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Afterlives of Medieval Manuscripts

Wendy Scase

From the fifth to the fifteenth centuries, manuscript books (strictly, codices) were the principal means by which European written culture was transmitted. From the mid-fifteenth century printing gradually replaced handwriting as the default means of reproducing texts (though of course manuscript continued to be used for private and singular purposes as it still is today). The leaves of most manuscript books were made of animal skin. Paper started to be used only towards the end of the period. Texts, illustrations, and decorations were all produced by hand.¹ Scribes created new books by copying from exemplars and illustrators used models, but owing to the processes involved in production by hand, every manuscript book was unique.² The materials used to produce manuscripts are extremely durable, much more so than those used for modern printed books, and many survive to this day. We have no figure for the number of survivals but it has been estimated that some 600,000-800,000 books are extant in Latin script alone.³ Most today are in the libraries of institutions, though there are still manuscripts in private ownership. Manuscripts of Western provenance are now found across the globe. Alongside the important European collections (for example The Bayerische Staatsbibliothek in Munich, with 37,000 Western manuscripts, and the Vatican Library, with over 80,000 manuscripts) there are significant holdings beyond Europe. Yale University's Beinecke Rare Book and Manuscript Library has over 1,500 manuscripts and New York's Pierpont Morgan Library holds 1,300. *Europa Inventa* lists over 300 manuscript items in Australian collections (some of them documents rather than codices however).⁴

For each manuscript there is a story to tell about its afterlife, which for present purposes we might define as its history from the time it ceased to be used for its original purpose or by its original owners. In many cases the afterlife story of how and why it arrived at its current location is fragmentary; indeed we have incomplete provenances for most surviving books. Not surprisingly, both individually and as a class of artefact, manuscripts have often been subject to huge changes in the ways in which they have been received, used, understood, and valued. In some cases historical rupture and radical ideological change have featured decisively in the afterlives of manuscripts. During the Reformation in England, for example, the manuscript holdings of the monasteries were subject to appropriation and destruction. Many books came into the possession of collectors and eventually became the basis of the holdings of today's great manuscript libraries such as the British Library and the Bodleian Library.⁵ But despite ideological and historical change, people with a love of fine books and a wish to own them are found throughout history from the medieval period to today. Many fine manuscripts were commissioned by medieval patrons as valuable art objects and many continue to be objects of *bibliophilia*. Finely illuminated Books of Hours, for example, the high-status prayer books originally owned and enjoyed by wealthy medieval persons, continue to be transmitted from one private owner to the next through sales, auctions, and inheritance. Rather more controversially, there is also a trade in the leaves of dismembered manuscripts, with those bearing fine illuminations attracting the highest prices.

Some manuscripts are associated with particularly long and eventful afterlives, being the subject of legends of preservation, curation, longevity, and transfer of ownership that are still unfolding. A particularly rich and suggestive example is a book now known as the St Cuthbert Gospel (London, British Library, Additional MS 89,000). A scribe has written on the back of the

second leaf: *‘Ewangelium Iohannis quod inuentum fuerat ad capud beati patris nostri Cuthberti in sepulcro iacens anno translacionis ipsius’* (‘The Gospel according to John which was found lying at the head of our blessed father Cuthbert in his tomb in the year of his translation’).⁶ The St Cuthbert Gospel was made in the seventh century, in north-east England, probably at the Wearmouth-Jarrow monastery. The story of how the book was found in St Cuthbert’s tomb started to be told in the early twelfth century, when Cuthbert’s remains were moved (‘translated’) to Durham Cathedral. In an account in the miracles of St Cuthbert written c. 1120-30, it is recorded that the Bishop of Durham displayed the miraculously-preserved volume during a sermon he preached on the day of the translation of the saint’s remains. The book was shown to later visitors to the saint’s tomb as a kind of relic of the saint, when the new shrine became a site of pilgrimage.⁷ The scribal note in the volume about the finding of the book dates from this phase in the manuscript’s afterlife.

