The Boundless Book: A Conversation between the Pre-modern and Posthuman

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Abstract

Digital humanities and medieval studies share a long history, beginning with one of the first large-scale digital humanities projects, which was carried by Father Roberto Busa using IBM's Literary Data Processing Center. Why then, do many scholars of historically-minded fields consider digital humanities to be a "helping discipline" instead of a full-fledged area of study in itself? Beginning with the above question, this paper explores the ways in which scholars need not use the digital humanities to update historical disciplines or vice versa. By examining the pre- and post-print histories of the book, and interrogating the ways in which reading technologies and interfaces link the past and future of the book together, the past and present histories of reading coalesce and offer scholars novel ways of approaching many different disciplines that engage with the digital humanities.

Men louen of propre kynde newfangelnesse (Chaucer, *The Squire's Tale* [Chaucer 2008, 610])

Here, there are no longer any forms or developments of forms; nor are there subjects or the formation of subjects. There is no structure, any more than there is genesis (Deleuze and Guattari, *A Thousand Plateaus* [Deleuze and Guattari 2004, 266])

Medievalists have always loved innovation. Perhaps because the discipline is so far-removed from the present cultural moment, medievalists continue to embrace academic change. The first large-scale project in the digital humanities was undertaken by a medievalist. Using IBM's Literary Data Processing Center in Gallarte, Italy, which opened in 1956, Father Roberto Busa completed a concordance on "every one of the thirteen million words written by Aquinas," a daunting task for even the most hardy of scholars [McDonough 1967, 46].[1] The Literary Data Processing Center made this type of work feasible and started a wave of concordances and compilations by Busa and other early digital humanists.[2] By the 1960s, medievalists, and scholars in other disciplines as well, began to meet and discuss the ways in which computers could impact their field of study and the humanities in general.[3]

Indeed, by the 1980s the digital humanities became the new "helping discipline" for literary scholars, giving them a means to an end in the rush to give people easier access to hidden archives, hard-to-find editions, and almost-forgotten poets. I call the digital humanities a "helping discipline" and it will be helpful to define what this term has meant elsewhere in the field of medieval studies.[4] In his essay "Latin Palaeography since Traube," esteemed book historian Julian Brown described Ludwig Traube's influence in helping to change paleography from a *Hilfswissenschaft,* or helping discipline, to one that gave scholars insight into larger cultural movements [Brown 1993, 17]). Traube's contribution to the study of paleography was groundbreaking due to the fact that, after his scholarship, paleography became not just a means-to-an-end but a full-fledged area of study that has since yielded major contributions in the ways we think about medieval literary culture and book history. Although researchers in the digital humanities, new media, and electronic literature continue to produce scholarship that changes the way scholars think about the technologically-mediated world, it is only in the past decade that the field has become more than a "helping" discipline at most universities.

In the 1990s, books dealing with the digital humanities were rife with heady essays exclaiming the discipline-changing power of computers for humanists that promised to update and renew historical disciplines for the new digital era. Take, for example, the edited collection "Hypermedia and Literary Studies," published in 1991. In the introduction, its editors, Landow and Delany, exclaim "hypertext thus presages a potential revolution in literary studies" [Delany and Landow 1991, 6]. The essays within the book's covers echo the editors' initial utopic claim, and extol the digital humanities' potential for fundamentally changing the way research is carried out by literary scholars. This particular book is divided into three sections, with the last focusing on applications, which highlights a number of early digital humanities projects. Most of these examples deal with pre- and early modern literature and history, including Biblical Studies, Classics, Shakespeare studies, and early modern emblem books.[5] The rhetoric surrounding many of these projects is one that seeks to "update" historical texts for the present moment (as if the historical sources need the digital humanities' intercession to maintain their importance for a new generation of reader).

Indeed, one need only look to the names of recent exhibitions and books to find the history and future of the book tied together. *From Gutenberg to Google* [Shillingsburg 2006] and *From Parchment to Pixel* (British Library 2009) are two examples of titles that, at least alliteratively, connect these two historical moments.[6] The teleological evolution "from" one state "to" another in both these titles emphasizes a tacit progression, which places the past at odds with the present. What I have highlighted here are two different sides of the same coin. On one hand, medievalists and other scholars use the digital humanities as a way to provide access to one-of-a-kind manuscripts and engage with the digital humanities as only a *Hilfswissenschaft*, or helping discipline; on the other, practitioners employ digital humanities tools to "update" a discipline.

Rather than using the digital humanities to update the medieval period or vice versa, I would like to suggest another approach to studying these periods. Instead of writing this paper as a medievalist or as a digital humanist, I come at this paper as a hybrid of both worlds, always Janus-faced in the ways that I see each discipline. As a scholar of manuscript studies and the digital humanities, I cannot help but talk about the future of reading and books as I research the past — some might say, the beginning — of books. With this approach in mind I wish to explore some of these commonalities in this paper. Part of my aim here is to give the digital humanities equal space with medieval studies instead of using one discipline to enlighten and enliven the other and, as Jessica Brantley points out, to interrogate the "systems of thought that are both revealed and created by the physical structures through which ideas are expressed" [Brantley 2009, 632]. Rather than pitting the medieval period against the digital humanities or vice versa, this paper seeks to further link these two periods together through the lens of the history of reading and books.[7]

Jessica Brantley's article "The Prehistory of the Book," focuses the ways in which the discipline of book history eschews non-printed material — specifically medieval manuscripts. She takes issue of Robert Darnton's definition of book history as "the social and cultural history of communication by print" [Darnton 1990, 10] and asks that the definition of the book be broadened to "the material support for inscribed language, a category that includes rolls and codices and even monumental inscription, both written by hand and printed by many different mechanisms, and also a wide variety of digital media" [Brantley 2009, 634]. Although her article is not about digital media per se, Brantley touches upon an important point for this argument: if the book as it is defined by many book historians is really a history of print, where, then, does that leave the study of medieval manuscripts and the study of electronically-mediated texts?[8]

In her introduction to the book *New Media, Old Media,* Wendy Hui Kyong Chun cautions against arguments that "concentrat[e] on the remarkable yet over determined similarities between entities now considered media" and claims that "any such argument must grapple with the ways that mediums have changed" [Chun 2006, 3]. While giddy declarations as to the commonalities themselves do little to further our knowledge of digital humanities or "old" media, it is more useful to postulate *why* medieval manuscripts and electronically-mediated texts have so much in common. When the printed page is no longer the dominant means of transmitting data, how do we understand the concept of the book? To put it yet another way, this paper will study the "book ends" of book history and examine the reading technologies of the pre- and post-print eras in the same breath.

Writing on the Body: Skin as Interface

If we put aside the printed words' dominance from book history and concentrate instead on the ways we might define books in the pre- and post-print eras, the most telling commonality is one of interface. In the Middle Ages, reading is always, in its most literal sense, an embodied process. Medieval manuscripts are made out of sheep or cow skin, which has been scraped and processed until it is milky-white and smooth to the touch. Even so, in most cases, it is easy for a reader to determine which is the "hair side" or the "flesh side" — that is, if hair follicles are visible to the reader on a recto, the verso will have a creamier appearance due to the fact that it was on the inside of the cow or sheep. In some cases, the reader can see a difference in the parchment's quality as the page nears what would have been the animal's haunch — asking the reader to imagine the animal as a living entity. This embodiment is more than a visual process, but a haptic one as well: as a reader turns a page in a medieval manuscript, she touches skin — sometimes brushing against stray hairs — always aware that the reading interface is, in fact, a body itself. "For when I open a medieval manuscript, and this is different from opening a printed book," comments Michael Camille:

> I am conscious not only of the manu-script, the bodily handling of materials in production, writing, illumination, but also how in its subsequent reception, the parchment has been penetrated; how it has acquired grease-stains, thumb-marks, erasures, drops of sweat; suffered places where images have been kissed away by devout lips or holes from carious eating animals. [Camille 1997, 41–2]

Camille's observation — that reading a medieval manuscript is also an embodied process for a modern reader — is a salient one. Like a palimpsest, each reader leaves a mark on the manuscript, whether it is a marginal notation, emendation to the textual unit, or a new binding.[9] Thus, medieval manuscripts become a living history: from the original flock of sheep and the craftsmen who constructed the manuscript to all of its subsequent readers and writers.

It would be easy to assume that the reading interface in new media would be one that eschews bodies altogether for a completely virtual reading experience. Rather, many electronically mediated texts revisit a medieval practice and create a multi-sensory reading experience, or, as Mark Hansen suggests, these works signal a "redemption of embodied experience" [Hansen 2004, 2]. This avowal of an embodied interface corresponds to a reading process that involves sound and touch, which signals a paradigm "shift from a dominant ocularcentrist aesthetic to a haptic aesthetic rooted in embodied affectivity" [Hansen 2004, 12]. This more tactile experience of gaining unique meaning from touch and sound questions the primacy of the visual altogether and, indeed, asks us to redefine our definition of a text to one that encompasses a world, soundscapes and bodily understanding.

