JESSICA PRESSMAN

Reorienting Ourselves toward the Material: *Between Page and Screen* as Case Study

YOU HOLD IN YOUR HANDS a little red book. It is a lovely little book: a thin seven-inch square made of thick card-stock, whose red textured cover appears woven due to the finely printed diagonal lines repeating, in very small print, its title: *Between Page and Screen*. You open its covers and realize immediately that this is not for you.[1] The stark white page displays a strange image: a black square centered on the page, at its center a white geometric pattern. That's it. There's no text, just these geometric shapes. These patterns are Quick Response (QR) codes; they signify the presence of digital information that can be scanned and decoded. When a reader holds the book up to the webcam on a computer connected to the Internet (specifically to www.betweenpageandscreen.com), something magical happens: a projection of three-dimensional text appears between page and screen (Figure 1). Amaranth Borsuk and Brad Bouse's *Between Page and Screen* (2012), a work of augmented reality literature, operates through computational processes and acts of translation across a network of animate and inanimate actors, including the computer, the webcam, an Internet connection, programming code, software, and the book's geometric QR codes. These entities work together, along with the human reader, to produce a literary performance of poetic between-ness that turns attention to intermedial processes and comparative media practices of the literary.

In order to read *Between Page and Screen*, you must take, quite literally, a material turn. You must shift away from the traditional posture of holding a book and reading the text printed upon its pages. This work's text appears through not only linguistic but also programmatic acts of translation; furthermore, when it does appear, it comments upon the materiality of text and textual media. In this essay, I read *Between Page and Screen* as a tutorial on how our comparative literary practices

[1] Here I am cribbing the frontispiece text of Mark Z. Danielewski's *House of Leaves* (2000): "This is not for you."

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Figure 1. Amaranth Borsuk and Brad Bouse, *Between Page and Screen*, 2012. Transmedial reading circuit involved in *Between Page and Screen*. Reproduced with permission.

include textual media. In *Comparative Textual Media: Transforming the Humanities in the Postprint Era*, N. Katherine Hayles and I have argued that

> CTM [comparative textual media] pursues media as objects of study and as methods of study, focusing on the specificities of the technologies as well as the cultural ecologies they support, enable, and illuminate. A focus on media promotes awareness that national, linguistic, and genre categories (typical classifications for text-based disciplines) are always already embedded in particular material and technological practices with broad cultural and social implications.

Lisa Gitelman defines "media" as "socially realized structures of communication, where structures include both technological forms and their associated protocols" (7). Approaching text as media and media as "socially realized" means working at the intersection of comparative literature and comparative textual media. In this essay, I suggest that CTM operates under and through a paradigm of comparative literature, and I hope to show what CTM offers to the field. Specifically, a comparative approach to media (and textual media in particular) compares linguistic texts and translations within social, political, and medial structures in ways that illuminate the infrastructures and ideologies supporting communication, publication, distribution, and critique.

Comparative literature as a critical field is driven by the belief that a comparative perspective thwarts myopic or hegemonic conclusions about language and literature. Similarly, a CTM approach shares a commitment to analyzing the situatedness of media and how they mediate. We might say that both approaches have a

mandate to explore the social contexts and technical infrastructures that enable the literary. As Alexander R. Galloway, Eugene Thacker, and McKenzie Wark explain, "Media force us to think less about things like senders and receivers, and more about questions of channels and protocols. Less about encoding and decoding, and more about context and environment. Less about writing and reading, and more about structures of interaction" (2). Media are always situated in material networks that, by definition, they mediate. Craig Dworkin writes, "There is no 'medium.' No single medium can be apprehended in isolation" (28). Jacob Edmund cribs Dworkin's statement to claim that, just as there is no medium, there is "no discipline" in the field of comparative literature: "No discipline can be recognized in isolation, but only through comparison and indiscipline" (651).[2] Kiene Brillingburg Wurth extends this point through "the dimension of intermediality, focusing on a literature that has no single material predicate—or, at least, a literature that has different material locations, rather than the book and the paper page alone" (1).[3] In her introduction to the collection *Between Page and Screen: Remaking Literature through Cinema and Cyberspace* (aptly named for the subject of my essay), she encourages a critical practice of "intermediality," a term widely used in European media studies. In this special issue, she takes up the specific benefits of extending this paradigm to comparative literary studies.

To see the connections between a comparative media studies approach and a comparative literature approach, we need only turn to Rita Raley's essay "TXTual Practice" in the *CTM* volume, wherein she writes about site-specific collaboratively written Short Message Service (SMS, i.e., cellphone and text-messaged-based) textual performances. She argues that, in considering such events as literature, "we confront expanded fields of reading and writing that are not-electronic literature, not-codex, not-telephony, not-game, not-conversation, not-collaborative content creation, but that which is situated in the interstitial field" (8). Although her essay addresses a real-time performance of collective writing in a public space, an activity quite unlike the pre-programmed poetics of *Between Page and Screen*, we can see how the networked textual practice that she describes might inform pursuing CTM *as* comparative literature. To use her words, such a perspective "makes it possible to recognize structural logics that are both shared and repeatable in different social and technological contexts" (5). Networked literary performances promote critical consideration not only of the literary text at hand but also of the social and technological contexts that enable mediated utterances. I recently argued that electronic literature compels a merger of comparative literature and CTM practices because digital literature operates across multiple machine and human languages, requiring machine translation of these languages and multiple media formats before it even reaches the human reader (see "Electronic Literature"). Such literature is procedural and computational, processed across multiple platforms, protocols, and

[2] The longer quotation from Edmund reads, "And if disciplines are only apprehended through interdisciplinary practices, then not only is comparative literature not a discipline, but there is no discipline as such" (651).

[3] Brillingburg Wurth continues: "Interactions between literature and digital screens, on the one hand, and cinematic screens, on the other, may therefore deepen our insight into the issue of adaptation or intermedial 'translation' in comparative literature" (3).

technologies in accordance with the very real constraints and technical specificities of the hardware, software, and network configuration of the reader's computer. Such works challenge traditional disciplinary boundaries and require not only interdisciplinary but also comparative critical practices.