This story of the afterlife of the St Cuthbert Gospel as a relic book miraculously preserved and conferring benefits in a new location has recently been reprised as part of a successful fund-raising campaign to purchase the codex permanently for the British Library. In materials issued for this campaign, launched in 2011, the legend of the miraculously-preserved relic of the saint is retold in accounts of the codex as ‘the oldest intact European book’. The story of the ‘translation’ of the book to a new resting-place is echoed in the interpretation of the permanent acquisition of the codex by the British Library. An exhibition of the manuscript at the British Library told the story of ‘the many journeys the book has made’ until it was ‘saved for the nation’ in its new repository.⁸ The tradition of displaying the book and explaining its significance continues too. The exhibition and online interpretation marked the beginning of the

British Library's steps 'to increase public awareness and understanding' of the significance of the codex and its purchase for public ownership.

The St Cuthbert Gospel offers a particularly striking example of a manuscript afterlife: one in which the afterlife itself has become the subject of a myth that continues to be remade even today. But while exemplifying continuity, the British Library's plans for the volume arguably also signal a completely new chapter in the book's afterlife. For the whole of its previous history the manuscript has only been available to small audiences, from the monks of Wearmouth-Jarrow (and St Cuthbert himself, or at least his corpse), the medieval congregation of Durham Cathedral, and visitors to the saint's shrine, to the visitors to the British Library exhibition. A printed facsimile was produced by the Roxburghe Club in 1969 but the audience for this too is limited in number as the volume had a short print run and is rare.⁹ A prominent element in the British Library's programme of public engagement with the St Cuthbert Gospel is the display of the codex in the form of a full facsimile on the British Library *Digitised Manuscripts* website.¹⁰ As a consequence, for the first time ever in over fourteen centuries, the entire codex is available for anyone who wishes to see it provided they have access to a computer with an internet connection. And the uses to which the images can be put are enormously wide and can only increase as imaging software develops.

The potential of manuscript digitisation is of course not confined to giving this remarkable seventh-century book a completely new lease of afterlife. The St Cuthbert Gospel digitisation project is a high-profile example of a phenomenon that arguably has the potential to transform completely the afterlives of many—perhaps eventually all—medieval manuscripts. This chapter will provide an introduction to what digitisation can currently do and will consider the ways in which it is impacting on the afterlives of manuscripts and its potential for the future.

It will show that the digitisation of manuscript heritage is a complex and fast-moving story whose developments, outcomes, and impacts are as yet undecided and where practice is the subject of considerable debate.

The History of Manuscript Digitisation

The digitisation of medieval manuscripts is a phenomenon that has developed significantly only in the last two decades. Since c. 1990 three areas of technological advance have severally and in combination created this possibility of a completely new lease of afterlife for manuscript books. Digital scanning permits capture of high-resolution images. High-quality image files can be as much as 90 megabytes each in size. An exponential increase in capacity for storage of digital data is therefore another vital development. Even a manuscript with only 50 folios would generate scans requiring 9,000 megabytes (8.78 gigabytes) of storage if each page were scanned to this standard. Stored on the 5^{1/4} inch floppy disks of the 1970s personal computer, 83,781 disks would have been required—though of course it would have been impossible to access them in this format as only one or two disks could be read at a time. Even today's tiny memory sticks can far exceed this capacity permitting convenient mobile personal storage of big manuscript data. The third component of this enabling technology is of course the World Wide Web, first proposed in 1989 by Tim Berners-Lee as a 'universal linked information system' for the scientists of CERN that used the recently developed idea of 'hypertext' links.¹¹ The first photographic image was posted on the Web by Berners-Lee in 1992.¹² Within three years a digitised facsimile of the *Beowulf* manuscript, London, British Library, Cotton MS Vitellius A. xv, was posted on the Web by the British Library as an outcome of the *Electronic Beowulf* project.¹³ It is not known how many manuscripts are currently available in digitised

form. It must be still a very small percentage of the total, but major digitisation campaigns have been announced to make available some of the major collections. For example, in 2010 the Vatican announced a plan to digitise its 80,000 manuscripts,¹⁴ and *E-Codices: Virtual Manuscript Library of Switzerland* proposes to digitise all medieval manuscripts held in Swiss repositories.¹⁵