Sound is especially important in many works of electronic literature, and often goes hand-in-hand with haptic response as a way to create added layers of narrative meaning. In Young-Hae Chang Heavy Industries' Flash-based electronic poem, "Dakota," the reader hears a musical phrase that is quietly repeated as the screen slowly flashes from black to white (Young-Hae Chang Heavy Industries nd). Suddenly the music changes to a loud, frenetic drum solo by Art Bailey as the first words and numbers flash across the screen like a strobe light, matching Bailey's rhythmical pattern. In this poem, the flashing words and percussive music mirror the motion of the poem's subject matter, as the first words of the narrative announce: "FUCKING / WALTZED ØUT TØ THE CAR." The pulse of the words follows the pattern of the drum, creating haptic feedback as the drums blast through the reader's speakers and the letters vibrate in time to various drumbeats. As the reader's eyes quickly scan the word-images as they flash across the screen rapid-fire, she cannot help but read *sotto-voce* to keep up with the fast-moving text. This blend of visual, aural, and haptic feedback have much in common with medieval reading practices, "Reading for the medieval literate was charged with [...] associations that made every turn of the page an act of intense interpenetration and one resonant with sensations," comments Michael Camille; "from the feel of the flesh and hair side of the parchment on one's fingertips to the lubricious labial mouth of the words with one's throat and tongue" [Camille 1997, 41]. Reading in the Middle Ages was a tactile and sonorous experience, asking the medieval reader to interact with the textual unit in more than a strictly visual sense. Unlike print media, both medieval manuscripts and works of electronic literature are — as Anna A. Grotans writes regarding medieval reading practices — "intended as much for the ears as for the eyes, and authors wrote them with this reception explicitly in mind" [Grotans 2006, 19]. Sonority and haptic feedback create a reading experience for both medieval and contemporary readers that, insofar as they are able, mirror each other in the ways that works were produced for a multisensory experience.

Ice-Age Reading and the Embodied Medieval Text

Both electronically mediated texts and medieval manuscripts ask their readers to negotiate complex reading interfaces — these embodied experiences are not singularly tied to the user experience, but also to the metaphorical structures within the works themselves. Mapping prognostications onto the human body and using body parts to mimetically guide a reader was a common practice in medieval didactic texts. One example of this type of device is the "Zodiac Man," which was often found in the scientific manuscripts.[10] In these illustrations, the human body serves as the reader's interface, performing a narrative and visual function as it guides the reader down various paths.

The Zodiac Man, usually part of a "Physician's Calendar," advises medieval doctors as to which body part is ruled by a certain astrological sign; based on the image and the accompanying text, a medieval doctor could avoid bleeding or operating on that part of the body depending on the moon's position [Harley MS 5311].

Figure 1.

In this particular example, the parchment is folded into three sections and would have attached to the physician's belt so that he could easily refer to it when he was visiting patients [Glick 2005, 263]. This image places the body in the middle of the three sections of parchment, echoing a Christian triptych. The human body serves as the background while the astrological symbols crowd on top of the body, vying for the reader's attention. When engaging with this image, the reader must first traverse the human body and then navigate to the appropriate astrological symbol. Once the reader has found the appropriate sign, she must then navigate the accompanying textual unit in order to read the supplementary warning about each body part.

The same type of embodied and symbolic navigational process is suggested by Stephanie Strickland's hybrid print and electronic world *Vniverse.* [11] This poetic project self-consciously connects the modern reader with, what Strickland calls the "Ice Age" reader; as Strickland and Lawson state in the essay that accompanies the web-based portion of the project: "V is haunted by similarities between the nomadic Ice Age task of reading and 21st-century reading" [Strickland and Lawson 2003]. For the web-based portion of *Vniverse,* the reader navigates a starry sky. As she mouses over various stars, constellation-like patterns connect the stars together and short poems, or "triplets," appear on the screen. Strickland encourages the reader to interact with the text using multiple senses and paths, but the fundamental method of traversing the starry sky is by touch. The reader can touch the night sky (using the mouse in place of a hand) in a

shape that is not dictated by linearity or by the pages of a book, gesturing back to a nomadic reader who would have read the night sky to plot a course. At its heart, this nomadic reader is one who navigates differently than a modern one, who negotiates time, affect, and images in a fundamentally dissimilar way. In Strickland's words, this reader performs "a type of reading closer to seeing, one that problematizes the see/read difference, thus involving both sides of the brain" [Strickland and Lawson 2003]. The medieval physician, like Strickland's "Ice Age" reader, would navigate through the Zodiac Man in much the same fashion. The human body at the center and background of the illustration serves the same canvas-like purpose as the night sky in Strickland's poetic world. The constellations of *Vniverse,* which guide the reader to poetic "triplets," mirrors the navigational process of the medieval reader, as she traverses each representational animal and reads the corresponding text and finally remaps the entire process onto a human body.

