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THE INFLUENCE OF TECHNOLOGY ON STORYTELLING

An Interactive Qualifying Project Report

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Abstract

This project examines how new and recent technologies facilitate new story types, including collaborative hyperfiction. The author begins with a brief consideration of those enabling technologies that facilitate different types of hyperfiction, and then defines hyperfiction in itself, its significance, and the new paths of storytelling it enables. Finally, collaborative hyperfiction is analyzed, with significant regards being paid unto its impact upon society and culture.

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1. Introduction

The advent of the World Wide Web and the enabling technologies surrounding it have not only increased the ease by which millions of web users may solicit an article of fiction, but have also facilitated new kinds of story types, which greatly expand the boundaries and capacities of the art of storytelling. As a result of digitalization, some story types now incorporate animation, motion pictures, music, and sound, whereas they were limited solely to drawings, photographs, diagrams, and other non-moving pictures in the printed books of the past. Others, though possible before in standard printed fiction, are aided greatly by the advantages that digitalization affords, such as the instantaneous cross-referencing of sections allowed through hyperlinks. Standard hyperfiction, which will be discussed in detail, relies upon the same language that serves as the current foundation for the WWW itself; this new story type was not realistically feasible in print. Interactive fiction, which made its first mark on the world in 1982, was obviously impossible without the aid of computers, for there is no printed book in existence today that can interpret the typewritten instructions of a human in order to formulate a response that furthers the progress of that story. Still more story types, that bear resemblance to the ‘abstract’ art of drawings and paintings, were legitimately impossible before the computer revolution. An analysis of all of these new and emerging story types, which are made possible by advances in digital technology, comprises a central focus of this project, and is considered in detail in the third section of this paper.

It is important to note that a substantial impact of the WWW upon these new and emerging story methods is in the powerful way in which a single instance of a given story may be disseminated to a theoretically infinite quantity of users around the world, and from a great variety of cultures. Although this very potential in itself - broadcasting the art of language and communication with great ease about the globe – has tremendous sociological significance, this significance is redoubled in the implementation of collaborative hyperfiction. Collaborative hyperfiction relies upon the WWW to not only disseminate stories and story sections to an international readership, but also relies upon the Web as a tool by which collaborators may contribute to the story together.

This project examines how new and recent technologies facilitate new story types, including collaborative hyperfiction. The author begins with a brief consideration of those enabling technologies that facilitate different types of hyperfiction, and then defines hyperfiction in itself, its significance, and the new paths of storytelling it enables. Finally, collaborative hyperfiction is analyzed, with significant regards being paid unto its impact upon society and culture.

2. A Brief Look at the Enabling Technologies Involved Behind Hyperfiction

2.1. The Roots of the Internet

The roots of the Internet we know today can be traced to the predecessor and a prototype of the Internet, the ARPAnet (Advanced Research Projects Agency Network)

[Tanenbaum, 1996]. The ARPAnet was funded by the U.S. Department of Defense, and specified and outlined by scientists and academicians working collaboratively in a conference held in the late 1960s, at the University of Illinois [Deitel, 2000].

2.2. Packet Switching versus the 'Dedicated' Telephone Connection

To make the ARPAnet successful, one of the first things the ARPAnet team needed to do was facilitate multiple and simultaneous communication transmissions over network lines (which were primarily telephone lines at the time) [Deitel, 2000]. Previously, connections had been dedicated and exclusive, capable of handling communications between any two telephonic participants per each individual period of time. An example of such a dedicated connection is a standard, voice-to-voice telephone conversation. Person to person telecommunication has traditionally facilitated continuous conversation, without interruption or delay (as far as the technology involved is concerned), for the duration of a given phone conversation. While teleconnected, the phones of the conversationalists (the ends of the connection) cannot be used for anything else, such as making phone calls or connections to other telephones simultaneously.

This method of transmitting data, be it digital data or analog data, binary or voice, became problematic when a user at one computer wanted to access a computer that serves information (a 'server'), which a user at another computer was presently accessing. Were such information exchanges exclusionary and turn-based, the Internet and the plethora of powerful applications it now supports, such as web sites, would never have come to pass.

This is because the delay in accessing popular to even mildly successful web sites around the world through such a system would be too extensive to be practical or useful. For example, let's suppose a million people attempted to access a single site just once throughout a single day according to the procedure described above. Let's also suppose that each computer maintained a connection to that site for an average of only 5 minutes. Under such circumstances, the last person to attempt information access on that day, would eventually be granted access approximately nine and a half years *after* the request had been made (providing neither the computer in question nor the server itself ever lost the connection of course!). Such a delay is obviously unacceptable, and is not a part of the behavior of the Internet millions of people know and depend upon today.

As such, ARPAnet collaborators devised a communication protocol they called *packet-switching* [Deitel, 2000 and Tanenbaum 1996]. Packet-switching basically entails sending some finite burst, segment, or 'packet' of data to and over a network from a sender computer (server) to a receiver computer (client), without establishing a dedicated and exclusive connection. As such, if another client computer requests information from that server, the server may then send *that* client a packet of appropriate data, and thereupon return to sending the *original* client yet *another* packet of data, until all participating clients have eventually received all the data they have requested. By distributing *pieces* of the complete data packages that clients have requested, and in an alternating fashion, all clients receive their data in a total time frame that is greatly reduced and more equitable.