As its title implies, *Between Page and Screen* happens in an intermedial state connecting page and screen, codexical and screenic, and we read it in a networked configuration of objects that operate through the Net. Recognizing these technical facts and analyzing the medial context that supports the work compels a critical perspective that approaches *Between Page and Screen* as processural network rather than singular object and raises questions about what and how we read, analyze, and compare. To consider the ramifications of this point, I turn to our tutor text to see what actually appears between page and screen.

The Text and Textual Media of *Between Page and Screen*

The text generated through the digital circuit of *Between Page and Screen* is of two varieties: epistolary correspondence and concrete poetry, two deeply materialist practices that have been examined as such by literary scholars. I begin with the epistolary content. We read letters between P (page) and S (screen), personified as sparring lovers communicating after a skirmish. The work begins with P's letter to S, which mentions: "Last night on the patio, poco a poco, a patois between us, unseemly and peasant (pleasant)." S responds: "Our nocturnal skirmish was a junto, just that." The title *Between Page and Screen* thus not only describes the location of the projected text that the reader sees but also the type of texts we read: letters sent between two characters about what has passed between them. The epistolary is a genre about sending things—material objects—back and forth. Letters—whether written and received on sheets of paper, scrolls, or computational devices—move, and they move through infrastructural systems of information transfer (see Siegert). The epistolary genre depends upon and illuminates the larger information architectures and mediating agents that enable (or disable) exchange—whether they are postal systems, clandestine carriers, or Internet protocols. In other words, the epistolary genre promotes media studies and supports comparative textual media practices.

Eighteenth-century literary scholars have shown the importance of epistolary fiction to the period in which the novel genre proliferated, illuminating how the epistolary genre enabled exploration of social and political forces that mediate communicative practices. Consider two selections from this wide body of scholarship that show how epistolary narrative inspires reading not only for the textual content contained in fictional letters but also for the larger, metafictional moments that illuminate the cultural and material contexts through which the text moves and means. Elizabeth Cook argues that epistolary fiction explores "the Enlightenment ideal of Republic of Letters precisely because the letter-narrative exposes the private body to publication" (8), and Mary Favret examines the gender politics at work in letter-writing and represented by the epistolary genre, since "women writers used the familiar letter for entry into the world of politics" (7; cf. Decker). Epistolary narrative invites readers to consider not just what is contained in letters but also how these letters travel—that is, the system of information transfer, the politics behind who gets to participate, and the medial contexts for communication.

Alexander R. Galloway reminds us of the even longer history connecting stories about sending messages to the field of media studies. "The Greeks indubitably had an intimate understanding of the physicality of transmission and message sending (Hermes)," he writes; "They differentiated between mediation as immanence and mediation as expression (Iris versus Hermes)" (*Interface* 28). Hermes is a mischievous character, aligned with rhetoric (the formal practice of delivering a message) and hermeneutics (the formal practice of reading in order to receive a message). A focus on Hermes, like a focus on the epistolary genre, illuminates the media and mediation involved in sending messages. This is, Galloway suggests, the foundation for hermeneutics—for interpretation, literature, and literary criticism. In the age of telecommunications and particularly digital communication, forms and formats for letter writing and epistolary fiction have changed; but, as *Between Page and Screen* exemplifies, we still read fictions—and, indeed, epistolary fictions—that tell us much about how communication happens across media networks (see Decker 4; and Peters). *Between Page and Screen* uses the Web as its messenger or postal service (cf. Henkin ix) in ways that illuminate the specific issues of technical and technological—but also political, economic, and social—access that enable textual content to move across space, time, and media in digital contexts.

"Concrete poetry," the other kind of text contained in *Between Page and Screen*, describes not a specific group of poets or period of literary history but rather a formal pursuit: to use the page-space as a place for multimodal performances that combine language, color, topography, and design. Concrete poetry is a genre dependent upon the medium of print, and the page interface in particular (see Pressman et al., esp. chapter 4). As has been documented, concrete poetry has also significantly influenced digital poetry and poetics (see Glazier; Funkhouser; and Simanowski). The concrete poetry in *Between Page and Screen* turns our attention to the media enabling this particular literary performance, specifically the page and Quick Response (QR) markers upon it. When the image of a shield projects outwards from a page, the shield is outlined in text and contains across its center the following words, presented at a slant in large capital letters: "SCARAMOUCH, SCRIMMAGE, SKIRMISH, SCARARAMOUCH" (Figure 2). Above and below these words are etymological definitions. The top of the shield contains "9a. SCARAMOUCH, SCRIMMAGE, SKIRMISH"; on the bottom half, "9b." provides the definition of "SCREEN." The juxtaposition of these definitions suggests meaningful connections between these words and their etymological histories as well as between the material objects—shield and screen—that they define and are defined by in the calligramme. The 3D poem invites consideration of the technologies, activities, aesthetics, and linguistic histories that connect page and screen.

Because this book is comprised solely of QR codes, these black and white shapes demand attention and analysis. When you look at them as visual and aesthetic entities, rather than merely a means to an end (a medium or a technology to use), you see that they appear not like the commonplace QR codes that adorn our consumer goods. They are not arranged as visible squares comprised and centered by three large squares in the corners that act as alignment targets and are filled with tiny scattered boxes. Instead, these QR codes are minimalist and geometric, even analog in appearance. They are artforms aligned with QR code art but placed within pages of a book in ways that draw attention to the aesthetics of these printed images:

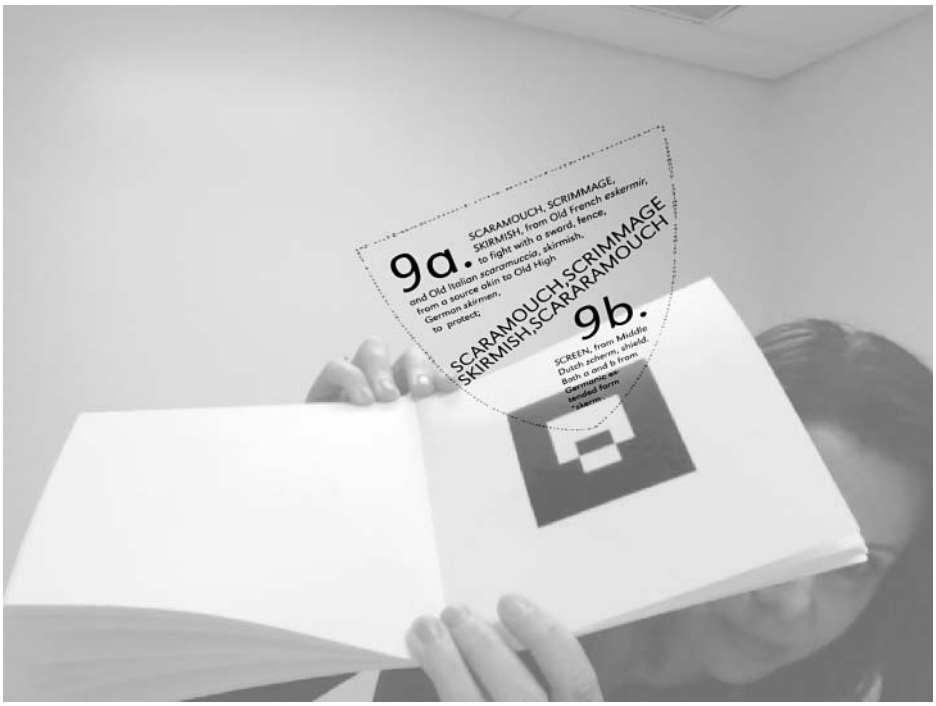

Figure 2. Amaranth Borsuk and Brad Bouse, *Between Page and Screen*, 2012. Screen capture of shield poem. Reproduced with permission.

white shapes centered on black squares that are themselves centered upon white pages (see https://designerqrcodes.wordpress.com/). The effect produces a series of framed squares: the white page, the black QR code background, and the white geometric shape on it. The images are visually interesting in and of themselves; they are, in point of fact, the book's concrete poetry. But this is not poetry to be read by the human reader; rather, like Radio-frequency identification (RFID) tags and other forms of digitally-encoded inscription, this visual writing is meant for machines and activities that we might not even consider to be reading.

The shape, appearance, and aesthetics of the QR codes on the page are designed so that the web-camera can scan and translate the code in a specific way: to project the text at an angle so that the text appears to be coming out of the codex. The code that runs *Between Page and Screen* operates by prompting the camera to search for black squares that comprise the QR codes. When it finds one, it reads the white pattern within the square to determine which animation file to pull up from the work's database and display. The software calculates at which angle to present the culled data file so that it maps to the angle of the book. To produce the aesthetic effect of text appearing in 3D space as if connected to the book, the authors created QR markers that are intentionally asymmetrical and comprised of squares, shapes that mirror the shape of the page.[4] This design decision allows the projection to align

[4] Thanks to Amaranth Borsuk for pointing out these technical details to me.

with the angle of the book's pages. This also enables the shape and visual appearance of the QR codes on the page, content intended for the machinic reader, to be symbiotically entwined with the appearance of the poetic text intended for the human reader. The piece of coding that enables this effect is a central part of the work and a uniquely authored text. A critic approaching *Between Page and Screen* from a Critical Code Studies practice (like my friend Mark C. Marino; see his "Critical Code Studies") might close read this code in order to understand the work. I will not attempt to do this (although I hope someone else will), but I do contend that recognizing the code as a potential entry point for literary analysis illuminates a comparative medial framework in which technology is not only part of the work but also part of the text to be read and compared.

Only after the machine reader does its work can the human reader then recognize a meaningful correspondence between the shapes of the QR markers on the page and the textual content they elicit. For example, a pole rises out of the page whose foundation is a QR code comprised of two right angles. These angles present the visual appearance of two "squares," as such instruments are called in construction, tools that measure the exactness of ninety-degree angles and thus ensure the construction of stable buildings from poles set in the foundation. The word sculpture is a vertical pole of poetry comprised of the words "PEEL," "PALE," "PAWL," "POLE," which appear as a hollow rectangular cube standing erect on the page. These words all share an etymological root, "stake," and the visual poem conjoins these words to show their connectedness to this root as, literally, a stake or pole that centers this text-based construction on the page (Figure 3). The meaningful correspondence between the squares on the page and the poetry produced from them shows *Between Page and Screen* using QR codes as poetic elements. Their visual and concrete aesthetic offers much to the human reader who reads between the text onscreen and the concrete geometric designs on the page. Or, to cite another example, consider a page whose QR code is comprised of a nearly circular white image centered on the marker's black square. This QR code elicits a kinetic poem in which the words "to spin" enact the action they signify: the words circle around the circular QR code. The result is an animated homage to Gertrude Stein's circular poem "a rose is a rose is a rose" that situates the AR text in literary history. The fact that the spinning screenic poem is derived from the circular marker on the page references the communication circuit connecting them, which includes programming code, software, web-camera, network, and book with its printed QR codes. The 3D concrete poem performs and visually references the feedback loop connecting these intermedial actors. Its content also draws attention to yet another thread connecting page and screen, for, as consulting the *OED* (a reading practice encouraged by this work) reminds us, the etymology of the word "spin" (v.) has connections to text and textile: "To draw out and twist the fibres of some suitable material, such as wool or flax, so as to form a continuous thread; to be engaged in or to follow this occupation." The inseparability of words from the material configurations that enable their meaning is presented here as technopoetic performance.