Navigating Viscera and Axial Structures

The Vein Man serves as the same sort of prognosticatory guide as the Zodiac Man, and is often found side-by-side with the Zodiac Man in medieval manuscripts.
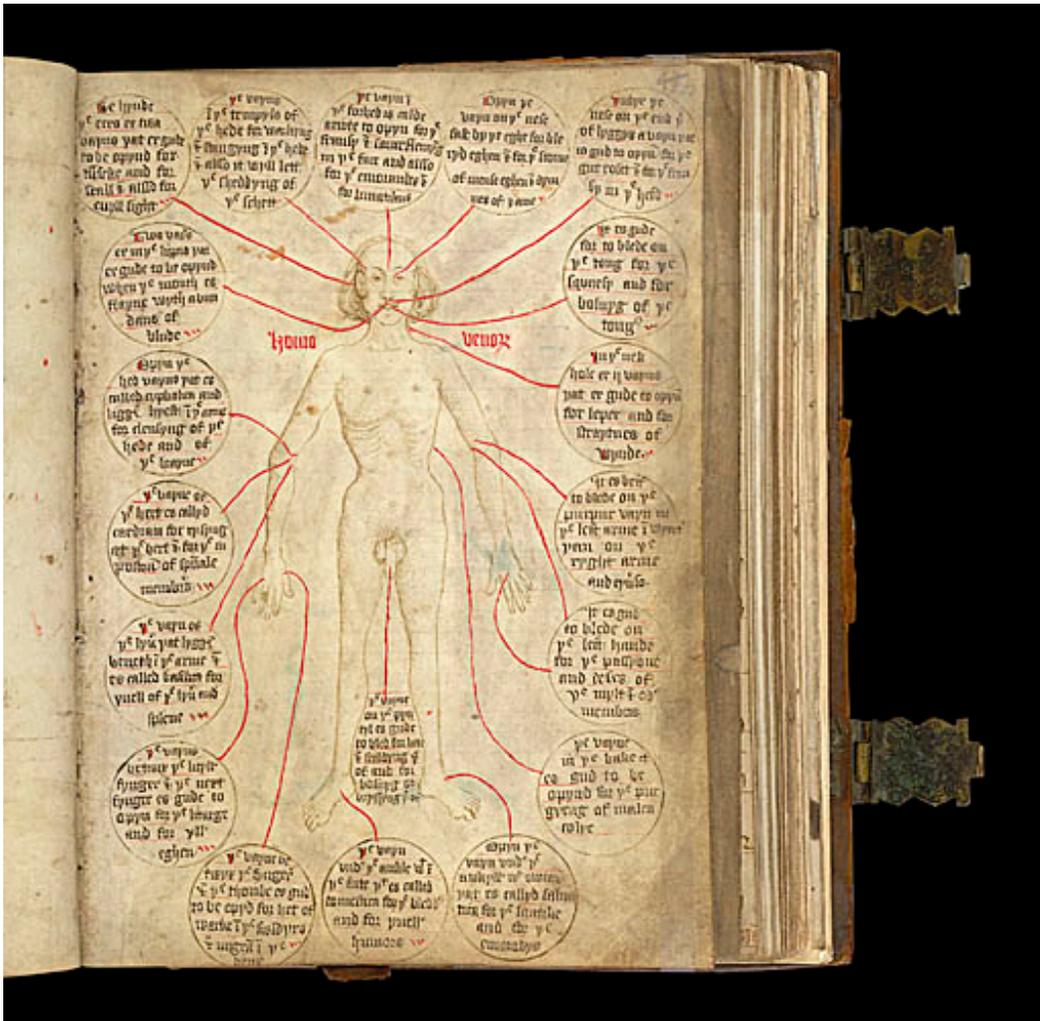
Figure 2.

These illustrations tell a physician which vein to bleed in order to relieve an illness in a particular part of the body. In this example, red "veins" point outwards from various body parts and lead to brief, explanatory footnotes [Egerton MS 2572]. Like the blood flowing through each vein, the reader's eye follows the path from the body to the narrative — each vein tying the body and narrative together. The body itself is carefully sketched in lead while the veins are painted bright red, highlighting their function as visual paths for the reader and, at the same time, underscoring the function of the veins themselves. Here, the body serves as a conduit, or, to take George Landow's phrase, it forms an "axial structure" with the torso serving as the main channel through the visual narrative [Landow 2006, 70].[12] Landow uses the axial model as a model to visualize "hypertext corpora that employ a single text [...] as an unbroken axis off which to hang

annotation and commentary" [Landow 2006, 70]. For the medieval audience who read the images along with the accompanying text, the body becomes the main narrative access with the red veins flowing to the textual "corpus."

The opening image in Shelley Jackson's *Patchwork Girl* , one of the most celebrated pieces of electronic fiction, is eerily similar to the medieval vein man. The first image the reader sees on screen is an image of a nude woman, her arms spread out in a Christ-like pose; and, like the vein man, her wide-armed stance implores the reader to view her body as she stares blankly across the screen back to the reader [Jackson 1995]. Dotted lines traverse the image-woman's body, inviting the reader's eye to follow each line and participate cutting the woman's body apart. Jackson challenges the notion of the body as a closed system with this image, as she tacitly suggests that — at least in her text — the navigational system is the patch-worked body itself:

> The body is a patchwork, though the stitches might not show. It's run by committee, a loose aggregate of entities we can't really call human, but which have what look like lives of a sort. [...] The body is not even experienced as whole. We never see it all, we can't feel our liver working or messages shuttling through our spine. We patch a phantom body together out of a cacophony of sense impressions, bright and partial views [Jackson 1995].