Transforming Understanding through Digital Images

How transformative are digital scans? How do they compare with traditional facsimiles and can they ever measure up to—or surpass—the experience of viewing the original book? Photographic reproduction of manuscripts began in the 1860s; before that facsimiles had to be made by hand.¹⁶ In the twentieth century experiments were made to apply technological solutions to problems associated with reading manuscripts where letters are faded, lost, or have been purposely erased. Badly damaged in the fire that engulfed the Cotton collection in 1731, the *Beowulf* manuscript had long been a test case for technological enhancement of illegible letters and hidden readings on its fragmentary pages. The project to digitise the *Beowulf* manuscript followed in this tradition. Aiming to reveal features of the manuscript not visible to the naked eye, the *Beowulf* digitisation would, it was claimed, ‘provide better access to parts of the manuscript than studying the manuscript itself’.¹⁷ This hope was vindicated by the recovery and display in digital images of material previously illegible. Digital imaging represented a game-changing advance on the previous techniques such as the use of ultra-violet light to expose marks not visible to the naked eye under visible daylight. Digital imaging programmes have permitted the manipulation, enhancement and even melding of images produced with the aid of photography under such conditions.¹⁸

Of course, digital images also have their drawbacks and limitations. Scans can misrepresent colour and lack the three-dimensional detail available when a book is examined in the flesh.¹⁹ In attempts to mitigate these problems, experiments have been made with lighting from different directions to capture the page's three-dimensional features such as puckering and traces of animal hair. An example is the *Codex Sinaiticus* digitisation project (discussed further below) where the user is given the choice of viewing pages in standard light or raked light.²⁰ Another drawback of digital images is that it can be difficult to get a sense of size and scale and the computer monitor may be too small to permit entire pages to be viewed in their actual size. However, navigation tools and zoom functions mitigate somewhat the problem of the limited size of the computer screen and viewing interfaces often permit zooming in on details which might be too small to be seen with the naked eye and where close examination with a magnifying glass might risk damage to the physical manuscript. Other problems are less easy to solve and may never be amenable to a technological solution. It is very difficult and in some cases impossible to examine the physical structure of a codex using digital images. Some are concerned that the availability of digital facsimiles will impact on policies regarding consultation of the original artefacts and lead to greater restrictions on access for readers, making it even harder in future to study features such as texture and smell that cannot be replicated digitally.²¹

Digital manuscript surrogates are of course accessible and manipulable via generic commercial image programmes but a range of specialist tools is being developed for the use of scholars as well as wider audiences. A number of tools facilitate image retrieval, annotation and comparison. Some, such as *Virtual Vellum*, can be used both by the individual scholar and collaboratively: this tool provides an environment for annotation, sharing of information and so on.²² *Virtual Vellum* was developed to facilitate manipulation of the huge corpus of images of

French chronicles developed by the *Froissart Project* but it is also adaptable for use with user-defined or user-created image collections. Another example of this kind of tool is provided in association with the *Parker Library on the Web*, a resource that offers a corpus of digital surrogates of 559 manuscripts (most of the collection) of the Parker Library at Corpus Christi College Cambridge, one of the world's most important Western manuscript collections. The site provides high-resolution images and a collaborative viewing and research tool enriched with manuscript descriptions and bibliography.²³

Electronic research environments such as these give users opportunities to reconfigure the source materials in ways not possible physically and materially and this can lead to a new quality of access and new understanding. For example, manuscripts that survive as fragments scattered across different libraries can be digitally reunited. A striking example of the power of this capability is the virtual reassembly of the *Codex Sinaiticus*, a Bible copied in the fourth century, fragments of which are held today in four different libraries: the British Library, Leipzig University Library, St Catherine's Monastery at Sinai, and the National Library of Russia in St Petersburg. The virtual reunification of the fragments from these libraries has permitted the first full codicological and palaeographical study of the manuscript and enhanced understanding of how the codex was made.²⁴ The digital environment also permits the virtual reassembly of historic collections of books whose component volumes are now in different locations. One example is the *Europeana Regia* project which unites digital surrogates of over 1,000 manuscripts that formerly belonged to three royal libraries.²⁵ It would be possible to carry out similar projects for medieval libraries of other kinds of institution, for example, to assemble digitally all of the known surviving books of, say, Worcester Cathedral Priory or the Benedictine Abbey of St Albans.²⁶ Virtual collections such as these would permit detailed comparative

studies across the collections and resource identification of scribes' and annotator's hands, production characteristics and so on. Virtual collections could be assembled according to other principles also to address other research questions. For example, all manuscripts containing texts in a given regional dialect could be assembled to resource research into regional textualities and writing systems. A step in this direction is made by the online resource *Manuscripts of the West Midlands*.²⁷ The reception and dissemination of a given text could be resourced by a virtual collection of its manuscripts. For example, the *Roman de la Rose Digital Library* is working towards the display of digital facsimiles of all of the c. 320 extant manuscripts and fragments of this important thirteenth-century French allegorical poem.²⁸ The resulting collection of digital surrogates will resource comparative research across a range of topics including manuscript illumination, patronage, script, and readers' engagement with the text.

Some argue that the digital medium can even enable improved understanding of aspects of medieval readers' processing of and modes of engagement with manuscripts. It is suggested, for example, that the flexible, non-linear and multi-media possibilities of digital editions could be exploited by editors to 'replicate the medieval reading experience'.²⁹ Given that our knowledge of medieval reading experiences is currently very limited, this claim might be seen as overstated. Nonetheless digital editions could be used to allow readers to experiment with hypothesised reading processes. The digital medium, it is also claimed, can bring to life aspects of manuscripts that readers whose practices and processes are shaped by print culture could fail to see.³⁰ Studies such as these make the claim that manuscript and digital media are mutually illuminating and this reciprocal relationship can play a key role in the way we navigate and understand the contemporary transitions from print to digital media. From this point of view the

afterlife of manuscript culture resonates with and illuminates the communications revolution we are experiencing today.

Audiences

In theory, digitisation can bring manuscripts to larger and more diverse audiences and present those audiences with higher quality access and interpretation than ever before. In the opening section of this essay we saw that the British Library's digitisation of the St Cuthbert Gospel is explicitly associated with an aim 'to increase public awareness and understanding' of the codex. While digital imaging and associated techniques enabled in the digital environment can in some ways be seen as the foundations for large but ultimately incremental steps in research, arguably it is by opening up access that digitisation has the greatest claim to be giving medieval manuscripts a completely new lease of afterlife. For this wide access to manuscript books is unprecedented in human history. Throughout their history manuscript books have been accessible only to very small audiences. In the Middle Ages they were always objects for an elite. The point is well illustrated by the example of the Luttrell Psalter (London, British Library, Additional MS 42,130) made for Sir Geoffrey Luttrell of Lincolnshire in the first half of the fourteenth century. Sir Geoffrey's book of psalms is famous for its illustrations of labourers at work in the fields. Commenting on the iconic picture of the ploughman, Michael Camille observes that the ploughmen who cultivated Sir Geoffrey Luttrell's estate would never have had an opportunity to see this representation of themselves.³¹ For the production of even the least distinguished little medieval manuscript books required considerable investment in time and materials. Only those who were relatively wealthy, therefore, or who had the privilege of access to the library of an institution (for example, friars and monks), would normally have had

opportunities to use books. And owing to the limited spread of literacy among medieval populations of all centuries and societies, the proportion of those who could have read a book for themselves, or for others, even if they could have got their hands on one, was low. Even after mechanical reproduction of manuscript facsimiles became possible, access remained limited to the few on account of the expense of editions and limited print-runs, as in the case of the Roxburghe Club facsimile of the St Cuthbert Gospel mentioned above.

But to what extent will digitisation really enlarge and widen audiences for manuscripts?

Reviewing the *Electronic Beowulf*, William Kilbride laments:

Regrettably, *Electronic Beowulf* is only for those students of Anglo-Saxon culture already thoroughly steeped in the written language, not for historians or archaeologists who want to expand their knowledge. It is certainly not going to enthrall or enlighten the public, let alone make them better citizens ... it is arguable that *Electronic Beowulf* doesn't do much to empower the public or enhance our access to these highly prized assets: it simply disenfranchises us in a new way.³²

Kilbride writes here from the viewpoint of the archaeologist. He makes the point that even specialists in disciplines cognate to Anglo-Saxon literature such as himself and his readers may find the digitised *Beowulf* inaccessible and he adds that in his view the wider public will derive little benefit from the project for similar reasons. However recent projects provide evidence that wider publics can derive huge benefits from manuscripts given a new digital lease of afterlife. A striking example is provided by the *Lindisfarne Gospels Durham* project. *Lindisfarne Gospels*

