Martin Foys
mkfoys@gmail.com

Medieval Manuscripts: Media Archaeology and the Digital Incunable

For The Medieval Manuscript Book: Cultural Approaches, eds. Michael Johnston and Michael Van Dussen (Cambridge University Press, 2015)

PREPUBLICATION DRAFT

Today medieval manuscripts are privileged scholarly objects, typically the focus and product of careful curation, conservation, and critical reconstruction. Scholarship surrounding a manuscript is often inflected with a teleological desire for the artifact's original or near-original state. But medieval manuscripts also lead long lives, ones that continue to change and now range far beyond the original media form of a handwritten codex. The surviving physical manuscript only inconsistently records and retains the changes it has undergone over centuries, while the scholarship and scholarly resources that surround the manuscript have tended to do the same, selectively reproducing its matter through other media formats, first in print, and now increasingly in digital. The proliferation of digital resources has provided greater access to reproductions of manuscripts, as well as reference tools that enhance and expedite traditional scholarly study. Less obviously, the digitization of a manuscript also changes the work's identity and meaning by extending its media history into a new technological incarnation, a process that builds upon earlier remediations of the work in print and photography.¹ This deeper history of a manuscript – the way it transforms over time, and the technological media through which it is reproduced and studied – has rarely received much notice. As one example, the majority of this essay surveys the long media history of the medieval manuscript known as London, British Library, Cotton Tiberius MS B.v (hereafter "Tiberius") from the eleventh century until the present day, over the course of three media ages: manuscript, print, and digital. The complicated and protean nature of Tiberius' form, content, and interpretation over time, along with the fractured way it now exists digitally, serves as a starting point for considering how future digital applications might develop to enable a more capacious architecture for studying medieval manuscripts in both time and media.

When we now consider manuscripts like Tiberius, we do so in what should be thought of as the age of the digital incunable. As an early printed book, the incunable was a media object that straddled the logics of two communicational technologies, evoking the form and function of the medieval manuscript even as it was produced through dramatically

¹ For an introduction to the concept of remediation, where newer media forms can first adapt the logic and function of older ones before developing their own, see J. D. Bolter and R. Grusin, *Remediation: understanding new media* (Cambridge, MA: MIT Press, 2000).

different mechanics. In the early modern period, the typographic book succeeded the handwritten one as the primary repository of historical, archival, cultural, and aesthetic data. Print consumed and digested the content, contour, and function of manuscripts to assume its earliest form, as the functional logic of the printed book gradually emerged into its own. Today, the development of digital resources for manuscript study finds itself in a similar position. The past half century witnessed a rapid growth of such resources, with multiple generations of tools and applications made available. The incunabula presaged a massive technological shift for what books were and how they were used. The large-scale reproduction of medieval manuscripts as digital media has the potential to challenge and change how such works are studied and understood. But digital resources for manuscript study are still relatively immature, and largely have not realized their own methodological and technological logic. Standing where we are today, looking back at precedent media and forward to emergent ones, we have an opportunity to gauge what we privilege in the long lives of manuscripts, and why.

Cotton Tiberius B.v: media history

Tiberius has had a complicated history, one that extends well beyond its identity as a handwritten codex produced in the early medieval period. The physical tome sitting in front of a reader in the Manuscript Reading Room of the British Library presents a singular object, but historically speaking there can be no one “Cotton Tiberius B.v.” Tiberius today is a negotiation of temporal forms – a sorting through of material survival and this material’s modification, documentary records, and multiple reproductions in multiple modes of media. Tiberius is thus an *artifact* in two ways. It is a human product from the past, but it is also a product in the present, still subject to alteration through external processes: the augmentation and modification of its original form, critical treatments in printed facsimiles and scholarship, and most recently, re-articulation in electronic and digital media. It is only with some difficulty that one can now rebuild precisely how Tiberius has continuously mutated in its material and then media history. This difficulty is a function both of physical artifact’s limited ability to preserve evidence of its historical change, and of the incapacity of earlier scholarly media and methods to adequately represent the chronological layers of the manuscript’s past and present form.

Tiberius began as a manuscript produced sometime in the early to mid-eleventh century, perhaps at Winchester or Canterbury, though provenance and date remain tentative.² In its earliest form, Tiberius was a miscellany of temporal and spatial materials composed in Latin and Old English, accompanied in places by substantial pictorial materials. Most famously today, it contains the “Cotton Map,” the earliest surviving detailed and non-schematic medieval map of the world produced in England. Tiberius also includes three major picture cycles – one of three versions of the *Wonders of the East*, a calendar

² P. McGurk, D. N. Dumville, M. R. Godden, and A. Knock, eds., *An eleventh-century Anglo-Saxon illustrated miscellany: British Library Cotton Tiberius B.V part 1: together with leaves from British Library Cotton Nero D.II* (Copenhagen: Rosenkilde and Bagger, 1983), 109; N. R. Ker, *Catalogue of manuscripts containing Anglo-Saxon* (Oxford: Clarendon Press, 1957), 33-4.

featuring the labors of the months, and a set of illustrations to accompany a version of Cicero's astronomical treatise *Aratea*. In its original form, the manuscript had at least two other maps (a Macrobean zonal map and a cosmography map, though the latter is now missing),³ along with numerous regnal, papal, and episcopal lists, the late tenth-century pilgrimage itinerary of Archbishop Sigeric, several computistical items and treatises, and Priscian's *Periegesis*, a fifth-century geographic description of the world.⁴ At least one other item, a copy of Hrabanus Maurus' *De laudibus sanctae crucis*, is now missing, and this work would have been a major and visually significant item in the collection. Post-conquest, by the early twelfth century Tiberius was at Battle Abbey, where blank leaves at the beginning of the manuscript were filled with a set of local annals, a practice that continued well into the late twelfth century.⁵ Likewise, blank leaves at the end of the work were filled with five twelfth-century metrical treatments of the life of St. Nicholas, in Latin.⁶ The manuscript probably remained at Battle; other twelfth-century hands are evident in various places throughout the manuscript, and there is evidence of continued use through scribal additions into the fifteenth century.⁷ After the dissolution of Battle in 1538, the volume became a part of the library of John Lumley, and was then acquired by Robert Cotton at some point between 1596 and 1621.⁸

During Cotton's possession, the manuscript underwent dramatic changes. Cotton appears to have re-arranged the order of the Anglo-Saxon material, moving the *Wonders of the East* material from the front of the manuscript to the back,⁹ and moved the world map from the end of the manuscript to before Priscian's *Periegesis*, perhaps because he thought it served to explicate the regions found within.¹⁰ He also appears to have added three leaves of tenth- or eleventh-century Old English items which themselves had been

³ T. Smith, *Catalogus librorum manuscriptorum Bibliothecae Cottonianae* (Oxford: E Theatro Sheldoniano, 1696), 22-3, records the map; J. Planta, *A catalogue of the manuscripts in the Cottonian library deposited in the British Museum* (London: British Museum, 1802), 36, notes its absence with the description "male manu abscissa" ("unfortunately torn out by hand").

⁴ McGurk et al., eds., *Anglo-Saxon illustrated miscellany*, provides overviews of all surviving items from the original composition.

⁵ D. N. Dumville, "A note on post-conquest additions" in *ibid.*, 104-6.

⁶ *Ibid.*

⁷ McGurk et al., eds., *Anglo-Saxon illustrated miscellany*, 39.

⁸ S. Jayne and F. R. Johnson, eds., *The Lumley library: the catalogue of 1609* (London: British Museum, 1956), item 1295; C. Tite, *The early records of Sir Robert Cotton's library: formation, cataloguing, use* (London: British Library, 2003), 107.

⁹ Tite, *Early records*, 107; M. P. Brown, "Sir Robert Cotton, collector and connoisseur?" in M. P. Brown and S. McKendrick, eds., *Illuminating the book: makers and interpreters. Essays in honour of Janet Backhouse* (University of Toronto Press, 1998), 292.

¹⁰ Smith, *Catalogus librorum*, 22-3, describes the map as "praefigitur Liber Periegesi," but the opposite side of the map's folio (now 56r) contains sections of the twelfth-century St. Nicholas additions, in sequence with other pages at the end of the manuscript.

previously added to blank pages in eighth-century Gospel books.¹¹ Cotton removed the Anglo-Norman Battle Abbey annals from the front of Tiberius, and added them to the end of the manuscript now known as London, British Library, Cotton Nero MS D. ii, though the Anglo-Norman St. Nicholas material remained. It is likely that Cotton also removed the version of Hrabanus Maurus' *De laudibus sanctae crucis*, which is listed in Lumley's catalogue, but not in Cotton's.¹² Most substantively, Cotton added an entire collection of fourteenth-century material to the manuscript, including copies of three apocryphal Old Testament commentaries falsely attributed to the twelfth-century Italian mystic Joachim of Fiore, as well as a fourteenth-century list of provincial bishops.¹³ Cataloguing the manuscript in 1802, Planta implies a reason for Cotton's addition of the Joachite texts to Tiberius in his description of them as a *liber historicus et geographicus*.¹⁴

The manuscript was damaged in the 1731 Cotton Library fire, and was subsequently acquired by the British Museum. At some point after 1802, it was broken into two parts, with Anglo-Saxon material and the twelfth-century St. Nicholas poems becoming "part 1" and the fourteenth-century material becoming "part 2." In 1843, the pages of the manuscript were disbound, reset on modern pages, and rebound.¹⁵ Part 1 was rebound to its present format by the British Museum in 1969, and part 2 in 1983 by the British Library.¹⁶ In Tiberius, part 1, two blank, modern leaves have been inserted between folia 29 and 30 to represent the cosmographical map removed in the eighteenth century.¹⁷ In the mid-twentieth century, parts of Tiberius were reproduced in a variety of photographic media; both parts 1 and 2 are on microfilm, and numerous slides were made in Ektachrome and/or 35mm formats, focusing almost exclusively on pages containing pictorial images. Roughly 200 slides of Tiberius part 1 were made, highlighting the map and pictorial material. In contrast, only five slides of part 2 appear to have been made.¹⁸ In 1983, a facsimile edition of part 1 was published, with black and white photography (and a few representative color images) and a detailed critical apparatus.¹⁹ In the past ten

¹¹ See Ker, *Catalogue of manuscripts*, 256-7 for folio 75, 35-6 for folia 74 and 76. Additions include manumissions, land grants, and notes of assembly.

¹² Ker, *Catalogue of manuscripts*, 256.

¹³ K. Kerby-Fulton, "English Joachite manuscripts and medieval optimism about the role of the Jews in history: a list for future studies," *Florilegium*, 23 (2006), 110 and n. 43.

¹⁴ Planta, *Catalogue of manuscripts*, 36.

¹⁵ McGurk et al., eds., *Anglo-Saxon illustrated miscellany*, 27.

¹⁶ Details from the British Library's On-line Archives and Manuscripts record, found by searching for "Cotton Manuscript Tiberius B V": <http://searcharchives.bl.uk/>.

¹⁷ McGurk et al., eds., *Anglo-Saxon illustrated miscellany*, 28.

¹⁸ British Library Manuscript Reading Room manuscript card catalogue, entries for "Cotton Tiberius B. V."

¹⁹ McGurk et al., eds., *Anglo-Saxon illustrated miscellany*.

years, a small sample (six) of pictorially oriented images have been digitized and are available via the British Library's Online Gallery,²⁰ though at the time this chapter is being written no complete digitization of either part of Tiberius appears to be available.²¹

MS Tiberius B.v: media archaeology

This summary of Tiberius' formal and media history is itself not easy to assemble; as the citations and footnotes above suggest, beginning to understand the "deep time" of Tiberius- the various stages of the manuscript's content and physical state in time, and how these stages are mediated in later forms of technological representation - means carefully sifting through the various commentaries of the editors, codicologists, and cataloguers who have at one time or another treated parts of the manuscript's past. This earlier reconstructive work is foundational for understanding the unstable nature of Tiberius' existence over time, but it by no means provides comprehensive or uniform coverage of the manuscript's history. Scholarly assessments of Tiberius position its history as of secondary importance, a gateway through which we can return to the manuscript's earliest content. Such summaries weigh materials associated with the manuscript inversely according to their distance from the work's point of origin. Since the eleventh century, Tiberius has continued to be modified and reorganized; since the twentieth century, the manuscript has been mediated through a sequence of technological processes and media, as parchment was reproduced as print, photography, and microfilm, and now as digital content. In such a media ecology, Tiberius becomes a work that is now a *network*, located both within its various historical forms, and the subsequent media that continue to reproduce and transform it.²²

Questions like how a work like Tiberius is transformed by its own media ecology is one of the concerns of the relatively new field of media archaeology. For media archaeologists, the investigation of media does not proceed as a "predictable and necessary advance from primitive to complex apparatus [but as] a dynamic cycle of erosion, deposition, consolidation, and uplifting before the erosion starts the cycle anew."²³ Rather than construct an object's history based on a simple chronological and narrative line of reconstruction, media archaeologists view the media object as a site of a constant and ongoing exchange between past and present forms of media. In such an

²⁰ British Library, On-line Gallery: www.bl.uk/onlinegallery/, search on "Cotton Tiberius B.v."

²¹ Neither part of the manuscript is listed in the 2013 "BL Medieval and Earlier Digitised Manuscripts Master List": <http://britishlibrary.typepad.co.uk/digitisedmanuscripts/2013/07/fancy-a-giant-list-of-digitised-manuscript-hyperlinks.html>.

²² For a basic introduction the concept of media ecology, and how it challenges the notion of interpreting the singular object, see L. Strate, "A media ecology review," *Communication Research Trends*, 23(2004), 3-48.

