# TATJANA CHORNEY

## Hypertexts and Reader-Engagement: Reading, Writing, Adapting

Because "hypertext is a mental process, as well as a digital tool,"[1] the digital medium influences how we read and write, and changes the ways we interact with texts. Readers have always been free to interact with any text in imaginative, cognitive and emotionally active ways, and they continue to be able to do so in the new medium as well. What is added to these existing interactive dimensions involved in reading in the digital medium is the "participatory" mode, the physical engagement with the text and its world.[2] Reading in hypertext can demand and encourage all modes of interaction—imaginative, cognitive, emotional and physically participatory—and it is the new combination that accounts for the difference from previous modes of engagement with texts. The hypermedia are shaping appropriative readers who are self-consciously involved in the making of meaning and knowledge construction. Traditionally, readers read in order to comprehend and interpret. In many hypermedia environments, however, the reader is often invited to be the writer, empowered to change the "source" text, to interfere with its content and form, and to adapt it or parts of it to idiosyncratic purposes. Readers are often encouraged to choose the order of what they are reading, alter it by their choices, and add their own material to existing hypertext systems. They can rewrite the origin-

text and create new systems of meaning. By virtue of the nature of the medium itself, reading in hypertext is an interactive activity that involves re-inscribing, adapting, restructuring. It allows for easy physical rearrangement, de-contextualisation and re-contextualisation of existing reading materials into new schemes and contexts determined by the readers' own purpose. Reading and writing in hypertext have thus been re-imagined in terms of rhetorical possibilities realised through the readers' active involvement in linking possible textual selections and combinations.[3] Rather than reading in order to comprehend and interpret only, in many hypertext environments readers have to read and comprehend in order to write: that is, they have to read in order to (re)interpret and (re)create. This new nature of interaction results in new cognitive skills, and changes how we think of reading and writing.

Not all hypertexts are interactive in this way; many are just as linear as any printed text and do not make significant new cognitive demands on readers. In many cases readers tend simply to transfer old reading habits formed in the Age of Print to reading in hypertext, and the extent of their physical participation is limited to several mouse clicks. But many reading situations in hypermedia, especially those created by hyperpoetry and hyperfiction, place on readers a new set of cognitive demands resulting from the new combination of modes of engagement. Many so-called informational hypertexts do the same thing, since they, too, often dictate new ways of structuring information, managing data and communicating. We do not have, as yet, extensive research into the cognitive processes involved in reading in hypertexts, nor a comprehensive assessment of hypertexts' potential impact on and implications for reading and writing.[4] What we do know from cultural and media theorists, however, is that in the hypermedia "what before had been a mental process, a highly individual state, now became part of the public sphere."[5] Hypertext externalises many cognitive processes, and encourages in

readers "fundamental cognitive skills and intellectual tasks that experts in various disciplines use routinely, subtly and self-consciously in accomplishing intellectual tasks."[6] But what are those cognitive skills that experts use and that are encouraged by some hypermedia environments? And what conceptual framework can we use to engage with the nature of these new cognitive demands? In this paper I suggest that recent theoretical perspectives on the concept and practice of adaptation provide one conceptual framework for investigating the nature of this changing interaction and its cognitive consequences in relation to reading and writing in hypermedia. Many hypersystems blur the boundary between reading and writing, between interpreting and creating from existing materials, and encourage users/readers to think like adapters.

If we define adaptation as the process of fitting or suiting one kind of utterance/story/form/medium to another, modifying it to suit its new conditions, "transcoding," changing contexts, reinterpreting, or repeating with variation,[7] we can see that interactive reading and writing in the hypermedia embody many elements associated with the principle of adaptation. Adaptation means repeating with variation. To adapt something means to engage with source material, to establish and announce a relationship to it, so that "thematic and narrative presence combines with material variation."[8] The material variation often involves a transposition or transcoding from one medium, genre or register into another. The result of this transposition is a change of frame or context. As a way of thinking and a process of creation and reception, adaptation depends on (re)interpretation and then (re)creation of various elements or separate units of source material, during which process the elements or units themselves may change.[9]

