

Beyond Remediation: The Role of Textual Studies in Implementing New Knowledge Environments¹

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Introduction

To claim to digitize premodern material culture is to speak in paradoxes. We cannot literally digitize an artefact from the past, in the sense of rearranging its molecules to make it transmissible in digital media. For now, at least, all we can do is create digital surrogates for artefacts and hope those surrogates measure up to expectations, even as second-order representations. However,

¹ This essay expands upon the brief description of INKE's Textual Studies team published in Siemens et al. (forthcoming). The authors wish to thank audiences at gatherings of NT2: Nouvelles Technologies/Nouvelles Textualités, the Society for Digital Humanities/Société pour l'étude des médias interactifs, and the Alliance of Digital Humanities Organizations for their comments on early versions of this article, and gratefully acknowledge the support of the Social Sciences and Humanities Research Council of Canada. We are also grateful to Peter Gorman for editorial assistance, and to the staff of the Folger Shakespeare Library and the Thomas Fisher Rare Book Library.

² A complete list of INKE team members and partners may be found at <http://inke.ca/>.

to digitize something successfully in this sense is to move a step beyond representation and remediation, and to create a model: an implemented representation that is tractable and manipulable according to structured inquiry (McCarty 2005, 20–72 and *passim*). A model should be capable of answering questions its creator did not conceive; conversely, successful *modelling*, to invoke the difference the verb makes, should prompt the discovery of new questions in one’s material. Merely celebrating the power of computers as modelling environments, however, is not enough; as Willard McCarty points out, there is no escaping paradoxes: “On the one hand, modelling cultural artifacts treats them as something like the empirical objects of nature; on the other hand, paradoxically, modelling anything is just as clearly an imaginative act” (2005, 72). To claim to digitize material *culture*, then, requires us to think beyond the conservative notions that Ronald Day associates with traditional forms of computing and information science, which hold that “history is the transmission of the past to receivers in subsequent generations (cultural heritage)” (2000, 810). Culture is not a transmissible thing, to be passed on like old taxidermy, whether the next generation wants it or not, but a network of imaginative investments that cannot be contained within material artefacts, yet cannot be understood without them. With McCarty’s paradox in mind, we can understand digitizing material culture not in terms of new digital technologies acting upon passive written records, but as the imaginative investments of the past meeting those of the present. To paraphrase Hamlet, “[T]his was sometime a paradox, but now the time gives it proof” (3.1.113–14).

Textual scholars have served both as chroniclers of how humans interact with written records of material culture, and as agents in some of the ways those interactions have changed. This chapter describes the rationale and initial goals of a particular group of digital textual scholars, the Textual Studies team within the Implementing New Knowledge Environments project (INKE.ca), but also considers the role of textual studies generally in a digital world. How has reading changed since the rise of digital media, and how can the history of textual practices inform the future? Pursuing that primary research question within a project like INKE requires that textual scholarship be anything but the hermetic, antiquarian discipline some still mistake it for: INKE’s Textual Studies team works in an interdisciplinary context alongside other teams in User Experience, Interface Design, and Information Management, as well as with many public- and private-sector partners. We do so within a project framework built on the idea of strategic prototyping, as opposed to building a single mega-resource, as a key to understanding how reading can change with

developments in digital media. INKE's purpose is to rethink what the book can become in a digital environment, to pursue that thinking in a broadly interdisciplinary intellectual commons supported by partnerships with the knowledge industries, and—crucially—to implement that thinking in prototypes to be shared on an open-source basis with the public.

This essay describes theoretical and interdisciplinary contexts for work of INKE's Textual Studies team in particular, and advances the argument, made by other textual scholars before us, that efforts to reinvent the book's future cannot afford to neglect its history (Chartier 1995; McKenzie 1999; McGann 2001; Kirschenbaum 2008; Darnton 2009). Our team's seven-year research plan connects the study of print and digital environments in order to develop a technical vocabulary for describing the salient features of electronic artefacts based on archival research into the history of book design, print production, and bibliography. This aspect of our work will develop the multimedia focus inherent to *digital* textual scholarship by bringing together traditional bibliographic methods and new forms of digital narrative, such as electronic literature and video games. The resulting technical vocabulary will inform the prototyping activities of INKE's other teams, who will take into account the material transmission (manuscript, print, and electronic) of texts. To document the complexity of past and present textual forms, INKE's Textual Studies team plans to compile an online, open-access knowledge base of textual features (titled *Architectures of the Book*) which illustrates technologies and human practices of transmitting knowledge in textual form. The repository will provide a complete set of facsimile exemplars of samples of type, columns, marginalia, tables, charts, volvelles, indexes, pictures, title pages, and error-control mechanisms. All of these are elements of the pre-digital information architecture of books which digital implementations must reconfigure.