²³ S. Zielinski, *Deep time of the media: toward an archaeology of hearing and seeing by technical means*, trans. G. Custance (Cambridge, MA: MIT University Press, 2006), 3-4.

approach, the ecology of a media object - the various technologies that contribute to its production, reproduction, and reception – need to be excavated *across time* to produce enhanced and alternative histories of the object. These histories in turn view past and present media forms as densely mediated subjects themselves, and not as singular objects restricted to their original medium, unaffected by subsequent modes of reproduction.²⁴ The more we study a manuscript, the more we turn it into other media to study it, and the more complicated its media history and ecology becomes. A brief example of a late fifteenth-century incunable of Petrus Comestor's *Historia scholastica*, now accessible in digital format through the Munich Digital Center, reveals how technological treatments of manuscripts align with critical notions of media archaeology, and how digitization fundamentally alters an object's media history. The metadata provided with the incunable facsimile notes that the *Historia* was composed ca. 1173, the incunable was printed (from a late medieval manuscript exemplar) in Strasbourg by Günther Zainer in August, 1483, it was digitized on January 8, 2011, its shelf number is 2 Inc.c.a. 1317 a, and its URN (Uniform Resource Name) is urn:nbn:de:bvb:12-bsb00061921-7.²⁵ This digital metadata relates more than a simple chronology of progressive and at times supersessionary steps in the production of a medieval and then an early modern text. Digitization increasingly has the potential to network parts of individual items directly together through linked associations. This digital record of these materials does not reproduce all of them (though they could theoretically do this, too), but it does transform them, presenting them together within the same medium, and significantly, linked within the same temporal moment. For most medieval manuscripts, though, digital applications of media archaeology are still a long way off. For Tiberius, both printed and digital approaches to the manuscript neglect the majority of its long history.

Printed Tiberius

The only substantive scholarly treatment of Tiberius remains the 1983 printed facsimile and edition by Patrick McGurk et al., which restricts its coverage to part 1 -- i.e. to the Anglo-Saxon material of the manuscript as originally constructed, together with the Anglo-Norman interpolated material (including material now in another manuscript, London, British Library, Cotton Nero MS D.ii).²⁶ McGurk and his collaborators' edition provides exactly what one expects from such scholarship: careful investigations of provenance, dating, scribal hands, and sources and analogues for each item of the Anglo-Saxon and Anglo-Norman material. Photographic reproduction is largely limited to black and white plates, as color plates were at the time considered a "lavish" feature too costly to produce.²⁷ As is common, the agenda of the edition is to reconstruct as best it can the early form of the medieval manuscript. To do so, the edition must in effect undo all of

²⁴ For a developed exploration of media archaeology, see J. Parikka, *What is media archaeology?* (Cambridge: Polity Press, 2012), esp. 5-16.

²⁵ <http://nbn-resolving.de/urn:nbn:de:bvb:12-bsb00043789-0>; see also the British Library's *Incunable Short Title* catalogue: <http://istc.bl.uk/search/search.html?operation=print&rsid=696566>.

²⁶ For the additional material in Cotton Nero MS D.ii, see Ker, *Catalogue of manuscripts*, 255.

²⁷ McGurk et al., eds., *Anglo-Saxon illustrated miscellany*, 9.

Robert Cotton's alterations to the manuscript, adding the Anglo-Norman additional material he removed (now in Cotton Nero D.ii), and removing the other Anglo-Saxon and fourteenth-century Joachite material he added. The other effect (and desire) of the printed facsimile is to break the long history of the manuscript in two, isolating the Anglo-Saxon and Anglo-Norman additions from later augmentations of the manuscript, which are treated as alien to it.

Such boundaries seem natural, especially to medievalists like me, accustomed to studying Anglo-Saxon material through printed editions exactly like this one. In this editorial view, the Anglo-Norman additions to Tiberius are organic additions by medieval scribes, while Robert Cotton's expansion is modern, artificial, and even illogical. The facsimile edition also omits without description the additional leaves containing Old English material included by Cotton (fols. 74-76), as well as the inserted blank leaves meant to represent the now missing cosmographical map. In reconstructing one particular version of Tiberius, the facsimile edition then absents other medieval and modern layers of Tiberius' history. In one case, where the facsimile does not produce the modern blank pages inserted between fols. 29 and 30 for Tiberius' missing cosmographical map, the representational indicator of absence is *itself* absented. Such choices derive from disciplinary desires to move as far back down the chronological line as possible, where the modern is expunged, all the while producing a printed and photographic facsimile, itself a quintessentially modern media object. The printed nature of this scholarly medium also plays a role, as more pages and especially more photographic plates equal more cost, further encouraging a temporally narrow, less-is-more" view of such historical works. The editorial process of winnowing the manuscript's complex historical and material identity may also exclude material once original to it. Lumley's catalogue notes that Tiberius earlier contained a version of Hrabanus Maurus' *De laudibus sanctae crucis*, missing from the manuscript when next catalogued in Cotton's Library.²⁸ *De laudibus sanctae crucis* is well known in other Anglo-Saxon manuscripts,²⁹ and was a visually sophisticated work that presented its text in the schematic form of images.³⁰ Its presence and place within Tiberius, where it would have been a fourth visual cycle in a manuscript famous for such items, should be integral to reconstructing the Anglo-Saxon context and content of Tiberius. While no facsimile reproduction of the missing work is possible, a *critical* reconstruction and discussion could easily be produced. But the physical absence of Hrabanus' work from Tiberius means it is now critically absent as well, and the facsimile edition of McGurk et al. does not treat it, only mentioning the missing work in passing. This layer, arguably a central one to Tiberius as originally composed and now valued, remains unexcavated - an alternative history of the manuscript, still hidden from view.

²⁸ Ker, *Catalogue of manuscripts*, 256.

²⁹ R. Deshman, *Eye and mind: collected essays in Anglo-Saxon and early medieval art*, ed. A. Cohen (Kalamazoo: Medieval Institute Publications, 2010), 133.

³⁰ Lumley describes the work in Tiberius as "cum pulchris variarum crucium formis"; Jayne and Johnson, eds., *The Lumley library*, 107.

Digital Tiberius

The manuscript's comparatively anemic digital existence says much about the relatively nascent state of digital manuscript studies. Three decades into the British Library's scheme to digitize its holdings, no digital facsimile of Tiberius (either part) as yet exists – evidence of both the large number of medieval manuscripts that survive and that digitization is neither an easy, quick, or inexpensive process.³¹ But a few bits of Tiberius have been digitized, and these reveal much about what remains most privileged about medieval manuscripts. A search of the BL's "Online Gallery" for Cotton Tiberius B.v returns nine results, all of which are individual folios of pictorial images, and all of which are from part 1. Four of the results are for different links to one item, the *mappamundi*, while two are for *Wonders of the East* illustrations, two are illustrations from the calendar cycle, and one is a pictorial image from the *Aratea*. No digital images of Tiberius part 2 are available. In print, McGurk lauds Tiberius part 1 as "long famous" for its picture cycles, so it is unsurprising that examples of each, plus the Cotton Map, were the first items to be digitized.³² Typographic culture prizes visuality over all other forms of meaning, and what can be currently accessed digitally of Tiberius remediates the visually stimulating aspects of the manuscript prized in the printed facsimile. The digital images themselves can be interpreted within Tiberius' media ecology and history: divorced from the larger context of the manuscript, the available images realize little of the connective potential of the digital form. Instead of networking the content of the manuscript, this digital treatment fragments Tiberius, isolating parts of it from the context of the whole. No doubt this will change as eventually all of Tiberius likely will be digitized and made available. But for now it remains an instructive moment of remediation in Tiberius' own media history.