2.3. Packet Reassembly and Other Packet-Header Information

Once the total quantity of packets has been received by a client from a server for a given request, the client computer reassembles the data. The client can do this by processing each packet *header*, or that portion of additional data prepended to a given piece of the data the user requested to facilitate packet reassembly (sometimes packets arrive out of the order in which they were sent). Headers also contain the networking ‘address’ of the client computer that a requested packet should be sent to, and error-control information [Deitel, 2000 and Tanenbaum 1996].

2.4. The Discovery of the Power of Email

The original purpose of the participants at the ARPAnet conference was to devise a way to share scientific and technological information more easily through direct access to the computers of their peers, over a network that would span from coast to coast. However, once computers of the ARPAnet were successfully networked, users soon discovered electronic mail, or *email*, and the ease of communication that it afforded to be one of the ARPAnet’s greatest assets [Deitel, 2000].

2.5. TCP/IP (Transmission Control Protocol/Internet Protocol)

As the ARPAnet and its success grew, the communication protocol (partially described above) it employed also improved, and was eventually referred to as the *Transmission Control Protocol*, or *TCP*. Meanwhile, other countries were installing and experimenting

with their own inter- and intra- networks. When the notion of connecting networks around the world was formulated, people involved realized another communication protocol would need to be developed – one in which different types of networks comprised of different kinds of computers could communicate with one another. The standard and protocol devised for handling this task was the *IP*, or *Internet Protocol*. The combination of these protocols, known collectively as *TCP/IP*, is the communication protocol set that the Internet utilizes and relies on today [Deitel, 2000 and Tanenbaum 1996].

2.6 The Distinction Between the World Wide Web and the ‘Internet’

The *Internet*, spelled with a capital ‘I’, refers to that substantial set of computers collectively connected to and comprising the largest single network around the entire world. Separately, the *World Wide Web* refers to that collection of linked documents which are *stored on* and *are accessed by* provision of the Internet [Jamsa, 1996].

2.7 Before the Web: FTP (File Transfer Protocol)

Before the standards of the World Wide Web were developed and employed, early users of the Internet typically used an old information retrieval stand-by, the *File Transfer Protocol*, or *FTP*. Unfortunately, and as its name implies, the FTP was conducive to little other than providing directory listings and transferring files. As such, if a user did not know exactly where a given document he or she was looking for was located, the Internet did not make finding required information very easy.

2.8 The Creation of the World Wide Web

To overcome this handicap, Tim Berners-Lee, the popularly accredited developer of the WWW, proposed a method by which documents might be displayed, linked, and traversed in a relatively easy fashion, to members of the European Laboratory of Particle Physics in Geneva, in 1989 [Jamsa, 1996]. He specified that by employing an idea known as *hypertext*, documents - which should no longer be limited to text, but should now have the capacity to contain other multimedia elements, should also contain *links* embedded directly within their contents. Selection of any given link within a document should provide the user a new document, with new information related to the description of that link, be it directions accompanying the link, or the link itself. This new document might be on the same server as the original document the user selected the link in, or on any different server connected around the world.

2.10 Implementing the WWW: HMTL (Hypertext Mark-up Language)

To implement this idea, the *Hypertext Mark-up Language*, or *HTML*, was developed. Using this mark-up language, users could design and create web-pages by providing the text they wanted to share, *in addition to* 'tags', or demarcators, also written in ASCII text, designating hyperlink descriptions and file directory/server locations. A 'hyperlink' is a portion of text or some other element of multimedia that a web user can *select* to go from the current page to some other page or piece of media. For example, a scientist writing a treatise on physics could, by following the specifications of the HTML, designate through

the use of tags all instances of the word “Geneva” in some particular article as hyperlinks. He would then specify the name and location of the linked file, whether its another document, a picture, sound recording, or some other piece of acceptable multimedia - even if it resides on a server halfway around the world. If implemented correctly, upon the web-users selection of the word “Geneva” in that particular document, the reader would receive the appropriate content of the file as designated by that document’s author. Because documents may have multiple links to other documents, which in turn may have multiple links to *more* documents, etc., and in a web-like fashion, on myriad computers across the world, the collection of those hypertextually linked documents are thus referred to as the *World Wide Web*.

3. Hyperfiction

3.1. What is ‘Hyperfiction’?

Hyperfiction, in a nutshell, is an art form that allows its readers choices in directing what content is displayed as the reader progresses from one section of the story to another. This is achieved by writing and ‘implementing’ the story and the choices included throughout that story in HTML and with the aid of hyperlinks [Looy, 1999; Shumate, 1997; Long, 1998].

More conceptually and practically, it is the unveiling of a dynamic story – one in which the story’s path is subject to change as a direct consequence of the user’s choices. It is

interactive and it is responsive – the author tells the reader something that has happened, but instead of continuing past that action towards the next significant event as per usual procedure in the traditional story, the author stops and asks the reader, *What do you want to happen next?* At this point, the reader chooses from a variety of options presented by the author, often encoded in hyperlink form.

3.2. What's the difference between linear, traditional fiction and hyperfiction?

A linear story, the static story, the traditional work in print does not offer such choices. Instead it proceeds from some beginning, and works its way towards some end, on a single path, and with a single method. Thus the story is *linear*. The only options such works offer readers in terms of choice of content are to 1) continue reading, or 2) stop reading. This type of story presentation, obviously, is not very *dynamic*, in that the story cannot *change* to suit the interests of the reader as reflected by the choices that that reader has made. Please check the “Classic Linear” story-type diagram in the Appendix.

3.3. The Basic Mechanics of Basic Hyperfiction

How does hyperfiction work? How is it technologically created and implemented?