INKE takes textual scholarship as one of its priorities for several reasons, all of which depend on the idea that what's past is prologue. Textual scholars study not only the past, in the form of writing technologies and the reading practices that humans have developed over centuries, but also the past in the present, in the form of new scholarly editions and studies of the transmission of texts and artefacts over time. Although past practices do not necessarily determine the future, the study of new technologies in historical context can reveal patterns of cultural use and meaning that connect past and future knowledge environments on the same continuum. The orientation of the Textual Studies team is therefore aligned with the recent turn away from determinism (i.e., oversimplifications of cause and effect, such as “print caused

the Reformation” [Kingdon 1980, 140]), narratives of revolutionary change, and rigid divisions between periods in the history of technology (generally associated with the work of Marshall McLuhan [1962] and Elizabeth Eisenstein [1979], as well as much of the hypertext and new media theory dominant in the late nineties).³ Textual studies, book history, literary studies, and other humanities disciplines have recently moved toward approaches that examine long-term continuities and discontinuities, overlap between new and old technologies, and the multiplicity of social and cultural effects that result.⁴ In addition to offering alternatives to outdated successionist models of technology and society, the Textual Studies team also furnishes INKE’s research program with a vocabulary and set of methods for studying the particular. Many of the dominant accounts of new media repeat McLuhan’s and Eisenstein’s neglect of primary materials (such as print and manuscript books) from the periods about which they generalize, and thus have not done justice to the often idiosyncratic and even intractable particularity of human artefacts.⁵ As a discipline that links mechanical and craft processes such as book-making with interpretive modes such as literary studies and cultural history, textual scholarship is inescapably qualitative in its methods. This orientation enables INKE to study human activities like reading and meaning-making in methodological terms not available to disciplines for whom quantification and generalization define the horizon of knowledge: one book is not like another in the same way that one carbon atom is like another. We need digital tools that recognize this particularity. Finally, according to Greetham, “Textual scholars study *process* (the historical stages in the production, transmission, and reception of texts), not just *product* (the text resulting from such production, transmission, and reception)” (1994, 2; emphasis in original). This attention to process enables textual studies naturally to extend its methods to digital texts, and, along with a corresponding attention to context, represents a fundamental methodological link among all of INKE’s teams.

³ For the most influential examples, see McLuhan (1962), Eisenstein (1979), and Landow (1992).

⁴ This critical turn is well described in the introduction to Thorburn and Jenkins (2003); other examples may be found in Joseph Dane (2003), Lisa Gitelman (2006), N. Katharine Hayles (2005), Adrian Johns (1998), and Matthew G. Kirschenbaum (2008), to name a few. See also the debate between Johns and Eisenstein in *American Historical Review* (Grafton, Eisenstein, and Johns 2002).

⁵ For a critique of Eisenstein in particular on her decision to use only secondary sources, see Johns (1998) and his contributions to the debate with Eisenstein in Grafton, Eisenstein, and Johns (2002).

The following discussion will turn first to historical and disciplinary contexts for digital textual scholarship, and then to the questioning of remediation as a dominant theoretical model for the future of the book. At stake in these contextualizing accounts is a question faced not only by INKE, but also by researchers undertaking similar work in the present: what does it mean to study the book at this particular historical moment, and how have we arrived at that moment? It seems inevitable that medieval and early modern studies should be one of the principal contexts where we answer this question. This is partly due to persistent interest in these overlapping periods as an analogue to our own present (Rhodes and Sawday 2000), and partly to these fields being important proving-grounds for relevant theoretical approaches such as New Historicism and its discontents (Patterson 1987; Veese 1989; Gallagher and Greenblatt 2000), and more recently, presentism (Hawkes 2002; Fernie 2005). Another part of the answer must be that studying the history of the book helps us to see digital technology with new eyes. Hand-press books, like manuscript books, remind us that the cheap machine-made paperbacks of the twentieth century are not the essential form of the book; indeed, the book may have survived so long only because its essence is multiple and protean. In that spirit, this chapter turns to aspects of book design such as content orientation and *mise-en-page* as examples of the early modern book's own construction of information architectures.

Textual studies and digital media in transition

To a textual scholar, a book is not an inert object left behind by the passage of time. Rather, a book is a nexus of physical materials, metaphors, human relationships, cultural preconceptions, and readerly interventions. Textual scholarship at its best is therefore a synthesis of disciplinary approaches and methods (Greetham 1999). Over the twentieth century, however, the study of the material transmission of texts, and of human interactions with them, has been subject to the same specializing impulse that segmented much of the academy in general, especially in North America (Howsam 2006; Moran 2002; Liu 2004). By the end of the twentieth century, this tendency had resulted in a number of possible approaches to the study of books and communication, many of which ironically did not themselves communicate or even acknowledge the others' existence.⁶ Leslie Howsam, looking at the kinds of textual