Both the exposed veins of the Vein Man and the dotted lines traversing Patchwork Girl's body hint at the interworkings and viscera that are usually hidden underneath the body's skin, and Jackson's accompanying essay, "Stitch Bitch," playfully highlights the bodily assemblage of the image-woman and of the vein man as well [Jackson1997].

Jackson's work also highlights the concept of a fragmented, non-linear text. In *Patchwork Girl*, the narrator ironically muses

> when I open a book I know where I am, which is restful. My reading is spatial and even volumetric. I tell myself, I am a third of the way down through a rectangular solid, I am a quarter of the way down the page, I am here on the page, here on this line, here, here, here. [Jackson 1995]

When reading *Patchwork Girl* and the Vein Man, navigation becomes a process that challenges our conceptions of linear reading and invites the reader to view reading as an embodied process. The reader of both texts must negotiate the body — and most importantly, its viscera — in order to progress through the narrative.

Entrances and Exits: Rhizomatic Reading Strategies

In some cases, navigating a text becomes significantly less straightforward in both the pre- and post-print world. If a text has no clear entrance, where does the reader begin? This question, and the works that engage with this concept, are much harder for theorists to define. George Landow gives a visualization of, what he calls, the "network structure" of some hypertext works [Landow 2006, 70].[13] Perhaps a more engaging description of Landow's "network structure" is Deleuze and Guattari's description of a rhizome. In their work, Deleuze and Guattari abandon a traditional informational structure of a tree for a model with significantly less linearity:

> the rhizome is reducible neither to the One nor the multiple [...] it has neither beginning nor end, but always a middle (milieu) from which it grows and which it over-spills [...] the rhizome is antigenealogy. It is a short-term memory, or antimemory. The rhizome operates by variation, expansion, conquest, capture, offshoots [Deleuze and Guattari 2004].

The rhizome encapsulates models of literary and artistic output that defy traditional and structural definitions. Unlike the "rooted tree" or axial structure, this type of hypertext has no directionality, that is to say a reader can enter and exit at any point in the text and have any number of reading experiences depending on the reader's path through the text.

Visualizing complex and rhizomatic structures on a single page posed a challenge for many medieval scribes.

Figure 3.

This image, from a 12th century manuscript of Boethius' *De Institutione Musica,* attempts to visualize musical theory through mathematical ratios [Harley MS 5237]. The representational image is so complex and full of paths and intersections that it is difficult to determine the underlying concept. As a reader, there is no clear point of entry or exit, and it is difficult to determine where to begin the viewing and reading process. There seems to be an axial or tree-like structure that horizontally organizes the diagram, but the number of secondary paths differentiates this image from a traditional structure of a tree. In this image, the only obvious place for the reader's eyes to rest is the horizontal middle, although as Deleuze and Guattari hint, the middle generates multiple middles so there is no final resting place.

While the previous figure is particularly emblematic of a rhizomatic model, it is somewhat anomalous as far as medieval diagrams are concerned. Diagrams with a cohesive visual metaphor are more common in even the most intricate of medieval diagrams, suggesting a highly complex process of reading and integrating images and text, much like the blend of text and images found on web-pages and advertisements. "The medieval page is a hive of activity," suggests Graham Caie: [23]

> full of visual stimuli with the text itself off-centre to make space for marginal illustrations and glosses that parody or interpret text, and lemmata that guide the reader who attempts to assimilate and synthesize what can only be called a multi-dimensional visual experience. [Caie 2000, 31]

A 13th century illustration from William Peraldus' *Summa de Vitiis,* a manual on preaching and pastoral care, presents its reader with a complex structure of links and nodes and corresponding allegorical images [Harley MS 3244]. [24]

Figure 4.

The image spans two pages and serves to comment on Peraldus' text as a whole as well as to illustrate and exemplify his message on sin. On the left side of the page, the didactic diagrams illustrate the seven main vices as a number of sub-vices, which are represented as dragons and worms and correspond to chapters and sub-chapters in Peraldus' narrative. The reader can take any number of paths through the various sins and vices and negotiate through the word-image pairings, the path echoing the message of Peraldus' text itself: that once a person commits one sin, more egregious sins easily follow.