Hyperfiction typically depends upon HTML (though it is conceivable that some forms may be implemented in CGI-Script, Java, or Javascript, which are other types of programming languages), because reader *choices* are implemented via hyperlinks, and a foundation of the Hypertext Markup Language is the hyperlink [Looy, 1999 and Shumate, 1997].

Here's the general process. The author creates a web page and author puts a segment of the story on that web page. The author specifies which sections of that portion of the story should link to other portions of the story on separate web pages. He or she demarcates these portions with the appropriate tags, turning them into hyperlinks. The author then repeats this process, creating a new web page with new story content for every discrete link on each page, until all discrete links lead to discrete story segments. (The word 'discrete' here is used to make a distinction from multiple links on different pages that lead to the *same* story segment. Obviously, in this case, the author only needs to create that particular segment once, setting all pertinent links to lead to that particular segment.) This process repeats, until the story comes to an end, *-if-* the story ever does come to an end. Perhaps if the work is a collaborative venture, an ending is waiting to be written by some future web reader, or perhaps those involved in creating the work *don't want* it to end, so that it may continue to grow and grow for as long as possible.

3.4. The Ten New Types of Fiction Progression the World Wide Web and its Underlying Technologies Allow or Greatly Facilitate:

Katherine Phelps has written a comprehensive article entitled "Story Shapes for the Digital Media," which has proved invaluable in formulating the following rubrics. While she delineates seven "story shapes", including a "linear" shape, however, I thought the general content was better divided into ten story types, without an exclusively "linear" denomination. This is because I feel several categories and concepts are and should be

posed disparately. While her descriptions and postulations are posed in a light and conversational manner as well, I have tried to present my descriptions and diagrams in a more clinical and abstract manner, indicating both the sum of each category and its composite pieces. I have also tried to name the story types discussed with especial care. For example, Phelps discusses an “interactive” story shape in her article. Of this ‘shape’ she says: “An interactive narrative shape is one in which the story is basically linear, but each screen of material offers an opportunity to enrich your experience of it.”[Phelps, 1998] I too have included an “Interactive” story type in my consideration of the many ‘new’ story types emerging and afforded as a result of worldwide computerization, but the matter I am describing beneath such a title is vastly different from that which Phelps is describing. The label and content discussed in that section of *this* work are based upon the relatively antiquated pioneers of the digital story type – the old works of ‘interactive fiction’ produced by such companies as Infocom, in the early 1980s, with which the author is intimately familiar. Nevertheless, many of the central ideas that follow are the same or similar to those of Phelps, which served as a basis for my own.

3.4.1. Augmented Linear

The *augmented linear* story is one that utilizes the multimedia potential of the Web. Movies, music, sound effects, animations...new story authors are finding creative ways of incorporating such stimuli and media into their works. There is the question, are such works still technically 'stories'? Or 'fiction'? Or 'novels'? Or have they become 'movies'? Or computer 'games'? Many books, especially children's, usually include pictures, as a

tool to help the reader more easily assimilate the given content. Yet they are still books. Nevertheless, perhaps straight prose in combination with multimedia content becomes something different - an amalgamation of book and movie, or music and book - or something new altogether. If we examine traditional film, we usually find a script at its base or core. Stories have been written out in text - in stage and camera directions, and in dialogue. It is important to note that there *is* a *story* there. If an author or authors can incorporate multimedia successfully into a work to enhance the audience's enjoyment and appreciation, then why should that be condemned or dismissed? Semantics aside, in summary, the *augmented linear* story is a story by which a linear storyline is *augmented with multimedia content outside of text*. When considering the other story types discussed below, recognize that *any* of them may be augmented with respects to multimedia content, so far in that they remain in digital format.

A basic example of augmented linear fiction is the children's short story "Baby Jason", by John Rickey. A simple linear story about a rambunctious baby is augmented with cartoon animations and innocuous music. Please check the "Augmented Linear" story-type diagram in the Appendix.

3.4.2. *Enhanced Linear*

The *enhanced linear* story is one in which the linear content, either classic or *augmented*, is supplemented with explanatory tangents that a reader may choose to explore or peruse if so desired. That is to say, along given intervals of the hypertextual story, the reader may be offered explanatory asides provided by the author to further explain elements of

the story being read. For example, suppose a reader is engaged in a hyperfictual mystery set in London, and follows a character into Westminster Abbey. At this point, the author may provide the reader with a link detailing the history and other interesting information about Westminster Abbey. This content may be totally supplementary - it is not necessary for the progression or enjoyment of the story at all - but still, it may be a nice provision for the reader if he or she is interested in learning more about Westminster Abbey. Again, the aside describing Westminster Abbey needn't be strictly textual - the annotation may be in the form of a short digital film showing and/or describing the Abbey, in addition to or in exception to annotative text.

A comparable homologue of such an enhanced linear story in printed form would be the children's *pop-up* book. A child is provided a linear story in which the child traverses the story from the beginning to the end, page by page. However, a variety of different activities and events are provided throughout the book for the child along the way in the forms of tabs, windows, and paper dials that are able to be pulled, opened, and otherwise manipulated. The reader does not *need* to interact with any of these devices to be able to complete the story; nonetheless, they do provide the reader with more opportunities that he or she can *choose* to explore to make the story richer and more enjoyable. The more choices available for a reader to make, the more interactive the story can become, and this interactivity is regularly more stimulating and arresting.

