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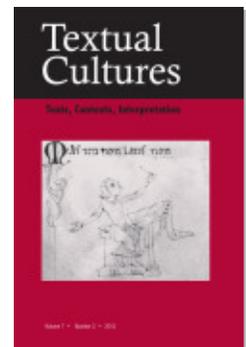
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## Imagining the Architectures of the Book: Textual Scholarship and the Digital Book Arts

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# Imagining the Architectures of the Book

Textual Scholarship and the Digital Book Arts

*Alan Galey, Jon Bath, Rebecca Niles,  
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## ABSTRACT

Why should designers of digital reading environments study the history of the book? What can the continuities and discontinuities—the successes and failures—of new developments in the book’s long history teach us about its possible futures? Questions such as these often go unasked in commercial e-book design and other domains that emphasize technical innovation as their only criterion for evaluating the past. However, new reading environments challenge us to understand the role of material forms in meaning-making, and to situate e-books and digital reading devices within the changing history of books and reading. This article explores that rationale as embodied by the Architectures of the Book (ArchBook) project, an online, open-access, and peer-reviewed collection of richly illustrated essays about specific design features in the history of the book.

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D. F. MCKENZIE ONCE CLAIMED THAT BIBLIOGRAPHY “UNITES US as collectors, editors, librarians, historians, makers, and readers of books” ([1985] 1999, 16). His inclusion of “makers” in this list is notable, reflecting his own experience as a printer-bibliographer, but the word also points toward new roles for textual scholars in the digital age. In this article, we explore what it means for textual scholars to embrace an aspect of their

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identity that is both new and old, going beyond traditional hermeneutic, explanatory, and editorial modes to influence the design of new digital reading technologies. Textual scholars have, of course, undertaken complex and innovative digital editions that exploit the possibilities of new media, but finding new ways to represent historical texts (including very recent born-digital ones) need not define the limit of textual scholars' engagement with design. At a time when new reading technologies are proliferating around us, textual scholars have a new role to play in the emerging digital book arts, provided they can bridge the gap between their traditional strengths in the reading of historical artifacts, on the one hand, and the making of new digital artifacts, on the other.

This article describes how an online reference resource called *Architectures of the Book* (or *ArchBook*) draws upon textual scholarship's historical and interpretative strengths to inform the design of digital reading environments. *ArchBook* is an online, open-access reference resource composed of richly illustrated articles about specific design features from the history of the book ([archbook.ischool.utoronto.ca](http://archbook.ischool.utoronto.ca)). Unlike traditional studies of the history of books and reading, a typical *ArchBook* entry will follow a specific feature—such as bookmarks, or manicules, or the opening as a visual unit—through its lifespan across historical periods, with an eye to the continuities and discontinuities the feature might have with digital reading environments. There are, of course, scholarly reference resources that tell the story of books and reading with a comprehensive scope and trans-historical perspective, but *ArchBook* is the first to do so with the specific goal of informing digital design. *ArchBook* allows the designer of electronic texts to learn about the history of a specific textual feature without needing to become a specialist in the field. Our broader goal, however, is to make the under-appreciated parts of the history of the book available to students, researchers, and the public.

Recognizing the potential agency of textual scholarship in digital text design, however, requires us to think differently about textual scholarship's relationship with the past and future. As David Vander Meulen put it recently (in an echo of McKenzie's point about unifying influences, quoted above), "What above all else links bibliography, textual criticism, and book history is their historical outlook; they are attempts to understand and reconstruct the past" (2009, 119). The *ArchBook* project comprises textual scholars who work in that tradition, but who have also adopted a premise best expressed by the computing historian Michael Mahoney: "the past can be a good place to look for the future" (2005, 119). Although many of the researchers involved in *ArchBook* have backgrounds in digital schol-

arly editing, they are concerned as much with new forms of the book as with new ways of representing old forms in digital editions and facsimiles (GALEY et al., 2012).

How might understanding continuities with the book's past help us imagine—and, more to the point, design—its future forms? Answering that question in specific terms is not so simple. For example, Jonathan Rose offers a telling account of a consultation between the RAND Corporation and a group of book historians in 2000. His anecdote is set in the period just as e-books were appearing on the horizon, but still prior to the popular success they have enjoyed with the Amazon Kindle and its cousins:

The RAND people put to us a straightforward question: Drawing on your knowledge of the printing press as an agent of change, tell us what the social impact of the Internet will be. We drew a deep breath, and began by disabusing them of a common fallacy, what might be called the Two Big Bangs Theory of printing history. Like most lay people, the folks at RAND assumed that there had been two world-transforming developments in print technology: moveable type and the World Wide Web. Yes, we acknowledged, these certainly had revolutionary consequences—but then so did lithography, papermaking machines, stereotype plates, power-driven rotary presses, offset printing, half-tone illustration, the linotype, the mimeograph, microfilm, xerography, photocomposition, and desktop publishing.