Durham: One Amazing Book, One Incredible Journey offered an exhibition of British Library, Cotton MS Nero D. IV, a gospel book made before 721 at Lindisfarne Priory on Holy Island that is famed for its exceptional decoration. The exhibition of the original book was enriched by a programme of events and creative initiatives and the provision of interpretative material. A digital facsimile was provided so that visitors could ‘turn the pages’ virtually and explore all of its pages rather than being confined to seeing the single opening of the book that was visible in the display case. A press release issued by one of the organising institutions cites the exhibition’s attraction of 100,000 visitors and engagement of 20,000 school children as evidence of its benefit for regional communities and the economy.³³ The manuscript is also available to wider audiences in the same digitised page-turnable form through the British Library’s *Sacred Texts* website, accompanied by an online interpretative exhibition.³⁴ It is also often on display in the Treasures gallery at the Library and in page-turnable form on a screen in the Library foyer. Digitisation of the Lindisfarne Gospels therefore supports public access through a variety of channels, ranging from conventional display at its home repository and in its region of origin to online exhibition. For the immediate future this use of digitised surrogates within a multi-channel model of dissemination and interpretation appears to be a most promising model for enhancing public understanding of and benefit from manuscript heritage.

Another challenging problem associated with widening audiences for manuscripts through the creation of digital images is that of resource discovery. The digitisation of manuscripts is carried out for many different purposes by many different agencies and finding out what is available is not straightforward.³⁵ Searching in search engines via a manuscript shelf-mark or other name is not unequivocally reliable. A given shelf-mark can be capable of being reproduced in a number of subtly different ways. For example, should one search for ‘British

Library, Additional MS 37,787', 'BL Addit. 37,787', 'British Library, Addit. MS 37,787', or 'John Northwood's Miscellany'? Language can add an additional area of uncertainty: should one try 'Copenhagen, The Royal Library', or 'København, Det Kongelige Bibliotek'? And the situation is even more difficult if one does not know the shelf-marks and names of the kind of material one wishes to find. The online *Catalogue of Digitized Medieval Manuscripts* hosted by the Centre for Medieval and Renaissance Studies of the University of California at Los Angeles offers links to 3,129 fully digitized manuscripts at 139 websites in a database searchable by language, author, title of work and repository. However compilation ceased in 2013 and the database is now described by its editors as 'an increasingly partial subset of manuscripts that have been digitized' owing to the rate at which new material is published on the World Wide Web.³⁶

The manuscript 'portal' is another kind of solution which has been applied to the resource discovery problem. Various models are being explored. The *CERL Portal: Manuscripts and Early Printed Material*, developed by the Consortium of European Research Libraries, facilitates searches across a range of online manuscript catalogues and other resources.³⁷ Searching is available in eight European languages and use of search terms with variant spellings is supported by an underlying thesaurus (e.g. someone searching for 'Wiclif, John' will be asked if they also want to search for 'John Wiclif'; 'Wiclif'; 'Wyclif, Johannes'; 'Johannes Wyclif'; 'Wyclif'; 'Wyclif, John'; 'John Wyclif'; 'Wycliffe, John'; 'John Wycliffe'; and 'Wycliffe'). While the CERL Portal brings together for one-stop searching the catalogues and digitisation projects of some of the major European manuscript libraries, *Manuscripts Online*, developed by a consortium of British manuscript digitisation projects, federates a range of research tools such as catalogues, dictionaries, editions, and text corpora relevant to 'Written Culture 1100-1500' of

British provenance.³⁸ The project supports unified searching across disparate genres of resource by means of automatic indexing supported by natural language processing techniques that enable automatic identification of personal names, place names, dates and so on in the source materials.³⁹ *Manuscriptorium*, based at the Czech National Library in Prague, brings together digital content from institutions in the Czech Republic and beyond as an aggregator for the *Europeana* project.⁴⁰

How Long can the New Lease of Afterlife Last?

In keeping with the brief of this volume, this essay has largely concentrated on developments in the last twenty years. I have been arguing that digital technologies have been giving manuscript heritage an unprecedented new lease of afterlife. These technologies, we have seen, carry with them problems and not everyone agrees that digitised manuscripts are an unalloyed good. Nonetheless, whether one is a committed enthusiast or a sceptic, the general case that we are witnessing a transformation seems undeniable. This story of transformation would not be complete, however, without acknowledgement that its end, and, crucially its duration, are very uncertain. The new lease of afterlife for medieval manuscripts that this essay has been describing will be short-lived if a number of pressing technical and legal problems are not solved. Chief among these problems is that of finding ways to preserve digital data sustainably so that it remains accessible indefinitely. The National Digital Information and Preservation Programme of the United States advises: ‘all digital storage media have a short life’.⁴¹ Likewise the British National Archives warns, ‘No computer storage medium can be considered archival, irrespective of its physical longevity: technological obsolescence is inevitable and all media have limited life spans’.⁴² In a useful literature review of this area,

Heather F. Ball finds problematic conflicts between the 'access' agenda and the 'preservation' agenda and warns of 'the challenges that even the most scrupulous digitizers face in balancing the imperatives of access and preservation'.⁴³ Preservation often entails migration of data from one format to another, so that as hardware, storage media, and software programmes become obsolete and are upgraded or replaced the data remain accessible and usable. Naturally this process of migration involves costs in time, labour, and equipment and in order for it to happen successfully it also entails continued commitment to preservation and accessibility.