A good example of enhanced linear hyperfiction is [The Heist](#), by Walter Sorrells. While some of the hyperlinks need to be followed to further the progression of the story, others

simply provide tangential information that serve only to *enhance* the story, but which are not necessary for the reader to enjoy the story by and large. The reader should be warned that, in contrast to the children's story provided as an example in the preceding category, there are many different genres of hyperfiction as well as standard fiction, and The Heist is a work of a more adult variety. Please check the "Enhanced Linear" story-type diagram in the Appendix.

3.4.3. *Parallel Storylines*

A *Parallel Storyline* structure contains two or more storylines that are closely related and potentially complementary, but that never quite intersect, or do so minimally, or indirectly. An example would be a story about two people living in different locations but in the same time frame. Perhaps there is a war going on that affects both locations, and the author is using this structure to demonstrate the similarities and differences between the separate struggles of the two individuals - how this horrible war affects them together, although they are apart. Or consider a story that takes place within the same time frame *and* location - for example, a city in France in the late 18th century. The author may detail the accounts of a young, impoverished street urchin and a fat, pompous and wealthy aristocrat. The signs of the environments of one and the other may be all about the city – in the dirty, overcrowded and noisy slums of the young boy and in the rich, opulent, and regal palaces of the fatuous Marquis. The author may write such a story with parallel storylines to illustrate the tragedy involved in the failure of a human being that

“has” to help a human being that “has not”. In any case, these are a couple of examples of the parallel storyline structure.

Where hyperfiction really begins to thrive with regards to such a story structure is the extent to which such parallels may be illustrated. A likely method an author of a printed book might use to write both stories in parallel, and to keep the reader abreast of each character's activity from time segment to time segment is to focus on alternating characters from chapter to chapter. Using hypertext, however, an author can create a complete timeline, built in increments of years, months, days, hours, or even minutes, depending upon the scope of the story. He or she can construct both stories in parallel, and allow the reader to explore the paths provided in whatever manner he chooses. Using the example provided above, one reader might read the story of the young boy from start to finish, before beginning the story of the wealthy aristocrat. Contrariwise, another reader might read the aristocrat's story first. Different still, a reader could alternate from character to character at each and every time interval provided, so as to get the best grasp on the temporal parallelism. For example, suppose the author detailed the accounts of the two characters from hour to hour. A reader might then read an 'hour' of one storyline, and then read the description of the exact same 'hour' in the other storyline. Or, if the reader became involved with one storyline in particular, he or she could follow it along as long as they chose to, perhaps checking the events of the other character's life in parallel in a desultory manner for reference. A reader might even read segments about the characters' lives from the end to the beginning, to get a different perspective as to why events in the storylines transpired as they did. Such freedoms in printed books are few and far between.

To jump from story to story and time to time in the fashion that hypertext and hyperfiction allow would require a great deal of page turning and searching. While skipping over chapters, the reader risks accidentally glimpsing parts of the story that he or she may not have wanted to know about at that time. Hypertext and hyperfiction truly empower and facilitate such story structures, and in new and more expansive ways. Please check the “Parallel” story-type diagram in the Appendix.

3.4.4. Intersecting Storylines

Intersecting Storylines are like parallel storylines, though the characters have direct impacts upon one another at certain intervals within the story. When the characters or the influences they exert come into contact with and affect one another, the storylines are said to be intersecting.

Intersecting storylines are prevalent throughout regular fiction. When the characters of J.R.R. Tolkien's Lord of the Rings trilogy are travelling together, their lives, adventures, and stories are intersecting. When Tolkien details each character's journeys and adventures once they've split apart, the storylines have become parallel. When the characters are reunited with one another again, the storylines are again intersecting.

Intersecting story-types are typically richer and more fulfilling than the kinds previously described. They attempt to show the much more realistic ways in which conscious

entities in any given world, be it the 'real' world or a fantastical one, affect and interplay with one another, albeit sometimes unwittingly.

Hyperfiction can be used to display such stories in the same manners which it can be used to reveal parallel story-types. Readers decide which character's story they want to follow, and when all characters or events have coincided at given time frames, readers can observe and appreciate the interconnectivity described, and follow all the characters together. I would like to say that hyperfiction facilitates this story-type by affording the readers the opportunities to *decide* when and under what circumstances characters meet and/or affect one another, if at all, but technically speaking, such options are a device of the next story-type, "standard hyperfiction". Please check the "Intersecting" story-type diagram in the Appendix.

3.4.5. Standard Hyperfiction

The 'hyper' is duly put into the fiction in this story type. This is the first story type in which the reader has direct influence or control over the *progression* of the story, or the path that it takes. This is facilitated by the author presenting the user with *choices* at intervals determined by the author. The author writes the consequence of every possible choice the reader can make before the story is proffered to the reader. The reader then reads *only* those portions of the story that follow from the choices that reader makes, as he or she follows the story from the beginning to a given ending. As such, the reader is

following one of several or many possible 'paths' from the start to some finish, all segments of which have been written by the author.

Considering the technological production of this type of story also facilitates understanding its concepts in general. We can say that any point at which the reader is offered a choice is called a 'page'. Any choice that brings the reader from one page to another we can call a 'link'. Links and pages are the fundamental elements of hypertext and the World Wide Web, as well as standard hyperfiction.

Here's how such fiction is created. The author writes a page in HTML. He presents the reader with a number of choices by which they may direct the story. He presents these choices in the form of hypertextual links. For example, suppose one particular page may depict the reader or the central character as being in a foreign place, with an ominous and conspicuous staircase as the only ostensible exit. One link on this page may read:

"If you want to go downstairs, click here."

Another may read:

"If you want to go upstairs, click here."

A final option might be:

"If you want to jump up and down and wave your arms, click here."