(2003, 14)

Rose's story points to the importance of an historicist intervention into what we could call lay narratives about the book's history. But, as Johanna Drucker points out, simply filling in the missing bits of history is not enough: "The real difficulty is in understanding which aspects of the familiar book have relevance for the design and use of information in an electronic environment" (2009, 167). She offers a critique of corporate design thinking similar to Rose's, citing IBM researcher Harold Henke's suggestion that e-books should import "'metaphors' of book structure" from the notional printed book (see HENKE 2001, 27–35). Those metaphors are all too easily literalized, like the page-flipping digital animations made popular by the British Library's "Turning the Pages" exhibition displays (<http://www.bl.uk/onlinegallery/ttp/ttpbooks.html>; see also critiques by DEEGAN and SUTHERLAND [2009], 128–9, and ECHARD [2008], 198–216).

Like Rose, Drucker would have us dig deeper into the book's history to overcome the e-book's limitations, which, as she argues, "have stemmed in

part from a flawed understanding of what traditional books are. There has been too much emphasis on formal replication of layout, graphical, and physical features and too little analysis of how those features affect the book's function" (2009, 166). She advises, "Rather than thinking about simulating the way a book *looks*, then, designers might do well to consider extending the ways a book *works*" (2009, 166; emphasis in original). The typographic austerity of Amazon Kindles and other single-purpose devices does not represent the only possible form of the e-book any more than the twentieth-century mass-market paperback novel represents the only form of the printed book. Connections between specific design features and different kinds of reading become clear when placed in historical perspective, as Adrian Johns does when describing his informal experiment with a Sony Touch e-reader, which he attempted to use exclusively in place of paper documents for an entire academic quarter (2010, 7–10). Oddly enough, Johns discovered that the Sony Touch e-reader did a poor job of supporting his reading of modern commercial e-books, but was surprisingly well-suited to reproducing scanned pages of seventeenth-century pamphlets—not least because the e-reader duplicated the portability of the original pamphlets (printed to be read in coffee-houses, salons, and on street-corners) in ways a microfilm reader or rare book room simply cannot. Johns's experiment bears out Drucker's point by showing us that it is not only a matter of looking anew at neglected moments in the book's multifaceted history, but also of looking at those moments with new eyes, and seeing textual features in terms of their performative and meaning-making functions, not just their formal structure.

*ArchBook* responds to Drucker's suggestion by focusing on the textual features to be found where a book's material form interacts with its information architecture, whether by the design of the book's creators or the modifications of its readers. In this regard textual features share similarities with what Jerome McGann has termed "bibliographic codes" (1991, 56–87), though our term's definition does not depend upon any distinctions with "linguistic codes", as McGann's does, and for which the term "bibliographic codes" has received criticism. Paul Eggert, for one, argues that codes, strictly speaking, tend to be systematic and predictable in ways that the things we call "bibliographic codes" do not:

the unpredictabilities of the gap between the physical features of a book and their meaning are poor conditions for the specifications of a code. We can talk about the *art* of page design and book binding. Such work can be highly conscious and aimed at achieving aesthetic effects or even

meanings [. . .]. But *code* is going further than the evidence permits. It would require a full-blown semiotics. It seems to me that there can be no specifiable and invariable meaning for any particular *mise-en-page*.

(2010, 191–2; emphasis in original)

Eggert may be overstating the systematic connotations of the word *code* as used in practice by McGann and others, but *ArchBook*'s initial entries bear out his point about the variability of what the physical features in a book can mean. That perspective, along with the practical inclinations of most of the *ArchBook* team—the authors of this paper are all encoders and programmers as well as textual scholars—accounts for our focus on the digital book arts rather than digital book semiotics. Furthermore, McGann's terms have a different critical function, and prove their value more as interventions in literary criticism, where linguistic codes have traditionally occupied the dominant position in the binary, than they do in textual studies, whose interpretive traditions usually reflect the synthesis of McKenzie's dictum that “forms effect meaning” (1999, 13). Textual features are simply the bibliographic forms that have effected meaning over the book's diverse histories.

There are barriers, however, to seeing the past in this way. Influential strands of design thinking and textual theory alike have tended to emphasize discontinuity with the past, with the book as a material prison from which supposedly immaterial texts would be liberated by digital technology. The world of business and information systems often depends upon such progressivist narratives, in which the primary criterion for evaluating the past is technological innovation. Dematerializing the book in the name of progress, even speculatively, can lead to regrettable generalizations like William Mitchell's claim that digital books should cure us of our addiction to “the look and feel of tree flakes encased in dead cow” (1996, 56). Curiously, Mitchell's statement freezes the book in a predominantly nineteenth-century form by implying that books have always been made with pulp paper and leather bindings. It is tempting to dismiss such reductionist thinking about materiality as mere flippancy, especially now, many years later, as the proliferation of reading devices seems to have sparked new interest in the physical forms that books can take. However, rather than simply criticizing non-specialists for ignoring the book's past or mimicking superficial aspects of the book's materiality, it is important to understand how interface design functions as a “medial ideology”, to use Matthew Kirschenbaum's term (2008, 36–42). As he puts it, a medial ideology “sub-

stitutes popular representations of a medium, socially constructed and culturally activated to perform specific kinds of work, for a more comprehensive treatment of the material particulars of a given technology” (2008, 36). In the case of digital books, the question is how that substitution operates in practice, enabling large historical blind spots like Mitchell’s.

We can learn a great deal by critically reading the design documentation for digital reading technologies, which serve as both symptom and support for medial ideologies that efface the historical diversity of the book. For example, the interface documentation for the iPad reveals many of the unstated assumptions of design thinking, especially a document called the *iOS Human Interface Guidelines* ([developer.apple.com/ipad/](http://developer.apple.com/ipad/)). The “User Experience” chapter of the *Guidelines* contains a number of short sections under imperative headings like “Elevate the Content People Think About”, and “Delight People with Stunning Graphics”. The section titled “Consider Adding Physicality and Heightened Realism” offers an especially rich text for interpretation: “When appropriate, add a realistic, physical dimension to your app. Sometimes, the more true to life your application looks and behaves, the easier it is for people to understand how it works and the more they enjoy using it”. Echoing the “Conceptual Use of Metaphor” advocated by Henke (2001, 27–35), the section makes clear the kind of realism it advocates: “Don’t feel that you must strive for scrupulous accuracy. Often, an amplified or enhanced portrayal of something can seem more real, and convey more meaning, than a faithful likeness”. Worth noting is the *Guidelines*’ recruitment of the book’s form to support its points here: one of the two visual exemplars that support the advice in this section is an image of a codex book, specifically the iPad’s address book app.

Apple’s guidelines not only assert the value of a “realistic, physical dimension”, but also specifically connect the physical to the real. A successful app is said to be “true to life”, and to reference an external world of familiar artifacts to achieve a synthesis of utility, intelligibility, and pleasure. For textual scholars generally, the phrase “faithful likeness” might seem to invoke our own tradition of facsimiles, which purport to represent their materials accurately above all, but the important thing to note is how these iPad design guidelines depart from that tradition. We are used to being skeptical about the distortions of the form of physical artifacts by digital projects like *Early English Books Online* (DANE 2009); by contrast, Apple’s design philosophy embraces distortion unapologetically, such that the physicality of the real is “amplified and enhanced” to “seem *more* real,

and convey *more* meaning” (emphasis added) than a facsimile ever could. The point is that the appeal to materiality here is a conflicted one, as we can see in the apps that embody these design principles.

Apple’s marketing of the iBooks e-reading app, for example, emphasizes the interface’s continuity with book forms, but tends to present novel-reading as the normative form of interaction, along with the clean, text-centric *mise-en-page* of the twentieth-century novel as the normative material form. The iBooks website also de-emphasizes the sociology of texts by claiming that “illustrations and images—and brilliant writing—appear just as the author intended”, thereby effacing non-authorial agents in the production of meaning, such as typographers, designers, and editors. The subtext here is that readers should recognize the received truths of print culture even in this new form: of course authorial intention coordinates all aspects of meaning, including design—is that not how books work? The answer, as we know from decades of textual scholarship, is no; forms effect meaning in far more complex ways. The iPad’s marketing thus appeals to a received idea of the book’s historical form, while at the same time rewriting that history in a way that impoverishes our understanding of the forms that books and reading have taken, and what they might become.

Let us turn to a very different depiction of reading interfaces. Figure 1 shows a plural representation of the book’s forms and features from the 1777 printing of the twelfth edition of Charles Hoole’s translation of the parallel-text edition of the *Orbis Sensualium Pictus*, or *The Visible World in Pictures*, a visual encyclopedia for children first published by the Czech educator Johann Amos Comenius in 1658. Pictured here is the entry for “A Book”, an acutely self-reflexive entry given the object in the reader’s hands.

As a work written to explain the world to children, this visual encyclopedia invites us to regard a familiar object as though it were strange. This representational mode is the opposite of the one advocated by the iPad developer guidelines, which attempt to make a strange object seem familiar. As Seth Lerer explains in a chapter on children’s literature and the history of the book, understanding the *Orbis Pictus* and its genre is inseparable from understanding it as an artifact: “How a book looks, how it feels, even how it smells can affect the experience of reading as much as what it says. Meaning embraces media, and [. . .] that meaning goes beyond mere illustration to embrace the volumetrics of the child’s grasp” (2008, 322). The multimedia potential of the *Orbis Pictus* was itself the subject of an experimental museum exhibition and art installation called *Orbis Pictus Revised*, mounted between 1991 and 1996 by Tjebbe van Tijen and Milos Vojtechovsky. Their exhibition was not simply the representation of



Figure 1. COMENIUS, Johann Amos. [1658] 1777 *Orbis Sensualium Pictus*, trans. Charles Hoole. Reproduced by permission of the Thomas Fisher Rare Book Library, University of Toronto.