The facing page responds to the sinful images — with the break between the pages marking the distinction between good and evil — and instructs the reader as to what a person can do to resist vices. A knight on horseback with the shield of faith, and an angel opposes the horde of worm-like vices. The allegorical images in the diagram from *Summa de Vitiis* serve to expand the concept of vices and virtues that Peraldus introduces in his tract and illustratively turn virtues and vices into an epic battle between dragons and a knight on horseback. This multi-dimensional experience of which Caie speaks shares many similarities with Landow's "network model" of hypertext. As Caie reminds us, the medieval page is a "multi-dimensional visual experience" that requires the reader to "read" images alongside text [Caie 2000, 31]. "New media change our concept of what an image is" asserts Lev Manovich; "because they turn a viewer into an active user. [...] The image becomes interactive, that is, it now functions as an interface between a user and a computer or other device" [Manovich 2001, 183]. In the most complex types of medieval data visualization, word and image are also inexorably tied together and, indeed, the image becomes the interface that functions as a portal into the diagram or data.

A reader also encounters an interactive and multi-dimensional reading experience when navigating through Mary Flanagan's narrative, [theHouse] [Flanagan 2006]. This narrative takes place in a 3-dimensional environment and asks the reader to move through the story-space populated by cubes that form house-like structures. Snippets of text are interspersed throughout the cubes and the reader must navigate through the 3-dimensional architecture of the space to explore the literary work itself. Like the illustration of Peraldus' work, the interface mirrors the work itself, with Flanagan playing on computer architecture and the structural design of a building itself. The connections continue as the reader explores the few lines of text that are readable and soon realizes that she must engage with the 3-dimensional space in order to read more of the narrative, which revolves around a troubled relationship between two people. There is no clear

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beginning or end to Flanagan's text, indeed the reader feels as though she eavesdrops in the middle of an argument — as if she floats above the action and watches the scene from below. Unlike the embodied navigation of Jackson's *Patchwork Girl,* this narrative is more reminiscent of the spatiality of Strickland's *Vniverse.* Flanagan's text, however, fully immerses the reader in a world that is at once architectural and symbolic at the same time.

Conclusion

The digital humanities has quickly generated new ways of thinking about reading technologies and continues to inform and change entire disciplines. While it may have started as a *Hilfswissenschaft,* the digital humanities has opened up book history to a world beyond the printed page, and medievalists have been there since the beginning. What I proposed in this paper is that instead of examining book history from the print to the digital era, we instead concentrate on the ways in which reading technologies from the pre- and post-print eras anticipate the same sort of reader and share similar reading experiences. The first, and perhaps the most significant, commonality between medieval and digital reading technologies is a simple one, but it is often overlooked: neither digital nor pre-modern books use the linear flow of the printed book as their primary means of storing data. This may seem incidental, but because of the dominance of the printed book, we forget it is a technology altogether. As Kate Hayles comments: "five hundred years of print have made the conventions of the book transparent to us" [Hayles 2000]. If we remove these conventions from the playing field altogether, book history becomes something different altogether.

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Reading technologies become multi-sensory when the stable, printed page is not dominant. From the embodied reading practices involving parchment and vellum to the haptic, forward motion of the drum solo from *Dakota,* reading technologies in medieval and digital texts expand to incorporate sound and touch. Bodies also become part of the metaphorical structure of the works themselves, especially in the shared image-space of medieval medical diagrams and digital works like *Vniverse* and *Patchwork Girl.*

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Once we look past the reading technologies themselves, the ways the reader engages with the text is also another important feature in both medieval and digital texts. Specifically, a rhizomatic structure encourages the pre- and postmodern reader to approach a text that has neither a clear entrance nor exit. In diagrams explaining mathematical approaches to music and illustrated battles between the vices and virtues, the medieval reader had to search for complex visual meanings as they read. The same types of reading strategies are evident in *[theHouse],* which introduces a world both complex and user-driven. The spatiality involved in these pre- and postmodern texts also hearkens back to *Vniverse* and other works featuring an embodied reader.

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Strickland asks us to be "Ice Age" readers when we approach *Vniverse,* which is to say, that we must try to approach her work without the constraints of contemporary reading practices and not anticipate that *Vniverse* can be navigated as though it was a traditional, printed book. Strickland's caution is a salient one, especially as we look back and research medieval reading practices and technologies. Another way of looking at a Janus-faced approach to book history is to take a page from Deleuze and Guattari's more rhizomatic expectations and allow ourselves as critics to make critical as well as temporal leaps as we study the history and future of the book.

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Notes

[1] McDonough's 1959 article "Computers and Classics" provides a good summary of these early connections between Classicists and medievalists with computers [McDonough 1967].

[2] In addition to McDonough's article, Susan Hockey's more recent work "The History of Humanities Computing" describes these early projects [Hockey 2004].

[3] One notable meeting regarding the ways in which computers could help medieval literary study took place at the University of Colorado and resulted in the 1967 article "Computer Study of Medieval German Poetry: A Conference Report" [Beatie 1967].

[4] This almost-pejorative term has also been leveled at the discipline of paleography — the study of ancient scripts — and it is no coincidence that both paleography and the digital humanities have since changed the ways that scholars understand books and their place within medieval and contemporary cultures.