The process of reading and writing in hypertext involves a number of activities associated with adaptation in its denotative sense, such as adjusting, altering, transforming, recreating, while maintaining a relationship with the source material or originating context. In hypertext the reading experience—informed by comprehension and interpretation—and the writing experience, as a form of creative output, are often inextricably linked.[10] The potential of hypertext to link inextricably these two processes stands -2(a)4(ba )]TJ   /TT1Tw 0 0.008 To4nk iwo pda4

aspects of human existence. Literature in both the sciences and the humanities indicates that the process of adaptation is important in explaining how we understand and interact with our surroundings, texts, and technology. In the evolutionary social sciences dealing with cumulative cultural adaptations, the concept is used to explain "the information processing properties of the human minds," and to argue that "cultural adaptation has played a crucial role in human evolution."[11] In the context of literary and cultural theory the concept has been recently applied to the investigation of the process of "cultural revision" in all media, and its distinctive cultural status.[12]

Rather than discussing adaptation in the context of "fidelity to the original," "cultural inferiority," "stealing" or plagiarism, new adaptation theory in the context of the humanities sees adaptation as a distinctive and pervasive cultural process and form, situating it within a long Western cultural tradition of borrowing and sharing ideas, narratives and parts of narratives to create new ones. Borrowing from the ancients, Shakespeare transferred his culture's stories from page to stage, and others like Aeschylus, Racine, Goethe and da Ponte, all retold familiar stories.[13] And this is not because those who came before us were in some way less creative or less original than we are. It is because the nature of creativity and originality was perceived in a different way. The ways of engaging with cultural texts in the pre-Romantic past always assumed and explicitly stated a relationship to existing or previous models. Rather than only being a product, an entity derived from another entity, adaptation ought to be understood also as a cognitive and "experiential" process, a way of thinking about reading, writing, creating, a way of being engaged with culture. It is this aspect of adaptation that is most useful in relation to the modes of engagement enabled in the new medium.

Without undue technological determinism, it is important to acknowledge that the new media do influence our ways of engaging with culture and modify ex

media file or object from one format to another. In the words of media theorist Lev Manovich, "the computer layer" and the "culture layer" are "being composited together," and the result of this composition is a "blend of human and computer meanings, of traditional ways in which human culture modeled the world and the computer's own way of representing it."

consequences for the reading process as Strickland does, means to invite readers to think like

adapters and to transform the origin-text by choosing where it begins and where it ends. They

are encouraged to adapt its parts to their own sense of narrative or poetic progression, and to

use the result of this inttr(e)4(<</t)-2(n)-4ve rt42(r(e)2(n)-4e(t)-2c(e)4(t6(h)-4(f)-1 cr(e)4(eat(y)20e a (t)-2ew i)-2

and a recontextualisation of the poem. Each of the three models of hypertext readings and the new combinations they enable adapt the print poem in different ways by rearranging and restructuring its parts into new wholes. Each reading involves reinterpretation, recreation and reordering using the existing elements of the poetic narrative.

Another kind of adaptation took place in the process of transcoding the poems from print into hypertext. Strickland retitled all her poems, an act through which the newly titled poems emerged modified, adapted to a new medium and a new audience. Retitling represents an adaptation in the sense that each new title creates a new reading and interpretive framework for each poem, foregrounding, in a literary and symbolic sense, the complex interpretive relationships created between the poem's text and its "name:"

> Since each of my poems already had a title, I did not wish simply to repeat that title as their screen address—so I chose a "second" title which would resonate with the first and with the poem…. Since it is possible to locate both the poem-title list and the lexia-list online, it is possible to arrive at a poem you have already read, but this time as it appears under another name. In this way, the text acquires a double, or a shadow—provided exclusively by the way it is named. This kind of shadow is a persistent concern in *True North*, and its formal implementation occurs quite naturally in a hypertext environment, whereas double-titling is so unconventional, and so unhappily accommodated on the print page, as to be unreadable on paper.[29]

Holopoetry, poetry that that addresses language "both as material and subject matter," is another example of the way in which the hypermedia can realise the polysemic nature of language and experience in a non-linear, discontinuous way, and so enable various forms of adaptation to take place.[31] Eduardo Kac, the pioneer of holopoetry, describes his invitation to the reader to interact with his art and re-create it differently:

> I try to create texts which can only signify upon the active perceptual and cognitive engagement on the part of the reader or viewer. This ultimately means that each reader "writes" his or her own texts as he or she looks at the piece. My holopoems don't rest quietly on the surface. When the viewer starts to look for words and their links, the texts will transform themselves, move in three-dimensional space, change in color and meaning, coalesce and disappear. This viewer-activated choreography is as much a part of the signifying process as the transforming verbal and visual elements themselves.[32]

The readerly interactivity that is the basis of holopoetry in fact here extends beyond the Web itself as it often requires the combination of Web or virtual and actual presence in order for its spatiotemporal possibilities to be fully realised. Holopoetry combines image, sound and text in ways that "highlight the complex discontinuities that structure the syntax" of the poems, and illustrate the "fluidity of the verbal sign and semantic interpolation, i.e., mutability of the actual topology of words in space leading to changes in meaning." One such example is Kac's work shown at the InterCommunication Center in Tokyo in 1999, called *Uiapuru* (1996/99).[33] This interactive installation represents a flying fish that hovers above a forest in the gallery, responding to local as well as Web-based commands:

> Audio and video from its point of view are streamed on the Web. Local and remote participants interact with the avatar of the flying fish in a virtual world. When this happens the flying fish sings in the gallery. "Pingbirds" (robotic birds) sing Amazonian bird songs in the gallery in response to the rhythm of Internet traffic. Pingbirds monitor the rhythm of the Internet by sending ping commands to a server in the Amazon. This work unites telepresence, multi-user virtual reality, and networking into a single realm of experience.[34]

indigenize them by adapting them to different national and cultural settings or times in order to highlight elements that otherwise may not be very obvious or unusual in the original.[43] With Kirke's poem, as in previous examples, readers have to engage in an adapting process, as they have to appropriate elements of an existing text, interpret them, and filter them through their own sensibilities, interests and talents.

Just as in relation to any other process of adaptation, fidelity to the original is in no way an adequate guiding principle. Whatever the motivation of the adapter/reader, "adaptation is an act of appropriating and salvaging, and this is always a double process of interpreting and then creating something new."[44] One of the culturally significant results of this kind of interaction is its potential to redefine the nature of authorship so that "the value of texts in the hypermedia often "becomes embedded in the social fabric, rather than the distributed product."[45] In this sense, the act of reading in the hypermedia has the potential to participate more explicitly in a general protplalual

Michael Joyce's "Storyspace" also emphasises aspects of the principle of adaptation: selection, rearrangement, interpretation and creation of something new while retaining some relationship to the original material or its elements.[49] "Storyspace" is a software programme illustrating with particular vividness the close proximity of the processes of reading and writing, as well as the active quality of "problem solving" associated both with the process of adaptation and interactive storytelling in the hypermedia.[50] It allows the creation of many "maps" containing different bits of information, organised into sections that can be viewed simultaneously. The simultaneity allows readers/writers to experiment with organisation as they continue to discover different patterns of meaning by reinterpreting and rearranging the existing elements into new wholes. As such, "Storyspace" is what Joyce calls an "exploratory hypertext," where readers "control the transformation of a body of information" to suit their needs and interests.[51]

This software allowed Joyce to create "*afternoon*, a story" (1987), often called the first hypertext fiction, where readers are enabled and encouraged to engage in an adaptive process involving the manipulation and rearrangement of existing narrative "pieces" into different narratives that have different outcomes with regard to plot and character development. Hyperfictions like "*afternoon*" open themselves to being adapted in various ways, even in terms of narrative closure which is largely left for readers to decide, whenever they "feel the main narrative tensions are resolved and puzzles explained."[52] Like the adapter, the reader here has to take almost full responsibility for narrative progression and character development while rearranging the elements of the existing narrative. This very active role demanded of the reader in the new medium, "requiring considerable cognitive work," has proven to be unfamiliar and difficult for readers used to modes of "reading associated with escapism and so called 'ludic

reading' where we become fully immersed or 'lost' in the book in a cognitive and emotional way but where no direct demands are placed upon us for any other kind of engagement."[53] For some readers, the new kind of cognitive demand consisting of having to assume an active role in constructing narrative meaning results in "confusion and frustration from lack of coherence and structure." Based on their previous reading habits, these readers' desire to "find" rather than recreate the plot reflects the change in the mode of engagement with texts enabled by the new medium.[54]

and "sphere" can be interpreted as "world," resulting in "the world of words, the universe of

discourse" (*Wikipedia*). Blogs, especially, define the internet as a social space where