Let us consider one more example of how the work's concrete poetry illuminates the media of textual poetics: the short animation that resembles Wall Street ticker tape. Abbreviations and acronyms of corporations appear and are then replaced by recombinatorial poems: a few letters and numbers combine and recombine to form

Figure 3. Amaranth Borsuk and Brad Bouse, *Between Page and Screen*, 2012. Screen capture of pole poem showing correspondence between QR code and projected text. Reproduced with permission.

a linear path that juts out from the edge of the page. *Between Page and Screen* here references two very different medial formats for presenting concrete poetry, the page and ticker tape, and asks us to consider what connects them. Stock ticker machines have transmitted textual content through telegraph lines since the mid-nineteenth-century, making them one of the earliest forms of electronic textual communication. As Borsuk and Bouse see it, the stock ticker can be understood as part of the history of recombinatorial digital visual poetry. Ticker tape did indeed inspire Bob Brown's Readies machine (1930), which he imagined as a machine to speed up the presentation of poetry, and, as I have argued elsewhere, can be seen as an early example of machine-based, screenic poetics (*Digital Modernism*, chapter 2). Through such remediations of ticker tape into digital augmented-reality poetry, *Between Page and Screen* prompts us to turn our analytical gaze to textual media.

The History of the Book

The literary content of *Between Page and Screen*, and in particular the epistolary correspondence between P and S, contains a mediation on an evolving relationship between two characters and also on the evolution of literature's media. The work turns our attention from the diegetic, anthropomorphized characters of P and S to the material entities of page and screen in ways that enact and narrativize Bonnie Mak's point that to claim that the page matters means "not only [for the page] to be

of importance, to signify, to mean, but also to claim a certain physical space, to have a particular presence, to be uniquely embodied" (3). P and S are both characters and representatives of media forms in a literary work that invites critical engagement with the material history of the page, a history that now includes screens because e-readers remediate the skeumorphs of codexical page design and the sounds of turning pages in books (see Hayles, *How We Became Posthuman* 17; and Drucker). *Between Page and Screen* allows us to browse that history, as it were, performing or at least presenting that history at a glance. In their introduction to *The Future of the Page*, Peter Stoicheff and Andrew Taylor ask, "What exactly is the page?" They proceed to name "three aspects" of the page: 1) "the page's materials, such as papyrus . . . parchment and vellum"; 2) "its architecture: the underlying arrangement of information on the page or what medieval writers called its *ordinatio*"; and 3) "its ideologies: the ways in which the arrangement of information shapes or reflects cultural systems" (4). *Between Page and Screen* invites exploration of these different aspects through the perspective of a digital environment. We learn about the history of the page (and the book) by looking beyond it to the interstice of its edge and the screen.

When S apologizes to P, "I take your point. I didn't mean to cut," this may be understood not just as a metaphorical and figurative act of hurting someone's feeling but as a literal action that marks the body of the page in ways that can be read. The double-edged diction of point and cut references activities involved in the preparation of a page in early manuscript culture: specifically, the acts of scraping calfskin so as to erase unwanted hair, pores, and other marks in the process of preparing the vellum to receive new text. A cut marks the page in ways that can be read, leaving traces that distinguish textual media from a text.[5] Reading these material traces is part of what connects textual studies and media studies, as Jerome McGann has argued: "Unlike texts, documents in fact do often have real holes in them, or are otherwise marked by marks of their historical passage" (77). The rhetoric of pointing and cutting also alludes to the material history of pages and books, wherein a pointer stick in the shape of a hand ("yad" in Hebrew) is used to touch the pagina-based text of a Torah scroll in lieu of a human hand. When the pagina moved from scroll to codex, the size of the page and codex was probably influenced by the size and shape of a human hand.[6] The pointing hand was remediated into the manicule in print culture and then again into the hand icon in digital interfaces, including Apple's graphical user interface (GUI). As Bolter and Grusin argue, recognizing such remediations allows us to see the presence of older media "refashioned" (and thus archived in some way) into the newer forms. In a Derridan way, remediation indexes traces and citations of earlier content and material instantiations, the presence of which disables ideologies of newness (and accompanying narratives of progress) and instead demands comparative and historical practices.[7]

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[5] One might pause here to think about how books were once sold with their pages uncut; the folds of the signatures (the textual media) had to be sliced before the textual content on the pages could be read. I thank John Zuern for pointing this out.

[6] Alberto Manguel makes the argument that the first shape of the page was probably a Sumerian clay tablet sized to fit the hand of a child (29).

[7] I thank my undergraduate student at SDSU, Catherine Jagger, for helping me to see the connections between Derrida and remediation. See also Katalin Sándor, who writes that the digital "not only stores all other media as an archive but also cites and repositions them, which exposes their historicity, within

Consider another concrete poem that draws its force from the material history of the page and attention to comparing textual interfaces (cf. Emerson). This visual poem is a cheeky allusion to book history whose wordplay depends upon knowledge of the actual animal flesh involved in medieval manuscript production. As Bruce Holsinger reminds us, "Medieval literature is, in the most rigorously literal sense, nothing but millions of stains on animal parts" (619). The image of a pig in profile appears between page and screen (Figure 4). The body of this pig is comprised of horizontal lines of black text. The poem is a calligramme formed from words that rearrange the letters of "charcuterie"—a French word for butcher's shop. "Charcuterie" appears in red on the pig's rear end, a branding that visually marks the pig for slaughter and signifies the promised use of its flesh to serve human purposes—in this case, becoming the material for a vellum-like page, the interface for text, or the smooth surface enveloping the book's covers. The contents of the visual poem, the calligramme of the pig, are a collection of anagrams of the word "charcuterie," which has the same Indo-European word root as "screen," the surface upon which we read these words, as opposed to the page made from the flesh of an animal in a medieval manuscript. In Borsuk's words, "They seem worlds apart (cured meat and a gossamer veil?), but they are bound by etymology through things that shine" (http://sigliopress.com/enjoying-the-juncture-an-interview-with-amaranth-borsuk/). The piggy poem invokes the material history and actual objects involved in producing text and textuality. Medievalist Sarah Kay points out that contemporary readers are far removed from understanding this material history: "While today we may think of books as inorganic commodities—or even as virtual, electronic ones—the whole of medieval book production operates using what were once living things" (13).[8] What remains of this organic history resides in the language used to describe the textual media of the page and book. "Our pages and our bodies have long converged in metaphor," Alison Muri writes, explaining that, in addition to the page having a header and footer, it also has an index "(from the Latin meaning 'indicator' or more specifically 'forefinger'), or footnotes, or frontispiece (from the late Latin *frontispicium*, from *frons*, 'forehead' and *spic-*, denoting 'see')" or "chapter (from Latin *caput*, 'head')" and "manuscript (from *manus*, 'hand')" (235). Stoicheff and Taylor likewise remind us that "our understanding of what constitutes a text remains rooted in the traditions of the medieval page" (8). *Between Page and Screen* poetically presents a little lesson (or two) in this history.