[5] For more information see: "Biblical Studies and Hypertext," by Steven J. DeRose (1991); "Ancient Materials, Modern Media: Shaping the Study of Classics with Hypertext," by Gregory Crane and Elli Mylonas (1991); "The Shakespeare Project," by Larry Friedlander (1991); "The Emblematic Hyperbook," by David Graham (1991).

[6] The latter example is from a recent British Library exhibit, "From Parchment to Pixel: The Virtual Reunification of the Codex Sinaiticus," which was part of a larger initiative to digitize the entire codex [British Library 2009].

[7] For this reason, I avoid terms such as "remediation," which suggest that the medieval period is somehow the genesis of digital literary developments. Instead, I wish to examine how each of these periods anticipates a certain type of reader through similar reading technologies. For more information on remediation, see [Bolter and Gruskin 2000].

[8] Brantley's article touches upon an interesting point. Many works that seek to study the "beginnings" of new media begin with print's dominance as well, such as *From Gutenberg to Google* [Shillingsburg 2006] and *New Media, 1740–1915* [Gitelman and Pingree 2004].

[9] This process of past embodiment and what it can mean for contemporary readers was made especially clear to me when I researched the Exeter Book (*Exeter MS 3501*), which houses the only copy of many Old English poems. A previous reader mislaid a hot poker onto the manuscript and burned through many pages; because of this careless reader, a number of Old English poems have lacunae that will never be recovered.

[10] For a general overview of images associated with medieval medical practices, such as the Zodiac Man, consult *Astrology in Medieval Manuscripts,* by Sophie Page (2002).

[11] I use *Vniverse* to refer to both the website and accompanying print book, *V: WaveSon.nets/Losing L'una*.

[12] Although Landow does not make this connection, his axial model has much in common with tree structures from mathematics and computer science. In particular, Landow's axial model is comparable to a "rooted tree" structure wherein there is one main "root" from which any additional data is derived. In the case of Landow's diagram, the "root" is the literary work's main narrative while the hyperlinks to definitions and concordances would be the root's "branches."

[13] Along with the two models that Landow defines, he also provides three guiding questions to consider: "1. Where does the reader enter the text? 2. Where does the reader leave the text? 3. Where are the borders of the text?" which interrogate the boundaries of each type of hypertext [Landow 2006, 70].

Works Cited

Beatie 1967 Beatie, Bruce A. "Computer Study of Medieval German Poetry: A Conference Report". *Computers and the Humanities* 2: 2 (1967), pp. 65-70. http://www.jstor.org/stable/30203960.

Bolter and Gruskin 2000 Bolter, Jay David, and Richard Grusin. *Remediation: Understanding New Media*. Cambridge: MIT Press, 2000.

Brantley 2009 Brantley, Jessica. "The Prehistory of the Book". *PMLA* 124: 2 (2009), pp. 632-639. http://www.jstor.org/stable/25614307.

British Library 2009 Warning: Biblio formatting not applied. *From Parchment to Pixel: The Virtual Reunification of the Codex Sinaiticus.* British Library. July–September 2009.

Brown 1993 Brown, Thomas Julian. *A Palaeographer's View: the Selected Writings of Julian Brown*. Edited by Janet M. Bately Michelle Brown and Jane Roberts. London: Harvey Miller, 1993.

Caie 2000 Caie, Graham B. "Hypertext and Multiplicity: The Medieval Example". In Andrew Murphy, ed., *The Renaissance Text: Theory, Editing, Textuality*. Manchester: Manchester University Press, 2000. pp. 30-43.

Camille 1997 Camille, Michael. " *The Book* as Flesh and Fetish in Richard de Bury's Philobiblon". In *The Book and the Body*. Notre Dame: University of Notre Dame Press, 1997. pp. 34-78.

Chaucer 2008 Chaucer, Geoffrey. *The Riverside Chaucer*. Edited by Larry Dean Benson. Oxford: Oxford University Press, 2008.

Chun 2006 Chen, Wendy Hui Kyong. "Introduction: Did Somebody Say New Media?". In *New Media, Old Media: A History and Theory Reader*. New York: Routledge, 2006.

Chun and Keenan 2006 Chun, Wendy Hui Kyong, Anna Watkins Fisher and Thomas Keenan, eds. *New Media, Old Media: A History and Theory Reader*. New York: Routledge, 2006.

Crane and Mylonas 1991a Crane, Gregory, and Eli Mylonas. "Ancient Materials, Modern Media: Shaping the Study of Classics with Hypertex". In Paul Delany and George P. Landow, eds., *Hypermedia and Literary Studies*. Cambridge: MIT Press, 1991. pp. 205-220.

Darnton 1990 Darnton, Robert. *Kiss of Lamourette: Reflections in Cultural History*. New York: Norton and Company, 1990.

