The Materiality of the Intangible: Literary Metaphor in Multimodal Texts

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The materiality of fiction narratives is, ironically, a rather intangible concept, particularly as the notion of materiality traditionally relates to specifically tangible tools of creation — such as the painter’s brush or the sculptor’s clay. In presenting her theory of the technotext,1 however, N. Katherine Hayles calls for media-specific analysis in the literary arts, one that includes an examination of materiality, accounting for "how the work mobilizes its resources as a physical artifact" in terms of both physical manipulation and conceptual frameworks2 (2002, 33). Hayles argues that it is the conjunction of the physical embodiment of technotexts (whether semi-tangible in digital form, or as fully physical as a book) with their embedded verbal signifiers that constructs both plurimodal meaning and an implicit construct of the user/reader (130-1). This practice-led research paper seeks to examine the dynamic on the other side of technotexts: that of the creator and the text. Specifically, this paper explores how the materiality of digital media contributes to a layered metaphor that delivers meaning, reflects on the cognitive processes (the writer's and the reader's) of navigation, and generates a dynamic narrative structure through user interaction.

The argument for media-specific analysis is important in both post-textual analysis and practice-led analysis. The materiality of a storytelling medium such as film is a fairly straightforward notion to grasp, because many of the tools and artefacts of the medium are physically graspable: cameras, celluloid, reels, scissors, props, lenses, filters, lights, etc. The materiality of digital artefacts, however, lies only superficially in the haptic hardware of screens, keyboards, and mice; the materiality of modes, navigation, and interaction must also be explored for their effects on metaphor and meaning. Serge Bouchardon & Davin Heckman identify three levels of materiality in digital literary works: the figure of a semiotic

1 Defined as texts that "[connect] the technology that produces texts to the texts' verbal constructions" (Hayles 2002, 26).
2 This is the working definition of "materiality" that will be used in this paper. For further discussion of materiality, see Matthew Kirschenbaum's 2008 Mechanisms: New Media and the Forensic Imagination (focusing on the materiality of the apparatus) and Johanna Drucker's 1994 The Visible Word: Experimental Typography and Modern Art.
The grasp required to physically interact with the work, and the memory of the work—its whole compiled from the parts of code, hardware, and user/reader experience that form meaning (2012, n.p.). This memory "relies entirely on the materiality of the trace, the immediacy of the recording, the visibility of the image" (Nora in Pence 2002, 346). Without consideration of these material aspects of digital works, "we have little hope of forging a robust and nuanced account of how literature is changing under the impact of information technologies" (Hayles 2002, 19). More importantly, without a similarly robust and nuanced understanding of how these technologies affect process and artefact, digital storytellers may be hard-pressed to craft works that create these levels of metaphor and meaning through the interplay of apparatus and text.

Often such an understanding is not a conscious process—many writers and artists engage with their chosen medium through tacit knowledge (Nonaka & Takeuchi 1995), an instinctive understanding of the materials at hand, gained through exposure to others' works and through their own experiences. In other words, the explicit study of the materiality of a medium is not always required for artistic success, however that may be judged. As this paper will demonstrate, however, digital media have a significant effect on the outcome of the artefact itself; awareness of these effects, their variations according to hardware and software, and the affordances of these various materials offers the digital writer greater insight and capability to craft his/her texts for the desired meaning.

The Materiality of Technotexts

The following sections examine the materiality of technotexts, exploring how the material aspects of multimodality, navigation, and interaction influence the literary artefact in terms of structure and meaning. Each section presents examples of how the materiality of texts affects narrative meaning, and examines the elements of the author’s own digital fiction storyworld, Færwhile³ (forthcoming), as well as other contextual technotexts, that demonstrate these effects.

Multimodality

Digital texts are frequently multimodal, creating meaning through text, image, sound,
and movement. While these modes may be used to illustrate one another, as when an image is used to illustrate an article, or merely to provide a pleasingly aesthetic textscape, most multimodal works create meaning through the interplay of the modes used:

Meanings in multimedia are not fixed and additive (the word meaning plus the picture meaning), but multiplicative (word meaning modified by an image context, image meaning modified by textual context), making a whole far greater than the simple sum of its parts (Lemke 1998, 312).

This multiplicative quality of multimodal texts demands a level of attention from the composer, an awareness of how each component contributes to and affects the meaning of the whole.