Of course, if the story is presented well, and links or choices are clearly distinguishable from the rest of the story, the "click here" text is obviously superfluous, and can be dispensed with. I use it to illustrate how the user is presented with choices and might follow a presented path.

Once the author has his or her page and the links by which the reader may direct the story composed, the author then writes pages that he or she feels appropriately depict the consequences of the readers' choices. These pages are then 'linked' to the hypertextual choices and the page by which the reader would arrive at the newly created page. The author then devises as many links as he or she feels are suitable for the current page, and the process repeats until the author creates ending pages in which the story conceptually ends and there are no more links that further the progress of that story path (*if* the story is supposed to end, that is). At this point the reader may choose to read the story again, while pursuing different paths.

The closest homologue of this type of fiction in printed form is the Choose Your Own Adventure series of books printed by Random House Press. In these books a reader is presented with a page or pages of story, and then given options to direct the story's outcome. Each option available directs the reader to a different page in the book. The reader turns to the page referred to by the option of his or her choice.

For better or worse, this type of fiction is severely handicapped in printed form.

Depending upon the quantity of links and resulting story pages needed to develop those links, the quantity of printed pages needed could quickly become insurmountable. Also, the delay between page turning, and the risk of accidentally reading information unrelated to a reader's current path in the pages between could quickly become tedious. Also, multimedia and multimedia links or hypermedia obviously cannot be included in the printed form.

"Lies" by Richard L. Pryll Jr. is an interesting albeit simplistic example of standard hyperfiction. It is small and easily traversed though the content it expresses is very complex. Throughout the brief detailings of a tenuous romantic evolution of a relationship from its genesis, the reader is given from interval to interval the opportunity to select whether to hear lies about that given relationship - the way the narrator wants it to be: "*Lies tell you more about a person than the truth does. Lies tell you what a person wants to be, rather than what they are,*" [Pryll, 1994] or the truth. It's an intriguing and thought-provoking work. Please check the "Standard Hyperfiction" story-type diagram in the Appendix.

3.4.6. *Interactive*

The *interactive* storytype was actually in development during the late 1970's, under the rubric of "interactive fiction". *Zork*, created by Dave Lebling and Marc Blanc of MIT, and released commercially for a wide host of computers in 1980, was perhaps the most popular and successful interactive story at the time, and arguably ever since. This led to

the creation of *Infocom*, the premiere creators of interactive fiction throughout the 80's [Scheyen, 2000]. However, once graphically based adventures, such as Sierra's *Kings Quest*, began to lay hold of a greater share of the computer 'gaming' market, Infocom was eventually pushed to effectual extinction, and was taken over by Activision, another computer gaming company.

Interactive fiction is perhaps the most programming oriented of all the story types discussed within this paper. The end effect of a successful example of interactive fiction is one in which a reader or 'player' can 'move' among a variety of 'rooms', acquiring a variety of objects or possessions, while potentially solving puzzles, interacting with story-characters, and gathering a greater sense of the story as a whole. Readers are recommended to confer with Graham Nelsons' excellent article, "The Craft of Adventure" as a reference by which much of the material in this section is based.

The story elements manifest themselves by way of a prologue, which usually contains a mission or goal the reader/player should progress towards along the way to another fundamental element of any story - its conclusion. Room descriptions, effects of user actions and interactions with computer operated characters, and responses to user requests provide intermediary details of the story.

The way interactive fiction works is that readers or players express what they want to happen next in the story by way of *entering textual commands into a parser*. These commands usually resemble full sentences, with designated actions and subjects. After

parsing the user's request, the interactive story determines what type of response should be produced. If the user has made a request with a word that is not in the parser's lexicon, the computer usually asks that user to rephrase his or her command. If the computer does understand the user's request, it then must determine whether that request can be granted while operating within the confines of the established story structure. For example, if the user types, "Go west," and there is another 'room' open to the west (e.g. the kitchen is west of the living room), the computer will usually respond by providing the user with the description of that room his or her character has just moved into (i.e. the kitchen), thereby creating the illusion that the user has actually 'moved' within the story. That is, providing that there are no extenuating circumstances occurring within the story, such as the reader's character being bound arms and legs to an immovable object.

However, if a kitchen is not lying to the west of the character's currently represented location, but instead, a solid rock wall is, the computer must then not provide the user with the description of the kitchen, but tell the user that he or she cannot walk through that rock wall (again, excepting extenuating circumstances that might happen to character in a work of science fiction or fantasy).

Facilitating 'interactive' virtual realities like this require an order of programming complexity far above the simple connection of textual pages and hyperlinks. For every virtual room an interactive storyteller must create, all possible exits and the rooms they lead to must be accounted for and programmed. Attempted user egression through non-

exits must be accounted for as well. Many interactive fiction creators opt for a standard default response such as, "You cannot go that way."

For every object installed within this virtual story-world, the author/programmer must account for the following provisions. When a user puts an object into the user's inventory, it must be *removed from* whatever room it was originally taken from. If the user asks, "What am I carrying?" or any other similar question that the parser interprets successfully, the story must respond with a detail of the character's inventory including all items the character has picked up. Conceptually, this is all very obvious; however, it is not as easy to implement in code, as practicing programmers understand. There must be manipulation of arrays or linked lists, item labels must be added and removed and added again within these programming-code containers, for each and every corresponding action the user undertakes in the virtual environment. If the user marries a computer character, the computer should update and prepare that computer character's future interactions with the user to reflect this fact. If a computer character is killed somewhere along the storyline, the computer too should keep the story world consistent, and take a care not to tell the user that the deceased character is walking about the virtual story world as if nothing had happened.