DeRose 1991 DeRose, Steven J. "Biblical Studies and Hypertext". In Paul Delany and George P. Landow, eds., *Hypermedia and Literary Studies*. Cambridge: MIT Press, 1991. pp. 185-204.

Delany and Landow 1991 Delany, Paul, and George Landow, eds. *Hypermedia and Literary Studies*. Cambridge: MIT Press, 1991.

Deleuze and Guattari 2004 Deleuze, Gilles, and Félix Guattari. *A Thousand Plateaus*. Translated by Brian Massumi. New York: Continuum, 2004.

Egerton MS 2572 Warning: Biblio formatting not applied. Egerton MS 2572 London, Manuscript, British Library, Egerton MS 2572, folio 50.

Exeter MS 3501 Warning: Biblio formatting not applied. Exeter MS 3501 Exeter, Manuscript, Cathedral Chapter Library, MS 3501.

Flanagan 2006 Warning: Biblio formatting not applied. Flanagan, Mary. *[theHouse]. The Electronic Literature Collection, 1*. . Hayles, et al., eds. College Park: The Electronic Literature Organization, 2006. Web. 20 Sept. 2011.

Friedlander 1991 Friedlander, Larry. "The Shakespeare Project." *Hypermedia and Literary Studies* eds. Paul Delany and George P. Landow, 257–271. Boston: MIT University Press, 1991.

Gitelman and Pingree 2004 Gitelman, Lisa, and Geoffrey Pingree, eds. *New Media, 1740–1915*. Boston: MIT Press, 2004.

Glick 2005 Glick, Thomas F., Steven John Livesey and Faith Wallis, eds. *Medieval Science, Technology, and Medicine: An Encyclopedia*. New York: Routledge, 2005.

Graham 1991 Graham, David. "The Emblematic Hyperbook". In Paul Delany and George P. Landow, eds., *Hypermedia and Literary Studies*. Cambridge: MIT Press, 1991.

Grotans 2006 Grotans, Anna A. *Reading in Medieval St. Gall*. Cambridge: Cambridge University Press, 2006.

Hansen 2004 Hansen, Mark B.N. *New Philosophy for New Media*. Cambridge: MIT Press, 2004.

Harley MS 3244 Warning: Biblio formatting not applied. Harley MS 3244 London, Manuscript, British Library, Harley MS 3244, folios 27v–28.

Harley MS 5237 Warning: Biblio formatting not applied. Harley MS 5237 London, Manuscript, British Library, Harley MS 5237, folio 35v.

Harley MS 5311 Warning: Biblio formatting not applied. Harley MS 5311 London, British Library, Harley MS 5311, folio F. ie 5.

Hayles 2000 Hayles, N. Katherine. "Flickering Connectivities in Shelley Jackson's *Patchwork Girl:* The Importance of Media-Specific Analysis". *Postmodern Culture* 10: 2 (2000).

Hockey 2004 Hockey, Susan. "History of Humanities Computing". In Susan Scheibman Ray Siemens and John Unsworth, eds., *A Companion to Digital Humanities*. New York: Blackwell Publishing, 2004. pp. 1-19.

Jackson 1995 Jackson, Shelley. *Patchwork Girl; or, a Modern Monster*. Watertown, MA: Eastgate Systems, 1995.

Jackson1997 Jackson, Shelley. *Stitch Bitch*. 1997. http://web.mit.edu/comm-forum/papers/jackson.html.

Landow 2006 Landow, G.P. *Hypertext 3.0: Critical Theory and New Media in an Era of Globalization*. Baltimore: Johns Hopkins University Press, 2006.

Manovich 2001 Manovich, Lev. *The Language of New Media*. Cambridge: MIT Press, 2001.

McDonough 1967 McDonough, James T. "Computers and the Classics". *Computers and the Humanities* 2: 1 (1967), pp.

37-40.

Page 2002 Page, Sophie. *Astrology in Medieval Manuscripts*. Toronto: University of Toronto Press, 2002.

Shillingsburg 2006 Shillingsburg, Peter L. *From Gutenberg to Google: Electronic Representations of Literary Texts*. Cambridge: Cambridge University Press, 2006.

Strickland 2002 Strickland, Stephanie. *Vniverse*. http://vniverse.com/.

Strickland 2002a Strickland, Stephanie. *V: WaveSon.nets/Losing L'una*. New York: Penguin, 2002.

Strickland and Lawson 2003 Warning: Biblio formatting not applied. Strickland, Stephanie and Lawson, Cynthia. *Making the Vniverse.* 2003. http://collection.eliterature.org/2/works/strickland_vniverse/Vniverse/essay/making.pdf.

Young Hae Chang Heavy Industries nd Warning: Biblio formatting not applied. [Young Hae Chang Heavy Industries nd] Young Hae Chang Heavy Industries. *Dakota.* http://www.yhchang.com/DAKOTA.html.