A software application called HyperStory is a reading program for short fiction which has proved to be effective in the classroom. In 3 years of use, over 300 students have tried it out. Part of the reason for its suitability for helping students develop short story reading skills lies in the relationship between the computer technology known as hypertext and some basic historical.generic characteristics of the short story since its beginning with Edgar Allan Poe. HyperStory exploits the generic characteristics of the short story, compelling students to "slow" down their reading and construct spatial nets out of the seeming temporal flow of the story. With Poe's "The Cask of Amontillado" as an example, the student is guided step-by-step through the program. Based on student observation, some of the reasons for HyperStory's success are: (1) readers cannot skim to the end of the story; (2) students reading at the computer put themselves in a more serious analytical state of mind; (3) students are less apt to "drift off" to other matters when reading on a computer screen; (4) students are encouraged to pause as they are reading to reflect back on the story; (5) readers are apt to feel a closer sense of interaction with the computer than with a book; (6) HyperStory creates the illusion that it is the story, not the teacher, asking the questions; and (7) students are able to transfer their experience with the heuristic prompts embedded in the HyperStory format to stories outside the format. (TB)
Recently I developed a software application, which I named HyperStory, to help my students learn how to read short fiction in a way I thought appropriate to its unique generic characteristics. The application won First Prize in the Liberal Arts category of Zenith Corporation's Masters of Innovation competition. When D. C. Heath published my short story anthology, Fiction's Many Worlds, they packaged a modified version of the software with the book. In this discussion, I will briefly describe the application and, more importantly, try to suggest some of the reasons that it has proven successful in the classroom. Although the application is technically unsophisticated (I am no computer programmer), the experiences of my students suggest that the computer technique on which it is based is ideally suited for helping them develop short-story reading skills. Part of the reason for this suitability lies in the relationship between the computer technology known as hypertext and some basic historical/generic characteristics of the short story since its beginning with the works and theories of Edgar Allan Poe.

The most significant contribution Poe made to the development of the short story as a new genre in American literature was his creation of an alternative definition of narrative "plot." Instead of "simple complexity" or "involution of incident," Poe suggested a new meaning of the term: "That which no part can be displaced without ruin to the whole." By this one stroke, he shifted the reader's focus on narrative from mimetic events to aesthetic pattern. In his review of Dickens' Barnaby Rudge, Poe argued that without the "key" of the
overall design or plan, many points would "become null" through the impossibility of the reader's comprehending them. Once having the overall design in mind, however, the reader will find that all those points that might otherwise have been "insipid" or "null" will "break out in all directions like stars, and throw quadruple brilliance over the narrative."

This suggestion that to understand a narrative readers must begin with the end in mind was made once again approximately a hundred years later when Joseph Frank argued that to comprehend modern fiction, one must perceive its spatial rather than its temporal structure. In discussing *Ulysses*, Frank claimed, "Joyce cannot be read--he can only be reread. A knowledge of the whole is essential to an understanding of any part."

The reader's inability to grasp narrative meaningfully by following the progression of its events through time is matched by the writer's difficulty in trying to communicate meaning in narrative by recounting a series of events in time. E. M. Forster, who gave the most famous description of the problem in *Aspects of the Novel*, reminds us that in addition to the time sense in daily life there is something else the writer's interested in, something not measured by minutes or hours, but by intensity, something called value. Story, qua story, however can only deal with the time sense and writers flout it at their peril. Forster argued, "As soon as fiction is "completely delivered from time it cannot express anything at all."

C. S. Lewis makes a similar point. The central problem, says Lewis, is that for stories to be stories, they must be a series of events; yet at the same time it must be understood that this series is only a net to catch something else. And this "something else," which, for want of a better word, we call theme, is something "that has no sequence in it,
something other than a process and much more like a state or quality." That the temporal series of events in a fiction is a "net" to catch something atemporal has been more recently affirmed by poststructuralists in their understand and define the reading process. Umberto Eco, for example, says "The main feature of a net is that every point can be connected with every other point, and, where the connections are not yet designed, they are, however, conceivable and designable. A net is an unlimited territory...not a tree [but]...a tree plus corridors connecting its nodes so as to transform the tree into a polygon, or into a system of embedded polygons." The notion of narrative as a net is in turn related to recent studies of the computer application hypertext, for hypertext simulates the reader’s mental reorganization of temporal events into spatial patterns.