An example of this multiplicative meaning, or "pluricode" (Saemmer 2012), can be found in Andy Campbell's 2009 "Consensus Trance, Part 1", the first chapter of his multimodal and multimedia work Nightingale's Playground. The narrator in this Flash story is driven by an inner conflict, a desire to discover what of his memory is real, and what is merely delusion. Campbell uses text, image, interactivity, light, colour, movement, and sound to express this inner conflict. The story (as it existed online at the time of this writing) begins in the "bedsit" sequence, toned in browns and grays to reflect the sour, depressed mood of the narrator, the peeling wallpaper and stained mattress of the barely furnished room reflecting his dire circumstances. The room is poorly lit, sunlight from the one window unable to reveal the hidden shadows. This searching quality is reflected thus in the mise en scène of the sequence, as well as the action the reader must carry out to reveal the lexias: mouseovers of the entire screen reveal four segments of text, the narrator describing his circumstances, his search in both physical form and mental memory of a high school friend he is no longer sure exists outside his own mind. The modes in this sequence coalesce into a "coherent coupling" (Saemmer 2012), as the meanings of each (colour, lighting, text, image) combine to denote a coherent whole, shaping the narrator's shadowed and fragmented memory.

Multiple modes can also be used in "de-coherent couplings" (Saemmer 2012), in which the meanings of each mode seem to contradict one another, perhaps leading to a third meaning. Ridley Scott's 1982 film Blade Runner presents an apparently straightforward character, script-wise, in Rick Deckard (Harrison Ford), the blade runner tasked with hunting and killing four rogue "replicants" (androids) who have illegally escaped their duties on

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4 The version that is analysed in this paper was last accessed in March 2012. The text may have since undergone revisions.
extraterrestrial colonies to return to Earth in an attempt to extend their own short lives. The replicants, in both script and visual elements of the film, continually pose the question "What does it mean to be human?" Roy Batty (Rutger Hauer) demonstrates this central theme through the text, the script, in his actions to find his creator, his drive to extend his own life, stressing his own humanity in statements such as "We're not computers, Sebastian. We're physical" and through his final speech that encapsulates his memories, his life. The visuals offer a cohesive coupling of this question, through their repeated use of eye and animal imagery (Skains & Chambers, in preparation).

The character of Deckard, however, presents an example of de-coherent coupling. The scripted dialogue presents Deckard as a hardened blade runner, never questioning his own status as human. The visuals, however, offer a contradictory meaning: Deckard is frequently associated with the colour green, committing to neither the blue associated with the mechanical replicants, nor the yellow representing natural life. Further, Deckard is linked through his own dream imagery and Gaff's (Edward James Olmos) origami animals to the figure of the unicorn, which provides more contradiction around the question of his own humanity. The visual of the dream unicorn questions Deckard's status as human; he is the only character represented by a mythological creature (Burt 2002, 74). Similarly, the paper unicorn Gaff leaves for Deckard in the final sequence conflicts with the notion of Deckard as fully human: how can Gaff know the contents of Deckard's dreams unless they are the programmed memories of a replicant? "The controversial unicorn [image] perhaps reflects Deckard's hidden replicant desire to become something mythical, something that no longer exists in his word: truly alive" (Skains & Chambers, in preparation).

An examination of "Lost, Seeking Found", the first chapter in *Færwhile*, reveals both coherent and de-coherent coupling, even within the opening frames. The background image is a beach scene: bright skies, families playing in the sand, signifying summer and warmth, togetherness and family. The text, however, tells the tale of a brother and sister who, orphaned, are separated by the foster system, each lost to one another; the narrative content of the text against the beach background offers a de-coherent coupling. The tonal quality of the image, however, also offers a coherent coupling with the narrative content: the colours are overexposed, turning the bright sky into a flat white, the shadows in the foreground black and cold, signalling a harsh, almost alien environment. Given the narrative content, this would indeed be an alien environment to the brother and sister in question, who have never
experienced the comfort and apparent normalcy of a simple day at the beach amid family and friends. Similarly, the verbal style of the text offers yet another de-coherent coupling. The text uses a lilting, storybook voice, beginning with "Once upon a time," which signals a fable with a comforting ending; this comfort is quickly belied by the narrative and visual shift into the deepest of the shadows on the screen. Combined, these two modes — the visual and the written text — offer layers of meaning in this sequence that neither offer alone, opening a story whose ontological level is about two lost siblings seeking one another in an expression of love and family, and whose metaphorical level reveals the manipulations and machinations of external and internal powers that, in the end, leave everyone unfound.

It is only through consideration of the full complexity of the multimodality of these texts that a full realisation of their meaning can be reached. Similar to Hayles's note on the recursive quality of varying media, so do multiple modes within one work "engage in a recursive dynamic" (2002, 30) to reflect and refract meaning through various layers, levels, and angles of multimodal fictional narratives.

