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LIVING LITERACIES TEXT OF THE
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by Caitlin Fisher

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PART THREE: E-LITERACY

Electronic Literacies

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My research and artistic practice is organized around the overarching theme of electronic literacies in the broadest sense and the research concerns of this emerging field: production by artists and writers of new kinds of texts, the way these cultural objects are encountered and understood, and the widespread implications of these new cultural artifacts. As a hypermedia theorist and storyteller – as both a reader and a writer of these arguably new kinds of texts, I believe that the way we tell stories matters in a profound way, that forms are never innocent, that storytelling has intimate connections to theory-making and that playing with ideas and forms is not only good for you, but can also result in some surprising, unanticipated discoveries. I would like to share some of these discoveries with you, here.

All of my work to date is invested in finding a common language between thinking and doing – to making electronic art and texts, as well as thinking about them and reading them. This is significant with respect to digital literacies because as McLuhan said, "we shape our tools and then our tools shape us," (Lapham, xi) echoing Nietzsche who similarly observed that "our machines are working on our thoughts" (qtd. in Machine, n. pag..). An exploration of digital literacies necessarily, then, demands a consideration of both new ways and means of writing and new strategies and effects of reading.

The Living Literacies conference asked us to consider what it means to read and write now – and with respect to electronic literacies we need to consider specifically, I think, ==what it means to read and write nonlinearly, visually, and cinematically.== Do these new cultural forms and digital grammars allow us to communicate differently? How? To what effect? How do digital technologies and new media tools modify the relationships between language, texts, and culture? How do we speak to one another, now? What are the benefits of reading digital text as a material mode of creating shaped by ideological concerns? What is the future of storytelling? In short, how will our encounters with new digital texts and possibilities challenge and change us?

These are the large questions in the field of electronic literacies of interest to this conference, as I see them, though it's impossible in one short piece, of course, to cover all that, and immodest to try. And so my focus here will be to sketch roughly for you a handful of the literacy skills I think electronic texts demand from us as readers and storytellers. We will be challenged to:
1. read and write databases
2. ==read and write thought sculptures built through electronic linking==
3. ==balance the need for experimentation with a current craving for readerly texts==
4. read and write code
5. inhabit information architectures

First, though, some quick definitions. When I use the term electronic texts I mean texts not simply generated on a computer, like a word processed document, but a text that must be read on screen, one that demands the computer for its instantiation. A lot of my own early interest was in hypertexts. Electronic hypertext has been described as a system of nested, electronic footnotes, and early literary work in hypertext usually involved replacing one screen of text with another screen of text – and in this way they much more resembled

print work than contemporary hypermedia works we now see in the field. Hypermedia refers to texts combining word, sound, image, animation, or other components into fully coherent and integrated work – the words in hypermedia work are, then, only part of the text. Those of you who use the World Wide Web are already familiar with hypertext/ hypermedia – clicking on words that connect you from one (sometimes hypermedia-enhanced) document to another. Others of you who are not familiar with computers may be able to find a way to begin to imagine electronic hypertext through this suggestive list written by Susan Hawthorne:

Consider the form of a Hindu Yantra. This is hypertext.
Consider the form of the Kabbalah. This is hypertext.
Consider the paintings of Aboriginal artists.
Consider an astrological natal chart.
Consider the stained glass windows of a Gothic cathedral.
Consider the images you find in Russian or Greek Orthodox icons.
Consider the algebraic architectural and religious designs of the medieval Arab world.
Consider the image of the labyrinth, the maze. All are shorthand for hypertext.
(n. pag.)
So most of us, then, already have at least some complex, translatable literacy skills we can bring to electronic works. I'd like to talk now about my own work and experiments in this area and some of the things they have taught me.

I. Databases
My doctoral dissertation, *Building Feminist Theory: Hypertextual Heuristics*, explored the intersection of feminist and hypermedia theories and was written in HTML and a software program called Storyspace for stand-alone CD-ROM. It was an exploration, in hypertext, of the resonances and productive couplings between digital writing technologies and feminist theories and the dissertation used feminist and hypertext theories to build a new kind of text, a text that sought a form homologous with excentric knowedges.

Implicit in the title was the claim that the process of shaping this hypertext was itself a form of feminist theory production – that theory was "built" both by the structure of the dissertation and as an effect of reading. For example, the reader was challenged to choose her own pathways through the material from among many others I had coded; to build the text from fragments. No two readers were likely to have read the same screens in the same order.

I think of this text as my text of *jouissance*, which Barthes identifies as "the text that imposes a state of loss, the text that discomforts," that "unsettles the reader's historical, cultural, psychological assumptions, . . . [and] brings to a crisis his [sic] relation with language" (14). In other words, it was a text that very few people seemed to enjoy. Two years ago when hypermedia theorist Lev Manovich published his much anticipated book *The Language Of New Media*, I returned to my doctoral work to think about the "unpleasure" I had caused.

In his book, Manovich posits the database as the culture's new symbolic form and the unordered list, the archive etc., as a challenge to traditional narrative. He goes so far as to suggest that "database and narrative are natural enemies. Competing for the same territory of human culture, each claims an exclusive right to make meaning out of the world" (225). He goes further to suggest that we may even call the database a new symbolic form of the computer age, a new way to structure our experience of ourselves and of the world.

Building Feminist Theory was composed of over fourteen hundred lexias, or screens of text. While I wrote my dissertation long before Manovich published this piece, a database was, in effect, what I had produced – a large database and instructions for reading across it. In short, one of the things I had learned in the process of producing *Building Feminist Theory: Hypertextual Heuristics* was to answer the call of the new symbolic form. In terms of emerging literacies, then, I agree with Manovich that we must learn or relearn to read archives and databases.

II. Thought Sculptures
But my own work wasn't simply a database.

One of the first things I came to know when I began to share my dissertation widely with readers was that, more often than not, my readers read nodes and not links; these reluctant bricoleurs read the words and quotations, the elements of the database, but not its structure or associative method of organization.

The lexias or screens full of text were understood as the "real" content of the dissertation and the structure itself – its contours, its conventions, new ground I'd hoped it might break – was largely unintelligible to many of them. For some months I understood the work as a catalogue of losses – the loss of polemic, of certain kinds of rhetorical gestures, of mastery.

While I believe even now we can begin to talk about a new grammar and aesthetics of digital media, I had undertheorized, I think, the ways in which readers – expert readers of linear texts – would experience this hypertextual work.

The intellectual core of the hypertext, and one of the most interesting aspects of hypertextual writing to my mind, is the constellation of ideas held aloft by the technology – the linked and coded concretization of the weaver's constellation I visualize as a thought sculpture. I have always seen my texts as three dimensional, sculptural. Perhaps this is why linear forms always felt one step removed from my writing process. I would build a set of notes with many linkages and then work hard to flatten it all out again to construct a persuasive, two-dimensional essay form. My understanding of the constellation and its philosophical and political importance emerges from my reading of the Frankfurt school: when we want to understand an object of interest – in the case of my doctoral work, for example, feminist hypertext theory – we must not look directly at the object, fetishizing the concept. For Walter Benjamin, the constellation is a multidimensional form: the arrangement or configuration in which a variety of concepts, models, ideas or other materials takes shape (in "Theses on the Philosophy of History" for example). In Adorno's extension of the idea, the constellation holds contradictions in tension and is addressed this way: "as a constellation theoretical thought circles the concept it would like to unseal hoping that it may fly open like the lock of a well-guarded safe deposit box: in response, not to a single key or a single number, but to a combination of numbers" (163). Sounds very hypertextual.

I use the word constellation with a nod to Benjamin and Adorno, among others, then, but it's different here in new media. How? Crucially, because this particular constellation has been coded, because the linking structure, however complex, is saved in computer memory, I can return to it, and I can share it with you.

In the case of my dissertation, the web of original lexias, quotations, and imagery and sound put into conversation was held together by more than 17,000 links. While it is sometimes assumed that "links are directly analogous to prose transitions, page sequence

or other connective structures in print" (Slatin, 871), as Burbules points out, there are different kinds of links that signal different kinds of associations: metaphors, metonymy, association not by similarity but by contiguity, synecdoche, antistasis, identity and catachresis: "novel, strange instances might spark reflections just as revealing and delightful as those one recognizes more readily" (111). The linking structure, in other words, was an integral part of the intellectual work necessary to produce the text.

Indeed, the linking structure – the ability of this writing technology to hold the all-at-onceness of theory as we build it, to communicate this constellation of ideas, and crucially, to have readers encounter and explore them (though never unmediated, of course) – is, I believe, one of the most theoretically interesting aspects of hypertext writing.

I associate this hypertext, in part, with the scaffolding of the academic enterprise, the unconscious of the philosophical line, whose communication, I suggest, has real academic, theoretical, and aesthetic value: the concretization of a web of signification – the constellation of ideas held aloft by the technology through its linking structure. While it's true that much digital work is increasingly televisual, time-based, and linear, that many new texts employ software like Flash and Director in ways that do not showcase classic hypertextual structure, and that some texts consist solely of unordered lists, in my own work and in the work of many others, links continue to be crucial to the writing/thinking practice. It is for this reason that simply learning to read archives or databases will not always be enough.

It won't be enough because to concentrate only on the dataset in our reading practices is potentially to miss the structure coded by the author and to miss entering into a relationship with that artful labour. This structure is what I'm calling the thought sculpture – the invisible intellectual labour that demands a new kind of literacy and one that risks remaining unintelligible to readers even though its contours have been given what we might call a certain kind of materiality through coding. This is a very important innovation, then: conceiving of the navigational apparatus not simply as a way to get around the text, but the navigational apparatus itself as a signifying component of the text (Hayles). And so we need to focus on finding ways to make the digital constellation intelligible to us. We will learn to read archives and datasets, yes, but we must also explore ways to teach ourselves to read and write and theorize the navigational apparatus, this thought sculpture, too – its contours, its grammar, its possibilities … its poetry.

III. Balance
My first sustained attempt to think through what I had learned from my doctoral experience resulted in the writing of my recent electronic novella, *These Waves of Girls*.

Based on my theoretical understandings of emerging literacies, and my doctoral finding that readers of hypermedia typically still crave readerly texts, I constructed an architecturally and visually complex piece that nevertheless employed many of the traditional appeals of narrative. While some electronic writers predict that many of the current concerns about readability in hypermedia work will fade over time as the notion of reading itself makes the shift, and the scope of what we mean by "text" expands, I nevertheless deliberately set out to write *These Waves of Girls*, as a text of pleasure built in part as an echo of the dissertation.

The novella was awarded the 2001 International Electronic Literature Prize for Fiction, and I believe in large part *These Waves of Girls* won because it made concessions to people's existing literacy skills, allowed for closure and pleasure, and wasn't devoted to the

Still, at a theoretical level, the text considered complex questions around how narratives of girlhood are discursively produced and how hypermedia might enable a writer to craft a complex and new kind of text while resisting the impulse to produce a standard univocal account of the subject matter – a linear developmental tale. Although it's a fairly narrative text, the small stories are to be encountered in no particular order. I wanted the stories and memories to crash like "waves" because I wanted possibly contradictory tales to emerge, for readers to encounter the complex nature of diverse girlhoods themselves – girls at once strong, as victims, as scheming, as vain, as kind, as wanting … all of this within one girl. Or are there many girls here? Hypermedia made it possible for me to suggest all of this at once.

IV. Codework:
"Writing" in a digital environment consists of both text and code, and many of the other works on the shortlist for the Electronic Literature Prize might be called "codeworks," works in which programming languages are revealed on the surface of the text, or executable code shapes the writing and reading of the text. Techniques vary, but the general result is a digital text that emphasizes its own programming, mechanism, and materiality. Rita Raley – whose important article "Interferences: [Net.Writing] and the Practice of Codework" forms the basis of the following discussion – notes that practitioners refer to the practice variously as: "net.wurked" language, "rich.lit," codepoetry"; "digital visual poetics"; and "programmable or machine modulated poetry (n. pag.). Some works, for example, rely on operable code using algorithms and randomization functions to generate new texts from pre-existing ones. The new text is different every time it's read, and you see it being built on screen a little at a time.

Other authors use code mixed with a natural language like English. The work of Mez – the screen name of Marianne Breeze, an Australian author – is a good example of this practice. Mez calls her hybrid language "mezangelle." Mez uses code fragments visually, on the surface of her texts – square brackets, operators and those of you familiar with mobile phones, pagers, instant messengers, and other info shorthands will be familiar with the look of some of this work. Work like this interrupts and impedes smooth transmission of information, rendering meaning opaque and troubling interpretation, which results in another text of jouissance. Not surprisingly, lots of people dislike it. Mez receives email regularly from people asking "why can't you just write in plain English?" and Mez's answer is found in the work itself: "[meaning code: if narrative is essential to comprehension, then TTT is not for you. turn reading 'off' and filter 'on'. if, on the other key, you enjoy dream sequences/ sequentials, reverse the last.]" (Mez, Puzzle Pieces of a Datableede Jigsaw)

Codework has roots in earlier avant-garde practices – found poems, concrete poetry, Oulipian texts, Dadaist composition – but the context and circulation of the texts is different. Mez makes clear that her writing practice has at its core an ongoing sense of performance and collaboration: "code wurk_remnants d-voted to the dispersal of writing that has been n.spired and mutated according 2 the dynamics of an active network" (qtd. in Raley).

As Raley points out, codework has interesting implications for literacies: "the reader-users will learn to process the meaning of some elements of code: a handful of operators, instructions, and characters" (n. pag.) We will also learn to process these hybrid, irregular, shorthand languages. Indeed, Raley suggests that codework like Mez's facilitates a kind of

oppositional literacy, that the practice of mezangelle might well jam our complacent reading practices and awaken those that lie dormant; or, as Mez herself declares, "move through the neural in waves, swarming into active channels, critically hitting inactive potentials" (n. pag.).

V. Inhabit

Finally, another key area of interest of mine with consequences to literacy is hypermedia in virtual environments, particularly the work of writers built in virtual reality (VR) caves. Powered by high-performance computers, a cave is an eight-foot-square cubicle with high-resolution stereo graphics projected onto three walls and the floor to create a virtual reality experience. Special hardware and software keep track of the positions and movements of visitors entering the space, changing the images within in a way that allows them to feel immersed in the virtual space. Although the cave was initially embraced as a way to produce mimetic representations with application to medicine, archaeology, chemistry, applied mathematics etc., writers, performers, and dramatists, cultural theorists and visual artists are increasingly being drawn to VR as a new realm for their work.

I am particularly struck by the fascinating work undertaken in the VR cave at Brown University, under the direction of novelist Robert Coover. Coover and his students are the first to experiment with the use of written text in the caves, and are working with questions about how the spatial qualities of VR can be employed to create narrative experiences in new and innovative ways. Coover notes that "those of us who have loved the literary experience, the richness of reading, are working to preserve some of that experience inside the new media … while acknowledging that there is no use trying to imitate the printed page" (Curtis 2000a: n. pag.).

One of the potentials of the cave is the creation of animated 3-D worlds and characters that a user can interact with, in effect making the user part of a story. I have been fortunate enough to explore some of these works – to step through boxes of text, to inhabit and explore a storyroom, to shrink a wall full of poetry so that it fit into the palm of my hand, to pull a giant letter "O" over my head before stepping through a doorway to interact with characters at a virtual cocktail party.

And so it makes perfect sense to me that the first graduate fellow in electronic literature at Brown, Talan Memmott, was trained as a visual artist in painting, video, installation art, and performance, and that he has worked in theater, as both an actor and a director. Memmott similarly feels that "electronic writing sort of pulls together all of these interests – from painting, to performance, theater and text. It's all part of what I think of as electronic writing" (Brown has its first graduate fellow, unpag.). Although the audience is limited owing, in part, to the physical limitations of the cave itself (only a handful of people can be accommodated at one time and the caves are very expensive to construct and calibrate), Memmott believes the cave nevertheless "puts literature into exhibition mode," and that "there's great potential for what I refer to as narr-act-ivity, rather than narrativity" (Curtis 2000b: n. pag..).

With respect to this, there's one other item I'd like to note before concluding. Theorist Greg Ulmer, who coined the term "electracy," has noted that with respect to electronic literacies, the kindergarten curriculum has much to oVer the high schools. He writes "I am not saying to forget literacy, but to include aesthetic and performance experience in the educational process. K–3 teachers … allow the children to … relate to the story not so much in terms of meaning but doing. High schools to become electrate need to add this aesthetic performance dimension to learning as well" (Memmott, n. pag.) And many of us would

agree that more Kindergarten activities – hands-on, experiential – probably wouldn't be so bad at the university, either. Because as readers of electronic texts, it will be through *doing* – experimenting, making sense of, puzzling through – that we will begin to know and to learn what kinds of knowledges and ways of understanding these new artefacts demand, encourage, or make possible.

What I've suggested to you here today is that I think, at a minimum, we will be challenged by electronic texts to:
–learn to read databases. And if Lev Manovich is right, the database will increasingly compete with traditional narrative for our attention;
–we will learn to read digital constellations – to see the materiality and depth of code, the sculptures of stories, the scaffolding of essays, their shapes;
–we will continue to crave stories, closure, narrative pleasure, I think, but perhaps we will increasingly recognize code, its intrusions and enhancements of texts. Perhaps by rendering information more opaque these texts can, paradoxically, allow us to see things anew;
–we will, through virtual reality technologies like the cave, inhabit information architectures and change the stories we wander through for our having been there. There will be a new kind of "literature" in immersive virtual reality not readily described by old terms or understood with reference to the printed page.

Finally, and with a great deal of excitement, the only thing I can predict with any certainty: we will need to learn to read shapes and texts that none of us here has even begun to imagine.

Caitlin Fisher
Caitlin Fisher is a theorist, creative writer, and web artist with broad interdisciplinary interests. Her research and teaching focus on the social and cultural aspects of communication technologies, hypermedia, feminist theory, and digital multimedia work. Her most recent publication is *These Waves of Girls*, a hypermedia novella that won the Electronic Literature Organization's 2001 Award for Fiction. She currently teaches Fine Arts Cultural Studies at York University.