Let me pluck a final example of such a lesson in textual media from *Between Page and Screen*—this time a piece of low-hanging fruit from a section in the correspondence of P and S that uses the metaphor of the page as a tilled garden in which the reader walks and eats. A letter from P to S states that "trellis is a metaphor—it props me up" (14). This metaphor of reading pages and books to support, like a trellis, the growth of human knowledge and religious fidelity has long been part

altered conditions and contexts of meaning-making. This double function of storage and repositions/rewrites displays the digital not as a compound, but rather as an intermedium and a metamedium, into which other media are reinscribed as forms, as absences, and as figurations of difference" (155).

[8] One might thus think of the "animal turn" in literary studies—which Kay sees as an opportunity to consider anew the role of ethics in reading, especially "an ethics of medieval reading that takes into account its basis in legible skin" (31)—as part of the material turn that this special issue explores. Doing so connects the material aspects of the page to the social, ideological, and ethical.

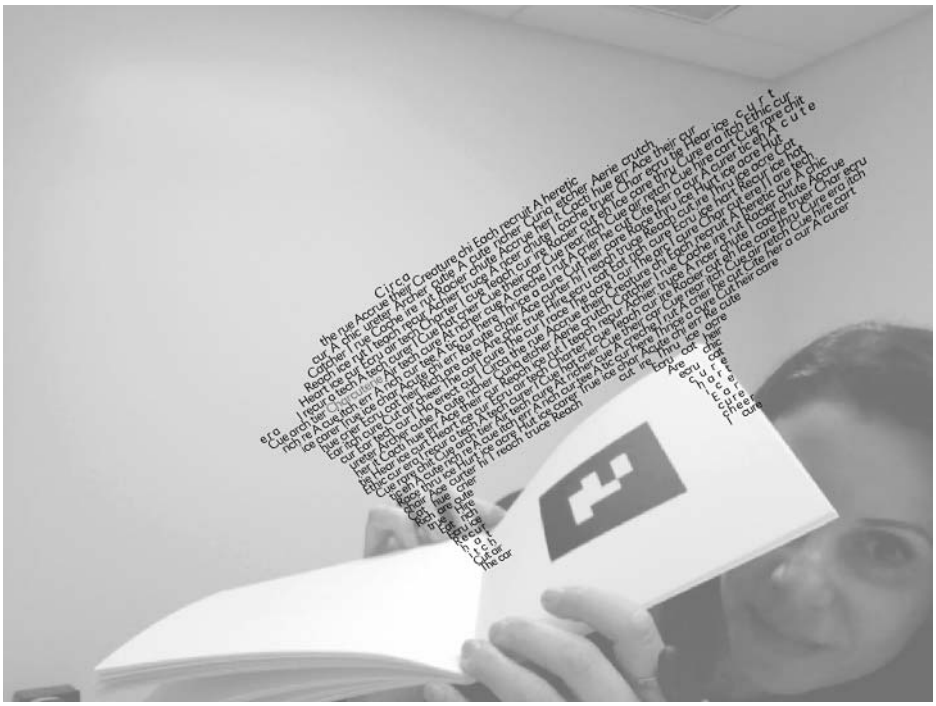

Figure 4. Amaranth Borsuk and Brad Bouse, *Between Page and Screen*, 2012. Screen capture of pig poem. Reproduced with permission.

of codexical media. The rhetoric of gardening-as-reading harkens back to the biblical Garden of Eden, wherein picking and eating the fruit of the tree was the original act of gaining knowledge. The metaphor (pardon the pun) blossomed in the Middle Ages, as exemplified in the fifteenth-century *The Orchard of Syon*, which compares the experience of reading to wandering in an "orcherd" (see Wogan-Browne et al.). "The fruits of the pages were literally mouthed by speakers," Michael Camille writes, "and thus the body interpenetrated on a level of the Logos" (252). Or, even earlier, in the twelfth century Hugh of St. Victor described "the page as a vineyard and a garden," and Ivan Illich famously comments on this line in ways that connect the medieval metaphor of the vineyard with *Between Page and Screen*'s use of the trellis as a metaphor for scaffolding the relationship between P (page) and S (screen): "When Hugh reads, he harvests; he picks the berries from the lines. He knows that Pliny had already noted that the word *pagina*, page, can refer to rows of vines joined together. The lines on the page were the thread of a trellis which supports the vines" (57). The page is both a space (a garden) and a form of information infrastructure (a trellis and interface); it supports exploration, interpretation, and attachment. In both the tilled garden and text-filled page, the reader wanders, plucking and consuming.

The metaphor of the page as garden depicts a specific type of relationship between the embodied reader and the physical book. "In this symbolic world," Stoicheff and Taylor write, "the page had particular significance as a physical

enactment of the central truth that in the beginning was the Word and the Word was made Flesh"; this is how "each Bible was a recapitulation of the Incarnation" (8). For the individual reader, the parallel between book and body carries over to a reading practice "that aimed at . . . physical and spiritual incorporation (the metaphor of cud-chewing embedded etymologically in *ruminatio* has real significance)," Jan Ziolkowski writes (528). Such *ruminatio*, reading-as-ruminating, reflects an embodied understanding of reading that happens through the use of a material book as fruit from a garden. Medieval scholars remind us that the scripted text and illuminated images assist the reader in wandering along the tilled rows of the page and picking fruit to consume. So, when P writes to S, "Let's name this pagan pageant, these rows of lines or vines that link us together," the words invoke the garden metaphor and also refer to what Jessica Brantley identifies as another aspect of medieval reading practice. "Late medieval devotional readers brought the idea of public recitals into the private space of vernacular manuscripts," she writes; "their literary activities enlivened the silent page with the imagination of noisy scenes . . . and made the individual's quiet encounter with the static book itself a species of sacred performance" (2). "Pagina" and "pageant" are from the same root, so the page is a kind of pageant, as Brantley suggests. *Between Page and Screen* uses augmented-reality technology to literally "enliven" the silent page and make manifest this point of connection between digital and medieval reading. The work's content comments upon and plays with the idea of inserting performance into a book, as is suggested by the sexual innuendo contained in a line in the same letter from P to S about the "pagan pageant": "There's a neat gap between these covers, a gate agape through which you've slipped your tang." Its language ripe with symbolism harkening back to literature's pre-print period, and its visual design presenting reading-as-ruminating on media, *Between Page and Screen* explores the concept of reading as an act of wandering in a physical space and performing with material objects, illuminating and enlivening the medial histories connecting medieval pagina and digital webpages.

