

## Archaeology of a Digitization

Bonnie Mak  
University of Illinois

501 E. Daniel Street  
Champaign, Illinois  
61820  
(217) 244-0154

[bmak@illinois.edu](mailto:bmak@illinois.edu)

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*Abstract*

This study proposes an archaeology as a means of exploring the practices by which digitally-encoded resources are generated, circulated, and received. The discussion grapples with the ambiguous relationship between digitizations and their exemplars in the well-known database, *Early English Books Online (EEBO)*, and suggests ways in which digitizations might be analyzed as witnesses of current perceptions about the past, and used accordingly in scholarly research. The article therefore offers a critical reading of *EEBO* and its digitizations as part of a broader effort to investigate the role of digitally-encoded resources in the transmission of ideas and the production of cultural heritage.

The proliferation of digitized materials for both popular and scholarly audiences has stimulated widespread interest in the relationship between these new materials and the documents, books, and artefacts that they represent. Although investigations of digital reproductions have highlighted the notion of remediation, what has not yet been considered in detail is the ontological rift that separates digitizations from their exemplars, the ramifications of such a rift, and how we might embark upon productive and critical interpretations of the digitized sources.[1] Debates continue to be waged about the appropriate treatment of digital materials in libraries and archives [2], but we can in the meantime deepen our understanding of these entities by exploring their role in the production of knowledge. To this end, the present study is conceived as an archaeology that excavates for consideration the discursive practices by which digitizations are produced, circulated, and received. This particular conception of archaeology was popularized by Michel Foucault (1972) as a means of critical analysis, and will prove useful in making visible the scope and approach of the examination at hand. L.M.J. Delaissé advocated in 1976 similarly for an archaeology of medieval manuscripts that would be "the first step in any research based on manuscripts." He went on to explain that the method "guarantees that we are in possession of all the material facts revealing the life of these books and vital for understanding their contents" (p. 81). Just as Delaissé hoped that his archaeology would develop into a robust and well-rounded history of the medieval book, so too does the following study propose an archaeology that lays the foundation for a future

history of the digitization. The article will therefore perform an excavation of a particular project in digitization, introducing for discussion the constitution of that project, how we might interpret the conditions in which its digitizations circulate, and how we might approach similar initiatives as sites of critical analysis.

By locating digitizations within the tradition of manuscript studies, book history, or, more generally, the transmission of ideas, the following exploration builds upon earlier work by bibliographer D.F. McKenzie (1999), classicist James J. O'Donnell (1998), and historian Roger Chartier (1995) that considers digital media a part of a longer trajectory of reading and writing technologies. An expansive understanding of the tools of bibliography and literary criticism has lately enabled the investigation of the materialities of digital books and texts by Alan Galey (2012), Johanna Drucker (2009), Matthew G. Kirschenbaum (2008), Alan Liu (2008), and N. Katherine Hayles (2004). The present study similarly calls upon the well-established humanistic approaches of palaeography, codicology, bibliography, and art history, among others, to explore a digitally-encoded artefact for its role in the transmission of ideas and may thus be distinguished from approaches in media history and media studies that engage with broader structures of communication (Parikka, 2007; Gitelman, 2006; Manovich, 2001).[3] Digitizations are here not conceived primarily as technological, or, at least, no more or less technological than medieval illuminated manuscripts or printed newspapers. The digitally-encoded book is instead framed in this analysis as a material, bibliographical object. As a product of human labour, a digitization transmits clues in its very instantiation about the

circumstances of its manufacture and dissemination. Such clues – paratextual and peritextual; formal and material – may be drawn together and scrutinized to develop a more nuanced understanding of that digitization and its politics, for it is within such an infrastructure that meaning is made.[4] Just as the exploration of ancient and medieval societies has been conducted by interrogating aspects of their written record, including the punctuation of sentences (Parkes, 1992), the space between words (Saenger, 1997), and the shape of letter-forms (Morison, 1972), this article employs a similar approach that seeks to decode the physical instantiation of the digitally-encoded text or image in a consideration of the history and politics of knowledge-making of the present day.

The digitization of a medieval manuscript is the materialization of a twenty-first-century perception of an object that has been evolving for over five hundred years. The digital encoding of such an artefact – the eighth-century *Lindisfarne Gospels* by the British Library, for instance, or the thirteenth-century *Codex Gigas* by the National Library of Sweden – occurs in a particular social, cultural, economic, and political climate of the modern day, and is correspondingly marked by a particular approach to recalling and commemorating a specific past for modern audiences. The consideration of a single digitization reveals that the resource operates in reference to, and intermittently transmits something of, the various circumstances associated with the object that is being represented: handwriting or illustrations produced in the twelfth century, perhaps, or printers' marks of the fifteenth, plus marginalia of the eighteenth, in addition to bibliographical description from the nineteenth, and a binding that was lately

commissioned by a collector of rare books. Such a digitization is furthermore accompanied by contemporary metadata and other paratexts that help identify its significance as well as that of its exemplar, or originating artefact, in a particular narrative. All these histories are presented together in the here and now. Referring to their exemplars at the same time that they refer to themselves, transmitting both past and present, digitizations constitute a unique space in which multiple traditions visibly intersect, and offer redolent clues about the ongoing processes of meaning-making.[5]

The following study will examine *Early English Books Online*, an online resource that transmits diverse digitizations of early English printed books – namely, digitally-encoded versions of texts and images that have an anterior existence in printed form. As representations of historical materials, these digitizations are generated from a particular synthesis of traditional and emergent technologies. The imbrication of old and new makes such digitizations intriguing; however, it is precisely because of this hybridity that the digitizations are challenging to locate for scholarly analysis. To aid the study of the intersecting temporalities in *Early English Books Online*, then, the present endeavour employs the notion of the palimpsest, a writing surface on which one text or image has been erased to be overwritten by another. Papyri and medieval parchments were especially subject to this kind of recycling, for both materials are durable, offering useable writing surfaces even after having been washed or scraped.[6]

Palimpsests, by definition, are evidence of an effacement that is incomplete; they transmit vestiges of their former lives – partially obscured, yet always at hand. By

considering the opportunities tendered by the overlapping narratives of anterior and posterior, [7] digitizations may be recognized as vibrant and historically-situated sources in their own right that offer alternative points of entry into enduring debates about the production and transmission of knowledge.