Other issues such author/programmers must consider involve time: is something the user wishes to do within the story at present too early or too late? or acceptable? How much time passes from one user action to the next? How much time should elapse from the beginning of the story to some end?

What are the effects of some objects on others? For example, if the user holds a blazing torch beneath a book, shouldn't the book be incinerated? But what if that user puts that same torch in a pool of water? Shouldn't then the flame be doused? These are all considerations that the author must first take into account, and then - implement.

What if a user does something unorthodox, like apply the flame of one torch to the flame of another torch? What happens in this scenario? Will the interactive story crash? Or will the author/programmer have conceived that some user might enter such a request, and have already designed the appropriate safeguard? Again, the more possibilities the author/programmer can consider and code, the better and more robust the story.

A classic example of interactive fiction is of course the aforementioned *Zork*, by Marc Blanc and Dave Lebling of Infocom – first officially released in 1982. *Zork* is arguably the first successful piece, and the archetype, of digital fiction. In the story, the user guides an adventurer around by entering text into the program's parser. The user's goal is to gather the twenty extant treasures of a desiccated and near-forgotten ancient empire, by plumbing the subterranean depths in which it now resides. Along the way the user encounters foes, puzzles, happenstances, and other challenges, whilst exploring the old empire's many rooms. A great mainstay of interactive fiction, as well as a great deal of fun. Please check the "Interactive" story-type diagram in the Appendix.

3.4.7. *Non-sequitur*

The non-sequitur story does not even have even a remotely similar printed counterpart. The premise of this story methodology is that from any given section of the story, the reader should be able to go to any *other* section of that story, without suffering loss of story connectivity or consistency. Throughout each element of the story there should be some chronic *theme*, but no sections *need* to bear a *direct chronological* relation to one another to work. No part of the non-sequitur story *needs* to follow or precede any other portion. What brings all the portions together is some common theme. It is to fiction as “abstract art” is to modern visual art. It is best illustrated by example.

Suppose an author creates a non-sequitur work of hyperfiction with six separate story sections. Each of the six sections contain links to the other five sections. The story should be designed so that the reader can easily and comfortably go from any one of the six story sections to the other without having to backtrack or read any of the other sections first.

Let us consider an example story called, “The Life of Bob.” It is a very short story comprised of six hyperfictual pages. Each page begins, “When Bob was [x] years old...”, in which [x] is a variable representing any one of six distinct ages of Bob which the author has chosen to write about. One section might begin with, “When Bob was 25 years old...” and another with, “When Bob was 82 years old...” If the story is written in a non-sequitur format, each element of the story is something of an independent story in *itself*. Perhaps when Bob is 82 years old the reader finds him drooling in a rest home, and the

reader may go on to discover in reading a different section that when Bob was 25 years old he was into heavy illicit drug use, and it is not only a marvel that he is alive but this explains his copious drooling propensities. However, the author may be presenting the discrete slices of Bob's life, and his or her purpose may be in illustrating how each slice of life is different, distinct, and individual. By presenting options allowing the user to *choose* to investigate the provided portions of Bob's life in a non-sequitur fashion, the author may be making an artistic statement, and/or trying to get the reader to consider something he or she had thought they'd understood from a different perspective – by considering it in a different way.

The ways in which these portions of Bob's life are connected are hopefully pretty straight forward. Even though the chronology of the story may be non-sequitur, they all contain Bob and issues about his life at different stages.

An example in which the connection might be more abstract and less straight forward may have to do with a concept of universal love among infinite space and within some recurring, paradoxical cycle of time. The alien D'roog'sloth'hal's love for space-marsupial Xeebot'X'12 may be the episode of one section of the non-sequitur story. From this powerful cosmic love, somehow, somewhere, a picoscopic universe may have been born as a result. The love between Cindy and Carl within this universe may effect some mysterious time-space continuum that subtly preserves the passion between D'roog'sloth'hal and Xeebot'X'12, and thus the two loves are symbiotic and help each other co-exist. Of course, this example is but a superficial hypothesis of a peculiar

application of discrete hyperactive fiction. It attempts to illustrate the way in which one story may be read before or after the other, with the *aggregate* effect being *unaffected* by the order. Of course, a work of non-sequitur fiction should probably contain more than 2 distinct story portions or episodes, but given that the author is not writing an actual work of non-sequitur hyperfiction at present, I hope the example will suffice.

A wonderful example of this type of digital fiction, far better than anything the author of this paper has provided, is 253, by Geoff Ryman. It is an exciting and highly cognitive work of hyperfiction. The story provides 253 words for each individual description of the 253 people that would fill the seven carriages of a Bakerloo Line train, in London England, providing that there was one person for each of the 36 seats on each carriage, and a driver. Through hyperlinks applied to a graphical, train-route map; seven 'car' maps, that serve to provide the names and capsule interests of each passenger in each seat numbered from 1 to 253; and links within character descriptions themselves, readers are provided with the following information about the characters of their choice: their "Outside appearance" (what they look like), "Inside information" (their personal history, both pragmatic and personal), and "What he [or she] is doing or thinking" while riding the subway train, prior to a crash that will kill almost everyone onboard at the time. The events of the crash and actions of its victims are described in seven separate sections, one for each car, collected under the foreboding heading of: "The End of the Line". The author Geoff Ryman asks, "Do you sometimes wonder who the strangers around you are?" and then strives to answer this through his beautifully provocative illustrations of

the simultaneous separation and connectivity among the 253 virtual passengers of thought and cyberspace. Please check the “Non-Sequitur” story-type diagram in the Appendix.