Comenius's work in historical context; it was an attempt to recognize and fulfill the proto-digital potential of the *Orbis Pictus*, embodying Lerer's formulation that "meaning embraces media".<sup>2</sup> That lesson seems to have been lost in e-book design, which reduces the plurality of bibliographic forms to uniform "content", more or less interchangeable thanks to standardized formats such as EPUB and PDF. Promising exceptions may be found in

2. Images and descriptions from the 1996 exhibition at Amsterdam's Society for Old and New Media may be found on van Tijen's website, *Imaginary Museum* ([imaginarymuseum.org](http://imaginarymuseum.org)). See also HENNING 2006, 309–10.

recent experimental books designed for the iPad, including multimedia adaptations of Al Gore's *Our Choice: A Plan to Solve the Climate Crisis*, and Lewis Carroll's *Alice in Wonderland*—the latter with John Tenniel's original illustrations from the 1866 publication (which, as if in response to Lerer's point about the reader's grasp, move in response to the way the reader grasps the device).<sup>3</sup>

Comenius's depiction of books was also forward-looking in its comprehensiveness, with the entry for "A Book" as part of a sequence on technologies for reading and writing as they appear in various environments, from the commercial to the educational. Preceding "A Book" ("*Liber*") we have detailed entries for writing on wax tablets and paper ("*Ars Scriptoria*"), paper-making ("*Papyrus*"), printing ("*Typographia*"), a bookseller's shop ("*Bibliopolium*"), and bookbinding ("*Bibliopegus*"); the sequence continues after "A Book" with depictions of a schoolroom ("*Scolia*"), a study ("*Museum*"), and an allegorical tableau of the "Arts belonging to Speech" ("*Artes Sermonis*"). In its plurality, Comenius's array of representations anticipates Robert Darnton's famous visualization of the communications circuit (1982, 68), not to mention Thomas Adams and Nicholas Barker's more book-centric revision of Darnton's model (2001).

Even this single entry for "A Book" is remarkably plural. The image shows us not one book but many, and the complexity of the book form is examined in terms of specific identifiable features and not in regard to its textual contents: the books here come in multiple formats (from folio down to duodecimo, including oblong formats); aspects of their construction are exploited in different ways; and they come with different kinds of built-in features, like clasps and strings, to assist storage and reading. The open book in the upper-right is especially noteworthy in that it shows a full opening—not just a single page—with a complex *mise-en-page* that includes columns, marginal notes, and an asymmetrical layout. In this centuries-old text for children, the book's formal plurality is emphasized over any notion of its essential singularity, and the form of the book appears here with a greater sense of diversity than we often see in modern contexts.

Where would one turn to learn about the histories of specific textual features like the ones Comenius depicts, and about the functional differences they made for readers? Let us take three examples of textual features with direct relevance to e-reading: bookmarks, marginal notes, and graphic

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3. For a description of the Gore digital book for the iPad, see [pushpoppress.com/ourchoice/](http://pushpoppress.com/ourchoice/) and the TED talk in which they demo the e-book (MATAS 2011). *Alice for the iPad* may be found at [www.atomicantelope.com](http://www.atomicantelope.com).

cues such as manicules (*maniculae*). On bookmarks, one might turn to Peter Stallybrass's article "Books and Scrolls: Navigating the Bible" (2002); on printed marginalia, William Sights's *Managing Readers: Printed Marginalia in English Renaissance Books* (2001), or Evelyn Tribble's *Margins and Marginality: The Printed Page in Early Modern England* (1993); and on manicules, William Sherman's chapter "+: Toward a History of the Manicule" in *Used Books: Marking Readers in Early Modern England* (2008, 25–52). In all cases, a reader would quickly learn that her chosen feature was connected to bigger questions about how readers have related in different ways to knowledge in written form; for example, Stallybrass's discussion of bookmarking makes clear the importance of discontinuous reading as a concept that transcends any one textual feature (2002, 46–51).

Our hypothetical reader might then turn to the question of how specific features work together holistically, within knowledge environments that also encompass human practices and epistemologies. Comprehensive accounts of systems of textual features and practices could be found in the work of the authors just cited, as well as Ann Blair's *Too Much to Know: Managing Scholarly Information Before the Modern Age* (2010), Mary Carruthers's *The Book of Memory: A Study of Memory in Medieval Culture* (1990), and Malcolm Parkes's "The Influence of the Concepts of *Ordinatio* and *Compilatio* on the Development of the Book" (1976), to name only a few of many possible examples. However, as mindful as their authors might be of the present, these studies follow the traditional period divisions that structure most scholarly work in the humanities. All are early modern or medieval in focus, which makes sense given the radical transformations that books and reading underwent in those periods. Granted, some reconceptualize the book's place within traditional period structures, such as Parkes's arresting claim that "The late medieval book differs more from its early medieval predecessors than it does from the printed books of our own day" (1976, 135), but none of these works in itself bridges the persistent scholarly divide between modernity and premodernity.<sup>4</sup> Furthermore, none of these scholarly works engages with digital transformations of the features and practices they describe, except in passing. Stallybrass (2002, 42), Sherman (2008, 40, 179–82), and Blair (2010, 2–3, 229, 265–68), for example, all point to the importance of their early modern subjects as pre-

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4. Three scholarly accounts of textual features that deserve mention for crossing period boundaries are Parkes's *Pause and Effect: An Introduction to the History of Punctuation in the West* (1993), Grafton's *The Footnote: A Curious History* (1997), and Jackson's *Marginalia: Readers Writing in Books* (2002).

histories for the digital age, but these references to the digital tend to be made in passing or in afterwords and epilogues, as though alluding to a conversation between historical periods that must take place elsewhere. Period specialization is clearly a strength, but it is just as clear that we also need histories of books and reading which cross period boundaries, and which deal directly with the presentism of their subject.