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The database of early English printed material, *Early English Books Online (EEBO)*, has gained much currency with scholars in the humanities, especially those working in the areas of literary studies, history, and the history of the book, and therefore offers familiar terrain for the present excavation. *EEBO* provides searchable full-text transcriptions and digitized images of early English printed books to 1700, and calls upon both the textual edition and the facsimile reproduction as models for its transmission of text.[8] Containing more than 125,000 titles, the database has become a landmark reference tool for literary scholars and historians who study early modern England and its colonies. *EEBO* is composed of multiple elements, but associates itself most overtly with the publication, *Short-title catalogue of books printed in England, Scotland, and Ireland, and of English books printed abroad, 1475–1640*. Entries in the *EEBO* database are furthermore augmented by bibliographic records derived from an iteration of the English Short-Title Catalogue (ESTC), digital scans of microfilms of particular books, marked-up textual transcriptions that were made from the scans, and finally "print-view" versions of the transcriptions.[9] By approaching the database and its digitizations of text and image as palimpsests, we can analyze their relationships with each other and with historical antecedents, and moreover

locate them with regard to the growing body of resources that are designed for scholarly use. We begin our excavations of the database with an examination of the *Short-title catalogue (STC)*, from which *EEBO* claims its inspiration.

The *STC* was an attempt at the beginning of the twentieth century by A.W. Pollard and G.R. Redgrave to generate a hand-list of materials that would lay the foundation for tracing relationships between surviving editions of books printed in English in Britain and its colonies before 1641. The initial list took about eight years to compile, and employed a workforce of, in the words of the editors, "septuagenarians and something over" (1926, p. vii). In his memoranda to the *STC*, Pollard warned that the work was "a catalogue of the books of which its compilers have been able to locate copies, not a bibliography of books known or believed to have been produced," and, owing to the mixed character of its sources, the editors indicated that the *STC* was "dangerous" for anyone to handle without verifying the information. Indeed, Pollard and Redgrave conceded, "Greater completeness as well as a higher standard of uniformity and accuracy might well have been attained if the work had been conducted from the first on a more systematic plan, more especially if it had been possible to obtain at the outset the help of a larger number of American libraries and collectors" (1926, pp. vii–xi). A revision and update was officially begun in 1949 by W.A. Jackson and F.S. Ferguson, and completed some thirty years later. The last editor of the *Catalogue*, Katharine Pantzer, admitted that the revision of the list similarly betrayed an "unevenness in execution" – including inconsistent descriptions and irregular designations for folio formats – which might be expected when working with

researchers of varying expertise over the course of decades, and she also confessed that the pressure to meet publication deadlines had resulted in some entries being excised from the final copy. Pantzer characterized the history of the revision as "tangled" and "serpentine," and related that although the only remaining copies of some books were destroyed during World War II, she made the decision to let stand their entries in the *STC*, and drew attention to them individually in her introduction.[10]

At its inception, then, the *STC* was conceived as a preparatory list, designed to give way to a later "full-dress" catalogue of printed books and their editions in the English language. The initial admonitions about its reliability, scope, and completeness were explicitly reiterated in the second edition – the earlier warnings to be "still neglected at peril" (Pollard & Redgrave, 1986, vol. I, p. vii). The shortcomings of the *STC* and its revision, especially the lack of comprehensiveness and consistency, were thus openly admitted by the editors in the front matter of the publication, debated, and indeed continue to be debated almost a century later in scholarly journals, such as *Papers of the Bibliographical Society of America*, *The Library*, and *Library Quarterly*. [11] In situating the *STC* with regard to the history of bibliographical study, G. Thomas Tanselle remarked that the work aims "to differentiate editions; and its history is tied up with the history of the Bibliographical Society in London, a society interested in the history of books, not in the production of lists." [12] Furthermore, D.F. McKenzie described the priorities of the Society in the early twentieth century thus: "to create a systematic record of the extant printed books to the end of 1640, and to

establish precisely how Britain's most important literary texts from the same period were transmitted from manuscript to print" (2002, p. 263). The *STC*, then, was shaped by the mission of the Bibliographical Society, and is the product of a specific desire to track the recension of editions of texts in the English language.

Now embedded as part of what might be called the infrastructure of the *EEBO* database, the 90-year-old mission of the Bibliographical Society continues to play an influential role in the configuration of the past. The online adaptation of the revised *STC* organizes and arranges the reader's engagement with the collection of digitizations. But careful scrutiny of the list in *EEBO* reveals that it is not a simple replication of the *STC*: for example, the entries that Pantzer decided to include in her revision of the *STC* – despite the fact that the books to which they refer had been destroyed – are not reproduced in *EEBO*. At the same time, other entries have been added and expanded with descriptions from the *ESTC*. Whereas the materials prepared by the editors of the *STC* had provided details by which the reader might grasp the intention of the project, and identify changes, inconsistencies, or overt interventions between the first and second editions, the editors of the database remain elusive about the production of *EEBO*, including the precise nature of its relationship with the *STC*, and indeed with the *ESTC*.<sup>[13]</sup> Although the list in *EEBO* is not identical to that of the revised *STC*, the former nevertheless professes an important relationship to the latter, and accordingly transmits much of the agenda of the Bibliographical Society of the early twentieth century. In erasing markers of its own construction, for instance eliding the role of the *ESTC*, *EEBO* fashions a porous boundary between the

database and the *STC*. Maintaining this close and ambiguous relationship garners for *EEBO* a kind of authority by association, for thus entwined, criticisms of the database could be construed as an attack on the bibliographical monument of the *STC*.