Hypertext thus compels us to reconsider the nature of text, reading and writing, as well as adaptation, in essential ways. By compelling readers to make decisions along the reading path, ranging from choosing where the text begins and ends, to an active rearrangement of selected textual elements, many hypertexts externalise and enact the text's capability to engender a variety of interpretations in different reading situations, and they so externalise the cognitive processes underlying adaptation. Regardless of whether readers interact with open or closed hypertexts,[61] the adaptive principle is embedded in interactive reading in the hypermedia. Although in many hypertext systems we may be as "much controlled as controllers," we are still immersed differently in a world in which we have to participate kinesthetically, rather "than with one we are either told about or shown."[62] This form of participation results in a different way of engaging with culture and existing cultural narratives. By encouraging a "piecemeal" approach to composition and to reading, hypertext provides us with the ability to create pastiche-like compilations by easily extracting bits of data in different forms out of their initial contexts, and then bringing them together in different wholes. Reading in hypertext is often described as "welding," "where the meanings extracted— decontextualized—from different parts of the text can be crafted—re-contextualized" into something new.[63] By revealing the close connections between reading and writing, interpreting and (re)creating, hypertext educates us into the kind of reading done by adapters. As such readers, we have to "learn new navigational strategies and accept a new and altered relationship with the creator of the work;" we have to make decisions as to how to "navigate" through the layering of textual meaning and learn how one kind of information can be applied to another context. In this way, we thereby have to figure "in the thinking of the adapter" and become familiar first-hand with the process of adaptation.[64]

patterns—each pattern being adapted to the needs of one class of readers [and writers] on one occasion."[66] With hypertext we are encouraged to think in terms of "segmentation, juxtaposition, and connectedness," and associative rather than linear, "step-by-step" logic. We are unlearning forms of "psychological realism" reflected in print-oriented forms of text and narrative, and once again, remembering that "there is no chronology inside the head," we are learning to think in "discrete packages"[67] that can be reintegrated into new contexts. At the same time, the participatory model of engagement with the process of analysing, transforming, "repeating with variation," evaluating and reorganising, instructs us in a radical form of the art of adaptation. With these changes and the possibilities they imply, reading is "the process of 'finding' meaning, which is at once a fundamentally creative and also adaptive exercise," as "meaning is shaped" rather than "deciphered or uncovered."[68] It may also be that with the capacity of the new media to instruct readers *en masse* into the cognitive processes involved in adaptation, we are likely to redefine our relationship with cultural institutions and artifacts, and  nn   m0014(da)⁴

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[44] Hutcheon, 20.

[45] Joyce, 112.

[46] Hutcheon, 9.

[47] Manovich, 16.

[48] cf. Hutcheon, 174.

[49] Details about "Storyspace" can be accessed at: www.eastgate.com/storyspace/StoryspaceOV.html

[50] cf. Hutcheon, 137-8.

[51] Joyce, 41.

[52] Polle T. Zellweger, Anne Mangen and Paula Newman, "Reading and Writing Fluid Hypertext Narratives" in *Proceedings of the Thirteenth ACM Conference on Hypertext and Hypermedia, 2002* (College Park, Maryland, USA, 2002, 45-54), 51. Retrieved on 25 May 2007, from: http://portal.acm.org/citation.cfm?id=513353

[53] Ibid.

[54] cf. Ibid.

[55] Ibid.

[56] On the potential of hypertext to change existing rules governing narrative structure, see David Kolb, "Hypertext as Subversive?" *Culture Machine,* accessible at http://culturemachine.tees.ac.uk/Cmach/Backissues/j002/Articles/art_kolb; George P. Landow, *Hypertext: The Convergence of Contemporary Critical Theory and Technology* (Johns Hopkins University Press, 1992), and *Hypertext 3.0: Critical Theory and New Media in an Era of Globalization* (Johns Hopkins University Press, 2006); Joyce (1995); Jean Mason, "From Gutenberg's Galaxy to Cyberspace: the Transforming Power of Electronic Hypertext" (Diss.: McGill University, 2000), accessible at: