalistic inquiry*. Beverly Hills, Calif.: Sage Publications.

Litz, Walton. 1996. Afterword. In *The literary text in the digital age*, ed. R. J. Finneran. Ann Arbor: The University of Michigan Press.

Liu, Alan. 2004. *The laws of cool : knowledge work and the culture of information*. Chicago: University of Chicago Press.

Lyotard, Jean-Francois. 1984. *The postmodern condition: a report on knowledge*. Manchester: Manchester University Press.

Massey-Burzio, Virginia. 1999. The rush to technology: a view from the humanities. *Library Trends* 47 (4):620-639.

Maxwell, Joseph A. 2002. Understanding and validity in qualitative research. In *The qualitative research's companion*, ed. M. A. Huberman and M. B. Miles.

McCauley, Kym Andrew. 1998. Collision/Collusion: Editing - Rhizomes - Hypertext. PhD diss., School of English, University College, University of New South Wales.

McGann, Jerome. 1998. Textual scholarship, textual theory, and the uses of electronic tools: a brief report on current undertakings. *Victorian Studies* 41 (4):609-619.

— — —. 2001. *Radiant textuality: literature after the World Wide Web*. New York: Palgrave.

— — —. 2004. Marking texts of many dimensions. In *A companion to digital humanities*, ed. S. Schreibman, R. Siemens and J. Unsworth. Malden, MA: Blackwell.

— — —. 2005. Culture and technology: the way we live now, what is to be done? *Interdisciplinary Science Reviews* 30 (2):179-189.

- McKechnie, Lynne, Heidi Julien, Jennifer L. Pecoskie, and Christopher M. Dixon. 2006. The presentation of the information user in reports of information behaviour research. *Information Research* 12 (1). <http://InformationR.net/ir/12-1/paper278.html>.
- McKnight, Cliff, and Sheila Price. 1999. A survey of author attitudes and skills in relation to article publishing in paper and electronic journals. *Journal of Documentation* 55 (5):556-576.
- MLA Task Force on Evaluating Scholarship for Tenure and Promotion. 2006. http://www.mla.org/pdf/task_force_tenure_promotio.pdf.
- Moustakas, Clark. 1994. *Phenomenological research methods*. Thousand Oaks: Sage Publications.
- Mullings, Christine, Marilyn Deegan, Seamus Ross, and Stephanie Kenn, eds. 1996. *New technologies for the humanities, British Library research*. London ; New Providence, NJ: Bowker Saur.
- Myers, Michael D. 2004. Hermeneutics in information systems research. In *Social theory and philosophy for information systems*, ed. L. Willcocks and J. Mingers. Chichester, West Sussex ; Hoboken, N.J.: Wiley.
- Nardi, Bonnie A., and Vicki O'Day. 1999. Chapter Four: Information Ecologies. *First Monday* 4 (5). http://www.firstmonday.org/issues/issue4_5/nardi_chapter4.html.
- Nelson, Nancy. 2001. Discourse synthesis: the process and the product. In *Discourse synthesis: studies in historical and contemporary social epistemology*, ed. R. G. McInnis. Westport, Connecticut: Praeger.
- Neumann, Laura Jeanne. 2001. Communities of practice as information systems: humanities scholars and information convergence. PhD diss., Graduate College, University of Illinois at Urbana-Champaign, Urbana, Illinois.

Noguchi, Sachié. 2001. Assessing users and uses of electronic text: in case of the Japanese Text Initiative, Japanese classics electronic text on the World Wide Web. PhD diss., Department of Library Science of the School of Information Sciences, University of Pittsburgh.

Nunes, Mark. 1999. Virtual topography: smooth and striated cyberspace. In *Cyberspace textuality: computer technology and literary theory*, ed. M.-L. Ryan. Bloomington: Indiana University Press.

Olsen, Mark. 1993. Signs, symbols and discourses: a new direction for computer-aided literature studies. *Computers and the Humanities* 27 (5-6):309-314.

Palmer, Carole L. 2001. The information connection in scholarly synthesis. In *Discourse synthesis: studies in historical and contemporary social epistemology*, ed. R. G. McInnis. Westport, Connecticut: Praeger.