The Cotton Map - a mini-excavation

As the most digitally popular part of Tiberius, the Cotton Map (figure 1) stands as an apt metonym for the long media life of Tiberius, and for what shape its future might take. Medieval maps of the world like the Cotton Map traditionally layer time onto the places and spaces they represent. On a two-dimensional plane of geographic representation, *mappaemundi* contain spans of centuries, flattened out across continents, cities, peoples, rivers, mountains, and wonders. As media, such maps encode diachronic information synchronically as an enfolding and contemporary moment of cultural expression - a move that recalls the similar goal of media archaeology. I have elsewhere critically treated this map at length, and in relation to New Media theory, exploring how the map functions as a form of virtual reality.³³ When I returned to Tiberius to think about its long media history, I was reminded of just how much I had originally struggled to understand the map's place within the manuscript, first in studying its treatment within McGurk's edition and then

³¹ For a sense of scope and cost of large-scale digitization projects, including manuscripts, see the British Library's own report, "Digitisation Strategy 2008-2011": www.bl.uk/aboutus/stratpolprog/digi/digitisation/digistrategy/.

³² McGurk et al., eds., *Anglo-Saxon illustrated miscellany*, 15.

³³ M. Foys, *Virtually Anglo-Saxon: old media, new media, and early medieval studies in the late age of print* (Gainesville: University Press of Florida, 2007), 110-58.

later working with the surviving manuscript itself. The map's foliation number is 56v, and in the manuscript it sensibly appears before folio 57, the start of Priscian's *Periegesis*. As a graduate student, I was initially befuddled by the fact that McGurk's edition printed the map as the very last page of facsimile plates, between folia 73 and 77. The confusion was that of inexperience; I was unfamiliar then with the ways Robert Cotton had reorganized and changed the manuscript, and McGurk's and other editors' careful scholarship that correctly re-located the map as originally the final item in the Anglo-Saxon manuscript.³⁴ But my confusion also derived from a fundamental conditioning of print culture about the function of pagination. A page number tells a reader where to find a page – this is regarded more or less as inviolate, a foundation of referential practice to assure the stable location of information within the physical progression of a book. But paging through parts of the Tiberius part 1 facsimile is not the same as paging through the surviving manuscript, and can be a disorienting experience as one turns through pagination series like 87-88-2-3, or 72-73-55-56-77. Between surviving manuscript and printed facsimile, page numbers go out of order, and the breakdown of pagination is an artifact of Tiberius' own unstable form over its history. Page-wise, now, the Cotton Map no longer has one location in Tiberius, but two.

That the Cotton Map now exists in two Tiberius locations simultaneously is ironically appropriate, given that maps in the modern and popular imagination are designed to fix locations to singular points. But a map (medieval or modern) is not the reality of physical geography, but its representation, and in that representation, multiple realities are inevitable. On the Cotton Map, numerous geographic entities appear twice. Some doubling, as in the cases of two incidences of the Taurian mountain range, or the split depiction of the Nile River, happens because of attempts to present the multiple incidences of these mountains that occur in the map's Orosian source text.³⁵ The reasons for other repetitions are less clear, as with the two occurrences of the city of Pentapolis in two different regions, or similar duplications of Greater Carthage and the otherwise unidentified and mysterious "Aniclea," or of the doubling of two different tribes of Israel (Zebulon and Nephthali), or of the Ethiopians of Libya. Perhaps such confusion arises in the face of unfamiliar and remote geography, or from attempting to accommodate conflicting textual traditions as to the location of an item, or, in the case of the tribes of Israel, the medieval tradition of cartographically representing the migration camps of these tribes.³⁶ But for modern viewers, recognition of the same place in different spaces on a map remains a dissonant, if now instructive, moment. Like pages out of order, these doublings resist a habituated and modern desire for a singular space of location, for information to live where we expect it to live. It encapsulates the temporal condition of the Tiberius manuscript, which today survives in one form, but must be understood to have existed in many.

³⁴ McGurk et al., eds., *Anglo-Saxon illustrated miscellany*, 24 and 30.

³⁵ Foys, *Virtually Anglo-Saxon*, 122-4. See also O. G. S. Crawford, "Some medieval theories about the Nile," *Geographical Journal*, 114 (1949), 6-29.

³⁶ T. O'Loughlin, "Map and text: a mid ninth-century map for the Book of Joshua," *Imago Mundi*, 57 (2005), 7-22.

In editing the map, McGurk takes pains to measure it against both physical topography and toponymic transmission, identifying distortion, disproportion, and disruption in the case of the former, and “carelessness and contamination,” “imperfections,” faulty copying, misinformation, and bad spelling in the case of the latter.³⁷ McGurk’s editorial judgments drawn from such comparative metrics of purity differ sharply from the only other substantive editorial treatment of the map, by Konrad Miller in the late nineteenth century.³⁸ McGurk edits the map as an individual document, judging its quality on a metric of faithfulness to putative sources or analogues. In contrast, Miller edits the map within the larger context of all surviving medieval maps and related sources, providing more neutral assessments (e.g., terming alternative inscriptions “original” as opposed to poorly spelled).³⁹ To be sure, Miller was also concerned with idealized source forms - the final volume of his six-volume series is dedicated to hypothetical reconstructions of classical maps imagined as sources for medieval ones.⁴⁰ But in the printed pages of his editions, Miller interprets the information on the maps he studies as part of a complexly related *network*, editing a map’s content in order to link it to the content of other pre-modern maps and geographic texts (figure 2). In effect, Miller thought the best way to edit a medieval map was to build a linked database for its content. Only the limitations of the printed medium, which resists the easy linking of related content, prevented him from doing so effectively.

Miller’s nineteenth-century typographic networks prefigure John Unsworth’s twenty-first-century model for how to develop digital humanities resources. Unsworth identifies “functions that could be the basis for a manageable but also useful tool-building enterprise in humanities computing,” arguing that digital resources need to be designed to allow scholars to discover, annotate, compare, refer, sample, illustrate, and represent research information.⁴¹ On the face of it, this list contains nothing surprising for scholars. The original Anglo-Saxon goals of the Tiberius manuscript might likewise be described in these terms. But unlike the earlier media forms of manuscript and typography, digital media now have the capacity to realize networks of visual, linked, and annotated data on vastly larger scales than previously possible, and make the interrelations of these data instantaneous and transparent. Digital resources could, of course, better realize Konrad Miller’s desire for a linked database of medieval cartography, or chart connections between the bewildering array of materials found within (both parts of) Tiberius. More

³⁷ McGurk et al., eds., *Anglo-Saxon illustrated miscellany*, 85.

³⁸ K. Miller, *Mappaemundi: die ältesten Weltkarten*, 6 vols. (Stuttgart: Roth, 1895-1898), vol. III, 31-7.

³⁹ *Ibid.*, 35.

⁴⁰ *Ibid.*, vol. VI, figs. 28-30, plate III, 61-8.

⁴¹ J. Unsworth, “Scholarly primitives: what methods do humanities researchers have in common, and how might our tools reflect this?” *Humanities Computing: Formal Methods, Experimental Practice Symposium*. King’s College, London, May 13, 2000: <http://people.lis.illinois.edu/~unsworth/Kings.5-00/primitives.html>.

than this, however, digital media also have the potential to better realize the long media history of a medieval manuscript, producing a representational archive of versions of the object's content and form across time and media, where specific moments of any of these versions may be targeted and linked to related moments in similar archives of other historical objects.

Digital resources today and the future of manuscript study

To paraphrase Marshall McLuhan, we are as far into digital manuscript studies as the Elizabethans were into the age of print.⁴² With particular reference to Cotton Tiberius B.v, we can see how early and incunabular this time is. Tiberius barely exists digitally, and what of it that does suggests that the manuscript should be treasured as a storehouse of individual visual images – a valuation reminiscent of the hyper-visibility promoted by typographic culture. We do not, cannot, yet know what forms of digital resources will arise, succeed, and change the way we study and understand written media of the pre-print era. But we can build upon an awareness of this incunabular moment, fashioning media resources that allow us to augment older methods of study while imagining new logics of scholarly practice. The earliest applications of digital resources for manuscript study encouraged the quantification and fragmentation of manuscripts and their contents, even as they sought to link and use this material in new ways. Until very recently a digital project that used manuscripts was invariably one that sought to take apart a manuscript's content in order to integrate it into a database that comprehensively covered a particular subject. Database projects are of immense value, and today continue to range across medieval disciplines and topics, including – to give only a very small sample from just the Anglo-Saxon period -- linguistic (*Dictionary of Old English*), historical (*Prosopography of Anglo-Saxon England*), literary (*Fontes Anglo-Saxonici*), artistic (*Corpus of Anglo-Saxon stone sculpture*), paleographical (*DigiPal*), or manuscript (*The production and use of English manuscripts, 1066-1220*).⁴³ As early efforts in the age of the digital incunable, these projects largely remediate the goals of older print-based scholarship by continuing (if enhancing) earlier methodologies. In databases, the textual content of manuscripts is transcribed, described, and coded at granular levels of letter, word, or phrase, while pictorial content, especially in the earliest projects, is often divorced from larger contexts of page and/or surrounding textual or visual material.⁴⁴

⁴² M. McLuhan, *Understanding media: the extension of man* (New York: McGraw Hill, 1964), iv.

⁴³ Dictionary of Old English: <http://www.doe.utoronto.ca/>; Prosopography of Anglo-Saxon England : <http://www.pase.ac.uk/>; Fontes Anglo-Saxonici : <http://fontes.english.ox.ac.uk/>; Corpus of Anglo-Saxon stone sculpture: <http://www.ascorpus.ac.uk/>; DigiPal: <http://www.digipal.eu/>; The production and use of English manuscripts, 1066-1220: <http://www.le.ac.uk/english/em1060to1220/>.

⁴⁴ In a related mode, see also E. Treharne, "Fleshing out the text: the transcendent manuscript in the digital age," *Postmedieval*, 4 (2013), 465-78, who considers how the digitization of manuscripts fragments texts through the elision of their physical attributes and hapticity.

As such database initiatives continued to develop, the manuscript as an object of digital study in its own right slowly emerged. In the 1990s, encoding schemes began to attempt comprehensive digital transcriptions of individual manuscripts' contents. These efforts first focused on standard graphic markup language (SGML) and then the more flexible XML standard (leading to standards like the Textual Encoding Initiative [TEI]), and hold as the central goal the translation of the physical, written, and to some degree artistic content of manuscripts into machine readable computer code.⁴⁵ In the decade after 2000, a second generation of digitization gained momentum, which sought to make available online large numbers of digital facsimiles of medieval manuscripts. These ambitious repository schemes (e.g., *eCodices* and *Parker on the web*, to name two of many) benefited from increasingly less expensive and more efficient ways to digitally scan written material.⁴⁶ Currently thousands of medieval manuscripts in hundreds of institutions have been digitized, with ongoing efforts accelerating and proliferating at a rapid rate.⁴⁷ Unlike markup initiatives, large-scale digitization projects primarily present digital images of manuscripts as image content only, with a minimum of metadata associated with each codex and folio.

Most early digital resources tended to suffer from two limitations: taxonomic rigidity and siloing. In the former case, the desire to systematically tag manuscript content as machine readable code ran headlong into the constraints of tagging taxonomies, which had developed hierarchically in early markup schemes (e.g., SGML and then set XML schema such as TEI), and restricted the way manuscript content could be digitally described.⁴⁸ A quick example from my own early digital scholarship can serve as an historical example. Figure 3 shows the original working prototype, ca. 2007, for editing medieval maps. At the time I and my technical collaborators still thought the key to digitally editing the map was to develop a fixed set of categories of meaning to describe its content. Such a belief derives from common metadata models that hold that

⁴⁵ See "A TEI-based tag set for manuscript transcription" (2002): www.tei-c.org/Support/Learn/dsguide1.html; for a representative sample of such work, see L. Burnard, R. Gartner, and P. Kidd, "The cataloguing of western medieval manuscripts in the Bodleian Library: a TEI approach with an appendix describing a TEI-conformant manuscript description" (1997): <http://users.ox.ac.uk/~lou/wip/MS/>.

⁴⁶ *eCodices* (www.e-codices.unifr.ch/), for example, currently contains full digital facsimiles of 981 manuscripts from 42 different libraries, while the *Parker on the Web* (<http://parkerweb.stanford.edu/>) project digitized 559 manuscripts - almost the entire collection - of Parker Library of Corpus Christi College Cambridge.

⁴⁷ So much so, that UCLA's federated *Catalogue of Digitized Medieval Manuscripts* (<http://manuscripts.cmrs.ucla.edu/index.php>), which began in 2005 and lists 3129 manuscripts from 139 institutions, has at the time of this writing ceased cataloguing, as "institutions large and small have continued to digitize manuscripts at an ever-quickenning pace." For a current resource dedicated to tracking libraries that have digitized their manuscripts, see DMMmaps: <http://digitizedmedievalmanuscripts.org/>.

⁴⁸ For a current overview of such issues in TEI, see, M. Burghart and M. Rehbein, "The present and future of the TEI community for manuscript encoding," *Journal of the Text Encoding Initiative*, 2 (2012), <http://jtei.revues.org/372>, esp. section 3.4.

knowledge is best organized under set taxonomies – remediating models ultimately descended from Enlightenment-era epistemology.⁴⁹ Working with the messy medieval epistemes of the Cotton Map quickly revealed how naïve such an approach was.⁵⁰ The second limitation, siloing, was correspondingly pervasive among primary source digitization initiatives, where material was digitized and made accessible, but could not be linked to data within other related resources.⁵¹ Like a printed book, a digital resource could contain great amounts of valuable information, but the data remained fixed and closed within the resource. In effect, siloing and taxonomic rigidity produced digital manuscript material that was functionally similar to older typographic antecedents, albeit with increased access and enhanced image quality.

In the past few years, these first two generations of resources have given way to a new understanding that existing and developing digital resources must be able to *interoperate*, that is, they must be open in their data and connect into larger networks of related resources.⁵² The growth of alternative database protocols that encourage such semantic flexibility of data taxonomies and relations, such as the RDF Triple model, has pointed the way to how new digital metadata associated with individual manuscripts may be designed to be easily shared with other resources.⁵³ A significant initiative is the ongoing development of the Open Annotation Collaboration (OAC) data model, which promises to radically change the way in which scholars may in the first instance interact with and produce scholarly data. OAC is a protocol to standardize the way a range of digital media objects (including text, image, audio, and video) may be targeted and annotated. With OAC, any part or feature of a digitized medieval manuscript could be selected, tagged with information, and then linked to other areas of the same digital manuscript, other digital manuscripts, existing online scholarly resources, and even sections of other forms of digital media.⁵⁴ Through such platforms, it is possible to transform the increasing numbers of digital manuscripts online into truly open and networked entities, where

⁴⁹ For a fuller treatment of this early work, see M. Foys and S. Bradshaw, “Developing digital *mappaemundi*: an agile mode for annotating medieval maps,” *Digital Medievalist*, 7 (2011), www.digitalmedievalist.org/journal/7/foys/.

⁵⁰ For analogous issues, see N. Altschul’s summary of “Portrayals of difference: medieval race and ethnicity in cross-platform investigation,” her attempt to study race through digital resources of manuscripts: <http://lib.stanford.edu/digital-manuscript-uses-and-interoperation-public-site/altschul-summary>.

⁵¹ D. M. Zorich, *A survey of digital humanities centers in the United States* (Washington, DC: Council on Library and Information Resources, 2008), www.clir.org/pubs/reports/pub143/reports/pub143/pub143.pdf, esp. 41-2.

⁵² “Interoperation for digital medieval manuscripts”: <http://lib.stanford.edu/dmm>.

⁵³ RDFs (Resource Description Frameworks) are models for describing and categorizing data and what it relates to based on a grammatical structure of subject-predicate-object: www.w3.org/TR/rdf-concepts/.

⁵⁴ Open Annotation Collaboration: www.openannotation.org/.

manuscripts are available as “complete” documents in their own right, but also as partitive data for use in on-line databases and scholarship.⁵⁵

In his assessment of how New Media may be better employed to study the past, Will Straw calls for “the passage of time to be noted in deeply sedimented and richly resonating clusters of objects,” and argues that “we need large inventories of such objects in order that they may knit together within densely intertextual packages.”⁵⁶ Straw’s vision unites the theoretical tenets of media archaeology with the practical potential of digital resources, and is what manuscript studies in the digital age requires. At some point in the future, Cotton Tiberius B.v (both parts) will be digitized and accessible, but what then for this complex media object? The next generation of digital resources needs to accommodate new ways to inventory medieval manuscripts in ways Straw suggests – both as temporally thick collections of their own content, changing over time, and as networked to other objects, medieval or otherwise, that help explain their form, function, and meaning. We are just beginning to see the opening of digital manuscript data in this fashion. Monumenta Informatik is a pioneering project that works with the freely available digital medieval manuscript collections of eCodices to create on-line synoptic presentations of manuscripts and editions of the texts they contain.⁵⁷ Users can locate a specific passage from a text (e.g., Orosius’ *Historiae adversus paganos*) and then call up the folios of multiple manuscript witnesses of this text (for Orosius, five manuscripts may be currently consulted in this fashion; see figure 4). Other projects are beginning to take advantage of the recent interoperability of digital manuscript repositories (which themselves are beginning to be federated and consumed by centralizing resources such as Stanford University Library’s Digital Medieval Manuscript initiatives), allowing individual users to access and then create customized sets of annotations and linked data for personal, collaborative, or institutional use.⁵⁸ Representative examples of such tools in development currently include: SharedCanvas (for annotation scholarship distributed across multiple users and/or variant images of the same manuscript folio), T-Pen (for generating and exporting transcriptions of digital manuscripts hosted by a variety of repositories), and the DM Project (for creating annotations of individual details of digital manuscript and texts, linking them across manuscript collections, and exporting the linked data for on-line publication).⁵⁹

Today, these tools are rudimentary in execution, but still inspiring for how the landscape of manuscript studies might be transformed. At the British Museum, for example, the

⁵⁵ See, however, Treharne, “Fleshing out the text,” for a healthy reminder that digital facsimiles cannot reproduce all aspects of a medieval manuscript, especially their physical qualities.

⁵⁶ W. Straw, “Embedded memories” in C. Acland, ed., *Residual media* (Minneapolis: University of Minnesota Press, 2007), 14.

⁵⁷ Monumenta Informatik: <http://monumenta.ch/>.

⁵⁸ “Interoperation for digital medieval manuscripts”: <http://lib.stanford.edu/dmm>.

⁵⁹ SharedCanvas: www.shared-canvas.org/; “T-Pen: transcription for paleographical and editorial notation”: <http://t-pen.org/TPEN/>; DM Project: <http://dm.drew.edu>.

Research Space initiative is working to build a semantic web for cultural heritage objects, where large collections can be dynamically managed by users and opened to collaborative, annotative work.⁶⁰ Projects are beginning to take medieval manuscripts out of their usual environments. The Visionary Cross Project is creating a digital framework for the study of textually related but materially disparate Anglo-Saxon objects, the Ruthwell and Bewcastle crosses (stone sculpture), the Brussels Reliquary (portable metal shrine), and *The dream of the rood* and *Elene* (poems of the Vercelli Manuscript, themselves being digitized as part of the Digital Vercelli Book project).⁶¹ Using both traditional database technologies as well as videogame development, the Visionary Cross Project imagines a digital environment that allows scholars and students to study these works individually and at great depth and detail, but also as part of a larger cultural and aesthetic network. In manuscript study and elsewhere, such distributive scholarship may eventually move the nature of manuscript research out of older models of static, individual publications and into collaborative and ongoing forms of work directly and continuously linked to the online repositories of materials used. Whether such digital initiatives now underway will come to any kind of meaningful and longstanding fruition is impossible to predict. Many will be cut short by the vicissitudes of institutional funding, staffing, time, and the still transient nature of digital materials. If the printed medium is historically marked by a formal stability, its digital counterpart is defined by the ease with which it may change. The challenges facing large-scale data aggregation and alignment, linked resources and standardization, with the persistence of on-line locations for digital materials remain daunting. Access to materials, and the tight grip copyright laws (themselves an artifact from an earlier media age) have on intellectual and historical material remain massive obstacles to truly open and distributed digital scholarship.⁶² Silos and data fragmentation, at least for the foreseeable future, will continue to exist. But anybody who studies medieval manuscripts today is by default also a digital medievalist, whose work will be influenced by the technologies and media utilized, and this will continue as digital manuscript study slowly emerges from its incunabular form.

Manuscripts like Tiberius B.v developed as collections of information – they evolved out of specific technologies and practices to be as effective containers of information as their users required, and then changed as their users changed. We are used to taking a medieval manuscript and describing its history and ecology in words (as I have done here). But manuscript study has never been able to adequately accommodate the deep time of manuscripts like Tiberius, the variable states and dense media ecologies that

⁶⁰ “ResearchSpace - a digital Wunderkammer”: www.researchspace.org/.

⁶¹ The Visionary Cross Project: <http://visionarycross.org/>; Digital Vercelli Book: <http://islp.di.unipi.it/bifrost/vbd/dvb.html>. Such work also has recent analogues in critical scholarship: S. Chaganti, “Vestigial signs: inscription, performance, and *The dream of the rood*,” *PMLA*, 125.1 (2010), 48-72, theorizes a media ecology surrounding the poem and these objects that explains their relationship in ways beyond shared textuality.

⁶² W. Noel, “Parchament and pixel”: www.willnoel.com/2012/06/my-ted-talk-on-archimedes-and-open-data.html; cf. B. Schmidt, “Digital history and the copyright black hole,” *Sapping Attention* (2011): <http://sappingattention.blogspot.com/2011/01/digital-history-and-copyright-black.html>.

define its continuing life and use over time. We now have the technological capacity to imagine, and to strive for, digital architectures that can represent a manuscript's deep time, formal iterations, and shifting contents, and integrate these aspects in a network of past, present, and future scholarship. Like an early printed book, our incunabular desires for digital manuscript study have yet to realize their own efficient limits.

Bibliography

Altschul, N., "Portrayals of difference: medieval race and ethnicity in cross-platform investigation" (summary): <http://lib.stanford.edu/digital-manuscript-uses-and-interoperation-public-site/altschul-summary>

"BL Medieval and Earlier Digitised Manuscripts Master List," <http://britishlibrary.typepad.co.uk/digitisedmanuscripts/2013/07/fancy-a-giant-list-of-digitised-manuscript-hyperlinks.html>.

Bolter, J.D. and Grusin, R., *Remediation: Understanding New Media* (Cambridge: MIT Press, 2000)

British Library, "Digitisation strategy 2008-2011," www.bl.uk/aboutus/stratpolprog/digi/digitisation/digistrategy/

British Library, *Incunable Short Title Catalogue*: <http://istc.bl.uk>

British Library, *On-line Archives and Manuscripts*, <http://searcharchives.bl.uk/>

British Library, *On-line Gallery*, www.bl.uk/onlinegallery/

Brown, M., "Sir Robert Cotton, collector and connoisseur?" in M.P. Brown & S. McKendrick (eds.), *Illuminating the Book: Makers and Interpreters. Essays in Honour of Janet Backhouse* (Toronto: University of Toronto Press, 1998), pp. 281-298

Burghart M. and Rehbein, M., "The present and future of the TEI community for manuscript encoding," *Journal of the Text Encoding Initiative* 2 (2012), <http://jtei.revues.org/372>

Burnard, L., Gartner, R. and Kidd, P., "The cataloguing of western medieval manuscripts in the Bodleian Library: a TEI approach with an appendix describing a TEI-conformant manuscript description" (1997), <http://users.ox.ac.uk/~lou/wip/MS/>

Catalogue of Digitized Medieval Manuscripts, <http://manuscripts.cmrs.ucla.edu/index.php>

Chaganti, S. "Vestigial signs: inscription, performance and *The Dream of the Rood*," *PMLA* 125.1 (2010), 48-72

Corpus of Anglo-Saxon Stone Sculpture, <http://www.ascorpus.ac.uk/>

Crawford, O.G.S., "Some medieval theories about the Nile," *Geographical Journal* 114 (1949): 6-29

Deshman, R. and Cohen, A., *Eye and Mind: Collected Essays in Anglo-Saxon and Early Medieval Art* (Kalamazoo: Medieval Institute Publications, 2010)

Dictionary of Old English, <http://www.doe.utoronto.ca/>

DigiPal: Digital Resource and Database for Palaeography, Manuscript Studies and Diplomatic <http://www.digipal.eu/>

Digital Vercelli Book, <http://islp.di.unipi.it/bifrost/vbd/dvb.html>

DM Project, <http://dm.drew.edu>

Dumville, D.N., "A note on post-conquest additions" in McGurk *et al.*, *An Eleventh-Century Anglo-Saxon Illustrated Miscellany*, pp.104-6

eCodices, www.e-codices.unifr.ch/

Fontes Anglo-Saxonici, <http://fontes.english.ox.ac.uk/>

Foys, M. *Virtually Anglo-Saxon: Old Media, New Media, and Early Medieval Studies in the Late Age of Print* (Gainesville: University Press of Florida, 2007)

Foys, M. and Bradshaw, S., "Developing digital *mappaemundi*: an agile mode for annotating medieval maps," *Digital Medievalist* 7 (2011), www.digitalmedievalist.org/journal/7/foys/

Harley, J. B. and Woodward, D. (eds.), *History of Cartography: Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean*, vol. 1 (Chicago: University of Chicago Press, 1987)

"Interoperation for Digital Medieval Manuscripts," <http://lib.stanford.edu/dmm>

Jayne, S. and Johnson, F.R. (eds.), *The Lumley Library: The Catalogue of 1609* (London: British Museum, 1956)

Ker, N.P., *Catalogue of Manuscripts Containing Anglo-Saxon* (Oxford: Clarendon Press, 1957)

Kerby-Fulton, K., "English Joachite manuscripts and medieval optimism about the role of the Jews in history: A list for future studies," *Florilegium* 23.1 (2006), 97-144

McGurk, P., Dumville, D.N., Godden, M.R., and Knock, A (eds.), *An Eleventh-Century Anglo-Saxon Illustrated Miscellany: British Library Cotton Tiberius B.V Part 1*, Together with Leaves from British Library Cotton Nero D.II (Copenhagen: Rosenkilde & Bagger, 1983)

McLuhan, M., *Understanding Media: The Extension of Man* (New York: McGraw Hill, 1964)

Miller, K., *Mappaemundi: die Altesten Weltkarten*, 6 vols. (Stuttgart: Roth, 1895-1898)

Monumenta Informatik, <http://monumenta.ch/>

Noel, W. "Parchment and pixel," www.willnoel.com/2012/06/my-ted-talk-on-archimedes-and-open-data.html

O'Loughlin, T., "Map and text: a mid ninth-century map for the Book of Joshua," *Imago Mundi*, 57.1 (2005), 7-22

Open Annotation Collaboration, www.openannotation.org/

Parikka, J., *What is Media Archaeology?* (Cambridge, Polity Press, 2012)

Parker on the Web, <http://parkerweb.stanford.edu/>

J. Planta, *A Catalogue of the Manuscripts in the Cottonian Library Deposited in the British Museum* (London: British Museum, 1802)

The Production and Use of English Manuscripts, 1066-1220, <http://www.le.ac.uk/english/em1060to1220/>.