George Landow, a hypertext innovator, is the best-known spokesman for the relationship between hypertext and contemporary literary theory. He has pointed out the similarity between such theoretical assumptions of Foucault, Barthes, and Derrida that the text is a "network," a pattern of "lexias," or an "assemblage" and such hypertext pioneers as Vannar Bush, Douglas Engelbart, and Ted Nelson who have argued that technology can mimic the associational paths the mind uses to store and manipulate information, can objectify mental concepts so they could be visualized and manipulated, therefore can intertextually link all the literature of the world.

More recently, Robert Coover has suggested that with hypertext, as it is embodied by such writers as Michael Joyce, Stuart Moulton, and Jay David Bolter, we are at last free of what E. M. Forster never imagined we could be free of--the "tyranny of the line." On the computer, Coover says, the line does not exit "unless one invents it and implants it in the
text." What hypertext does, says Coover, is to make us aware "of the shapes of narratives that are often hidden in print stories"—which is of course what Poe wanted readers to be aware of 150 years ago when he insisted that by plot he indeed meant pattern.

As Poe knew, the short story, by its very shortness, is more apt to be dependent on spatial pattern than the novel, which is more bound to temporal events. Suzanne Hunter Browne, in her helpful summary of cognitive psychology's contribution to the study of short fiction, says that brevity inclines readers to organize works as configurations rather than as successive structures. As Browne reminds us, "The faster we are able to apprehend the separate parts of a work and 'grasp them together' into a whole, the freer a work is to reinforce nonsequential structures, even when a narrative order is present."

The software application HyperStory uses several unique features of the computer to exploit these generic characteristics of the short story and to compel students to "slow" down their reading and therefore construct spatial nets out of the seeming temporal flow of the story. The way the program does this is to force students to pause at possible nodal points that thematically connect to other points of the story. Students are asked to consider questions about the structure, the conventions, the motivation, and the theme of the story at these points. Periodically, after students have paused and responded to these points, they are asked to pull these suggestions together and formulate some ideas about their relationship.

Although it is easier to demonstrate this than it is to describe it, perhaps it will be better understood by referring to an example. And what better example than Poe's classic illustration of the importance of plot as pattern "The Cask of Amontillado."

The story begins with the following sentences:
"The thousand injuries of Fortunato I had borne as I best could, but when he ventured upon insult, I vowed revenge. You who so well know the nature of my soul, will not suppose, however, that I gave utterance to a threat."

A small lightbulb icon in the margin of the story, when clicked with the mouse, pops up a window that asks the following question:

"Why are we not told what the injuries to the narrator are?" The windows also asks:

"Who is the 'you' who knows so well the nature of his soul?"

A bit later on when Montresor meets Fortunato, another lightbulb popup asks:

"Why does the story take place at carnival time? Consider the theme of "supreme madness" and the way Fortunato is dressed."

When Montresor starts to lead Fortunato down into the catacombs, still another lightbulb popup asks the reader to notice the method by which Montresor makes sure that his servants will not be home. And when Montresor has chained Fortunato to the recess in the wall, a lightbulb popup asks the reader to note Montresor's "echoing" Fortunato's shouts and to consider the theme of "mocking" and how it relates to other themes in the story. At the end of the story, a popup asks the reader to note that the events described took place fifty years before and to consider why Montresor might be telling about it after all these years.

At each one of these popups, the reader is encouraged to click on a button labeled Notes at the bottom of the screen. The reader is then linked immediately to a notepad where he or she can respond to the lightbulb questions by brainstorming some responses in an open, free-writing way. Although the readers' responses to the lightbulb prompts may be free form, at certain points in the story, after having responded to several lightbulb prompts, the
student finds another icon on the screen of a hand writing on a piece of paper. By clicking on one of these icons, the reader is taken to another screen where a writing prompt asks the reader to pull together some of the brainstorming ideas and write one or two developed and organized paragraphs based on the at brainstorming. For example, at one point the reader is asked to write on the following:

"Write a paragraph in which you discuss the relationships between the following themes in the story: Montresor's coat of arms, the motto of Montresor's family, the criteria for a successful revenge Montresor sets up, the basic relationship between Fortunato and Montresor.

At another point, a writing prompt asks the reader to write a paragraph about Montresor's jokes about the masons and to try to tie together the mason themes with the other basic themes and techniques of the story; specifically the reader is asked to related Fortunato's inability to understand the meaning of the trowel with the fact that the masons are a brotherhood and a secret society. By responding to the lighbulb popups in the Notes section of the program through free-form brainstorming and then by synthesizing these brainstorming ideas through linking various themes, motifs, and techniques in the story, the reader gradually begins to develop some understanding of the basic pattern of the story.

In the three years I have been using HyperStory in my short story class, over 300 students have used it. I have been astonished at how much more carefully students read stories using the application and how much more thoughtful writing it generates than more conventional oral and written methods I have used previously. Each time I have used it I have administered a feedback response form at the end of the class, assuring students that
their responses would have no effect on their grade and that I would not read them until grades had been turned in. What I wanted to discover was why students were more apt to respond in such depth and detail on Hyperstory—what was it about this format that encouraged such response. The following hypotheses about the reasons for Hyperstory’s effectiveness are based on my observation of student work, my reading of their computer notebooks and writing prompts, and their feedback responses.

1. Research indicates that reading text on a computer screen is less "efficient" than reading text in a book, that is, one cannot read as fast. As a result, reading text on a computer screen, by its very medium, slows readers down, not allowing them to skim hurriedly to the end of the story. Although reader slow-down may be undesirable when one is reading solely for content, to read narrative analytically one cannot read hurriedly.

2. Students with little experience in the analysis of texts associate reading with an informal, non-analytical pastime. One student said, "I would have preferred reading these stories curled up in my bed with tea and a book," but grudgingly admitted that "hyperstory made me think more carefully."

3. As William Costanzo has noted in his discussion of electronic texts, students who read text at a computer put themselves in a more serious analytical state of mind than when they read from a book. As Costanzo says, whereas reading for pleasure is based on a "mechanical simplicity, the pleasure of being swept along in a stream of words with nothing
more demanding than the turning of a page to interrupt the flow," in reading a textbook, we may be more selective, reading some passages, skipping others. If the work is a reference book, we make even more use of its "apparatus.", e.g. contents page, indexes, glossaries, etc. It is when we read this way that "we are most likely to think of the book as a machine." This approach, says Costanzo, may feel more analytic, as if you were dissecting the text instead of following its natural course holistically.

Students have a hard time making a distinction between reading narrative for pleasure and reading narrative for analysis when they do both on the written page. However, to set them to reading narrative on a computer with hypertext, in which they are made to slow down, to stop, to think about what they are reading, forces them into an analytical mode. It makes reading a different kind of experience, one in which they get caught up in the analysis of ideas and techniques and seem quite willing to follow this up. As Costanzo points out, (60) "Computer-aided reading makes people read more systematically. They become more conscious of the choices they make as readers, since the computer makes those choices more explicit. As a processor, the computer draws attention to the complex process of reading."

4. Naive and inexperienced reader believe that fiction should be read linearly with no pauses to be queried, no links to follow up, no schemas to apply. Jakob Nielsen asked a group of computer science students to judge whether they would prefer having their manuals, textbooks, and fiction available online instead of printed. Whereas the students viewed online manuals as a big advantage and online textbooks as a small advantage, online fiction
was viewed as a big disadvantage. The students felt that online annotations were a small advantage of manuals, a big advantage for textbooks, and no advantage for online fiction.

5. Students are apt to feel more "captive" to text on the computer screen and less apt to drift off to other matters, than they are when reading a book. One student wrote, "Being on the computer made me focus more on the story. Once I started, I felt compelled to finish it. Questions in a book would have allowed me to procrastinate more easily." Another noted: "Responding to the questions on a sheet of paper just makes you want to answer the questions and get it over with. HyperStory prompts don’t. I don’t know why."

The fact that students don’t try just to "get it over with" on the HyperStory the way they do when responding to heuristic prompts in the book on paper is a curious phenomenon. Part of the reason may be the fact that Socratic questions embedded within the actual story rather than tagged on at the end help the student to focus on key points in the story at those points. Some students did indeed suggest this reason: One noted, "Hyperstory is more effective than questions on a page because you have to concentrate more on it, rather than putting a book down to watch t.v. My learning experience in this class would have been cut in half without HyperStory." Another said: "Hyperstory makes you read more carefully because it asks questions every couple of paragraphs, whereas questions at the end of the story allow the reader to summarize." Another suggested: "The computer makes it easier for some reason, maybe because you’re typing and reading as you go along."

Another student remarked: "Being on the computer made me focus more on the story. Once started I felt compelled to finish it. Questions out of a book would have allowed me to
procrastinate more easily."

6. Students are apt to read stories hurriedly and casually if they think that they can come to class and get "answers" from the teacher. As one student put it, "Without Hyperstory, I would have relied on the teacher to spoonfeed us what the stories were about. By using hyperstory I was forced to come up with my own ideas." Another said, "without Hyperstory I would have left all the explaining up to the teacher, but I liked figuring out the stories and knowing I could do it."

7. Students do not know where to pause and reflect on stories, thus are motivated to move quickly on the end. One students said, "Rather than read the story like a newspaper article, Hyperstory forced me to slow down." Another suggested that "if you skim the stories there is no way you can answer the questions." Suzanne Hunter Brown has noted: "The inclination to 'get on with' the story...is a strong one; readers need all the added resources of attention that brevity can supply if they are to emphasize nonsequential connections instead."

8. Students need to be encouraged to pause as they are reading rather than to reflect back on the story after they finish it. Embedding questions within the story make the students more aware of the conventions of short fiction. John Harker has discussed a kind of "metalinguistic awareness" demanded of the reader, a consciousness of the particular and specialized conventions of printed language, suggesting that this consciousness is necessary for the reader to decode the text with increasing automaticity and at increasingly higher
levels of understanding. As the reader moves through the text, it displays text features which require a highly specialized metalinguistic awareness and more attention; thus the capacity to process text becomes more taxed and the reader becomes slower. However, as the reader becomes habituated to the text, automaticity is increased and the text becomes naturalized.

9. Students need to learn how to transform the temporal nature of the story into abstract meaning. As Gregory Colomb has pointed out in his argument with E.D. Hirsch's cultural literacy theories, tests to determine the difference between inexperienced and expert readers indicate that the former are stuck in the realm of particular details while the latter are able to discern patterns. Tests of expert performance indicate that the experts were able to see an abstract general problem and to subordinate all other issues to this problem, could state a general solution that also solved many subordinate problems, and could see a long chain of implications in their solution. On the other hand, novices gravitated to particular rather than general statements, found correspondingly particular solutions, ignoring subordinate problems, and saw few or no implications in their solutions.

10. Although I am sure this will fly in the face of some of the most cherished humanists beliefs that there is something sacred about a bound book, students are apt to feel a closer sense of interaction with the computer than with a book. As one student said, "Because I was involved with the computer I felt a closer relationship to the story. When asked to consider an idea I was by the nature of the interactive relationship with my computer more involved." Another noted: "With HyperStory you feel you are more a part of the story
because you are working within it. Without HyperStory I don't believe I would have felt as involved in my work as I have." Another said: "The pop-ups and prompts occur at the exact place in the story that your mind is most involved with a particular idea or concept. I doubt I would have done half as much thinking about these stories without it."

11. Students need a means by which to freely brainstorm about a story that does not threaten them with negative responses. Although the questions embedded in HyperStory may be very similar to those a teacher might Socratically pose in a discussion class, embedded as they are in the text, the student has no fear of making the wrong response and receiving a negative reaction from the teacher or the rest of the class. One student noted: "If the student brainstorms with the notes section they should be able to write a paragraph in the writing prompt section. I would have been discouraged without HyperStory because writing is not my best subject and it helped me write about the stories." Part of the reason for this increase in the willingness to brainstorm lies in the relative ease of doing the reading and the responding in one seamless activity. One student noted that HyperStory was more effective "because it is easier to write more on a computer than on a sheet of paper. It was fun to do the hyperstories for they were unlike anything I have ever done before. I wouldn't have gotten involved in any stories without the HyperStory homework." Another noted: "It was easier to work on the computer because you didn't have a lot of materials to sort thought. Everything was right there on the screen. You can read much more carefully on the computer because you don't have to worry about going from book to paper." And one student said: "I must admit honestly admit that if not for HyperStory I simply would have
read the story once and not given it another thought, regardless of whether or not I understood it. I would never have learned the value of brainstorming a story without it.

12. HyperStory creates the illusion that it is the story, not the teacher that is asking the questions. I know this may sound absurd, for if pushed, students would admit that they knew someone had to program the queries and pop-ups into the story, but somehow when they begin working they forget that. This is a common phenomenon; computer users often refer to the computer itself as if it had some innate intelligence, and indeed some CAI programs encourage this illusion. The effect of this illusion in HyperStory is that they students do not think that a teacher is leading them along to a preconceived conclusion, but that the story itself is trying to help them understand. As one student noted: "Without HyperStory I would not have developed my own analytical skills; I would have learned only how you saw the story. This way, without your guidance I came to my own conclusions."

13. Students enjoy being able to "master" a story on their own, and they enjoy the sense that they are engaged in difficult, even profound, hard-to-discuss ideas. HyperStory gives them this sense of mastery, and, if the questions are sufficiently provocative, the pleasurable sense of thinking profound thoughts. As one student noted: "Working with hyperstory built my confidence in reading deeper into stories, which is an enjoyable experience." Another said: "My learning experience would have been different without HyperStory because maybe I would have not been able to think in deep thoughts." Another suggested: "HyperStory encouraged me to read the stories more closely and analytically. The other stories were
explained in class, so I didn’t have to go into deep thinking for those."

14. HyperStory exploits not only our familiarity with video screens for providing information, but also the irresistibility of interactive "hot spots" or buttons on a screen as they do in video games. Although students may ignore interlinear questions in the margins of a book page or at the end of the story, they do not ignore icon-linked hot spots. One student said: "I was always curious about what lay behind the lighbulb or writing prompt symbols."

15. Students are better able to understand the stories in HyperStory format than they are stories read in the book and discussed in class. Student understanding of the stories discussed in class was assessed by the use of multiple choice questions on the conceptual and conventional nature of the stories. However, on one occasion, I did create questions based on some of the HyperStory assignments. Although the questions were as complex as those on the other stories on the test, 100% of the students in the class got the HyperStory questions "right." As one student said, "I would not have read as closely without HyperStory. Of all the stories we read for the class I know the ones I did on HyperStory best of all."

16. Students are able to transfer their experience with the heuristic prompts embedded in the Hyperstory format to stories outside that format. A number of students said that after a few HyperStory assignments they found themselves anticipating the questions that were asked, guessing what they were before they clicked on the lighbulbs to pop them upon on the
screen's virtual page. Student ability to read a story analytically without HyperStory is evidenced by student success on an in-class essay on a story from the text at the end of the semester. The only prompt they were given was to discuss how the story embodied realistic, hallucinatory, and allegorical characters simultaneously. Students were able to isolate the significant issues, focus on the meaningful nodes, link motifs in the story to related motifs, and generalize about these issues without getting bogged down in simple plot summary or the mere citation of specific details.

HyperStory is a modest illustration of the essential truth of Poe's original intuition that short fiction depends more on spatial pattern than on temporal succession. It also indicates that teaching students how to read short fiction is a matter of engaging them in that spatial pattern in such a way that they can make their own discoveries about the story's meaning and way of meaning. Although simple in design, HyperStory indicates that practical pedagogical value may be derived from a blending of old fashioned literary theory and newfangled technology. I like to think that Poe would have been pleased by it.

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