How we recount those histories could also use rethinking. It is worth noting that in Rose's brief anecdote about introducing RAND's researchers to the history of the book (quoted above), the all-too-simple progress narrative (or medial ideology) he seeks to displace—manuscript begat print, print begat computers—cannot be countered by an equally simple if more accurate narrative. Rather, his copious list of sub-topics suggests the scholarly genre of the reference resource like *ArchBook*, whose scalable and exploration-friendly structure suits the kind of creative rethinking needed in the design world. Given that *ArchBook* entries are written for a general audience, the closest analog for *ArchBook* is probably the encyclopedia entry. However, *ArchBook* entries should not be confused with *Wikipedia* entries on similar subjects; *ArchBook* entries are peer-reviewed in a traditional anonymous process by expert readers drawn from an editorial board, both to ensure the quality of the entries and to attract original researchers as authors, including graduate students. Also, unlike *Wikipedia*, entries in *ArchBook* can be overtly argumentative, making a case for the relevance of their chosen feature to digital design, and potentially bringing original research to bear in support of that argument. Although crowdsourcing is currently fashionable in the digital humanities, its advocates tend to overlook the incompatibility between anonymity and original research that *Wikipedia* itself has been unable to overcome. *Wikipedia*'s solution was to exclude original research from its entries, which makes it an unsuitable model for a scholarly resource. *ArchBook* was undertaken more in the spirit of a blog, albeit a very large blog with editorial and peer-review structures.

Our hope is that *ArchBook* will evolve to combine the public accessibility of *Wikipedia* with the rigorous peer-review and attribution structure of a scholarly reference like the *Oxford Companion to the Book* (SUAREZ and WOUDEHUYSEN 2010), along with the visual richness of a rare book exhibition catalogue, and the critical provocativeness of something like Raymond Williams's *Keywords* (1976).<sup>5</sup> The project's scope is wide but not

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5. Exhibition catalogues remain an underappreciated scholarly genre, despite being highly public forms of book history scholarship by virtue of being sold in library and museum gift shops. To let one example stand for many, see BARON, WALSH,

encyclopedic. *ArchBook* seeks not to catalogue an exhaustive history of the book's interface features, but to focus strategically on those that hold lessons, and indeed serve as provocations, for thinking about books of all kinds in the present and the future. The strategic selection of entry topics shares in the spirit of Williams's disclaimer that his reference work was not a series of footnotes or definitions, but rather "the record of an inquiry into a *vocabulary*: a shared body of words and meanings in our most general discussions" (1976, 15; emphasis in original). Instead of words and meanings, however, *ArchBook* explores the book's vocabulary of textual features shared by readers, as well as scribes, printers, and other practitioners of the book arts.

What, then, are the parameters of the term *textual feature*? Any attempt to detail the history of books and reading in terms of specific interface features faces the conceptual challenge of defining one's terms. Jonathan Rose, for example, presents his list of underappreciated historical subjects in terms of technological developments, including specific new devices such as papermaking machines, linotype machines, and rotary presses, but also new techniques such as lithography, photocomposition, and desktop publishing (2003, 14). Comenius (1658), by contrast, gives a more concrete anatomy of the book organized by specific interface features and their implied affordances. The representation of books in the *Orbis Sensualium Pictus* remains limited, however, by its synchronic and formalist mode. Both approaches have their value. For *ArchBook*, however, the challenge is to define its structure of entries with enough specificity to be practical for a reference resource, while leaving enough breadth to avoid the limiting effects of literalized metaphors that Drucker warns against. We have outlined some textual features already—bookmarks, manicules, openings, and marginalia (printed and written)—and other entries might focus on volvelles, glosses, rubrication, *mise-en-page*, page numbering, and various typographical and scribal features, to name only a few of the entries in progress or under consideration.<sup>6</sup>

The qualities that define a textual feature are not always clear. Some textual features are inscriptions on material substrates. Examples of inscription-based textual features are printed marginalia and manicules, as well

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and SCOLA's catalogue for the Folger Shakespeare Library (2001), which makes use of textual features by hiding barely legible manicules and other marks in its margins, visible only when the reader holds the book at just the right angle.

6. The *ArchBook* editors maintain a list of suggested entry topics on the website, and use a blog to discuss and refine them.

as navigational features such as indices and page numbers. Some textual features are primarily typographical, such as the use of italics interspersed with roman type to highlight particular information, while others are graphic, such as fleurons, ornaments, borders, printers' devices, and illustrations. Not all textual features come into being with the book's design: a textual feature may just as well be added by a reader, such as hand-written marginalia and indexing schemes, reminding us that the process of a book's creation need not end with its manufacture.<sup>7</sup>

*ArchBook's* definition of a textual feature is not limited to the presence of marks on a surface; what lies beside, between, and beneath these inscriptions constitute significant textual features as well. The margins of a book, when considered from the perspective of the printer, are a necessary by-product of book creation, providing a protective space between the text and the edge of a page so that no words are lost either by a misalignment of the press or the trimming of the edges. However, the amount and distribution of margin space are also features of aesthetic design, as they serve the functions of balancing the textblock within the space of the page and providing a comfortable frame for the reader to view and handle (BRINGHURST 2002, 165). In the hands of a reader, the empty space of the margins not only affects the reading experience, but also dictates terms of the reader's involvement in the text.

In many cases, margins beget marginalia. They may be used as a site for the development of a record of directives for reading and a space for intersubjective interpretation (DRUCKER 2009, 172), as a means of navigating a text and in so doing advocating a particular interpretation (as in John Dee's heavily annotated 1577 *General and Rare Memorials* [SLIGHTS 2004, 74 and *passim*]), or as a battleground for competing claims for authority over the expression of the text (TRIBBLE 1993, 6). As John Dagenais notes, annotations can traverse the gutter that separates and isolates discrete textblocks, allowing the reader's marginalia to go where the text cannot (2004, 62). In a digital context, however, the margin takes on different meanings. The amount of space surrounding a digital document may have a formal aesthetic similar to manuscript or print margins, though the digital medium's practically inexhaustible storage capacity means that designing for economy of materials is no longer relevant. Furthermore, as the arrangement and orientation of text in a digital document tends to be mutable, the affordances for readerly involvement are typically no longer

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7. On this point in relation to hand-press era books, see MCKITTERICK 2003, 132–3.

associated with the visible space surrounding a text page, but rather with the presence or absence of features in the document's interface that allow for annotation and commenting (DRUCKER 2009, 173–4). It remains to be seen whether digital documents take advantage of what Drucker describes as an inherent quality of electronic technology: the possibility of continual transformation, making it an ideal space for “generative communication in an intersubjective community that is integral to knowledge production” (173).

A related example of a textual feature is the act of opening the book, the frequently unrecognized primary unit in a visual encounter with a text in codex form. When reading a book we first see two pages simultaneously and then generally narrow our focus to a single page.<sup>8</sup> Consequently, the layout of the page, including its margins, is often designed with the symmetry of the opening in mind (DAGENAIS 2004, 62). The opening of the book/codex also introduces an element of temporality into the reading experience; in the words of Dagenais, “we are [ . . . ] aware, peripherally, of what is to come and what has come before, of the past and future of reading” (62). This two-page display is a feature that has remained constant throughout the Western manuscript tradition (with notable variations such as the fold-out, or the center-spread in magazines), and digital reading platforms have begun to offer alternatives to this arrangement. Since many texts that appeared first as codices took advantage of the functional and expressive capabilities of the opening, consideration of the opening as a textual feature is crucial in developing digital reading interfaces, particularly in the representation of pre-digital documents.<sup>9</sup>

The substrate of a text, the material upon which the symbols that make up a text appear, is a textual feature whose diversity and complexity easily falls victim to the popular tendency to dematerialize digital texts. (Recall Mitchell's derisive comment about “tree flakes”, quoted above.) The discovery and production of new writing substrates, from clay to papyrus and parchment, to rag and pulp paper, have not only influenced the production of written materials and the magnitude of that production, but also changed the character of the inscription. For instance, the Whatman paper-making firm's development of new methods of printing finer, more

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8. For preliminary bibliography regarding the scroll form, used not only in earlier written documentation, including the Christian *Vetus Itala*, but also later notarial instruments and even lyrics for Provençal troubadours (note the image that graces the cover of *Textual Cultures*), see AVALLE 1993, 61–2.

9. See the discussion of George Herbert's *Easter Wings* in GALEY et al., 2012.

consistent paper by using loom-woven wire mesh provided John Baskerville with the smooth, even printing surface required to realize the delicate strokes of his eponymous typeface (BALSTON 1998, 180–5). Scholars such as Dagenais and Michael Camille have pointed out the significant difference in the (literally) visceral experience of text inscribed on the skin of what was once “a living, breathing mammal like us” (DAGENAIS 2004, 40), and the two-dimensional, tactically rarified digital text, in which “one cannot leave one’s bodily impression upon its surface” (CAMILLE 1998, 47). When one considers the emergence of e-books as a change not only in the way textual material is created, stored and manipulated, but also in how text is displayed, the material foundation of inscription becomes a topic with far-reaching implications. The substrates of digital reading devices vary far more widely now than they did a decade ago. The differences between e-readers such as Kobo and Kindle, with their unbacklit e-ink technology, and tablets such as Apple’s iPad with illuminated liquid crystal displays, change the function and expression of the page.

The substrate, as a textual feature, also shapes the politics of the book. Consider, for example, the politics of the substrate in Williams’s *Keywords*, one of *ArchBook*’s own foundational models. As Williams mentions in his introduction, “My publishers [originally Fontana Paperbacks in the U.K. and Oxford University Press in the U.S.] have been good enough to include some blank pages, not only for the convenience of making notes, but as a sign that the inquiry remains open, and that the author will welcome all amendments, corrections and additions” (1976, 26). A reprint faithful to Williams’s intentions would need to include all six blank leaves (or the equivalent) that were labeled “Reader’s Notes” in the original, as the Oxford edition cited here does (344–9). With e-readers in the present, where the very surface the text is inscribed upon is proprietary, the politics of substrates has perhaps never been so volatile. The outcry in 2009 over Amazon.com’s involuntary recall of the illegally produced e-book *1984*, and the resultant lawsuit brought by a student for the loss of his marginalia (*CONSUMER AFFAIRS 1*), are ready illustrations of the battles over ownership and agency inherent in the emerging model of textuality presented by e-readers.

When we consider digital and pre-digital reading in terms of textual features like these—especially the non-obvious ones discussed above—it may appear that future reading interfaces will have more in common with pre-modern textual cultures and artifacts than with the standardized, industrialized notion of the book inherited from the nineteenth and twentieth centuries. Many design features of pre-modern books, especially

aids to non-sequential reading and navigation, anticipate the complexity of digital environments and sometimes even exceed them. Stallybrass (2002), for example, describes textual features in early modern Bibles that exemplify qualities usually assigned to electronic texts, such as discontinuous reading, dense internal referencing, and complex bookmarking—a combination of features whose complexity exceeds many early Bible apps for the iPad. However, if it is true that certain digital design traditions overwrite the history of the book to suit their own purposes, it is also true that the door swings both ways. Since the codex form has had several centuries' head start on e-book design, we have the advantage of being able to draw upon a rich history of textual features in which the material forms of books interact with their own kind of information architecture.

In his anecdote about the RAND consultation, Jonathan Rose ends with questions that speak directly to *ArchBook's* mission to influence the imagining and design of digital reading environments (2003, 14). He asks:

What if this new technology was being developed in a Book Studies laboratory? What if specialists in the history of reading, the history of typography, the history of information, the history of printing, and the history of printing surfaces were working alongside the software engineers and the hardware engineers, offering a constant stream of advice about the interface between reader and print?

In many ways, *ArchBook* and projects like it together constitute the very “Book Studies laboratory” that Rose imagines. *ArchBook* was conceived as part of a larger three-stage structure which can be found in many emerging digital humanities projects: 1) the study of bibliographic *exemplars*, or typical instances of textual features; 2) the building of *models*, or abstract representations of those features which can be manipulated in different ways with digital tools; and 3) the completion and sharing of *prototypes*, or interface components which implement those models in useful ways, but are also strategically scoped to be completed and shared on a timeline of months rather than years.<sup>10</sup> These three connected styles of inquiry are often carried out by separate projects, and even by separate communities. In *ArchBook's* case, however, the three-stage progression of research activi-

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10. On exemplars as typical concrete examples used to teach abstract principles in the sciences, see KUHN 1970, 187–91, and KNOWLES 2003, 61–4; on modeling as a transdisciplinary activity, see McCARTY 2005, 20–72; on prototypes as embodiments of scholarly arguments, see GALEY and RUECKER 2010.

ties from exemplars to models to prototypes goes a step beyond Rose's suggestion by making book historians not only advisors, but also architects of digital reading environments themselves.

Why architects, not simply makers? One simple reason is that the term implies direct agency as distinct from indirect advising on the creation of digital reading environments. Another reason has to do with affinities between architecture and textual scholars' natural habits of mind. Drucker proposes the architectural "program" as one method for designers to avoid focusing on replicating the formal structures of the book and instead to pay attention to how those structures function (2009, 169). Architectural programming is the process by which the necessary functions for a given structure are determined so that the form can be planned appropriately (KEMPER 1979, 145). This way of thinking has long been central to the book arts, and the association between architecture and the making of books is not a new one. John Dee was one of the earliest English champions of the architect: "I will appoint the Architect to be that man, who hath the skill, (by a certaine and meruailous meanes and way,) both in minde and Imagination to determine and also in worke to finish" (1570). It was Dee's insistence on the architect's comprehensive skill set that may have influenced Joseph Moxon to open his 1683 treatise on printing by defining the typographer as one who "can either perform, or direct others to perform from the beginning to the end, all the Handy-works and Physical Operations relating to Typographie" (1958, 12).

We are simply extending Moxon's definition to encompass two other forms of architect that emerged after the middle of the twentieth century: the information architect and the computer systems architect. In the 1970s Richard Saul Wurman became dissatisfied with the trend in the printing and publishing industry to use "design" to mean "decoration", and thus to consider designers as those people charged with making things look better, because this eliminated the designer's agency in the process of creating meaning. In response he began referring to himself as an "Information Architect" because he saw his work as "the thoughtful making of either artifact, or idea, or policy that informs because it is clear" (1997, 16). Rather than being simply a decorator of the text, the information architect's primary responsibility is to create systems or structures that make the content visually meaningful to the reader.

In the same era in which Wurman was adopting and adapting the term *architecture* to suit his needs, another emerging profession also latched onto the term and added yet another definition: "The conceptual structure and overall logical organization of a computer or computer-based system from

the point of view of its use or design; a particular realization of this” (OED “architecture” n., definition 6). First used in relation to computing by Fred Brooks in 1962, many distinct architectures have now arisen within the fields of hardware and software design (BROOKS 1962, 5). For example, in software development, architectural design is “the process of defining a collection of hardware and software components and their interfaces to establish the framework for the development of a computer system” (INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS 1990, 10). Software and systems architects are responsible for developing a model of a system where human users, software, and hardware interact with each other, and which can then be used to develop the finished project. They must be familiar with all stages of the project so that they may effectively plan its execution. In this they are not that different from Moxon’s typographer. In this regard, the comprehensive perspective usually adopted by modern textual scholars makes them well suited to serve as architects, not just advisors, in the making of digital reading environments.

The idea of a future-oriented approach to textual scholarship has, itself, a history, just as the idea of the book’s future has its own history. Devices like the iPad have been recruited into the same dematerializing discourse that gave rise to Mitchell’s tree-flakes and dead-cow punch line, but both sides of the death-of-the-book debate tend to forget history. A sensible path beyond that debate can be found in an article by Lester Asheim titled “New Problems in Plotting the Future of the Book”, which frames a special issue of *Library Quarterly* devoted to a conference on the future of the book at the University of Chicago’s graduate library school. According to Asheim:

The death of the book is more likely to be hastened by those who adamantly insist on retaining, for twentieth-century purposes, the nineteenth-century form of the book than it is by those who are willing to examine that form for inadequacies that can be corrected.

For there is nothing eternal and God-given about the format and dimensions of the book as we happen to know it. Natural as the codex form of the book may seem [ . . . ], it must be remembered that such a form is comparatively new and must have seemed extremely unnatural to a whole generation of men used to another format.

(1955, 283–4)

Although the point Asheim makes may seem obvious and familiar, the arresting thing about it is the timing. If we could erase the year in the citation above, along with the gendered language in Asheim’s last sentence, his

quotation could easily have come instead from a blog post in the present instead of 1955. So could another of Asheim's arguments, which suggests that even in his time there were book historians ready to leave behind the either-or extremes of the death-of-the-book debate: "It is not too illogical [ . . . ] to anticipate that out of the thesis, book-reading, and its antithesis, the use of nonbook materials, some synthesis may come which retains the best features of both" (1955, 292). *ArchBook* is one attempt to survey those features, but the synthesis Asheim imagined can only be achieved by whole communities and fields.

Textual scholars working in the tradition of McKenzie's sociology of texts, not to mention Darnton's communications circuit and the models that followed it, tend to see connections between technologies and human practices that remain mysterious to purely functionalist perspectives. The connection between form and meaning, in particular, requires an eye trained as much in poetry as in design. Understanding the poetry of design in material texts is not so different from understanding the interplay of form and meaning in literary works. That very point was made by Apple's late CEO and co-founder, Steve Jobs, in the last product rollout presentation he made before he died in Fall 2011. Watched by legions of Apple followers earlier that year, Jobs reserved the final minutes of his iPad 2 rollout presentation to give credit to the humanities: "It's in Apple's DNA that technology alone is not enough, that it's technology married with the liberal arts—married with the humanities—that yields us the result that makes our hearts sing".<sup>11</sup> What makes this statement remarkable was its timing: as the events now known simply as "The Cuts" were underway in the United Kingdom, the CEO of one of the world's most profitable corporations was demonstrating the value of the very arts and humanities programs that the Conservative government was defunding. Given that textual scholars, like digital humanists, work at that very intersection between technology and the liberal arts (a metaphor literalized as a street sign on the screen behind Jobs), the need to think of our work as future-oriented becomes all the more imperative.<sup>12</sup>

Although textual scholarship, bibliography, and book history have been considered obscure and esoteric fields in the past, they may soon find them-

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11. See <http://www.apple.com/apple-events/march-2011/> or the Apple Keynotes podcast on iTunes.

12. For a discussion of Jobs's comments on the liberal arts over his career, see the website of *4 Humanities*, a humanities advocacy organization: <http://humanistica.ualberta.ca/2011/10/steve-jobs-on-the-humanities/>.

selves in the vanguard of the public humanities. In a way, that role would not be new at all. Historical surprises like Asheim's arresting futurity in 1955 serve to shake loose the comfortable sense of historical exceptionalism that shapes the discourse, popular and scholarly, that attends new technologies. Asheim's article, like an out-of-place artifact in a time travel story, reminds us that the future has a history, and that previous generations have imagined the futures of their books. In many cases they did more than imagine: they built, they prototyped, and they experimented with new forms and technologies in the same spirit as the digital architects of the present. Those stories are not usually told in such accessible narratives as Asheim's article or Octave Uzanne's vivid short story "The End of Books" (1894). Rather, to read those stories we must read the artifacts themselves. It is our hope that the *Architectures of the Book* project will provide textual scholars with a place to unfold the myriad stories about the book's future that hide latent in its past.

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