⁶ For example, McLuhan's *Gutenberg galaxy* (1962) does not cite a single bibliographer, even though the New Bibliography was actively theorizing about early print at the time, nor does Landow 1992 (or subsequent editions). On the textual studies side, see the gaps in the tables of contents of the Routledge *Book History Reader* (Finkelstein and

scholarship that have relatively recently come together under the banner of book history, schematizes the primary disciplinary divisions as: 1) *history*, which focuses on “agency, power, and experience” in relation to books, reading, and publishing; 2) *literature*, which focuses on the text as an object for interpretation, and takes the material and historical instantiations of texts to be partly constitutive of their meaning; and 3) *bibliography*, whose primary focus is on books and documents as artefacts which reflect the details of their manufacture (2006, 3–15). Another scheme we could use to explain the evolution of the study of the book is national. The French *histoire du livre* tradition developed out of the mid-twentieth-century *Annales* school of historiography, and brought a social-history focus to the study of books and publishing, placing these activities in a broad social context, and preferring as evidence quantifiable data about large social groups (Febvre and Martin 1958; Darnton 1979; Chartier 1995). If traditional *histoire du livre* sometimes gave insufficient attention to the material complexities of books themselves, then its Anglo-American counterpart, the New Bibliography, may be accused of excesses in the opposite direction. Following the lead of A.W. Pollard, W.W. Greg, R.B. McKerrow, and later Fredson Bowers and G. Thomas Tanselle, Anglo-American bibliography was resolutely empirical, and narrowed the understanding of books to describing their physical form, reconstructing their manufacture, and hypothesizing the manuscripts used as copy for printed books. This latter pursuit, the most contentious for recent critics, often happened in service of an idealized notion of authorial composition, allegedly recoverable through the New Bibliography’s arguably less rigorous editorial theory.⁷

The division between these approaches impoverished all of them. For example, bibliography is by nature a highly specialized discipline which requires years of training and hours of painstaking labour to produce knowledge that often applies only to highly specified contexts. Although that knowledge can radically change our understanding of the nature of a cultural artefact—the Shakespeare First Folio, for example (Hinman 1963)—bibliography often has difficulty with outreach to non-specialists. By contrast, other fields like media studies and intellectual history advance highly accessible narratives about the history of technology. Marshall McLuhan, for example, was interviewed

McCleery 2006) and the Blackwell *Companion to the History of the Book* (Eliot and Rose 2007) in the areas of project-based research on e-books and other forms of digital textuality.

⁷ There are many contesting accounts of this history; representative overviews may be found in Wilson (1970) and Maguire (1996).

by *Playboy* and makes a cameo in Woody Allen's *Annie Hall*; one struggles to imagine a bibliographer achieving comparable status as a public intellectual. However, the kinds of accessible narratives for which McLuhan was known generally lack a technically rigorous vocabulary for describing their putative materials, often treating a term like *the book* as what computer scientists call a "black box" that encapsulates complexity. In a critique that would apply to McLuhan and his followers, such as Elizabeth Eisenstein and Bruno Latour, Adrian Johns has argued that "cultural historians' appreciation of print has too frequently stopped short of the doors of the printing house" (1998, 42); conversely, Johns also notes that bibliographers "have often been too modest in their historiographical objectives" (1998, 42n66). Given the raised stakes that digital technologies bring to the study of textual forms, and the temptation of exaggerating the explanatory power of single technologies in understanding those stakes, the study of new knowledge environments must balance attention to big pictures with respect for arresting details.⁸

As textual scholarship began to overlap with what are now called the digital humanities, the study of the history of textuality became linked with the practice of making new editions using digital media (Hockey 2000; Smith 2004; Shillingsburg 2006; Price 2007). Even before the inception of the World Wide Web, the capacity of computing to alter the direction of textual studies has been a topic of controversy. First hypertext and then the Web have been celebrated for their liberation of texts from the linearity of print (Bolter 2001; Landow 1992; McKnight, Dillon, and Richardson 1991) or from the hierarchy that characterizes traditional editing (Smith 2004), especially the copy-text editing of the Greg-Bowers school, with its privileging of final authorial intention. It has been particularly tempting to marry electronic editing to certain versions of poststructuralism (Landow 1992; Marcus 1996; Ross 1996); however, several experts in humanities computing and textual studies demur from rhetorics of revolution in favour of more nuanced positions (McGann 1997, 2001, and elsewhere; Kirschenbaum 2002; Greetham 2004, 2006; Shillingsburg 2006; Hockey 2004 and elsewhere; Bryant 2008; O'Donnell 2008; Eggert 2009), and G. Thomas Tanselle, the most able advocate of the Greg-Bowers tradition, denies that the electronic medium can fundamentally alter his field.⁹

⁸ As Bolter points out, drawing on Raymond Williams, social and economic determinisms are no less dangerous than the technological kind (2001, 19–20).

⁹ In particular, see Tanselle's ambivalent foreword to the recent volume *Electronic Textual Editing* (2006), and Greetham's discussion of that ambivalence in his review (2007).

