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Hypertext in the context of reading

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Abstract. The article is devoted to the actual problem of informational technologies usage and possibilities of their integration into the studying process. This usage favours the effectiveness in the solution of deductive aims at the lessons of fictional reding. The author also determines the expediency and specific character of informational resources usage while working with hypertext.

Keywords: *informational technologies, hypertext, text, textuality, modeling technology*

Computers have affected human society as few other inventions in the past century have. As literature generally tends to reflect the nature and self-image of the society that produces it, it is but natural that the advent and widespread use of computers have had a large impact on contemporary literature.

The prophecy that computing will transform the nature of literary studies is certainly one that we have heard before, but the widespread use of powerful personal computers in the last few years and the increasing role played by the internet, now makes such a forecast seem to carry more weight. Advocates of these technologies have recently begun to put a new and powerful argument: computer technology for modeling, representing, or creating texts is emerging that will allow us to bring these processes a major step nearer to the activities of actual readers; this in turn will revolutionize understanding of the nature of textuality itself. If this is true, the forthcoming shift in the domain of the literary will be on a tectonic scale, analogous to that brought about in the visual arts by the invention of photography and film.

Among this significant developments that underlie this scenario are first, access by computer to large corpora of literary texts together with techniques for examining them (generally called text analysis); and second, the building of hypertext and hypermedia systems. In this essay I will describe some of the advantages of these two technologies and assess some arguments that have been made recently for their theoretical importance.

It should be suggested that in the immediate future they are likely to remain of interest only to a minority of scholars and readers. This is not only because, as everyone knows, literary scholars have been slow to pick up and use computers for anything other than word processing. A more important reason is that scholars, with few exceptions, have traditionally been uninterested in how actual readers come to understand literary texts (the reader response debate of the last fifteen years has been conducted almost entirely around putative readers, not real ones). Thus, since we lack firm information about the reading process itself, we cannot expect to build computer-based systems that will genuinely enhance the reading process. Some scholars have predicted that the computer will bring about changes in reading itself, making possible a type of interaction with text that the printed book inhibits. While this may be true, it is perhaps imprudent to speculate about changes in such a fundamental human activity as reading when we know so little about how we have accommodated to conventional printed materials over the last several hundred years. The advantages of book technology, which have made the medium so successful, cannot be dismissed so readily. Moreover, the computer technologies that we are going to describe are poorly developed and even more poorly distributed. In this article I am going in to In the last mention the broader context within which literary computing is situated, and offer an assessment of its future possibilities.

More texts are becoming available to the scholarly community in machine readable form, whether from text archives or commercial distributors who have released a comprehensive database Users of such texts, however, are still confined largely to a small and specialized research community, with the technical skills to make use of electronic text. The notable absence so far of computer-assisted research in the leading scholarly journals is one sign that the field is still marginal [14, p.94]. As we will suggest, there are reasons for this that go beyond mere notion, although this too has played a part in slowing the emergence of the field into the mainstream.

No one can yet advise readers that their primary reading activities can take place on a computer. Computers small enough to hold as comfortably as a book, and with screens as clear and versatile as conventional print, are probably imminent, but the number of texts available in electronic form is still small in comparison with the range of texts that is read in (say) a typical Literature studies curriculum at school or university. Moreover, while arguments over copyright continue unresolved, publishers are not releasing recent texts in computer readable form. The number of new texts being published in conventional form thus continues to far outstrip the number being encoded for reading by computer. The process of scanning an existing printed text electronically and proof-reading it (since no scanning process is perfect) is also very expensive: the labor involved in producing an acceptable computer-readable version of an average novel runs to well over one hundred hours. While some of the canonical texts, from Shakespeare to Virginia Woolf, are gradually becoming available in electronic versions, the same is not true of the secondary literature. Critical books and journals are still confined to book form, with the exception of a few electronic journals, including electronic editions of few major journals. This drag on development represented by the conservatism of publishers and the restrictions of copyright, shows little sign of diminishing.

Given a suitable portable computer, and well-designed software, there is no intrinsic reason why our main reading activities should not take place on a screen rather than a book, once more electronic versions of books come onto the market. This issue is peripheral, however, to the implications of literary computing for the discipline. The gap between physically reproducing the text stream on a screen and employing the computer to represent the reading process in any meaningful way that would enhance it is, at the present time, considerable, and not to be underestimated. The main use for computer texts, therefore, is for research.

But here, a major difficulty presents itself, which has both practical and conceptual implications.