— — —. 2005. Scholarly work and the shaping of digital access. *Journal of the American Society for Information Science and Technology* 56 (11):1140-1153.

Palmer, Carole L., and Melissa H. Cragin. in press. Scholarly information work and disciplinary practices. *Annual Review of Information Science and Technology*.

Palmer, Carole L., and Cheryl Knott Malone. 2001. Elaborate isolation: metastructures of knowledge about women. *The Information Society* 17 (3):179-194.

Palmer, Carole L., and Laura J. Neumann. 2002. The information work of interdisciplinary humanities scholars: exploration and translation. *Library Quarterly* 72 (1):85-117.

Plotkin, Wendy. 2002. Electronic texts in the historical profession: perspectives from across the scholarly spectrum. In *Computing in the social sciences and humanities*, ed. O. V. Burton. Urbana: University of Illinois Press.

Punch, Keith F. 1998. *Introduction to social research: quantitative and qualitative approaches*. London: SAGE Publications.

Quinn, Brian. 2003. Overcoming psychological obstacles to optimal online search performance. *The Electronic Library* 21 (2):142-153.

Rastier, François. 1997. *Meaning and textuality*. Translated by F. Collins and P. Perron. Toronto: University of Toronto Press.

Ricoeur, Paul. 1973. The model of the text: meaningful action considered as a text. *New Literary History* 5 (1):91-117.

— — —. 1975. Phenomenology and hermeneutics. *Noûs* 9 (1):85-102.

— — —. 1991. *A Ricoeur reader: reflection and imagination*. New York: Harvester Wheatsheaf.

Rieh, Soo Young. 2002. Judgement of information quality and cognitive authority in the Web. *Journal of the American Society for Information Science and Technology* 53 (2):145-161.

Robinson, Peter. 1993. Manuscript politics. In *The politics of the electronic texts*, ed. W. Chernaik, C. Davis and M. Deegan. Oxford: Office for Humanities Communication Publications with The Centre for English Studies, University of London.

Robson, Colin. 2002. *Real world research: a resource for social scientists and practitioners-researchers*. 2nd ed. Oxford: Blackwell.

Rockwell, Geoffrey, and Andrew Mactavish. 2004. Multimedia. In *A companion to digital humanities*, ed. S. Schreibman, R. Siemens and J. Unsworth. Malden, MA: Blackwell.

Ruhleder, Karen. 1995. Reconstructing artifacts, reconstructing work: from textual edition to on-line databank. *Science, Technology & Human Values* 20 (1):39-64.

RULOIS. 2002. See Education for Change Ltd.

Ryan, Marie-Laure. 1999b. Cyberspace, virtuality, and the text. In *Cyberspace textuality: computer technology and literary theory*, ed. M.-L. Ryan. Bloomington: Indiana University Press.

— — —, ed. 1999a. *Cyberspace textuality: computer technology and literary theory*. Bloomington: Indiana University Press.

Schachter, Stanley, Frances Rauscher, Nicholas Christenfeld, and Kimberley Tyson Crone. 1994. The vocabularies of academia. *Psychological Science* 5 (1):37-41.

Scherer, Klaus R. 2002. Introduction: cognitive components of emotion. In *Handbook of affective sciences*, ed. R. J. Davidson. Cary, NC: Oxford University Press.

Schooler, Jonathan W., Marte Fallshore, and Stephen M. Fiore. 1995. Epilogue: putting insight into perspective. In *The nature of insight*, ed. R. J. Sternberg and J. E. Davidson. Cambridge, Mass.: MIT Press.

Schwandt, Thomas A. 2001. *Dictionary of qualitative inquiry*. 2nd ed. Thousand Oaks: Sage Publications.

Seidman, I.E. 1991. *Interviewing as qualitative research: a guide for researchers in education and the social sciences*. New York: Teachers College Press.

Sharkey, Paul. 2001. Hermeneutic phenomenology. In *Phenomenology*, ed. R. Barnacle. Melbourne: RMIT University Press.

Silverman, David. 2000. *Doing qualitative research: a practical handbook*. London: SAGE Publications.