Navigation

Navigation in texts provides yet another of these layers, forming a significant "part of the work's signifying structure" (Hayles 2005, 91), offering a mechanism for "active manipulation of features on the level of discourse and presentation" (Drucker 2008, 121). Narratives can employ unicursal navigation, a singular pathway through the arc — as typically offered in the novel — or multicursal, offering multiple paths through, as offered in hypertexts (Hayles 2001; Aarseth 1997). The technology of the printed page, bound into an ordered codex — the materiality of the book — largely dictates a unicursal navigation of the narrative within, as the reader engages in the ingrained action of reading from left to right (in Western cultures), top to bottom, front to back. Some texts, digital antecedents or "cybertext[s] in antiquity" (Aarseth 1997, 9), attempt to disrupt this expected unicursality by unbinding the codex and shuffling the pages (Mark Saporta's 1962 Composition No. 1, Roman), directing the reader to pages or chapters "out of order" (Julio Cortázar's 1966 Hopscotch), or deviating from the norms of narrative structure (Italo Calvino's 1981 If on a Winter's Night a Traveler).

The materiality of digital media, however, readily affords multicursal navigation. Per Persson (1998) identifies four types of digital navigation: the spatial (up-down, left-right)
navigation popular in graphics-based games; the social navigation present in discussion forums and social media sites denoting how much and what type of activity is occurring; the semantic navigation connecting objects in the digital environment through "some semantic connection like similar, alike, more/less general, associated" (Persson 1998, 191, emphasis original); and the navigation inherent in narrative structure. The navigational possibilities in digital media are thus expanded to a significant degree; whereas unicursal narratives normally employ one method of navigation (narrative structure), digital media afford many different combinations of navigation within a single work. Digital fiction most commonly affords spatial, semantic, and narrative navigation; fictions engaging in social media tools such as forums and blogs also engage social navigation. Michael Joyce's 1987 *afternoon: a story* offers a multicursal path through the narrative, as the reader navigates through the segments of the hypertext through semantic links, digging deeper into the narrative structure even as repeated lexias reveal meaning through their very repetition. Emily Short's 2006 *Bronze*, an interactive fiction (IF) adaptation of the "Beauty and the Beast" fable, offers spatial navigation through the Beast's palace, the reader navigating the narrative structure by exploring the rooms and objects afforded by the interactive fiction.

Both are examples of "wayfinding" navigation (Benyon and Höök in Persson 1998, 192) — the reader/navigator has a clear quest to discover what has happened on the afternoon of the accident in the case of the former, and a quest to save the Beast in the latter. "Exploration" navigation, the reader/user exploring a text with no clear goal or to get an overview, can also occur in hyperfiction (questing to reveal all lexias), interactive fiction (visiting spaces and examining objects that contribute to storyworld but not necessarily narrative), and most obviously games such as online role-playing games or virtual worlds that provide a significant level of spatial navigation.

While *Færwhile’s "Lost, Seeking Found"* seeks to engage the reader in the familiar straightforward narrative structure navigation in its role as the introductory piece, later chapters "Streams Slipping in the Dark" and "Awake the Mighty Dread" offer more complex navigation strategies through spatial exploration and semantic associations. The navigation paradigm in "Streams" mirrors the narrative's structure: the characters are wandering separately across a landscape, eventually merging together. The imagery in "Streams" is that of a map; the reader must navigate the space of the map, and seek out clickable areas (semantic links) that reveal storybook chunks of narrative related to those areas. The more
story they find, the closer they progress to the castle, where all the characters eventually converge and this sequence concludes. The piece progresses in sections; each section is exploratory, enabling multicursral pathways within, but the sections themselves progress unicursally. Exploration through spatial navigation is possible in small areas, in other words, but overall the reader is manipulated down a unicursal narrative pathway toward the denouement of the segment. The technotext thus provides a navigational mirror of the narrator's ontological manipulation: just as the Trickster has manipulated the characters down their various paths (while still allowing for deviances along the way), so too does the navigation in "Streams" manipulate the reader through the narrative, reflecting the underlying metaphor of the tale.

"Awake"'s navigational structure is similar to Bronze's, with opportunities for exploration through the spaces of the storyworld, but also a wayfinding structure in that the player-character is navigating Lilly through the world toward the goal of finding her brother. The possible pathways of interactive fiction are by nature multicursral and unicursal simultaneously: the player-character's choices move them through the narrative in many possible pathways, but the overarching goal of the IF is to "win" or "succeed" by achieving a successful traversal (Montfort 2011). This again, much like in "Streams", requires manipulation of the player-character toward actions along a unicursal path, enabling a "successful" ending to the narrative, in which the player-character as Lilly escapes this world with Hal as her companion. As the reader explores and discovers, and occasionally gets lost, so too does Lilly; the exploratory nature of IF enhances the narrative metaphor of the lost little girl, navigating strange places with strange expectations.

Through devices such as the hyperlink, spatial movement (whether text- or graphics-based), semantic feedback in various modes, and even emerging social tools such as integration of social media into narrative spaces, digital media afford a staggering degree of possibilities for the recombination of narrative. Johanna Drucker, in her examination of the navigational effects of graphic devices, argues that the cognitive processes that piece together narrative existents and events into a coherent story (regardless of order or form) function not only because of the content of the text, but also because of how it is ordered and presented (2008). "Depending on how the designer chooses to organize the [digital] environment, it will give rise to different types of experiences in the user/player/reader/navigator" (Persson 1998, 191), and possibly to previously unimagined structures of narrative as well.
Interaction

Digital interfaces afford various levels and ways for the reader/user to interact with the text. These interactions typically arise from the physical gestures (typing, scrolling, mousing over, clicking, tapping) necessary to use most digital devices. Their effects within the digital environment, however, can range from a simple click to advance to the next section of story, to highly engaged interactions such as those requiring gameplay or typed commands. "The reader's physical as well as cognitive encounters with a text as much form the basis of the text as the words and links provided by the author" (Nack 2009, 15-16); the text is realised through the physical and cognitive interaction between reader and apparatus.

Bouchardon & Heckman's notion of a "figure of manipulation" in digital works provides a rhetorical model for evaluating how gestures of navigation and manipulation (mousing, keying, etc.) add elements of metaphor, metonym, and synecdoche to the text "based on the user's interaction with the interface" (2012, n.p.). The capability for the user to interact with digital elements and by doing so discover more text than is initially apparent on the screen adds significant depth to the digital work. "When interactive text is manipulated by the reader, the linguistic sign is again coupled to an iconic sign: a sequence of gestural manipulations performed for a purpose" (Saemmer 2012, 8).

These gestures become what Saemmer terms "semiotic units of manipulation" (2012, 8), as certain manipulations become associated with particular meanings. In Alan Bigelow's 2006 interactive self-portrait Because You Asked, several figures of manipulation are at work. The reader must click on icons to reveal lexias (which are presented in both text and audio), a simple gesture calling forth the next segment of the piece. With each lexia, however, a segment of the artist's portrait is revealed. In the final sequence, a mouseover of the revealed portrait erases the image wherever the cursor moves. The mouseover gesture signifies erasure, wiping out a fleeting image. Davin Heckman describes the significance of this interaction:

Rather than the act of interacting via a purely technological interface, "Because You Asked" implies that reader involvement takes place at a more fundamentally human level, that of curiosity, imagination, and consciousness, suggesting, perhaps, that we see ourselves as much as anything else in the things that we look for (2009, n.p.).

While all of the digital chapters in Faerwhile engage the reader in some form of interaction, from the hyperlinks in "Puerta Cerrada de Unman" to the text commands required
in "Awake the Mighty Dread", "Swallowing the Tale's Tail" most directly ties interaction to narrative meaning. In this final chapter, the interface is quite simple: on each screen, an icon appears on the screen, composed of three different figures, each representing a narrator in the work (Lilly, the Trickster, and the Storyteller). The icon that is presented with each particular lexia hints visually at the covert narrator influencing that section of text. With each click, the icon morphs, shifting between the metaleptic narrators Lilly, the Trickster, and the Storyteller. This shift, brought about by the simple interaction of clicking, signifies the underlying themes of manipulation and of storycraft, questioning perhaps the validity of the entire tale: whether the characters of Ben, Lilly, and Amelia exist, or whether they are simply constructs used by Trickster and the Storyteller in their battle of tales. Likewise, the question then extrapolates — who are Trickster and the Storyteller but the metaleptic presence of the author? — and interpolates — alternatively, is Lilly the author of all, writing her entire story in a dream, filtering in pieces of reality and myth? Overall, the interaction questions the act of narration, an inherent function of technotext: the materiality of the text presents questions about the actual meaning of the text.

Whereas in the novel one strives for the physical materiality of the text (paragraph breaks, page turns) to fade away as the reader immerses in the narrative, the gestures and manipulations involved in interacting with digital texts can add yet another layer of depth, metaphor, and theme to the narrative. "To the extent the user enters the imaginative world of this environment and is structured by her interactions with it, she also becomes a simulation, an informational pattern circulating through the global network that counts as the computational version of human community" (Hayles 2002, 49). The actions and manipulations required by digital texts encourage the reader to become a part of the text, rather than apart from it.

Conclusion

Materiality is a significant contributor to the cognitive processes of both creating and experiencing digital fiction. The materiality of digital media, and of specific media platforms such as Flash or Inform7, imply certain affordances and limitations unique to these forms. As such, the writer's approach to narrative, as well as the structure and shape of the narrative itself, adjusts and transforms in order to engage fully with the new media.

Hayles notes that "electronic authors are normally involved in every aspect of the
production process, which includes the appearance of the interface, the linking mechanism, animation, audio files, and image generation and placement" (2001, 23). While some authors collaborate with digital designers and programmers, I chose to undertake this more embodied approach in order to gain a more thorough insight into how the work's materiality influences author and narrative. Digital media offer the capability to produce multiple modes equally, thanks to the underlying programming that transforms code into image as easily as it does text or audio. Based on this foundation, the electronic author can transduce these modes: shifting semiotic material across modes, layering meaning through multimodality, navigation, and interaction.

As this paper demonstrates, extensive and nuanced knowledge of how these modes affect and transduce meaning is required to make full use of them in creating digital narratives (Kress 2003). The layering of multiple communication modes within a single text produces a multiplicative meaning (Lemke 1998), as different elements interact to offer either coherent or de-coherent coupling (Saemmer 2012) that shape the underlying metaphor of the narrative. Spatial, semantic, narrative, and occasionally social navigation can be used to mimic actions of exploration, to provide associated links of meaning, to influence the reader to construct a path through a potential narrative, its metaphor structured in part through these navigational clicks and choices. Even the very action of entering commands, clicking on buttons and links, mechanically spinning the narrative wheel through the digital device is a choice that affects the reader's experience of the narrative, and thus the communication of the narrative's metaphor and meaning. Digital media offer this dizzying array of narrative devices in addition to those that are familiar through reading and literary study, and thus the authorial choices for creation of narrative are significantly increased beyond the unicursal presentation of written language. The author of the technotext must appreciate and use all of the semiotic and cognitive capabilities of the apparatus at hand.

Interfaces that make use of multiple modes, hyperlinked or rhizomatic structures, memetic navigation and gestural manipulation can be argued to mimic the neuronal networks and cognitive processes of the human brain (Hayles 2002; Ensslin 2012). "The multisensory nature of most, possibly all, of the neocortex forces us to abandon the notion that the senses ever operate independently during real-world cognition" (Ghasanfar & Schroeder in Gibbons 2010, 100). Flower & Hayes's 1984 Multiple Representation Thesis poses the notion that even when writing prose (with its monomodal, unicursive outcomes), the author's ideation is
multimodal, inspired by images, sounds, interactions and associations, as well as by language; the act of prose writing is a process of translating and ordering these modes and ideas into ordered language. From a writer's perspective, digital media afford a more direct transcription of the original concepts, as Alan Sondheim notes: "As far as writing is concerned – I don’t care whether or not I’m writing/sounding/visualizing; it’s all a mix, all developed cross-application, cross-platform, cross-technology, cross-output devices" (2006, 376). Rather than constraining the ideas and possibilities to one unicursal narrative, digital media afford multiple possibilities to present in a single text, a "text-as-apparatus as environment rather than as [a] traditional narrative" (Weight 2006, 434).

This material mapping (Hayles 2001, 31) transfers to the reader of these texts, as "the reader’s physical as well as cognitive encounters with the text as much form the basis of the text as the words and links provided by the author" (Nack 2009, 15-16). André Gaudrealt & Philippe Marion argue that the text's fabula is manifest not only in the syuzhet's text, but also the structure of the syuzhet (2004, n.p.); the materiality of the syuzhet's medium not only informs but actually forms the text, "alter[ing] the conditions of reception" (Ryan 2009, para 4). Matthew Kirschenbaum posits that the reader's "forensic imagination" is thus activated, as the "process collapses into product" (2008, 253). Choices made in the navigation of the text, gestures carried out in order to explore the text, and the multiplicative meanings triggered by the multimodal layers coalesce into a mental model of the narrative (Persson 1998, 193), relying upon the same cognitive processes in the reader to construct the text as the writer engaged in creating it.
References


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