Helping to embody a story that has already been deemed important, digitizations may be taken to represent a particular people's literature or national identity, as Mats Dahlström, Joacim Hansson, and Ulrika Kjellman argue in their discussion of the digitization of the *Codex Gigas* and the *Suecia Antiqua et Hodierna*, both at the National Library of Sweden, and the *St. Laurentius Digital Archive* at Lund University (2012, p. 469). Such projects re-inscribe particular narratives about cultural heritage and furthermore concretize the dynamics by which such histories came to be privileged. For instance, the description, "the pinnacle of Anglo-Saxon art," associated with the British Library's digitization of the *Lindisfarne Gospels*, may inadvertently obscure in common consciousness the unresolved debates about whether the manuscript was made in Lindisfarne, and to what extent it may be properly said to represent a style called Anglo-Saxon.[14] As Stuart Hall observes, heritage "is always inflected by the power and authority of those who have colonized the past, whose versions of history matter. These assumptions and co-ordinates of power are inhabited as natural – given, timeless, true, and inevitable" (1999–2000, p. 6). Digitizations can thus be protected from critical interrogation when configured as an integral part of an already-established account of cultural heritage. The association of *EEBO* with the *STC* and English literary heritage, then, operates to guard the database against criticism. To offer a

critique of digitizations of cultural heritage – from this perspective – may be interpreted as an attempt to question a patrimony that already has been instituted as “given, timeless, true, and inevitable.”

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An examination of the digitally-encoded scans in *EEBO* unearths important clues about the processes of their production and circulation. Indeed, the images in the *EEBO* database employ microfilms as their immediate exemplars, and the “digital page facsimiles” graphically transmit their history through the communication of reel numbers, irregular exposures, and other such markings (Kichuk, 2007, pp. 293–294). But rather than dismissing these material traces of the creative process as operator error or accidental incursion, an archaeology might instead approach them as the residue of hand, machine, and time. Thus constituting valuable evidence in a social history of the digitizations, such signs may be exploited to formulate a critical understanding of the digital scans within a broader exploration of the transmission of ideas.

The microfilming of the books listed in the *STC* began in the last years of the 1930's by Eugene Power, founder of University Microfilms International (UMI).[15] The endeavour, *Early English Books*, also had its own “serpentine” history: the copying of the books began as part of Powers's entrepreneurial vision of a publication-on-demand service that would deploy new microfilming technology to photograph books in the negative and sell positive translations of the images on reels of film. Power identified the books of the *STC* as a valuable resource for his experiment, because, “demand for them would be certain:

American libraries, having been established relatively recently, were generally lacking in *STC* titles.”[16] After producing his first shipment, in which each microfilm corresponded to a single book, Power realized that he had not used the format of film to his best advantage. He modified his approach so that subsequent rolls of film – measuring about 100 feet long – transmitted twenty to thirty books each, rather than only one. Because many disparate books were now conjoined on the same film, the physical reconfiguration necessitated a concomitant change in the identification and organization of the materials. The films of books were originally to be ordered chronologically by year and alphabetically by author, and indeed the first batches were. Later films were identified by a plain numerical sequence according to an in-house order number, which in turn corresponded to the sequence of the *STC*. But even then, Power acknowledged, exceptions had to be made, owing to the availability and delivery of some books before others for photographing (1938, p. 47 n. 2). The experimental history of the production, arrangement, and dissemination of the materials is thus embodied and performed in the films themselves, which in turn exerts influence over the configuration of knowledge in *EEBO*.

By the end of the decade, Power worried that a ground war would interrupt his access to *STC* books in British libraries, and thereby jeopardize his fledgling microfilming business with its sixteen institutional subscribers. The scholarly community also expressed a concern about the preservation of books and manuscripts in European libraries in light of growing instability in the region. Commentators including Power “agreed that something should be done to

preserve the irreplaceable volumes in England, at least" (1990, p. 117; see also, Tate, 1942). At a meeting sponsored by the Library of Congress and the American Council of Learned Societies (ACLS) in June of 1940, it was concluded that, given the deteriorating state of affairs abroad, "the centre of learning would shift to the United States and a plan should be developed to bring microfilm copies of source materials from all parts of the world to [America]" (Anderson, 1958, p. 88). Historian Herbert A. Kellar and Lucile O'Connor Kellar accordingly compiled "a want list of historical materials desired by American scholars" (Anderson, 1958, p. 88; see also, Power, 1990, p. 122; and Kellar, 1941, p. 76). Seven months later, a Rockefeller grant of \$30,000 was pledged to support the microfilming work that was eventually awarded to Power, and additional funds were committed in September of 1941. Thus bolstered by the charge from the ACLS and the financial support of the Rockefeller grants, Power was able to continue his microfilming activities abroad through the course of the war. Although the secretary of the ACLS characterized the explicit goal of the project as "preservation rather than utilization, and the funds are provided for that purpose" (Daugherty, 1941, p. 211), it might be surmised that Power held the economic utility of the microfilms foremost in mind as he applied the Rockefeller grants towards the copying of six million pages of books in the *STC*. The imperative to preserve materials that were of special interest to scholars in the United States was again made explicit in the final checklist of films. At the top of this document, Power noted, "The collections listed are not complete. Only those

portions of particular interest to American scholars were microfilmed" (Power, 1990, Appendix C, p. 385).