If what lies between P and S are innumerable changes in the technologies, protocols, and mediating actors of textual media, what also lies between them is, quite literally, Q and R. Although this is of course an alphabetic truth, here it is also a formal and technological fact. Quick Response codes enable the correspondence between P and S to appear between page and screen, where it can be read. QR codes are also, as noted earlier, the only type of printed or typographic content displayed on the actual pages of this little book. But what exactly are QR codes? They are symbols and signifiers that contain encrypted information that can be scanned by a digital reader. For a book to contain QR codes is not odd; they grace the covers of books to track the distribution of these commodities or sell advertisements on them. But that is not how *Between Page and Screen* employs this digital tool and signifier. The QR codes in this book serve as formal devices to produce literature. They are also, as I have shown, the book's content. They must be read, but it is the computer that reads them. While the human reader ponders the linguistic twists and turns of the etymological translations connecting P and S, page and screen, or, as I did earlier, notices connections between the QR codes on the page and the projection of digital content from them, there are other acts of reading and translation happening in this work, acts that are digital and machinic.

What makes page and screen, book and Web, actually connect to produce the poetics of between-ness in *Between Page and Screen* is text that the human reader does not see—text that tells the camera what to look for, how to translate, and which data files to retrieve. Attending to this computational text invites metacritical questions such as the following, posed by Rita Raley: "Toward what understanding of translation, of text, even of language, are we being nudged by algorithmic translations?" ("Algorithmic" 119). "Translational media arts practices endeavor to make visible and intelligible the structural logics of the new linguistic doxa," and they "prompt critical engagement with the epistemological assumption of a metaphysical distinction between the expressivity of the mind and the mechanization of software" (Raley 122). In other words, and in works like my tutor text, machine translation is not only an inextricable part of the literary aesthetic but also a situation that challenges our very understanding of what literature is by destabilizing our fundamental ideas regarding who (or what) reads. Seeing the QR codes in the pages of *Between Page and Screen*'s book is akin to seeing a language one cannot read or, to use the other literary genre involved in this work, an epistolary correspondence one cannot decode. These signs are addressed not to you, the human reader, but to the machine.

One might think of the QR codes in *Between Page and Screen* as referencing a larger ideological situation by way of presenting a poetics of illegibility, intentionally "retarding the automatic process of reading, much less any speed-reading, and frustrating that illusion of the blank page" (Dworkin, *Reading* 54). Craig Dworkin suggests that techniques of illegibility offer a powerful mode of resistance regarding expectations of how reading operates: a poetics of illegibility can "remind us that the unreadable text is a temporary autonomous zone: one which refuses the permanence of its own constitution, and which calls on its readers to account for the semantic drives that they cannot, in the end, resist—and for which we must learn, as readers, to take responsibility" (155). In other words, illegibility demands a reading practice attuned to mediation—to the structures of formation, emergence, and power, not just media or content. Such a focus is at the heart of the scholarly field of comparative literature; indeed, Dworkin's point is connected to Emily Apter's argument against the idea that "translation [is] assumed to be a good thing en sui" (8). Apter strives to recuperate "an approach to literary comparatism that recognizes the importance of non-translation, mistranslation, incomparability and untranslatabilty" (4). Digital works like *Between Page and Screen* participate in such pursuits both by making the illegible and untranslatable part of the literary and by showing that literature is no longer the sole purview of the human reader. Machine reading and what Hayles calls "nonconscious" need to be part of the critical conversation as well (see *Unthought*).

Rebecca Walkowitz's work on "comparison literature" and "born-translated" literature can help to situate such technopoetics within the current discourse in the field of comparative literature. Walkowitz identifies "born-translated" literature as a contemporary genre that is "written for translation, in the hope of being translated, but they are also often written as translations, pretending to take place in a language other than the one in which they have, in fact, been composed" (4). Such works gesture to their emergence within global, digital networks, the material realities and technological configurations that include and depend upon acts of machinic translation. "Translation is not secondary or incidental to these works"

(4), she writes, but is part of their original composition and distribution. Such works challenge the designations "original language" and "secondary translation" by insisting that translation occurs in the process of creation and is often conjoined with translational machines (for example, Microsoft Word, Google Translate, and, even more broadly, the translations enacted by digital computation of codes). This goes beyond Walter Benjamin's understanding of translation as a creative and transformational process, because born-digital or born-translated work invokes the participation of computational, translational machines in the production of the literary text. In *Track Changes: A History of Word Processing*, Matthew Kirschenbaum explores how word processing software challenges designations distinguishing writer and user, text and translation, because word processing incorporates—combines and confuses—"hardware and software for facilitating the composition, revision, and formatting of free-form prose as part of an individual author's daily workflow" (xiv). As a result, a focus on word processing "permits us none of these simplifications" (x) that separate the user of a technology from the secondary translation. Putting Kirshenbaum's media archaeology in conversation with Walkowitz's "comparison literature," and even Benjamin's understanding of translation, allows ways of seeing machine translation as inseparable from literature and literary criticism.