Another problem which may prove limiting to the afterlives of digital manuscript resources is that of copyright law and its application to manuscripts and to the internet. This is a highly technical area of the law of intellectual property. Provisions as to the copying and reproduction of manuscript material vary from repository to repository and from country to country. Restrictions on copyright have the power to frustrate some of the most exciting possibilities in the digital afterlife of manuscripts. For example, while repositories usually charge a one-off fee for reproducing an image from a manuscript in a printed book (if they charge at all), a common model for internet publication is a licence for fixed period. This means, of course, that unless some arrangement can be made to renew licences relevant to a given resource indefinitely, digital illustrations have to be taken offline once their licences expire leaving the resource impoverished or even useless. Fortunately certain prominent institutions are taking a lead in alleviating the burden of these restrictions. The British Library, for example, has recently announced that images published through its *Catalogue of Illuminated Manuscripts* may now be treated as works in the public domain so that users may 'help [the Library] share these riches even more widely with the world'.⁴⁴

The afterlife of medieval manuscripts in the digital age is at once immensely exciting and very uncertain. With digital technologies our knowledge and understanding of manuscripts is increasing prodigiously. The number of people in a position to benefit from medieval manuscript heritage is historically unprecedented. At the same time problems of discovery, preservation, sustainability, and intellectual property cast shadows over this bright picture. Given the pace of change in this field over the past two decades, it is certain that the possibilities and problems associated with manuscript digitisation will continue to change rapidly. It is impossible to predict if and when the new lease of manuscript afterlife will end.

¹ For an introduction to medieval manuscript books see Raymond Clemens and Timothy Graham (2007). *Introduction to Manuscript Studies*. Ithaca: Cornell University Press.

² For an introduction to the crafts of scribes and illuminators see Christopher de Hamel (1992). *Scribes and Illuminators*. London: British Library; and Jonathan J. G. Alexander (1992). *Medieval Illuminators and their Methods of Work*. New Haven: Yale University Press.

³ Eef Overgauw (Freie Universität and Staatsbibliothek, Berlin), personal communication.

⁴ Network for Early European Research (n.d.), *Europa Inventa*.

<<http://europa.arts.uwa.edu.au/manuscripts>>.

⁵ N. R. Ker (1964). 'Revised Preface to the First Edition', in *Medieval Libraries of Great Britain: A List of Surviving Books* (2nd edition). London: Royal Historical Society, pp. x-xv;

James P. Carley (2006). 'The Dispersal of the Monastic Libraries and the Salvaging of the Spoils'; Julian Roberts (2006). 'Extending the Frontiers: Scholar Collectors'; and Timothy Graham (2006). 'Matthew Parker's Manuscripts: An Elizabethan Library and its Use', all in Elisabeth Leedham-Green and Teresa Webber (eds). *The Cambridge History of Libraries in Britain and Ireland: Volume I: To 1640*. Cambridge: Cambridge University Press, pp. 265-91, 292-321, and 322-44.

⁶London, British Library, Additional MS 89,000, fol. ii verso. The manuscript was previously called the Stonyhurst Gospel because it was kept at the Jesuit College of Stonyhurst, Lancashire, until loaned to the British Library in 1979: Claire Breay (2012), [The St Cuthbert Gospel](#). London: British Library <http://www.bl.uk/whatson/st_cuthbert_gospel.pdf>; R. A. B. Mynors and R. Powell (1956), 'The Stonyhurst Gospel', in C. F. Battiscombe (ed.). *The Relics of Saint Cuthbert*. Oxford: Oxford University Press, pp. 356–74.

⁷ See the British Library *Digitised Manuscripts* catalogue entry <http://www.bl.uk/manuscripts/FullDisplay.aspx?ref=Add_MS_89000>.