Through contacts at the Library of Congress, Power also began organizing the microfilming of intelligence for General William Donovan, the head of the U.S. Office of the Coordinator of Information (COI), an organization that was the predecessor of the Central Intelligence Agency and the U.S. Information Agency.[17] Scientific periodicals, underground newspapers, and other materials that had been acquired by British intelligence were copied by Power's staff and sent daily by diplomatic pouch to Washington. Women were critical in these microfilming initiatives, not only as photographers and technicians, but also as facilitators and administrators. For instance, while Power travelled abroad, Margaret Harwick continued the distribution of the *Early English Books* and other microfilms from the UMI office in Ann Arbor; meanwhile, Lucia Moholy and a "crew of women" worked on the COI project in London in a room provided by the Victoria and Albert Museum. Palaeographer Adele Kibre of the University of Chicago was hired by Power in 1942 to microfilm bags of intercepted German mail for the Office of Strategic Services (OSS); she supervised the effort from Stockholm, where she remained until the end of the war.[18] Elsewhere, manifests of ships were copied for the U.S. Department of Justice, as well as some 50,000 drawings used in the design and construction of the P-51 fighter plane for the U.S. Air Force.

Collaborating with the federal government enabled Power to purchase and take possession of state-of-the-art equipment that would otherwise have been

prohibited to him owing to strict war priority (Power, 1990, pp. 141–2). Such equipment helped UMI improve its efficiency in the production and reproduction of films, including those of the books of the *STC*. Indeed, after D-Day, the cameras that had been employed for the OSS project were re-assigned for “scholarly undertakings” in research libraries; in this way, the history of the *Early English Books* microfilms is entangled with the history of technologies of war (Power, 1990, p. 148). The relationship also worked in the other direction: namely, the earlier success of the *STC* subscription service put Power in a position such that his business was able to handle copying voluminous quantities of material, and at speed, as required by the federal agencies in their wartime efforts. As a consequence, UMI was able to compete with larger outfits that included Recordak, the subsidiary of Kodak, and even outbid them on military contracts. Decades later, the duplication process is still in progress, now under the aegis of ProQuest, which also organizes the translation of the microfilms into the digital images that are available in *EEBO*.<sup>[19]</sup>

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The images transmitted on the UMI microfilms were at the outset converted through a manual process into bitonal (black-and-white) digital scans.<sup>[20]</sup> From 2012, the practice of digitizing the microfilms was revised: all new scans were to be executed in greyscale. *EEBO*'s website relates that the change was initiated “to provide a more nuanced and realistic rendering of the original printed source.”<sup>[21]</sup> The suggestion by *EEBO* that greyscale images offer a better representation of the “original printed source” elides the key

intermediary of microfilm. That is, the claim is not that the digital scan represents its immediate exemplar of the *microfilm image* more accurately, but rather the *page of the printed book*. Readers are thus encouraged to overlook as inconsequential the material history of the scans that is graphically registered in the digitizations themselves. Not only do such slippages elide the histories of transmission and thus present challenges for the archaeological endeavour, but they also permit the scans to possess multiple referents: the "digital facsimile page images" of *EEBO* may index the microfilm; a printed book with a specific shelfmark at the Huntington Library; an edition of a particular text; or an abstracted notion of that text. Although the dynamic in which a single object can concurrently sustain several referents may seem to defy received logic, the digitizations in *EEBO* thrive on this ambiguity that is characteristic of the palimpsest.

An examination of the visual and verbal cues of *EEBO*'s digital scans thus leads to a broader consideration of the relationship between facsimiles and the objects that they are designed to represent.[22] The facsimile is designed to imitate, to emulate, to reproduce; it seduces readers into overlooking the physical differences between the reproduction and its exemplar, and nowhere more acutely than in the digital environment, where the material incongruities between codex and computer should be most evident. Indeed, the relationship between the digitization and the object to which it refers is not necessarily a close one, and the extent of the imitation is by no means obvious. For instance, digital images of a book are not yet configured in the physical form of a codex – parchment or paper

pages bound under a cover – and no one expects them to be. But what else are they not? Although an illusion of virtuality is central to any facsimile, analogue or otherwise, this particular kind of artifice has been especially refined in the codes of digital reproductions (Latour & Lowe, 2011; Smith, 1998).

Visual imitation, for example, has been accepted as a key mode of representation in the digital environment. Digitizations are often adjudicated according to image resolution rather than other qualities that might include smell or texture (Camille, 1998b, pp. 37–38; see also, Parisi, 2009). However, by suggesting that visual imitation alone is a sufficient criterion for the representation of artefacts, or at least serves to communicate their “relevant characteristics” (Arnold, 2008, p. 159), the rhetoric around digital facsimiles normalizes a peculiar logic in which qualities that are currently more amenable to digital transmission are privileged over those that are not. Most significantly for dissecting the infrastructures of knowledge-making, Fiona Cameron points out that the digital copy “passes on a set of social relations constructed for the ‘real’” (2007, p. 57). That is, in addition to codifying particular cultural narratives as discussed above, digital facsimiles may also serve to re-inscribe a predilection for the visual and its naturalized association with depictions of truth (Mitchell, 1992; Trachtenberg, 1989; Krauss, 1982; Sekula, 1978). At play, moreover, is an important dynamic between sense-making and authority that Martin Kemp characterizes thus: “We automatically work to bring coherence to [the digital image], and that very work predisposes us to trust it” (2011, p. 394; see also, Daston & Galison, 1992, pp. 82–83). Given that scholars and students are

increasingly relying upon digital images as primary sources for historical research (Terras, 2010; Deegan & Sutherland, 2009; and Lindquist & Wicht, 2007), an archaeology of these digitizations authorizes a consideration, or at least promotes consciousness, of underserved modes of engagement that may include touch or taste or smell, and the deliberate silence around them. The digitization, then, emerges from the archaeology as not merely a palimpsest of a historical object and its modern representation. Namely, it is also a space in which aesthetic responses are exercised and normalized; such responses embody the production, organization, communication, and reception of cultural resources, and give shape to the future crafting of knowledge.

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Another mode of engaging with materials in the *EEBO* database is through full-text transcriptions, produced by legions of outsourced "vendors" who have keyboarded and tagged over 40,000 early English texts with SGML code. Supervised by a non-profit initiative that is distinct from *EEBO* called the Text Creation Partnership (TCP), copyists continue to transcribe texts from the digital scans, adding machine-readable code to facilitate subsequent searching by title, author, and keyword.[23] Scrutiny of the source code and TCP's operational records reveals that each page of text is examined by multiple people as it is processed. According to the TCP, the deployment of human labour for the purposes of transcribing texts from scans of early printed books, or from scans of poor quality, has proven more reliable than using computer software that translates letter-forms into machine-encoded text, known as optical character

recognition or OCR.[24] The explicit acknowledgement by Text Creation Partnership of the merits of human labour is a surprising revelation when set against common assumptions about automation and computer precision. Nevertheless, an internal training document prepared by the TCP for the staff at the Bodleian Libraries warns that the transcriptions "have been created by non-expert staff, so they should not be used as authoritative editions in themselves." [25] The TCP thus acknowledges that although human labour generates better transcriptions for its purposes than OCR, the results are still sometimes problematic and should not be taken as reliable.

Also addressed in the documents of the TCP is the rationale behind the selection of texts for transcription and markup. Particular works are designated for transcription if the name of their author appears in the *New Cambridge Bibliography of English Literature*. In addition, titles requested by the investing partners of the TCP receive particular attention, and "are placed at the head of the production queue"; these organizations are mainly private and public universities in the United States, but also include a handful of institutions in Canada, Australia, and the United Kingdom.[26] The selection criteria employed by the TCP thus constitute important signals of how the corpus of English literature is being conceived, organized, and presented, and by whom in the 21<sup>st</sup> century. This process and others like it, Hall argues, "confer authority and a material and institutional facticity on the selective tradition, making it extremely difficult to shift or revise. The institutions responsible for making the 'selective tradition' work develop a deep investment in their own 'truth'" (1999–2000, pp. 5–6). The

enfolding of this particular ordering of knowledge into *EEBO* adds yet another history of practice to the database. The priorities of the TCP are palimpsested in *EEBO* with those of the *STC* and the UMI microfilms, which – in turn – collectively become a strategic organization of early English material that configures the past for the present-day scholar. Serving in part to codify disciplinary knowledge, such work also may influence the future course of research.

The Text Creation Partnership intends to make public its full-text digitizations on a rolling basis, with the first release of approximately 25,000 texts projected to occur in 2015.[27] The TCP transcriptions will not necessarily be easily compared with their exemplars, because the digital scans will remain behind *EEBO*'s paywall; this arrangement divorces the product from the labour and processes that underpin it. Disseminated with little reference to their history of construction and the caveats about authoritativeness, the full-text versions and their markup may more readily be able to be deployed as data in the crafting of other narratives. Indeed, the encoded transcriptions have already been taken up for further computational processing in initiatives in the digital humanities, such as *Metadata Offer New Knowledge* (MONK) and *Manuscripts Online*. [28] As Bruno Latour and Steven Woolgar note with respect to the construction of scientific knowledge, there is a point of stabilization at which an assertion can become authoritative, namely, "when it loses all temporal qualifications and becomes incorporated into a large body of knowledge drawn upon by others" (1979/1986, p. 106). Tracking the ways in which the TCP's transcriptions and markup have

been incorporated into other resources helps to apprehend the processes by which provisional trials can become accepted as authoritative in the production of knowledge.

The manner by which an assertion is granted the status of a given had already been observed by Peter W.M. Blayney in his studies of the *STC* and its afterlife (2007, p. 387). However, the bibliographical, photographic, scribal, and editorial idiosyncrasies of the *STC*, the encoded transcriptions, and image scans take on a different complexion in *EEBO* under the umbrella of ProQuest. As Latour and Woolgar observe, the practice of creating fact "involves the use of certain devices whereby all traces of production are made extremely difficult to detect" (1979/1986, p. 176). And the database may be one such device: as the list, images, and transcriptions are aggregated by *EEBO*, their respective histories recede from view. The elision of the contingencies that are always entangled in processes of production generates the illusion that the digitizations have not only been protected from editorial intervention, but may even function outside traditional infrastructures of production.[29] All the propositions in *EEBO* – and indeed the proposition of the database itself – become stabilized, making it increasingly difficult to raise questions about whether certain entries should be in the list; whether others should have been left out; or to what extent and in what respect a particular image or transcription is an accurate representation of its exemplar. Consequently, the reader may find it challenging to disambiguate handwritten corrections of the sixteenth or seventeenth century from microfilming "artefacts" of the early twentieth century, and these from the ones introduced by

copyists, scanners, and coders in the twenty-first century (Giddens, 2011, pp. 27–28; and Kichuk, 2007, p. 295). In eliding the social processes that constitute the digitizations, not only are the politics of the final product in *EEBO* obscured, but so too is the possibility of a historical understanding of the project itself. The palimpsesting of the past, present, and everything in between can therefore be understood as part of the dynamic that produces the effect of fact: the performance of *EEBO* becomes the performance of knowledge.