Consider, for example, *Between Page and Screen*'s website, through which you read the work. The "About" page of betweenpageandscreen.com contains a vertical, clickable list: About, Authors, Book, Software, Letterpress Edition, Recent Events (http://www.betweenpageandscreen.com/about). "Software" appears just below "Book," and when you click on "Software," you arrive at a page that explains how *Between Page and Screen* uses the *FLARToolkit* to project animations: "The source code is available here" (http://www.betweenpageandscreen.com/about#software). FLARToolKit is, as its website explains, "free to use for non-commercial applications under the GPL [General Public License] license. This means the complete source code for your application must be made available to anyone that asks for it" (http://www.libspark.org/wiki/saqoosha/FLARToolKit/en). The website where you download the toolkit is "The Spark project," which is "a Flash/ActionScript open source community" (http://www.libspark.org/wiki/WikiStart/en). The page is a space of comparative languages and literatures; it is bilingual, containing onscreen text in English and Japanese (the toolkit is created by Japanese coder Saqoosha), and these interface languages are enabled by HTML. Borsuk and Bouse's selection of these particular tools and their decision to link their work to this location online situates *Between Page and Screen* within a specific context of web culture and discourse, legal battles, and political affiliations. This is an open source technology and an "open source community," which matters both to the authors and the community of creators with whom they affiliate but also to my understanding of how *Between Page and Screen* calls for approaches that blend comparative literature and CTM. Text and context, politics and language, translation—by humans and machines—are all here: http://www.libspark.org/wiki/saqoosha/FLARToolKit/en.

The fact that *Between Page and Screen* operates through an active Internet connection means that it depends upon protocols of translation that support the distribution of information across the Web (HTML, HTTP, TCP, IP, and so on). I will

not spend time explaining these various acts of transmission; suffice it to say that translating human-language text into ACSII and binary code—so that it can be manipulated across levels of machine translation and broken up into packets that can be distributed across high-speed cables to then arrive at a host computer where this data can then be reconfigured into the appearance of a cohesive document—is a substantive part of digital textuality. *Between Page and Screen* directs, or, in the language of this special issue, *turns*, our attention to such acts of machine translation. To focus on the programming code and configurations of software, hardware, and Internet is to turn towards the protological and political. "From a technical standpoint, protocols can be difficult to grasp because they are intangible and often invisible to Internet users," Laura DeNardis writes; "They are not software code or material products but are language—textual and numerical language" (6). For these reasons, Alexander Galloway and Eugene Thacker explain, "Because a network is as much a technical system as it is a political one, any theory addressing networks will have to entertain a willingness to theorize at the technical level" (*Exploit* 100). Understanding that digital networks are political and social as much as they are technical and technological renders them important aspects of comparative literary analysis. This is where the discipline of comparative literature meets CTM, a conjunction that is needed to address a born-digital, born-translated work like *Between Page and Screen*.

The Material Turn, a New Orientation

Reading *Between Page and Screen* requires a sophisticated digital apparatus: an Internet connection, a webcam, the right Flash-based software upgrades, and, of course, the book containing the QR codes. All of these elements must work together to produce the augmented-reality performance in which the text can be read. But making the text appear is not easy. When I first attempted to read the work, I watched the video on the book's website, which shows the author, Amaranth Borsuk, gracefully moving the pages of her book as the letters dance upon the screen in front of her while energetic music romps in the background. I, on the other hand, was flummoxed. I could not, for the life of me, position the book in the right location to be read by the camera. The frustration of my initial reading experience was not, I now realize, completely my fault, but also part of the point. The work requires us to learn how to read it—to learn to adopt an embodied position through which to hold the book in front of the web-camera and to position ourselves where we can view the projected text askance between page and screen. It defamiliarizes our accustomed practice of reading and our normative stance of holding a book. In doing so, it demands that we turn our attention to the material of literature. Such actions are not trivial but constitute what Espen Aarseth calls "ergodic" (94), meaningful ludic, interaction.[9] When I finally figured out how to make the text appear between page and screen, my text appeared backwards! At first I thought this was a brilliant stroke of engineering on the part of the author and designer—an aside to

[9] Ironically, Aarseth uses turning pages in a book as an example of a non-ergodic and non-interactive action. *Between Page and Screen* turns this example on its head in ways that make us think twice about both the action of turning pages and the book as an interactive medium.

Leonardo da Vinci's notebooks and other types of encoded writing, a reference, perhaps, to the various interfaces that affect the ways we see, read, and comprehend. I thought of Marshall McLuhan's dictum: "We look at the present through a rear-view mirror, we march backwards into the future" (73–74). My literary mind interpreted the backwards letters as purposeful and symbolic, but they were also a beginner's mistake. For one can simply turn the book around to change the direction of the projected text. This epiphany made me realize how set in my ways I was—particularly my way of holding a book so that its content faced me. I assumed that I was the reader, not the computer. *Between Page and Screen* dispels this ideology of the page and the anthropocentrism associated with codexical media. In doing so, it reminds us that, in the age digital reading, humans are not the only actors making, processing, and reading literature. Computers are also active participants, particularly when it comes to digital text and literature.

While the experience of learning to read this work is initially exasperating, you eventually get into the groove of interacting with the book: holding it in the right spot at a particular angle, tilting its pages and acquiring a pace at which to turn them. You learn how to move with the book like a dancer and her prop, and you realize that reading requires discipline involving mind, body, and media use. Learning how to turn the material object (the book) teaches us that reading is a deeply embodied and also technologically augmented activity that has a history of material turns. In my larger research project on the fetishization of the book in the moment of its supposed obsolescence due to digital media, I explore many examples of contemporary literary works that use their bookish bodies and aesthetics to turn our attention and appreciation to the book as medium and artifact (see "Aesthetic of Bookishness" and "Jonathan Safran Foer's *Tree of Codes*"). *Between Page and Screen* participates in this activity, staging a situation in which we can enjoy the bookishness of this little red book from the vantage point of the digital circuit. We can read the book as artifact even if we don't actually read text contained within it.