Smith, Hazel. 2004. Cursors and crystal balls: digital technologies and the futures of writing. *TEXT: the journal of the Australian Association of Writing Programs* 8 (2). <http://www.griffith.edu.au/school/art/text/>.

Spink, Amanda, and Tefko Saracevic. 1998. Human-computer interaction in information retrieval: Nature and manifestations of feedback. *Interacting with Computers: The Interdisciplinary Journal of Human-Computer Interaction* 10 (3):241-267.

Steedman, Carolyn. 2001. Something She Called a Fever: Michelet, Derrida, and Dust. *The American Historical Review* 106 (4). <http://historycooperative.press.uiuc.edu/journals/ahr/106.4/ah0401001159.html>.

Stephens, Mitchell. 1998. *The rise of the image, the fall of the word*. New York: Oxford University Press.

Stern, Madeleine. 1983. Characteristics of the literature of literary scholarship. *College & Research Libraries* 44 (4):199-210.

Stieg, Margaret F. 1981. The information of needs of historians. *College & Research Libraries* 38 (4):549-560.

Stone, Sue. 1982. Humanities scholars: information needs and uses. *Journal of Documentation* 38 (4):292-313.

Strauss, Anselm, and Juliet Corbin. 1998a. *Basics of qualitative research: techniques and procedures for developing grounded theory*. Second ed. Thousand Oaks: SAGE Publications.

— — —. 1998b. Grounded theory methodology: an overview. In *Strategies of qualitative inquiry*, ed. N. K. Denzin and Y. S. Lincoln. Thousand Oaks, Calif.: Sage Publications.

Strauss, Anselm L. 1987. *Qualitative analysis for social scientists*. Cambridge [Cambridgeshire] ; New York: Cambridge University Press.

Summerfield, Mary, Carol Mandel, and Paul Kantor. 2000. The potential for scholarly online books: views from the Columbia University Online Books Evaluation Project. *Publishing Research Quarterly* 16 (3):39-52.

Sutherland, Kathryn. 1993. Challenging assumptions: women writers and new technology. In *The politics of the electronic texts*, ed. W. Chernaik, C. Davis and M. Deegan. Oxford: Office for Humanities Communication Publications with The Centre for English Studies, University of London.

— — —. 1997. *Electronic text : investigations in method and theory*. Oxford: Clarendon Press.

Sze, Goi Sook, and Zainab Awang Ngah. 1997. Postgraduate research in the humanities at the University of Malaya. *Malaysian Journal of Library & Information Science* 2 (1):71-80.

Talja, Sanna. 2002. Information sharing in academic communities: types and levels of collaboration in information seeking and use. *The new Review of Information Behaviour Research* 3:143-159.

Talja, Sanna, Reijo Savolainen, and Hanni Maula. 2004. Field differences in the use and perceived usefulness of scholarly mailing lists. *Information Research* 10 (1). <http://informationr.net/ir/10-1/paper200.html>.

Taylor, Robert S. 1991. Information use environments. In *Progress in communication sciences*, ed. B. Dervin and M. J. Voigt. Norwood, New Jersey: ABLEX.

The British Academy. 2005. E-resources for research in the humanities and social sciences: a British Academy policy review. London: The British Academy.
<http://www.britac.ac.uk/reports/eresources/report/eresources-pdf.pdf>.

Thrift, Nigel. 2004. Intensities of feeling: towards a spatial politics of affect. *Geografiska Annaler* 86 B (1):57-78.

Tibbo, Helen R. 2002. Primarily history: historians and the search for primary source materials. Paper presented at ACM/IEEE Joint Conference on Digital Libraries, JCDL 2002, at Portland, Oregon, USA.

— — —. 2003a. Primarily history in America: how U.S. historians search for primary materials at the dawn of the digital age. *The American Archivist* 66 (Spring/Summer):9-50.

— — —. 2003b. How historians locate primary resource materials: educating and serving the next generation of scholars. Paper presented at ACRL Eleventh National Conference, at Charlotte, North Carolina, April 10-13, 2003.
<http://www.ala.org/ala/acrl/acrl events/nationalconference/3authorindex.htm>.

Trauth, Eileen M., and Leonard M. Jessup. 2000. Understanding computer-mediated discussions: positivist and interpretive analyses of group support system use. *MIS Quarterly* 24 (1):43-79.

UNESCO High Level Group of Visionaries on Knowledge Acquisition and Sharing. 2007. Kronberg Declaration on the Future of Knowledge Acquisition and Sharing. Kronberg, Germany.
http://portal.unesco.org/ci/en/files/25109/11860402019Kronberg_Declaration.pdf/Kronberg%2BDeclaration.pdf.

Unsworth, John. 1996. Electronic scholarship; or, scholarly publishing and the public. In *The literary text in the digital age*, ed. R. J. Finneran. Ann Arbor: The University of Michigan Press.

— — —. 2000. Scholarly primitives: what methods do humanities researchers have in common, and how might our tools reflect this? Paper presented at Symposium on "Humanities Computing: formal methods, experimental practice" sponsored by King's College, London, May 13, 2000.
<http://www3.isrl.uiuc.edu/~unsworth/Kings.5-00/primitives.html>.

— — —. 2003. The humanist: "dances with wolves" or "bowls alone"? Paper presented at Scholarly tribes and tribulations: how tradition and technology are driving disciplinary change, October 17, 2003, at Washington, D.C.
http://www.arl.org/scomm/disciplines_program.html.

Vakkari, Pertti, and Sanna Talja. 2005. The influence of the scatter of literature on the use of electronic resources across disciplines: a case study of FinELib. Paper presented at Research and advanced technology for digital libraries: 9th European Conference, ECDL 2005 Vienna, Austria, September 18-23, 2005 Proceedings, at Vienna.

Walker, Geraldine. 1990. Searching the humanities: subject overlap and search vocabulary. *Database* 37 (October):37-46.

Warwick, Claire. 2001. "Reports of my death have been greatly exaggerated": scholarly editing in the digital age. In *New media and the humanities: research and applications: proceedings of the first seminar Computers, literature and philology, Edinburgh, 7-9 September 1998*, ed. D. Fiormonte and J. Usher. Oxford: Humanities Computing Unit, University of Oxford.

— — —. 2004. Print scholarship and digital resources. In *A companion to digital humanities*, ed. S. Schreibman, R. Siemens and J. Unsworth. Malden, MA: Blackwell.

Watson-Boone, Rebecca. 1994. The information needs and habits of humanities scholars. *RQ* 34 (2):203(14).

Weedman, Judith. 1993. On the "isolation" of humanists: a report of an invisible college. *Communication Research* 20 (6):749-776.

Westney, Lynn C. Hattendorf. 2004. Mutually exclusive?: information technology and the tenure, promotion, and review process. In *Digital scholarship in the tenure, promotion and review process*, ed. D. L. Andersen. Armonk, N.Y: M.E. Sharpe.

Whaples, Robert. 2001. Consensus and disagreement among American economic historians. In *Discourse synthesis: studies in historical and contemporary social epistemology*, ed. R. G. McInnis. Westport, Connecticut: Praeger.

Wiberley, Stephen E., and William G. Jones. 1989. Patterns of information seeking in the humanities. *College & Research Libraries* (November):638-645.

— — —. 2000. Time and technology: a decade-long look at humanists' use of electronic information technology. *College & Research Libraries* 61 (5):421-431.

Willis, Gordon B. 2005. *Cognitive interviewing: a tool for improving questionnaire design*. Thousand Oaks: Sage Publications.

Wilson, Patrick. 1983. *Second-hand knowledge : an inquiry into cognitive authority, Contributions in librarianship and information science ; no. 44*. Westport, Conn: Greenwood Press.

Wilson, T.D. 2002. Alfred Schutz, phenomenology and research methodology for information behaviour research. Paper presented at Fourth International Conference, Information Seeking in Context, at Lisbon.

Winter, Richard P., and James Sarros. 2000. *The academic work environment in Australian universities : a motivating place to work?* Caulfield East, Vic.: Monash University, Faculty of Business and Economics, Department of Management.

Wisneski, Richard. 2005. Investigating the research practices and library needs of contingent, tenure-track, and tenured English faculty. *The Journal of Academic Librarianship* 31 (2):119-133.