A further challenge for an archaeology, then, is not only to discern the character of such an elision and recover that which has been obscured in the digitizations, but also to conduct such activities in a context that actively works against such enterprises. Sherry Turkle characterizes the environment of digitizations thus: "Computer precision is wrongly taken for perfection. The fantasy, visceral in nature, is that computers serve as a guarantor" (2009, p. 80). This fantasy harbours the implicit assumption that all valuable information is online, and that such information, apparently having been certified by computational processes, is necessarily complete, comprehensive, and accurate. Although Ed Folsom recently suggested that the database "desires completeness" (2007, p. 1575), a more precise characterization might be that the database is a performative space in which readers enact desires for its completeness, and that such desires have been carefully and strategically fostered. To be explicit, ProQuest, the company that owns *EEBO*, professes to connect people with "vetted, reliable information. . . . [ProQuest's] role is essential to libraries and other organizations whose missions depend on the delivery of complete,

trustworthy information.”[30] Rosalind Krauss’s discussion of advertising is useful to aid the dissection of such a statement, for she observes that images deployed in a similar manner “are the reality that is being projected by an advertising company, by a given product’s imperative to instil certain desires, certain notions of need, in the potential consumer” (1984, p. 65). Moreover, Krauss contends, such a proposal leaves no room for an alternative. Applied to the present case, it may be argued that ProQuest simultaneously inspires and cultivates in its consumers certain notions of need for trustworthy, complete, and reliable information at the same time that it proposes to fulfil these desires with its suite of products that includes *EEBO*. By these lights, it is difficult for the consumer to imagine an alternative; no other body of knowledge seems to present itself. Indeed, Crowther, Jordan, Wernimont, and Nunn (2008), self-described members the “*EEBO* Generation,” describe how Crowther’s reliance on the database led to her formulation of a theory later discovered to be “completely unfounded” when considered in relation to other sources that were not transmitted in *EEBO*. *Early English Books Online* thus emerges as a space in which readers may enact their desires for the completeness of the database. In this way, the database is an important site of performance, for the aesthetic responses generated by *EEBO* influence the very deployment of the resource and the configuration of the research enterprise. Thus enfolded, both database and response become part of the practice of knowledge-making.

As *EEBO* continues to be employed in universities around the world – a “body of knowledge drawn upon by others” – it will, in time, come to constitute a

*de facto* standard of particular iterations of texts, not only circumscribing with its interface the look of English literary heritage, but also shaping the future direction of research.[31] The codification of *EEBO* as an authoritative tool for the examination of early English printed materials will furthermore compel scholars to engage in conversations with the database: those without access to *EEBO* must nevertheless locate their studies with respect to the work of those who benefit from an institutional subscription to the database. Through this phenomenon, *EEBO* will be established as a canonical resource in the lives of those for whom legitimate access to it is precluded. The significance of such a lacuna for "have-not" scholars and for scholarship more broadly has yet to be fully grasped: indeed, the acceptance of *EEBO* as a default representation of the corpus of early English books may eventually oblige a reconsideration of the status of corresponding printed materials that are presently held in the British Library, the Huntington Library, and other repositories.

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Despite the "aura of information" around digitizations that impedes their easy historicization (Betancourt, 2006), a close study of digitally-encoded materials can nevertheless reveal important insights about the processes by which they have been produced. Such insights can be deployed in a critical analysis of the digital resources upon which scholarship about the past increasingly depends, thus laying bare some of the infrastructures of knowledge-making in the twenty-first century. As Hubert Damisch observes with regard to the photographic image, "[It] does not belong to the natural world. It is a product of human labour, a

cultural object whose being . . . cannot be dissociated precisely from its historical meaning and from the necessarily datable product in which it originates" (1980, p. 288). An archaeology of a digitization, then, should understand the digitally-encoded entity as a cultural object, produced by human labour, and necessarily shaped by – and consequently embodying – historical circumstance. With this perspective, digitizations emerge as material artefacts, ideal for the study of the past and present. The foregoing archaeology has uncovered that vestiges of human labour and war-time anxiety may indeed be manifest in the digital scans of *EEBO*: the digital images carry a history that prompts questions about the production of Englishness and English cultural heritage, as well as the orientation of American scholarship with regard to English materials; the stewarding and ownership of a shared patrimony; the relationship between the Library of Congress, federal agencies, and national identity in the mid-twentieth century; and the connection between academia and technologies of war.[32] The digital scans might furthermore generate explorations of the role of women in the production of knowledge. Women were critical in the bibliographical endeavours of the *STC* in the early twentieth century and in the microfilming work that was conducted during World War II; the fruits of both are now taken as foundational to scholarship in the humanities and present-day efforts in digitization.[33] In addition, the images in *EEBO* offer a complex narrative about duplication technologies, as they chart moments in the history of printing, microfilm, and digital scanning and manipulation, and gesture towards the discursive practices of such work that involve human labour. Indeed, the scans in *EEBO* constitute

palimpsests of the multiple hands of printers from the fifteenth century, of chiefly female librarians, photographers, and microfilm technicians from the twentieth century, and of scanners, web designers, and privately-owned information services in the twenty-first century. Even the most recent change from scans in black-and-white to scans in greyscale – documented graphically in the database – indicates the experimental and imbricated social, political, and technical character of the transmission of information, and thus invites further examination of its practices and infrastructures. Approached in this way, the digitization constitutes an exciting platform for the investigation of the history and future of meaning-making.