⁸ British Library/Julian Harrison (2012), 'St Cuthbert Gospel Saved for the Nation', in *British Library Medieval and Earlier Manuscripts Blog*, London: British Library, 17 April 2012 <<http://britishlibrary.typepad.co.uk/digitisedmanuscripts/2012/04/st-cuthbert-gospel-saved-for-the-nation.html>>.

⁹ T. Julian Brown with Roger Powell and Peter Waters (eds) (1969). *The Stonyhurst Gospel of St John*. Oxford: Oxford University Press for the Roxburghe Club.

¹⁰ See the British Library *Digitised Manuscripts* catalogue entry and Harrison (2012).

¹¹ Tim Berners-Lee (1989, 1990). *Information Management: A Proposal*. CERN (Conseil Européen pour la Recherche Nucléaire) <<http://www.w3.org/History/1989/proposal.html>>.

¹² Andrew Hough (2012), 'How the First Photo was Posted on the Web 20 Years Ago', in *The Telegraph*, 11 July 2012, <<http://www.telegraph.co.uk/technology/news/9391110/How-the-first-photo-was-posted-on-the-Web-20-years-ago.html>>.

¹³ See the British Library *Digitised Manuscripts* catalogue entry <http://www.bl.uk/manuscripts/FullDisplay.aspx?ref=Cotton_MS_Vitellius_A_XV>.

¹⁴ Anon. (2012), 'Avanti col Digitale', in *L'Osservatore Romano*, 12 April 2012, p. 4.

¹⁵ University of Friburg (n.d.), *E-Codices: Virtual Manuscript Library of Switzerland*, <<http://www.e-codices.unifr.ch/en>>.

¹⁶ Elizabeth O'Keefe (2008), 'Medieval Manuscripts on the Internet', in *Journal of Religious and Theological Information*, 3 (2), 9-47 (p. 10).

¹⁷ Cf. the remarks by Kevin S. Kiernan (1994), 'Digital Preservation, Restoration and Dissemination of Medieval Manuscripts', in Ann Okerson and Dru Mogge (eds), *Scholarly Publishing on the Electronic Networks, Proceedings of the Third Symposium: Gateways, Gatekeepers and Roles in the Information Omniverse*. Washington DC: Association of American Research Libraries, Office of Scientific and Academic Publishing, pp. 37-43.

¹⁸ A. H. Smith (1938), 'The Photography of Manuscripts', in *London Medieval Studies*, 1, 179-207 discusses early applications of ultra-violet light. For the application of digital imaging

processes to expose writing, sharpen contrasts, and meld photographs produced by different techniques see Kevin S. Kiernan (1994), 'Old Manuscripts/ New Technologies', in Mary P. Richards (ed.), *Anglo-Saxon Manuscripts: Basic Readings*. London: Routledge (2001), pp. 37-54, and for applications to the *Beowulf* manuscript see Kevin S. Kiernan (1991), 'Digital Image Processing and the *Beowulf* Manuscript' in *Literary and Linguistic Computing*, 6: Special Issue on Computers and Medieval Studies, 20-7.

¹⁹ For these and other ways in which digitisation may not produce an accurate surrogate see Heather F. Ball (2011), 'Limitations and Ethical Implications of Digitizing Medieval Manuscripts' in *Library Student Journal*, <<http://www.librarystudentjournal.org/index.php/ljsj/index>>.

²⁰ See below, and note 24.

²¹ Cf. Ball (2011): 'For all its strengths, a computer cannot accurately delineate the feel or smell of a manuscript leaf. This may sound trivial to the average researcher, but texture denotes what kind of medium the text was written on, and what inks could be used. The smell of urine could indicate the presence of a palimpsest. Even a digital copy with accurate representation of size and color cannot replace the visceral experience of inspecting a manuscript firsthand' (n.p.).

²² HRI Digital (2013), *Virtual Vellum*. Sheffield: University of Sheffield, <<http://hridigital.shef.ac.uk/virtual-vellum>>.

²³ Anon. (2013), *Parker Library on the Web, version 1.6*. Cambridge: Corpus Christi College and Palo Alto: Stanford University, <<http://parkerweb.stanford.edu>>.

²⁴ Anon. (2009). *Codex Sinaiticus*. British Library, Leipzig University Library, St Catherine's Monastery at Sinai, and the National Library of Russia, <<http://www.codexsinaiticus.com>>.