Between Page and Screen presents a material turn. I mean "material turn" both literally and metaphorically. In the literal understanding, you turn your attention from the material at hand—the book—to the space of the screen. Figuratively, this turn away from the page references a symbolic shift in our relationship to the medium of book and our approach to reading it. When reading *Between Page and Screen*, you see yourself incorporated into the digital network. Like the text culled by the QR codes, you appear onscreen, between page and screen, in the projected performance of this work. Your face appears alongside or occluded by the book and the text projected out from its open pages. You see yourself holding the book and reading it by gazing not at the actual pages but at their reflection onscreen. This Narcissus-like experience confronts and confounds you with the fact that you are just one of many media involved in producing this literary work. Moreover, you are not the central node in this reading circuit. You are off to the side as the text appears. Reading *Between Page and Screen* is not a human-centered activity. It is, instead, a posthuman technological distribution that involves human and machine readers in the production and reception of literature.

Between Page and Screen thus stages a scene of reading that is quite different from the "look of reading" that Garret Stewart catalogs in his book by that title. The image of a silent reader staring deep into an open book is a well-known and

poignant symbol of interiority and selfhood, a symbol we have learned to associate with learnedness, privacy, leisure time, and class. *Between Page and Screen* challenges and complicates traditional postures of reading and the meaning associated with them. To read this work, you open the book and flatten it out. The ramifications of this small physical detail are significant. The reader's attention is directed not into the book but to a space just beyond its pages. This is the opposite of getting lost or immersed in a book; the book here is not a space for the projection of the human self into the text but a space for the webcam to scan and project. "To understand books is to understand the act of looking that transpires between us and them," Andrew Piper writes: "It is to ask how we face books and how they face us" (26). The trope of facing books, of holding them so that they face us and mirror us, is an old and important one. John Dagenais reminds us that when we read a page, we actually see two pages, a verso and a recto; the page "is almost always accompanied by a failed mirror image of itself, a lost twin" (62). This mirroring both of pages and of the human reader is an important material part of the history of reading. "There is something irreducibly tactile in our relation to the book," Henry Sussman writes: "It confronts us at eye-level. It addresses us face-to-face" (2). But what happens when the book doesn't look us in the eye, when it instead addresses us only through the mediating interface of the computer screen? What are we to make of this affront? We might think initially of early theorists of computer screens and interfaces, from Sherry Turkle's description of "the second self" or Brenda Laurel's identification of the computer as a stage for collaborative performance: "The interface becomes the arena for the performance of some task in which both human and computer have a role" (7). But *Between Page and Screen* is not just about screens; it also turns our attention to how we hold, view, and understand ourselves in relation to books.

To consider this change in our relationship to the book, we might also consider the gesture required to enact the material turn that is so central to *Between Page and Screen*: the turning of the book away from the human reader to face the screen. Media theorist Vilem Flusser pursues a theory of gesture as something distinct from movement in general: "A gesture is one because it represents something, because it is concerned with a meaning" (*Gestures* 4). In *Does Writing Have a Future?* Flusser writes, "To pull out and turn a book over can serve as a model revolutionary gesture" (98). To pull out and turn a book over so that it faces the computer is certainly a revolutionary gesture; it rebels against centuries of experience involving how we hold books and perform the embodied actions of reading them. Writing about the history of child readers and children's literature, Patricia Crain argues that "a codicology of the modern self" (155) emerges with the gesture of holding the book as a mirror to the face and the heart; this is how, she shows, children learned to look into books to see themselves. Understanding the historical importance of the look of reading suggests that the embodied gesture promoted by *Between Page and Screen* is a poignant one. It pivots our attention in ways that, following Flusser, are revolutionary. The topic—"the material turn"—that structures this special issue suggests a change in orientation. A focus on our orientation towards objects—specifically towards the book, page, and screen—is an opportunity to consider how these material entities structure our experiences and expectations of literature and our practices of comparative literary studies. This is an invitation to consider how Sara Ahmed's *Queer Phenomenology: Orientations, Objects, Others* can help guide our reflection; for a focus on orientation illuminates how reading, in

whatever form it takes and with whatever media it involves, is not a natural activity but one that requires training, practice, and submission.[10] Michael Warner reminds us that critical reading is "a historically and formally mediated practice, with an elaborate discipline of subjectivity" (35). Ahmed echoes this point: "The work of repetition is not neutral work; *it orients the body in some ways rather than others*" (57). Repetition and discipline train the reader to open the book so that its pages face her and also to assume that the book's content is intended for her. The way we turn to hold and face books, and certain books in certain ways, shapes us and is shaped by previous acts that inform our perspectives, practices, and scholarly professions. Positing a material turn in the field of comparative literature enables us to follow Ahmed in considering what happens "if we foreground the concept of 'orientation'" (1). As I have been arguing, *Between Page and Screen* promotes such examination by foregrounding the actions that bring some objects—literally, some QR markers and some text—into view and not others. The work makes us see that "to be orientated is to be turned toward certain objects" rather than others (Ahmed 2). This orientation is based, in part, on what we have encountered previously: "The object is an effect of towardness; it is the thing towards which I am directed and which in being posited as a thing, as being something or another for me, takes me in some directions rather than others" (27). Attention to what literary texts and textual media come into view and why (and also which do not) involves a metacritical perspective that must take into account not only text and media but also politics, ethics, and the power of orientation. Comparative literature is a discipline devoted to bringing to the fore the invisible forces that inform orientation: acts of translation, political power structures, and materialist contexts that affect the production and reception of texts. Today, comparative literary practices must extend beyond the exploration of linguistic translations or national and identity politics in order to explain the invisible acts of machinic and computational translations that support global capitalism, digital infrastructures, and protological control. Digital works like *Between Page and Screen* can support such critical comparative efforts. To pursue this material turn, we simply need a new orientation . . . along with, of course, a webcam, an Internet connection, a computer, the right QR codes and software, and—yes—the book.

San Diego State University

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[10] I am suggesting the relevance of Ahmed's queer theory here to expose normative reading practices rather than, as she pursues, the construction of normative (heterosexual) sexuality as "something that we are orientated around" (90–91). I see these disciplines of subject formation as twinned, since, in both, "the normative can be considered an effect of the repetition of bodily actions over time, which produces what we can call the bodily horizon, a space for action, *which puts some objects and not others in reach*" (66).

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