The proliferation and widespread use of digitizations in scholarly research has stimulated a re-assessment of enduring questions regarding the original and its reproduction, authority, and authenticity that had heretofore been considered the specialized realm of – among others – textual scholars, art historians, art critics, and conservators. The foregoing discussion thus attempted to locate the digitization as a site of critical analysis, and perform the work of a preliminary archaeology that not only explores some of the discursive practices by which digitizations might be constructed, but also considers how such processes shape, or may indeed constitute, the infrastructures of meaning-making. The notion of the palimpsest was employed to aid the identification of the different traditions that are manifest in a digitally-encoded resource, and facilitate the analysis of the imbricated relationship of the past and present, of the there and here. Such a framework supports a nuanced discussion that concerns itself with the productive

and creative role of ambiguity – namely, exploring what the entangled configuration of past and present in the digitization accomplishes, how it functions, and the ways in which it can entice a broader audience to explore the history of the transmission of information. The digitization emerges as an interface of differing and often opposing narratives and temporalities; consequently, it embodies and stimulates a wide variety of performances in the making of meaning. As this study has shown, the digitization is a construction that has been generated from a particular social, cultural, and political economy, is accordingly shaped by this particular context, and subsequently transmits traces of this history even as it purports to index a different story. Understood thus, digitizations might be comprehended as artefacts of the modern day, evidence of how we are now collectively perceiving, imagining, making, organizing, and sharing our cultural heritage.

## Endnotes

[1] For instance, Latour & Lowe (2011); Echard (2008), esp. "Coda: The Ghost in the Machine: Digital Avatars of Medieval Manuscripts," pp. 198–216; Nichols (2006); Hayles (2005); and Bolter & Grusin (1991). Recent assessment in, Galey et al. (2012). Critiques of particular digitizations in the cultural heritage sector include Terras (2010); and Deegan & Sutherland (2009).

[2] Recently, Galloway (2011); and see the series of reports on the preservation of digital materials by the Council on Library and Information Resources, <http://www.clir.org/pubs/reports/reports.html>. For "born-digital" materials specifically, see Kirschenbaum et al. (2010); Duranti & Preston (2008); Duranti ([2005]).

[3] Initiatives that use humanistic approaches in the study of digitally-encoded objects may be differentiated from those that employ digital methods in the work of the humanities, such as Jockers (2013); and Ramsay (2011). On the relevance of the humanities with regard to the analysis of digital resources and data in general, see Bowker's essay in Gitelman (2013). Parikka (2012) offers an explication of media archaeology and its connection with media studies, citing work by Ernst (2011) and Kittler (2009; 1999). Other studies include Montfort et al. (2013), which explicates a single line of code; Mackenzie (2006); and Galloway (2004).

[4] On paratexts and peritexts, see Genette (1997). In a similar vein, D.F. McKenzie (1990) provides a sociology of texts that accommodates materials in

the digital environment. On the political qualities of information and its infrastructures more generally, see, among others, Schiller (2007); Bowker & Star (1999); and Winner (1980). On the political aspects of digital affect, see Karatzogianni's epilogue in Karatzogianni & Kuntsman (2012).

[5] On the computer as process in particular, see Galloway (2012); and Hayles (2012).

[6] Brief overview of palimpsests in Dillon (2007), pp. 10–22. Recent discussions of palimpsests include, Carruthers et al. (2011); Claassens & Verbeke (2006); Dekeyzer & Van der Stock (2005). A recent project that uses digital technologies to investigate and recover an erased text is the Archimedes Palimpsest Project, <http://www.archimedespalimpsest.org/>

[7] On erasure as creation, see Chai-Elsholz (2011), p. 2; and Camille (1998a), p. 140.

[8] <http://www.lib.umi.com/eebo>. On the development of *EEBO*, see Martin (2007). Recent critiques include Deegan & Sutherland (2009); Kichuk (2007); Sherman (2006); Jowett & Egan (2001); and Williams & Baker (2001). Also of relevance, Tabor (2007). *EEBO*'s corpus comprises materials from Pollard & Redgrave (1926), Wing (1945–51), their revised editions, as well as the Thomason Tracts and the Supplement, mediated in part through the English Short-Title Catalogue.

[9] A discussion of the different interfaces in Mak (2011), pp. 62ff.

[10] Pollard & Redgrave (1986), pp. xx; xxviii, §19. For "tangled" and "serpentine," see Pantzer (1968), p. 300.

[11] Discussion and criticisms of the *STC* can be traced back to the early twentieth century, but more recent explorations include Gadd (2009); McKitterick (2005); and Blayney (1994).

[12] Tanselle (1988), p. 35. For more on the history of the Bibliographical Society, see Roberts (1998) and (1988); and the essays in *The Bibliographical Society* (1945). On the financial position of the Society and the *STC*, see Pollard (1928), p. 381.

[13] On errors, see – in addition to the prefatory material in the *STC* – an exhortation for broader participation by Pollard (1928). On Pantzer's discriminatory comments, see her introduction to the second edition of the *STC* and throughout, as well as R.C. Alston (1979); Koda (1978). Meanwhile, some but not all updates in *EEBO* may be found on the "What's New" section of the website: <http://eebo.chadwyck.com/about/whatsnew.htm>. The relationship between the ESTC, which continues to be updated, and *EEBO* is complicated and worth of further exploration elsewhere. Some relevant details may be found in Gadd (2009). Meanwhile, Snyder (2003) discusses the ESTC's adoption of a machine-readable version of the *STC* that had been created under the guidance of David A. Bank of Glasgow University and funded by a grant from Manpower Services Commission as part of a training scheme for job creation, and the subsequent sharing of bibliographic records with UMI (more on UMI and Proquest's *EEBO* below). On the history of the ESTC, see Alston (2004); Snyder & Smith (2003); and Alston & Jannetta (1978). I am deeply indebted to D.W. Krummel and David Vander Meulen on this point.

[14] For a sense of the debates regarding the dating and provenance of the *Lindisfarne Gospels*, see, for instance, Brown (2003); Nees (2003); Gameson (2001); Dumville (1999), and Backhouse (1981). For "the pinnacle of Anglo-Saxon art," see the "Virtual Books" section of the British Library's website: <http://www.bl.uk/onlinegallery/virtualbooks/viewall/index.html#>. Such rhetoric has been called a "ready conspiracy between digitization and cultural exhibitionism" by Deegan & Sutherland (2007, p. 129).

[15] The microfilm series: *Early English Books, 1475–1640*; *Early English Books, 1641–1700*; *the Thomason Tracts (1640–1661)*; and the *Early English Books Tract Supplement*. On UMI, see Power (1990); and (1939). For the history of microfilm in general, see Cady (1994); and Luther (1959); as it relates to the American Documentation Institute, see Chapters 3 and 4 of Farkas-Conn (1990).

[16] Power (1990), pp. 28–29. An early report in Power (1938).

[17] More precisely, in 1942, Franklin Delano Roosevelt split the COI into the Office of Strategic Services and the Office of War Information, predecessors of the Central Intelligence Agency and the U.S. Information Agency respectively. In general, see Dunlap (1982); and Troy (1981).

[18] Power (1990), pp. 129–130; 135–139. Power furthermore identifies "a Miss Bartlett" at the League of Nations Library in Geneva (p. 103), Dr. Teresa Lodi of the Biblioteca Laurenziana (p. 104), and his wife, Sadye, who may have been critical in mending relations with the management of the British Museum, and thus facilitating the success of the *Early English Books* microfilming project (pp. 124–127).

[19] See section on "Status of the Microfilm Project,"

<http://eebo.chadwyck.com/about/about.htm#micro>.

[20] On "manual process," see p. 1 of

<http://www.bodleian.ox.ac.uk/eebotcp/files/2012/04/EEBO-TCP-training-online.pdf>.

[21] Alert dated December 2011 on

<http://eebo.chadwyck.com/about/whatsnew.htm#greyscale>.

[22] On facsimiles in general, see the seminal works, Panofsky (1930/1986) and Benjamin (1968), and Mitchell on "responsible" reproductions (1994, pp. 421–425).

[23] Alert dated July 2012 on

<http://eebo.chadwyck.com/about/whatsnew.htm#greyscale2>. See also,

<http://www.textcreationpartnership.org/home/>.

[24] See explanation under "Why Keying?" on

<http://www.textcreationpartnership.org/why-keying/>.

[25] See p. 2 of <http://www.bodleian.ox.ac.uk/eebotcp/files/2012/04/EEBO-TCP-training-online.pdf>. Elsewhere, Giddens (2011) describes his own work as co-editor of the James Shirley Project in correcting the files and returning them to the TCP for reintegration into EEBO (p. 28).

[26] <http://www.textcreationpartnership.org/tcp-eebo/>.

[27] <http://www.textcreationpartnership.org/tcp-eebo/>.

[28] Welzenbach (2012) mentions the adoption of some of the TCP's markup in a number of projects, as well as its appearance in Google searches. Access to the

*EEBO*-TCP collection in the MONK Project is currently restricted to institutions in the Committee on Institutional Cooperation, <http://www.monkproject.org/>; *Manuscripts Online* includes entries in the *EEBO*-TCP corpus to 1500, <http://www.manuscriptsonline.org>.

[29] For example, see Jack Linchuan Qiu's work in the area of labour and information technologies, including the documentary, *Deconstructing Foxconn* (2010a); (2010b); (2009). Also of relevance, Downey (2003); and Schiller (1999). Regarding the impact on the environment, see Cook (2012), esp. p. 7; Cook & Van Horn (2011); and Roslin (2011).

[30] <http://proquest.com/en-US/aboutus/default.shtml>.

[31] A number of awards encourage the use of *EEBO* in scholarly research: ProQuest's undergraduate essay award of \$1,000 was discontinued in 2007, but the company still sponsors a dissertation award in Information Science (ASIST), as well as professional awards for librarianship and intellectual freedom. Elsewhere, the National Endowment for the Humanities and the American Council of Learned Societies have both initiated grant programs that support research with digital tools. Also promoting the use of *EEBO* are dedicated conferences, for instance, the 2012 *Revolutionizing Early Modern Studies?* at the University of Oxford, <http://www.bodleian.ox.ac.uk/eebotcp/eebotcp2012/>, which offered support for students to attend.

[32] See Archibald MacLeish, Librarian of Congress, in, Dunlop (1982), pp. 274–275. On university scholars in the COI, see pp. 309ff.

[33] In addition to the discussion above on the contributions of women, McKitterick (2006) discusses how Pantzer's work on the revised *STC* was importantly aided by Janet E. Critch and Suellen Mutchow. In her preface to the *STC*, Pantzer herself notes the involvement of these two women, as well as of Frederica H. Oldach and Anne W. Henry Ehrenpreis (pp. viii–ix), in addition to her lengthy acknowledgements that follow (pp. xi–xviii). For the contribution of women to the *ESTC*, see Alston (2004); and Snyder & Smith (2003).

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