²⁵ <<http://www.europeanaregia.eu/>>.

²⁶ Listed in Ker (1964), pp. 205-15; 164-8.

²⁷ Wendy Scase (ed.) (2006). *Manuscripts of the West Midlands: A Catalogue of Vernacular Manuscript Books of the English West Midlands, c. 1300-c. 1475*. Sheffield: University of Sheffield, <<http://www.hrionline.ac.uk/mwm/>>.

²⁸ Anon. (c. 2010), *Roman de la Rose Digital Library*. Baltimore, MD: The Johns Hopkins University.

²⁹ Farkas Gábor Kiss, Eyal Poleg, Lucie Doležalová, and Rafal Wójcik (2013), 'Old Light on New Media: Medieval Practices in the Digital Age' in *Digital Philology: A Journal of Medieval Cultures*, 2 (1), 16-34 (p. 16).

³⁰ Martin K. Foys (2007). *Virtually Anglo-Saxon: Old Media, New Media, and Virtual Anglo-Saxon Studies in the Late Age of Print*. Gainesville: University Press of Florida.

³¹ Michael Camille (1998). *Mirror in Parchment: The Luttrell Psalter and the Making of Medieval England*. London: Reaktion Books, pp. 200-9.

³² William Kilbride (2000), 'Whose Beowulf is it anyway? Review of *Electronic Beowulf* [CD-Rom]'. *Internet Archaeology*, 9, reviewing Kevin Kiernan, with Andrew Prescott, Elizabeth Solopova, David French, Linda Cantara, Michael Ellis and Cheng Jiun Yuan (eds) (1999), *Electronic Beowulf*. London: British Library and the University of Michigan Press. The resource

is now in its third edition: Kevin Kiernan (ed.) (2011). *Electronic Beowulf* (3rd edn). London: British Library.

³³ Durham University Press Office (2013), *Overwhelming Success for Lindisfarne Gospels Durham*. Durham: Durham University Press Office, 1 October 2013, <<https://www.dur.ac.uk/news/newsitem/?itemno=18591>>.

³⁴ British Library (2003), *The Lindisfarne Gospels*, London: The British Library, <<http://www.bl.uk/onlinegallery/features/lindisfarne/home.html>>.

³⁵ For detailed discussion of this problem see Elizabeth O’Keefe (2000), ‘Medieval Manuscripts on the Internet’ in *Journal of Religious and Theological Information*, 3 (2), 9-47 (pp. 14-27).

³⁶ Matthew Fisher and Christopher Baswell (2008-2011), *Catalog of Digitized Medieval Manuscripts*. Los Angeles: University of California at Los Angeles Centre for Medieval and Renaissance Studies, <<http://manuscripts.cmrs.ucla.edu/index.php>>.

³⁷ Consortium of European Research Libraries (2006-2007), *The CERL Portal: Manuscripts and Early Printed Material*. Consortium of European Research Libraries, <<http://cerl.epc.uu.se/sportal/>>.

³⁸ Humanities Research Institute (2014), *Manuscripts Online, version 1.0*. Sheffield: University of Sheffield, Humanities Research Institute, <<http://www.manuscriptsonline.org/>>.

³⁹ Michael Pidd, Orietta Da Rold and Katherine Rogers (c. 2013), ‘Manuscripts Online: Written Culture from 1000 to 1500, Final Report’, in Humanities Research Institute (2014), n.p.

⁴⁰ Anon (n.d.), *Manuscriptorium: Building Virtual Research Environment for the Sphere of Historical Resources*, <<http://www.manuscriptorium.com/>>.

⁴¹ National Digital Information and Preservation Programme (n. d.), ‘How Long will Digital Storage Media Last?’, in *Personal Digital Archiving Series*, Washington: Library of Congress, <<http://www.digitalpreservation.gov/>>.

⁴² Adrian Brown (2008), ‘Selecting Storage Media for Long-Term Preservation’, in *The National Archives Digital Preservation Guidance Note, 2*.

⁴³ Ball (2011).

⁴⁴ British Library (2012), ‘Exploring our Catalogue of Illuminated Manuscripts’, in *Medieval Manuscripts Blog*, 23 November 2012, <<http://britishlibrary.typepad.co.uk/digitisedmanuscripts/2012/11/exploring-our-catalogue-of-illuminated-manuscripts.html>>.