Prosopography of Anglo-Saxon England, <http://www.pase.ac.uk/>

"ResearchSpace - a digital Wunderkammer," www.researchspace.org/

"Resource Description Framework (RDF): concepts and abstract syntax" (2004), [w3.org/TR/rdf-concepts/](http://www.w3.org/TR/rdf-concepts/)

Schmidt, B., "Digital history and the copyright black hole" *Sapping Attention* (2011), <http://sappingattention.blogspot.com/2011/01/digital-history-and-copyright-black.html>.

SharedCanvas, www.shared-canvas.org/

Smith, T., *Catalogus Librorum Manuscriptorum Bibliothecae Cottonianae* (Oxford, E Theatro Sheldoniano, 1696)

Strate, L., "A media ecology review," *Communication Research Trends* 23.2 (2004), 3-48

Straw, W., "Embedded memories" in C. Acland (ed.), *Residual Media* (Minneapolis: University of Minnesota Press, 2007), pp. 3-15

T-Pen: Transcription for Paleographical and Editorial Notation, <http://t-pen.org/TPEN/>

"A TEI-Based Tag Set for Manuscript Transcription" (2000), www.tei-c.org/Support/Learn/dsguide1.html

Tite, C., *The Early Records of Sir Robert Cotton's Library* (London: British Library, 2003)

Treharne, E., "Fleshing out the text: The transcendent manuscript in the digital age," *Postmedieval* 4 (2013), 465-78.

Unsworth, J., "Scholarly Primitives: what methods do humanities researchers have in common, and how might our tools reflect this?" *Humanities Computing: Formal Methods, Experimental Practice Symposium*. King's College, London, 13 May 2000, <http://people.lis.illinois.edu/~unsworth/Kings.5-00/primitives.html>

The Visionary Cross Project, <http://visionarycross.org/>

Zielinski, S., *Deep Time of the Media: Toward an Archaeology of Hearing and Seeing by Technical Means*, trans. G. Custance (Cambridge, MA: MIT University Press, 2006)

Zorich, D.M. *A Survey of Digital Humanities Centers in the United States* (Washington, DC: Council on Library and Information Resources, 2008), www.clir.org/pubs/reports/pub143/reports/pub143/pub143.pdf

Figure 1: The Cotton Map (British Library MS Cotton Tiberius B.v, Part 1, f. 56v)

Pentapolis (am Toten Meere), ebs. Is, 14, 3, 24; Eb.
Moabite, ebs. Hf, Eu; Moab Hi, Eu.
Amonite, Eu, Ammone Hf — sonst keine Karte.
Philistea, ebs. Lb, -sthiim Is.
Mons Galaad, ebs. Hi, Hn.
Mons Fasga, ebs. Hf, die Spitze des Berges Nebo,
 von wo Moses Chanaan überschaute, Deut.
 34, 1. Num. 21, 20.

Städte:

Antiochia, fehlt Or.
Cesarea Philippi, ebs. Hf, Eb.
Hiericho (-ico C falsch), Eb, Ra, Hn, Hf, -onte
 Ta, Jerico Be.
Hierusalem, Betleem a. a. K.
Ebron, Hi, Eb, Hf, Is. Chebron, olim metropolis
 Philistinorum et habitaculum gigantum, reg-
 numque postea David in tribu Juda, 22 Meilen
 südlich von Jerusalem, Grabmal Abrahams,
 früher Arbee genannt: Eus. Onom. 55, 14.
 (Tyrus) ist zwar nicht genannt, aber die an der
 Küste von Palästina vortretende grosse Halb-
 insel entspricht ganz der Schilderung von
 Tyrus bei Pomponius Mela I, 66.

Die 12 Stämme Israels (alle 12 hat Hn):

Manase und *dimidia tribus Manase*, ebs. Hf, Hn.
Neptalim (bis, wiederholt bei Alexandria).
Trib' Dan.
Trib' Zabulon (bis, statt Benjamin).
Isachar.
Ephraim.
Asser.
Gad.

Ruben.

(Juda) Name fehlt, mit Ebron s. o.
 (Simeon) fehlt, Benjamin s. o.

4. Der Orient:

Mesopotamia, ebs. Or.
Chaldea, ebs. Or, mit
Babylonia, ebs. Or.
Persidia, -da Or.
Aracusia, ebs. Hf, Is, -ch- Hi 2, Lb, Arachosia Or.
Media, ebs. Or, mit
Ninive, ebs. Eb, Hf, Hi, Ps.
India in qua sunt gentes XLIIII. (falsch India
 magna —), ebs. Or, mit
Evilath (an Ailath-Aelana in Arabia Petraea zu
 denken, wie C will, wäre natürlich sehr irrig),
 Ra, biblisch: Gen. 2, 4; 25, 18. Reg. 15, 7.
 Eu 361 und 195.
Mons aureus, Montes aurei Eb, Hn, Hf, Ae, Is;
 cf. Gen. 2, 11: „Phison . . . circuit terram
 Evilat ubi nascitur aurum“.
Farthau (falsch Farthan — C). Mons Parthau,
 Or 17. Montes Parthorum Eb.
Fison fl. (falsch Tison C).
Arabia, ebs. Or, mit
Eudemon (Eodemon C), ebs. Or.
Arabica deserta, ebs. Hf, Hn; est „Desertum
 ubi XL annis erraverunt filii Israel“ Ta, Be;
 Deut. c. 1.
Mons Sina, ebs. Hi 2, Hn, Eb.
 Der Durchgang durch das Rote Meer — ge-
 zeichnet, aber ohne Legende.
Tabrobanen, habet X civitates¹⁾ bis in anno metit
 et fruges. ¹⁾ Or 6. — Der 2. Satz aus Is 14,
 3, 6, wo er aber sich auf Indien bezieht.

In Afrika.

I. Aegypten:

Egiptus interior, statt inferior, ebs. Or, mit
Alexandria, Or 3.
Egiptus superior, ebs. Or.
Fluvius Nilus (Nilu- C falsch), mit
Meroen insula, ebs. Or, Be (auch Meroen ins.).
Hic arenis immergitur (C liest hic Arguis imm.),
 Or 12, Hn.
Fons Dara (oder Dora?), -Dara Or 13, Hf, Eb.

Libia cirenaria (C hat falsch -aica), statt -ica, ebs.
 Or 43, mit
Lacus Calcarsum (Calcarsum C), -Chalearzum
 Or 3.
Pentapolis (zum zweitenmal), Or 43.
Mons Clinax, -Climax Or, und
Aniclea, bis (Cort. fasst A. als Stadt und denkt
 an Amyclae, einer der Namen von Canope),
 Mons Alitne, Hf, est Nitrie Hi 2.

Figure 2: Example of Konrad Miller's "database" editing of the Cotton Map, with reference to content in other maps and texts

Figure 3: The early, “fixed taxonomy” scheme for digitally encoding medieval maps data, by Martin Foy and Shannon Bradshaw