The software resources for studying computer text remain relatively primitive: the gap is still immense between what readers can do effortlessly, and what a computer can do. Scholars interested in calling on a computer to aid their research are limited to a very narrow range of possible operations, and such operations still fall largely outside the mainstream work of literary scholarship. Moreover, each research study must, more or less, create its own tools from the resources available. Although some tools for text analysis tools are becoming standard and more readily available, there are severe limits on what can be achieved with purely 'off the shelf' products. Many scholars thus spend time either writing special computer programs to perform a particular analysis, or creating specially encoded electronic versions of the texts they wish to study (or both), so that a particular range of textual features can be isolated for examination. The nature of such research means that almost no existing software or standard encoding will be adequate to support a serious study, nor could it be adequate until major developments take place in our understanding of reading and how to represent its component processes on a computer. It takes a particular type of dedication to undertake such research, since results are neither gained quickly, nor are they often readily communicable to the wider scholarly community, where understanding is rarely found of such domains as computational linguistics or statistics (the two most frequent underpinnings of such study) and where the major journals are inhospitable to the alien discourse of this type of research.

Willie Van Peer has pointed to a basic problem with the present state of text analysis methods, which deal largely in counting words [13, p.302]. The quantification offered by text analysis enables only relatively primitive methods of examination. The frequencies of words, collocations, or particular stylistic features, tell us rather little about the literary qualities of a text, since these aspects of a text find their meaning only within the larger and constantly shifting context constituted by the reading process. Text as object (a pattern of words) is a quite different entity from text as communication (a reader's interaction with a text). As Van Peer remarks, "in the very act of transforming textual qualities into counts, their essentially process-like character is irretrievably lost." Or, as he puts it more generally, by confining attention to what can be counted "the processes of meaning constitution have been eliminated before the analysis is undertaken" [13, p.302]. The role of figurative language in literature provides a central example. No known computer algorithm is yet capable of identifying whether a word is being used metaphorically or literally (or ironically, or within a pun). But computer-based methods that cannot take account of the multivalent meanings of words do away with one of the basic characteristics of the literariness of the texts being studied. Thus, Van Peer points out, the easier it is to represent a given feature on a computer, the less relevance it has to what makes a text literary [13, p. 304-305]. While it is possible to encode a text such that figurative usage is identified, and can be made the basis of a computer analysis, this is merely to transfer a standard tool of scholarship from paper to screen, with (one would hope) gains in speed and accuracy: the method, however, is still not computational, in any substantive sense. The role of figurative language in the production of meaning has not been represented by the computer.

This is not to argue that computer methods of analysis have no place: a number of interesting studies could be cited to show the opposite, from Oakman's analysis of Carlyle's prose style to Burrow's study of the idiolects of the characters in Jane Austen's novels [12]. The issue is rather, that no paradigm shift (to use that much overworked concept) in our theoretical understanding has been effected by our use of computer methods in literary scholarship. Nor is it likely to occur until a much more refined and accurate understanding of human cognitive processes is available, and of the process of literary reading in particular. Claims that a new electronic world is imminent, in which understanding of literature will be radically reconstituted, are thus almost certainly premature and, in the light of our present primitive technical capabilities, misleading: they underestimate the complexities of the reader's engagement with a literary text [8, p. 267].

Alternative models of what it means to read a literary text are abundant in the theoretical literature. The little empirical work that has taken place, however, suggests that a central characteristic of reading a poem or a novel is a transformation process, in which what the reader knows or feels undergoes a change in the course of reading [11, p. 58]. This contrasts with other types of reading, from newspaper articles to instruction manuals, which generally appear to be cumulative, consisting of a process of conceptual model building [5, p. 303]. The latter process can clearly be simulated more easily by computer: the typical hypertext system, which provides annotations and links to related documents, enables a reader to elaborate a view of a target domain in this way. Thus a literary text can be surrounded by various supporting contexts that will enhance a reader's knowledge and understanding of it, but this is not the same process as the encounter with the primary text.

The act of reading a literary text involves a different set of issues. There is a major indeterminacy in literary reading, springing from the readers' individual experiences and feelings (in addition to a rather sophisticated set of literary competencies for recognizing structures and genres special to literature): this makes the process impossible to simulate by any known computer method. While there is some evidence that various literary features, including stylistic variations and manipulations of plot in narratives, tend to constrain the reading process in ways that are partly predictable, no study has yet gathered systematic evidence to show what determines the interaction of readers with literary texts: the process is extremely complex, and we have hardly begun to ask what the major variables might be [11, p. 62]. Thus, until we understand the reading process better, we can make little use of the computer as a facility for presenting or examining literary texts; and to treat such texts solely as information is to disregard the most significant feature that makes them literary.

Touching upon the target question if the computer becomes the primary means of literary communication, we should mention Patrick Connor, one of a recent group of advocates of computer-based literary systems. He in his turn asks if literature survive the development of other media of communication. The day when the Book ceases to be the principal vehicle of knowledge, will not literature have changed its meaning once again [4, p. 7]. Lewin's distinc-

tion as an analyst of narrative is unquestioned, but the assumptions that inform his work are typical, and prefigure more recent extensions of the claim for postmodern understanding to hypertext [9, p. 261]. As Cees Van Rees pointed out, a reader's response is determined by them [3, p. 451]. Lewin's question about the fate of 'the Book' raises the problem in its most general form. Since we know very little about the cultural ecology within which readers and books interact, including books as physical objects, we cannot intelligibly pose the question whether the demise of the book is imminent.

Connor contrasts oral with literate culture, and proposes that the advent of hypertext points to a reinstatement of the textual system of orality. The integrity and self-sufficiency of the single text will no longer be privileged, as it has been in print culture. We will see the "linguistic conception" of text peculiar to the book replaced by a "semiological conception," similar to that which died out in the medieval period under the impact of print technology. Connor explains that the linguistic conception minimalizes the extra-referential possibilities which characterize the semiotic conception of the text [4, p. 10]; it produces a "rhetoric of linearity, as opposed to a rhetoric of association" [4, p. 11]. In the semiotic conception, Connor envisages a reader reading non-sequentially: thus, he adds, hypertext is one means "of reducing the writer's control over the reader", that is, freeing the reader from the constraints of linearity [4, p. 12].

These conceptions of the printed text originate with the post-structuralist thinkers: Roland Barthes's often cited distinction of the lisible from the scriptible text (the "readerly" and the "writerly" text) provides a familiar way of understanding the distinction [1, p. 5]. Hypertext is seen as a timely instantiation of the writerly text, in which meaning is visibly dispersed along the links across a constellation of texts, leaving the reader to construct meaning from the various available avenues. Unlike Barthes, who only claimed to distinguish two types of text, however, the proponents of hypertext see the book itself as a distortion of the true nature of textuality. As Connor remarks, "the text has been embodied in a book so that the physical constraints proper to objects are improperly transferred to the text itself" [3, p. 13]. Hence hypertext, as the title of his article puts it, may signal "the last days of the book" [4, p. 14].

Over the last ten years we have frequently heard the claim that hypertext offers a challenge to existing practices of reading. In particular, hypertext has been used to polarize differences between two kinds of reading: a constrained, linear form determined by the nature of print text, and a decentered, participatory form supposed to be liberated by hypertext. The repressive effect of the book is based on its tangible appearance, as a recent commentator explains: "the physical, stable presence of the text works to deny the intangible, psychological text the reader attempts to construct" [8, p. 145]. As a result, "books are machines for transmitting authority and disseminations of cultural capital" [8, p.136]. In contrast, the standard vision of hypertext is that it "obviously creates empowered readers, ones who have more power relative both to the texts they read and to the authors of these texts." Hypertext increases individual freedom because "users are entirely free to follow links wherever they please" [7, p. 273].

In other words, the book is dead or dying; hypertext and hypermedia are ensuring fundamental changes in reading and writing. Similarly, radical changes are said to be in prospect for learning: the introduction of the computer will force teachers to rethink their practices, while students will be empowered to learn in new ways [7, p. 232, 227]. Although this is an attractive picture, we will argue in this paper that in other ways it is also misleading. Apart from the wider issue that for many years some teachers and students have been shifting to inquiry-based learning without being driven by the technological imperative, the embrace of hypertext for literature is possible only for those who have paid little attention to the nature of reading. So the issue should perhaps be framed differently. Given what we know about reading and writing, and the psychological processes that support them, it is interesting to know, how effectively hypertext facilitates or extends those processes, to what extent hypertext changes the nature of reading, or promotes some component process to a more prominent role.

Such questions, however, are not legitimate in the view of hypertext theorists such as Landow. For them, the textual medium determines the nature of response. Not only is the concrete form of the book supposed to drive how we read it; so too the features of hypertext are said to drive its function. To understand hypertext fiction, says Landow, "involves deducing its qualities from the defining characteristics of hypertext" [7, p.183]. Similarly, Moulthrop points to what he calls the hypotext, the underlying structure sand specifications of a hypertext: this part, he says, is "arguably the most important" [10, p. 86]. Bolter refers to the "intentional network" of codes and scripts with which a reader must come to terms, or be frozen out of the reading [2, p. 23]. In other words, the mechanism of hypertext determines reading, rather than the content – a view which, if true, will profoundly alter the relation of readers to literary texts [11, p. 62]. As we show later, our own empirical studies indicate the reality of this alteration.

The structural differences said to exist between book and hypertext has led to a more general claim: a hierarchical model of text deriving from the prestructured nature of the book has been opposed to the so-called topographical model found in hypertext. Since hypertext is non-linear, says Bolter, "In place of hierarchy, we have a writing that is not only topical: we might also call it 'topographic' . . . Electronic writing is both a visual and verbal description. It is not the writing of a place, but rather writing with places, spatially realized topics" [2, p. 25]In this view, compared with the book, hypertext more naturally embraces graphic representations, such as a tree or network diagram, or an image map, and can make them available to interactive linking just like a passage of text. Thus hypertext advocates are drawn to promote the visual over the verbal or abstract order of the book. In fact, the underlying structure driving a hypertext may exist literally as a map.

The question, then, is how these claims fare in view of what we know about reading. We will first assess the claim that hypertext is a topographical medium; then consider the rhetoric of empowerment in the light of current hypertext design, particularly the role of links in hypertext fiction. The course of this discussion will largely be critical: we will draw attention to discontinuities between hypertext models of reading and much previous understanding of reading. We then present the findings of our own empirical study of readers of literary hypertexts, which, among other things, raise questions about the role of both the topographical and

the linking components of hypertext. At the same time, our discussion should not be construed as a dismissal of hypertext as a tool for reading and learning. Our aim, rather, is to show that some current claims about hypertext appear to be misleading. In particular we challenge the claim that now we have hypertext we must accept that the mode of reading appropriate for the printed text is constrained and outmoded. What hypertext is good for is another issue that we will not attempt to consider in this paper [11, p. 73].

The potential advantages of hypertext as a pedagogical tool are undoubtedly considerable. The promoters of hypertext, however, overlook the inadequacy of the information on which their far-reaching claims are based. As a result, the issue of what constitutes literary reading is overlooked, and the real benefit to be gained from hypertext obscured. Reading a literary text is equated with reading about literary texts, to the disadvantage of both.

Just as text analysis, as Van Peer shows, limits us to dealing with the physical elements of text (words and some of their elementary relationships), so hypertext is confined to what can be represented in verbal or graphical form; and this is, in the end, the least important dimension of the response to literature. It is what cannot be represented that invokes a reader's imaginative investment in a literary text. Henry James provided a particularly interesting statement of this view when he described his strategy in writing "The Turn of the Screw". James insisted on not spelling out the details of the horrors he wished to evoke: "Only make the reader's general vision of evil intense enough ... and his own experience, his own imagination ... will supply him quite sufficiently with all the particulars" [6, p. 176]. It is worth noting, fought a comparable battle in the eighteenth century against the fashionable notion that the best poetry was like painting: verbal description, he claimed, raises stronger emotion than any painting, because it rouses the imagination to act.

Hypertext representations of a literary text are perhaps rather likely to work against this imaginative mode of reading. Since the primary benefit of hypertext is intertextuality, various links to other texts and to graphics will continually tempt a hypertext reader to diverge from the main text to examine alternative pathways. The imaginative investment to which James alludes, the progressive development of a specific mood and a set of issues personal to some degree to the reader, will be aborted before it has properly taken hold: repeated digressions to linked texts will dissipate and undermine the reader's engagement with the primary text. Taken to its logical endpoint, the image of intertextuality offered by the advocates of postmodern hypertext suggests that a reader would never read a complete text at all, since all texts are merely dispersed fragments of a whole world of other texts whose relationships are more significant than any single text can be in itself.

Computers may come to play a more significant role as tools in research and teaching, through the use of text analysis and hypertext, but neither method yet offers any central purchase on the process of reading itself. In this context, producing hypertexts or other forms of computer media is a risky venture: although a common encoding format is also being considered for hypertext, a program that does not make full use of the machine for which it is written will simply seem rather dull. If hypertext authors are caught between the transportability and the attractiveness, it will come as no surprise to find authors opting for the latter: but each hypertext will thus remain an island. Given both the current poor state of distribution for such materials, and the potential obsolescence of the machines that support them, the island is one that few readers are likely to visit, and which will soon disappear beneath the waves of a technical progress driven by considerations remote from the interests of literary students. While it is possible that the latest technical developments, will provide a firm platform for the foreseeable future, the auguries are not promising: technical advances in computing currently enjoy a life cycle of ten years or less.

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Драч А.С. Гипертекст в контексте чтения

Аннотация. Статья посвящена актуальной проблеме использования информационных технологий, а также возможности внедрения их в процесс обучения, что способствует эффективности решения целого ряда дидактических задач на уроках чтения художественных текстов. Также автор обращает внимание на целесообразность и специфику использования информационных технологий при работе с гипертекстом.

Ключевые слова: *информационные технологии, гипертекст, текст, текстуальность, технология моделирования*