Tanselle focuses on the difference between what he terms the *work* and the *document, witness, reproduction, or copy* of that work: “One must be able to distinguish the work itself from attempts to reproduce it. A work, at each point in its life, is an ineluctable entity, which one can admire or deplore but cannot alter without becoming a collaborator with its creator (or creators); a reproduction is an approximation, forever open to question and always tempting one to remedial action” (1989, 13–14). For Tanselle, a change in the medium of the *work’s* reproduction from book to screen makes no difference to his foundational distinction (2001, 2006); however, what Tanselle does not allow is that our conception of works as ineluctable entities may depend at least in part on an effect of the still dominant medium for reproducing these works, namely the fixity of print that emerged only a little more than a century ago (McLuhan 1962; Eisenstein 1979; Kernan 1987; Johns 1998). If so, the boundary between the metaphysical *work* and the material *reproduction* has been porous. Reproduction can also be altered by the medium, this time the computer: “[I]t is technically possible for the same bitstream [the form in which a reproduction of a work is stored in a computer] to generate a different perceived object [the reproduction itself], depending on hardware and software configurations, and plausible that different bitstreams could generate the same perceived object” (Barwell 2005, 422). Tanselle aside, many of those who have reservations about the doctrine of liberation through computing nonetheless respect the achievements either they or others have created in the electronic medium: “[C]reative cybernauts have long since created marvels that place online readers in hypertextual experiences that constitute new genres of representation and reading” (Bryant 2008, 92)—included among these marvels might be the *Blake Archive*, the *Perseus Project*, the *Rossetti Archive*, the *Women Writers Project*, and the *Walt Whitman Archive*, as well as the next generation of Web 2.0 projects now emerging.¹⁰

Beyond being available for revision, the electronic archive or edition has been credited with exceeding the codex in many other ways. Martha Nell Smith offers an impressive list of advantages in the digital edition: (1) “images of all primary documents [often unique or rare and dispersed among libraries and museums, with severely limited access] ... including, where applicable, sound and even video reproductions”; (2) networking and communication among editors and readers; (3) critical feedback from readers (2004, 308); (4) “demotic,” rather than “hieratic,” editions (2004, 316); (5) broadly collaborative “teams of editors, rather than a solitary master with her assis-

¹⁰ See www.blakearchive.org, www.perseus.tufts.edu, www.rossettiarchive.org, www.wwp.brown.edu, www.whitmanarchive.org (all accessed September 7, 2009).

tants” (2004, 319). Smith’s reader, though, is hard pressed to identify which of these advantages constitute “ontological differences between electronic and bibliographic scholarly editions” (2004, 312). There are bibliographic editions containing (1) images of all primary documents, like Michael Warren’s *The Complete King Lear, 1608–1623* (1989), which provides facsimiles not only of all three of the earliest printed versions of the play, but also of their formes in every known state of correction—on loose leaves for combination by the reader. And, as Smith notices, associated sound and video can be put on a CD slipped inside the cover of a book edition. However, it is true, as Stephen Reimer observes (2006), that (2) networking, communication, and (5) collaboration, although hardly coeval with the electronic medium, have been enormously facilitated by it, first by email, then by wikis, blogs, writeboards, and other software. (3) Critical feedback from readers also did not await the coming of the computer; the Folger Library edition of Shakespeare, a reading edition collaboratively edited by Paul Werstine and Barbara Mowat, records the genesis of its structure in such feedback, first through “the Folger Institute’s Center for Shakespeare Studies’ ... fortuitous sponsorship of a workshop on ‘Shakespeare’s Texts for Students and Teachers’ ..., from which we learned an enormous amount about what is wanted by college and high-school teachers” and then from “Shakespeare teachers and students ... who used our texts in manuscript in their classrooms” (1992, x–xi). Nonetheless, in favour of Smith’s argument it must be granted that in the electronic medium reader feedback is dynamic and ongoing, not, as in the bibliographic, only pre-publication. Finally, though, as Smith is keenly aware, it is hard to fashion the electronic edition as ontologically (4) demotic, rather than hieratic, when such an edition must be encoded in TEI-conformant XML, a system of tagging that originates in the representation of the hierarchal structure of books. And, as Daniel O’Donnell points out, there is nothing in the ontology of the electronic edition that forbids a single editor from imposing on a text his own well-informed but individual conception of its textual history in an edition of the traditional bibliographic kind that offers only a single perspective on a work or its reproduction (to revert, appropriately in this context, to Tanselle’s distinction) (O’Donnell 2009). What distinguishes the electronic edition from the bibliographic one may not then be any of the former’s single features, but instead its capacity simultaneously to be more than one kind of edition. As Jerome McGann writes, “[O]ne can build editorial machines capable of generating on demand multiple textual formations—eclectic, facsimile, reading, genetic” (2006, 57).¹¹ Finally, then, for textual

¹¹ See also Peter Shillingsburg’s proposal for “an electronic infrastructure for representing script acts” (2006, 80–125).

critics, what may distinguish the electronic edition from its predecessors is its provision of both editions and the resources to lay bare the decisions of editors in these editions, reambiguating the editorial process with reference to a comprehensive array of primary documents (Smith and McGann's facsimiles). After all, as Randall McLeod's brilliant unediting attacks on editors continue, they threaten to break the bounds of the codex and cry out for digitization (McLeod 2004).

Re-opening the book

Thus far the history of digitizing books has focussed on re-presenting and re-purposing. Digital facsimiles reproduce the book in spectacular visual detail, while encoded texts endeavour to represent historic artefacts analytically, with potential for diplomatic facsimile rendering. Once rendered into machine-readable text, a book becomes malleable into infinite forms for any number of purposes. Some instances of representation and re-purposing are more valuable than others. A large portion of Google Books's literary corpus, for example, comprises little more than recycled books from the dusty recesses of the library stacks: outdated and otherwise unused public domain editions unsuitable for detailed, text-sensitive scholarly work, re-presented as OCR-scanned PDF images that are now machine-searchable, but only with the simplest of word-string queries. The best digital editions take fuller advantage of the digital medium to provide a clean, edited text that is enriched in ways that are impossible in print, supporting complex searches and visualization tools (Lavagnino 1996; Siemens 1998, 1999, 2005; Werstine 2008; Galey 2009). In almost all cases, from bald representation to multifunctional re-purposing, the end result is explicitly anchored—either representationally or notionally—to the historical print artefact.

The heuristic possibilities—and limitations—of reexamining the book in light of the digital age are evoked in Bolter and Grusin's notion of remediation, which arises from the recognition that so-called new media technology has intensified a cultural tendency to repackage and recombine old media content in new forms.¹² As an analytical term, "remediation" therefore "offers us a means of interpreting the work of earlier media" (55). This relationship between old and new media is reciprocal. To begin with, remediation and a host of ancillary terms are understood with reference to the anterior medium: each new medium in a *reflexive* manner, to *respond to*, *redeploy*,

¹² Scholars and students of the middle aAges and Renaissance will recognize echoes of what Ong calls the "rhapsodic method" of composition (1965, 148–50; cf. Bolter and Grusin 2000, 11, 21).

reform, refashion, or rehabilitate the original (55–56). There is a good deal of ambivalence and ambiguity encoded in these reflexive relationships. In one sense, the terms imply a reliance and respect for the anterior form. The imprint of the book upon the digital medium can be seen at every turn on the Web. Currently available e-books are not only books in the more abstract sense of ideational content (ideas encoded in language), but in the more concrete sense of their instantiated form (the codex). The most common form of the e-book is a simple PDF file of a printed book. Even the electronic edition of Bolter and Grusin's *Remediation: Understanding New Media* is bound up in the old print medium: although it is displayed in a browser in HTML, it is still partitioned into pages which correspond to the printed artefact. The digital-born book is yet to be established as publishing staple, and it is far from erasing its immense indebtedness to a reading technology that is now many centuries old.

Despite the new medium's reliance on the old, the term "remediation" also implies the need to fix something that is broken, or to restore it to some ideal or imagined form.¹³ But the book—more precisely, the codex—is not exactly broken, as its cultural persistence in the digital age attests: it is a remarkably refined and effective technology. To be sure, not all reading technologies have survived. The scroll superseded wax and clay tablets; the codex superseded the scroll.¹⁴ And yet the printed book has survived as our primary reading tool for some five hundred and fifty years. That said, there have been features of codex technology that never caught on. Its history is one of remarkable innovation and success mixed in (as innovations are) with failures. Often these failures are as interesting and instructive as are the successes. Another implication of this notion of remediation as a restoration to an ideal form is the imperative to retrain the codex form, though to improve or enhance it.

¹³ Bolter and Grusin acknowledge the implied "euphemism for restoring what is damaged, from the Latin *remederi*—'to heal, to restore to health.'" They also note the connotations of social reform (2000, 59–60).

¹⁴ While the scroll is no longer used, it should be noted that epigraphy does persist in such applications as the cornerstones of public buildings, gravestones, and even concrete sidewalks. For example, a version of one of bpNichol's concrete poems exists as an inscription in the laneway next to Coach House Press at the University of Toronto ("a / lake / a / lane / a / line / a / lone"; cf. bpNichol 1981, n.p.).

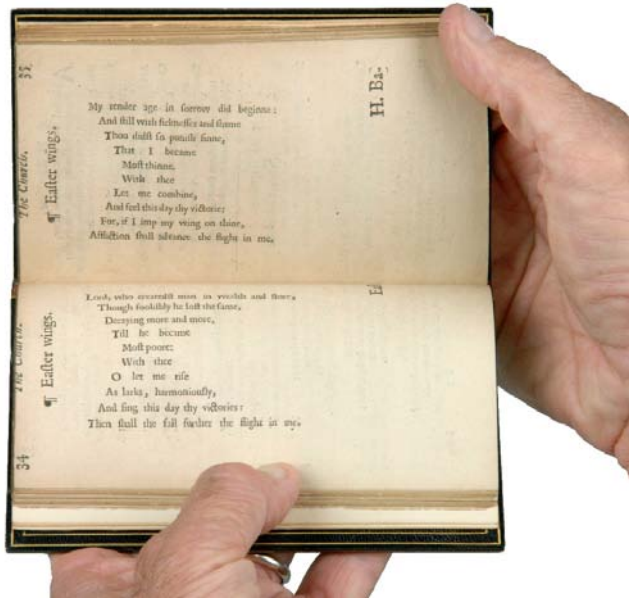


Figure 1. George Herbert’s “Easter Wings,” as printed in the 1633 edition of *The Temple* (reproduced by permission of the Folger Shakespeare Library)

The book is only an incidental consideration in Bolter and Grusin’s theory of remediation, which is chiefly concerned with non-textual media. Yet the book presents a slightly different case precisely because of its double status as content and form, which are in a sense distinct but not easily separated. The intellectual content—the form that the written language takes in the book—has been conditioned by the material form, even as the material form was at first shaped by its content. Take, for example, one of the most famous of seventeenth-century English poems, George Herbert’s “Easter Wings,” as printed in the 1633 edition of *The Temple*.¹⁵ The poem resists typical reading in its early printed form in that one has to change the orientation of the page in order to either read the poem or see two sets of wings. Random Cloud describes the cumulative effect of this and other ambiguities: “As the printed shape-poem is inherently an object of both reading and gazing, it cannot exist wholly in a single spatiality and temporality. In our performative processing of this poem-that-is-a-picture, we cannot be in all modalities at once” (1994, 72).¹⁶ Looking closer,

¹⁵ For a representative literary interpretation see Leah S. Marcus’s *Unediting the Renaissance* (1996, 257 ff. and fn.).

¹⁶ Related to this discussion is the unavoidable question, explored in Cloud’s biblio-

one also notices that each ten-line stanza represents a decline and an elevation, with the decline emphasized in the shortening of the poetic lines, which move towards the unifying phrase “With thee” in the middle of each stanza; the rise is indicated by increasing line lengths from the centre of each stanza to its end. Interpretations of the poem often work toward the notion expressed in the second-to-last line of page 35—“if I imp my wing on thine”—and treat it as a plea of the speaker, who presents the poem as a prayer for his own rise with the ascension of Christ. In Marcus’s reading, “The shaped poem and the duodecimo volume it microcosmically recapitulates are both ‘fall’ and means of recovery, ‘most thin’ and ‘most poor’ in their materiality, yet a means for spiritual flight” (1996, 182). This instance of text-as-image (or image-as-text, depending—literally—on one’s orientation) cannot be reduced to remediation: the process of meaning-making at work here depends not upon a linear progression of one medium (printed text) subsuming another (illustration), but rather upon poetic effects made possible by different orders of information, thought, and experience all co-present within the same print artefact.

When we imagine this seventeenth-century devotional poem as a distinctly bookish artefact within the hands of an embodied reader, some important aspects of the reading process become apparent. The reading process requires holding the book; it is necessary to turn the volume such that the poem(s) can be read, thus requiring both hands on the volume, one on each page and cover. After reading, the book may be returned to its more usual alignment and then, with two hands still on the pages and bindings, the volume closed. It is the closure of the text that brings the greatest formal significance, for in closing the book, two very important things happen: one is that the two wings on opposite pages—one belonging to man and the other to God—are “imped,” (1.9) or brought together, in the way called for by the poet’s prayer; the other is that the most natural position of the closed hands on the volume as the book is closed is that of prayer. “Easter Wings” thus provides an example of the richness of understanding that can flow from an informed appreciation of how the material form of the text influences, shapes, and may even on occasion determine its intellectual content.

graphic *tour de force*, of whether “Easter Wings” is one or two poems; if one poem, which stanza comes first?

Content orientation of the kind on display in “Easter Wings” was an important consideration in the development of print technology. This is an aspect of book history that is clearly relevant to the development of electronic reading technologies as diverse sizes and configurations of screen surfaces proliferate, even as the shape and form of the electronic document continues to change and adapt to new means of delivery. The case of the oblong book is a telling example of the early modern printed book whose interface responded and adapted to the special nature of the material being presented. In 1553, when the illustrious Estienne publishing house set out to print Pierre Belon’s *De aquatilibus*, which contains illustrations interspersed with text, they elected to print the book in an oblong octavo format, in recognition of the type of material they were dealing with. The decision to print in octavo was in part a reflection of the amount of material that was involved. It was certainly not enough to print in folio, but it certainly *could* have been printed in quarto: in octavo the book is some 450 pages, which makes for a rather thick octavo. The decision to print in this format, it seems, was also dictated by the material shape of the subject matter: most fish are by nature long and thin, and so is an octavo (a quarto, in contrast, is more squat). This means that the illustrations could be nicely and easily formatted on the page. The text commentary could, of course, be easily adapted to any set of dimensions. But in the normal printing process, each page would have been oriented in the forme, printed, and then folded in such a way as to facilitate sewing and binding along the length of the page. This would have resulted in an unnatural reading interface where the fishes would appear standing on their heads or their tails. In recognition of the natural orientation of a fish in the water, the printer (perhaps at the urging of the author) elected to set the pages in an unusual format that would enable the book to be sewn along the width of the page, so that the book would present the reader with a very wide opening that would allow a fish to fill out a large portion of the page, or even an entire page, with the added benefit that the reader would not have to turn the book to view the fish in its normative, horizontal position. This oblong orientation was by no means common, and would have required the printer to set the pages in a completely different orientation in the forme than was usual, making the printer’s task much more difficult¹⁷ Here is a case where an early modern printer responded to two very important considerations in his design of the reading surface: the size of the surface in relation to the structure and amount of information required for a single view of a coherent

¹⁷ In the British Library’s *English Short Title Catalogue*, of the 24,705 octavo catalogued books printed between 1500 and 1700, only 55 are classified as oblong; of 44,404 quartos, 125 are oblong; and of 10,172 folios, 52 are oblong.

and complete set of data; and the configuration and orientation of the reading surface in consideration of the intrinsic form of the material.¹⁸

The importance of the opening as a coherent grouping of information is emphasized in another instance of an oblong printing, in this case a quarto: Otto van Veen's *Amorum emblemata* (1608). There were three distinct polyglot versions of this book issued in the same year: a Latin-Dutch-French version; a Latin-Italian-French version; and a Latin-English-Italian version. In all cases, the desire to provide the text portion of the emblem in three languages posed a challenge. For emblem books, keeping the picture and the accompanying text together is even more essential than it was for Belon: indeed, the picture and the text of an emblem comprise an integral unit. It was therefore advantageous that the complete emblem—text and picture—be visible at once to the reader. Nonetheless, in many cases, emblem books in quarto spilled their content beyond two pages, so that one emblem might stretch across two openings. One solution to this problem of containment was to print in folio, as in the case of George Wither's *A collection of Emblemes* (1635), which enabled him to present a generously sized picture together with thirty lines of verse: one complete emblem per page, two per opening. Because Wither had ample material (two hundred emblems), a folio edition was viable. Otto van Veen, however, had only a hundred and twenty four emblems with only twelve lines of verse per emblem. A quarto was the right size of container for this amount of material, but a single page would have allowed only enough room for a small picture. The solution was to print the book in oblong quarto, placing the text on one side of the opening and the picture on the other, so that each turn of the page would reveal a complete emblem. The quarto format meant that there would be less difference between the length and the width of the page than is the case with an octavo, resulting in a more square surface that fit the sonnet-like dimensions of the text quite nicely: a horizontal line through the middle of the page adds a sense of width to balance the whole composition in relation to edges of the page. More importantly, these dimensions enabled maximum sizing of Cornelis Bol's engravings, which are in an oblong format that suits perfectly the landscaped scenes in which he places his Cupid figure, the key element in each emblem.

¹⁸ Cf. Cloud's discussion of the factors bearing on the decision to impose the 1633 "Easter Wings" text(s) vertically (1994, 83–5).

Print technology was relatively quick to respond to the special needs of such material and their users. It is not surprising that music publication was the first to introduce this innovation of oblong publication (as early as 1528), given that the musical staff has a long horizontal dimension and that such publications were often printed with multiple parts to enable sharing of songbooks.¹⁹ Electronic reading technology, however, has not been as quick to come to the aid of readers. For the first decades of commercially available computers, the landscape-oriented screen has been the most common reading surface (though exceptions did exist, such as monitors scaled to legal paper). The landscape orientation works well for creators and users of databases and spreadsheets, but it is an unnatural orientation for writers and readers of documents, which typically conform to the 8.5 x 11" or A4 standards of paper—the modern equivalent to the golden section often used in ruling the medieval manuscript page.²⁰ It took a surprisingly long time for portrait screen orientations to become available to non-specialist computer users, and the most common methods seen today result from accident as much as design: with the increased size of monitors and the easy availability of dual-monitor display, writers and readers of documents can now display a full page on a horizontal monitor, and indeed more than one side by side; alternately, the combination of flat-panel monitors and articulated monitor arms make it easy to rotate a single screen on the fly depending on content, requiring only slightly more effort than it takes to rotate "Easter Wings." We have seen much more rapid accommodation in the development of portable devices such as the iPhone, iPad, and Kindle DX, whose screen display responds immediately to the way the device is held. These adjustments (or lack of adjustment) to the reading surface, however, have not always followed from a conscious and thoughtful recognition of the requirements of the document and the needs of the reader. In this respect, those seeking to implement new knowledge environments have much to learn from the history of the book.

¹⁹ A catalogue printed anonymously at the end of the eighteenth century cites an oblong quarto printed by Pierre Attaignant in 1527, with the title *Chansons nouvelles en musique a quatre parties* (Levron 1948, 26). Attaignant was a pioneer in music printing, and the first to use single-impression printing of music using movable type (Perkins 1999, 93–95). *Chansons nouvelles*, Attaignant's second publication, was issued in 1528, although it is imprinted 1527 (Taruskin 2005, 692). Longeon's *Catalogue de Incunables et des Ouvrages Imprimés au XVI^e Siècle Conservés a la Bibliothèque Municipale de Saint-Étienne* (1973) cites Jehan Divry, *Scrinium medicine* (1519) (28).

²⁰ See Jan Tschichold (1991, 36–63).

Conclusion

The fact that a project like INKE can happen today owes as much to intellectual and cultural changes as to technological developments. When we assess what it means to pursue textual scholarship at the end of the first decade of the twenty-first century, we can identify three recent developments that make a project like INKE possible. First, the field has moved on from the debate about the death of the book, or that of *the computer* versus *the book*—which means that we can recognize the opposed extremes of hypertext enthusiasts like George Landow and radical traditionalists like Sven Birkerts as the distractions they always were. The narrative in which one technology drives out another (for better or worse) no longer holds much force in contemporary textual studies; rather, book historians like Roger Chartier (1995), Peter Stallybrass (2002), and Adrian Johns (1998; and in Grafton, Eisenstein, and Johns 2002), and media historians like Lisa Gitelman (2006), have prompted us to consider how writing technologies overlap and change each other, and how those technologies are implicated in reading practices that have their own histories. Second, the proliferation of reading devices and mobile computing means that serious scholars can no longer float vague generalizations or essentialist claims about “the computer” as though there was only one kind. As McCarty as argued, following Michael Mahoney, “Computing appears to us in a myriad of forms, changing and proliferating as it progresses. ... [T]here is not one but many computings” (2005, 14). The tendency among scholars and the popular media to essentialize computing in terms of workplace-oriented desktop devices is becoming less easy to sustain—a positive change that prompts us to appreciate the rich diversity of computing practices, just as textual scholars have long been doing with the rich metonymy of a term like *the book*. Finally, speculation about the future of the book is now in a more healthy balance with practical design work than it was even a decade ago. INKE, in the best tradition of the digital humanities (borrowed in turn from design), embodies the philosophy of thinking through making, and helps textual scholars regain their historical position as the makers of new textual technologies, not merely users or observers of them.

These are enabling conditions, a few among many, but we also recognize that the in-between position of the present historical moment, in which the book is no longer what it once was, and in which computing’s possible future is still a moving target. Scholars of premodern forms of textuality are especially well positioned to appreciate these changes because the period they study is a technological threshold-space, where we can see multiple, competing futures for the book in formation. Like the early modern period,

our transitory present provides a fleeting opportunity to see the book's past and future with a kind of double-vision. Bolter and Grusin assert that "[t]o believe that with digital technology we have passed beyond mediation is also to assert the uniqueness of our present technological moment" (2000, 24). At the same time they recognize that the persistence of remediation is not an a priori truth, "but rather ... that at this extended historical moment, all current media function as remediators and that remediation offers us a means of interpreting the work of earlier media as well" (55). INKE rests on the crux of this paradox, on the one hand insisting that current and future developments of the digital reading environment must learn from the successes and the failures of the remarkable technologies they seek to replace; and on the other, insisting with equal force that these new reading environments must make an attempt to move beyond remediation, to move beyond the paradigm of the printed book and take advantage of the unique affordances of the digital medium. The latter point is no small challenge, for in the very term *book* there is a persistent identification of a certain kind of content (the ideational book, and extended discourse on a particular topic) with a particular container for that content (the physical book, or *codex*). *The computer* and *the book*—two terms whose meaning we are still discovering—may not be such irreconcilable forms after all, so long as we look beyond them both as mere containers.

The future of books and computers has been a matter of much speculation. Predicting the future, however, is usually easier than working to influence it. Although our discussion here has not offered predictions about what forms e-books will take, we believe that those who build them must look beyond the twentieth-century book and understand premodern forms of textuality. The closest connections between the past and future are not always the most proximate ones, and digitization requires us to exercise the kind of historical imagination that can reconcile vast differences without effacing them. "Easter Wings," in its original form as a print artefact, similarly calls upon its embodied readers to reconcile two seemingly incommensurable orders of experience, image and text. In our readerly attempts, the book we hold becomes a new and strange artefact as we rotate it, and the symbolic potential of the poem's imping of one set of wings on another becomes fulfilled only when the book is closed, and the text unreadable to human eyes. While a divine perspective might see all modalities as one, and while an ideal text might be all things to all readers, the poem ineluctably casts us back into the human scale of reading. In its historical moment, a project like INKE is not

so much an ideal perspective as an attempt, while the book is still turning, to see with different eyes the changing object in our hands.

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