3.4.8. *Random Facets*

The random facets story type is one of the aforementioned story types with computer generated random events and consequences thrown into the mix.

For example, consider a reader is exploring a work of standard hyperfiction. If a particularly web-programming savvy hyperfictual author has devised a CGI-script or some other applicable device to allow for random elements to occur, when the user opts for his or her character to go to the bus station, the author may have designed there to be a 10% chance that the bus simply never shows up at all, and thereupon provides the reader an entirely new set of options and story sections that they would have otherwise never discovered.

Excepting the extra difficulties of implementing random facet additions to one of the aforementioned hyperfictual story types successfully, there are several advantages to doing so. Firstly, random elements within a story may instill it with greater realism, for life in the real world is not predestined as circumstances are laid out in a book (though some would argue that it is), but is subject to many *random* elements and events that are outside of the control of any single person. Including such phenomena in a story may make that story appear more realistic.

Such events too make the stories more exciting, involving, and fun. If the reader should know while exploring some storyline that there is always the *chance* that some *random act* may occur at any given moment – this may contribute to the reader’s sense of suspense considerably. For example, if the reader is confronting a madman with a gun in the story, surely the expense will be augmented if the reader *cannot* predict what will happen next, regardless of whether the reader opts to fight or flee – there is the chance that the gun might go off in either situation...and either action might be regardless...in the end.

This randomness increases the user’s interactivity in the story, and its vivaciousness. It is not *simply* a matter of following one predetermined path laid out by the author after the next – there is always a chance that that random facet of the story will come into play, and that things will suddenly be different.

Of course, it should be recognized that the consequences of all random events have to be written by the author before the story is presented in any case. Consequences of random possibilities are obviously not *written* by the computer itself. However, leaving some elements of the story to the ‘odds’ adds an interesting element to be sure. Please check the “Random Facets” story-type diagram in the Appendix.

3.4.9. *Random Progression*

The random progression story type is one in which any story section in a given *series* of story sections may follow any other single story section in the previous chronological story section series.

Let us suppose an author writes a story containing three chronological series each comprised of three separate story sections. Let us denote the three series as A, B, and C. Within each series there exists a section labeled 1, 2, and 3. We may think of the series as rows of story sections stacked atop each other with respect to chronology. Let's suppose the story as a whole is about Pee-Wee's spectacular touchdown. First the author presents us with the beginning of the story, and three options leading to the descriptions found in sections A1, A2, and A3. Suppose A1 entails Pee-Wee's attempt to recover an early game fumble, and his brutal tackle to the ground. Let A2 entail the ball being thrown to Pee-Wee, and him failing to make the catch. Suppose A3 is the story possibility in which Pee-Wee successfully acquires the ball but begins running in the wrong direction until he stops as a result of the stentorian jeers of the fans. In all of these early scenarios, things are not looking well for Pee-Wee.

Now let's consider the middle of the story, the denouement. Suppose the author has designed the story so that each of the three story sections in Series B can be accessed from any of the previous three sections in Series A. At present in section B, Pee-Wee is down & out – humiliated. To make matters worse, both teams score a touchdown and: in B1 – Pee Wee haphazardly trips beneath his team's star quarterback's feet, knocking the quarterback unceremoniously out of the game; in B2 – the visiting team score their

touchdown to tie the game by throwing Pee Wee into their touchdown zone while Pee Wee is holding the ball; or in B3 – the girl of Pee Wee’s dreams suddenly sits in the front row and while Pee Wee stares at her dreamily he gets hit in the face with the pigskin.

Now the author designs his victorious climax, with any section in C being a consequence of any section in B. To end the story, the author lets the user choose from C1: Pee Wee miraculously catches a hundred yard field goal at the very end of the game to save the day, or C2: Pee Wee runs a miraculous hundred yards from one field goal to the next to save the day, or finally, C3: Pee Wee, angst-ridden social misfit that he is, has placed a large, shiny, metal disk high above the stadium so that when the sun comes out at the end of the game, everyone over four feet is incapacitatingly blinded, and when a cloud passes over the sun providing all players a moment of respite, they spot Pee Wee, with the ball, over the visitor’s goal line, scoring the winning touch down and saving the day.

In this example, though there is a clear chronological dependency from one event to the next in the storyline, in contrast to the non-sequitur story type, we see it is evident that the reader may progress from any single section of any single series to the subsequent series, in whatever fashion, however random, that he or she desires. The composite of the events that describe Pee-Wee’s day and his eventual victory may be assembled in 27 different ways even though there are only a total of nine story sections. Please check the “Random Progression” story-type diagram in the Appendix.

3.4.10. Collaborative

Collaborative hyperfiction is, simply, hyperfiction written by a group of people collaboratively. This group may run from a pair of persons up to thousands, or even more. The members of the group may know one another personally, or they may have had no contact or connection prior to their own contribution to the hyperfictual work. They might all hail from the same town, or they might reside in different countries around the world. Collaborative hyperfiction will be discussed further in the final third of the paper. Please check the “Collaborative” story-type diagram in the Appendix.

3.4.11. Thoughts About the Aforementioned Story Types

Each of the aforementioned story types have their own assets and liabilities. Some, such as the interactive story, or a work of standard hyperfiction with a great deal of links, may be incredibly time consuming to construct. However, upon completion, marvelous, diverse worlds may have been created to which a happy reader may return repeatedly to explore different avenues of the same story structure. An object of random progression may not be very rich and deep in terms of its overall message, (though the skill and complexity involved in simply creating such a work successfully may be commendable), though it may simply be a lot of fun for the reader, or present him or her with content in a new and exciting way. Nevertheless, one might have said the same thing about a non-sequitur story type, and though, surely, the skill and complexity involved in the creation of our non-sequitur example 253 is commendable, it is difficult to say that it is *not* also quite rich and deep with regards to its overall message as well. As such then, it would

appear that the ultimate value of any story type an artist utilizes greatly depends on how well the artist utilizes it, and categorizing that *value* of any of the aforementioned story types should be left outside the scope of this paper. Please check the table summary of story types in the Appendix.

4. Collaborative Hyperfiction

One of the things that facilitates the possibility of collaborative hyperfiction is the options and opportunities allowed via the WWW. Typically, the process works as follows. First, some facet of the particular collaborative hyperfictual work in progress is posted on the Web, to the public. It may be the beginning of the story, an idea for a story, or something else. Accompanying this posting (and other pertinent sections that are subsequently added), an invitation is extended to readers of the work to get more involved by contributing to the actual story themselves. Because it is a work of *hyperfiction*, a prospective contributor would probably not submit only a portion of the story, but the story *path* (hyperlink) by which a new reader may discover that new portion of the story as well.

For example, let's suppose that at some point in a given story a protagonist, or the reader himself or herself, if the story is written from a first-person perspective, is situated in a shopping mall. Several options may be posed to the reader following a description of the setting and events surrounding the central character. The options provided may be the

products of a single person or several, depending upon whose contributed to this particular portion of the story.

Let's look at how this example might appear on a web page, as a piece of some greater story:

You are standing in the middle of a crowded shopping mall. Most of the people that rush past you move with great purpose and preoccupation. Considering yourself for a moment, you decide to –

Head towards the north end of the shopping mall

Head towards the south end of the shopping mall

Go into "Marlena's Fashion Boutique"

Go into the "Digital Bleep and Bit Arcade"

Head over to the "Happy Chunk's Ice Cream Parlor"

Sit on the nearby wooden bench

Now, at this point, a prospective collaborator might want to add a new option to this portion of the story – *Head into the local bookstore*. As such, that prospective author would submit this link description along with a description of the consequences following the reader's choice of that action. For example, a description of the bookstore:

The bookstore is small, quaint, and cozy. A light, relaxing scent of incense permeates the air. You decide to –

Stroll on over to the romance section to see what Fabio's up to these days

Head over to the fantasy section to see if Bilbo's been on any new adventures

...and so on.

Hereupon the current author may continue to expand upon the links and descriptions he or she is providing for this story, or leave that task to the next interested contributor.

Once the total number of contributors is greater than a single person, the work has become a collaborative venture. Of course, although this is technically correct, the term typically applies to works that solicit free-lance contributions submitted by people through the WWW.

So – how does one *go about* sending a submission to the owner or operator of a collaborative hyperfictual effort? There are usually two ways by which submissions may be made – through submission forms and emails.

Submission forms are regularly the method a prospective contributor uses when he or she wishes to remain anonymous or forgo great personal involvement. He or she simply fills out the appropriate form provided by the author/webmaster on the appropriate page,

clicks submit, and voila! The submission is sent to either the webmaster, page owner, or a group of persons (via a group email reroute) for consideration to be added to the ongoing story. Another possibility is that the submission does not go to some person or persons for some means of human approval, but instead is simply added to the story by a cgi-script or other web-based program. This is the fastest way to contribute to the girth of a work, but it comes at the expense of human editing or censoring. In some cases, however, that may be what some people want, and a good thing.

Contributors can use email to send submissions to a group of people, often for their review or approval. Submissions via email are a good and effective way of showing a significant number of people a contribution almost immediately.

One of the truly most amazing and significant elements of collaborative hyperfiction is the fact that people can contribute to a collaborative work in progress from *around the world*. That is to say, one contributor may reside in the United States, another may hail from Canada, another from Russia, still another from China, and so on and so forth.

As such, a sociological question may duly be posited. What effect or influence does collaborative hyperfiction have in creating distinct communities of people around the world? Does it foster communication between collaborators? Does it show people of different and societies and cultures ways in which we are all human? To what extent do collaborators become friends with other collaborators?

In the very least, to begin contributing to a piece of collaborative fiction, potential contributors must at least *understand* the language involved in all or the most central parts of the story. It is conceivable an ambitious and avant-garde collaborative hyperfictual creator could encourage and strive to create a *multi-lingual* work, but such a work would be a rare novelty at best, because it would require readers and contributors to *understand* what is being said in any language presented, and this is not a feasible expectation.

As such, to the extent that collaborators around the world wish to work on and create a cohesive story environment together, they must share a common bond of language. This necessity should then tend to promote the reader's aptitude in that language, providing he or she studies a given article long enough, and takes the necessary measures to achieve complete understanding. If a reader personally wants to strive for the maximum enjoyment and value he or she may derive from all reviewed sections of the story, it makes sense that the reader would then educate himself or herself with respects to all and any article of unfamiliar vocabulary that he or she may come upon.

The fact of the matter is, with hyperfiction, or any other format which contains some sort of textual basis, reading is involved, and thus it seems plausible to assume that in all ways in which hyperfiction resembles reading a novel, all the educational benefits pursuant to reading a novel would also occur in reading hyperfiction.

Nevertheless, different people read for different purposes. A speculator cannot easily and assuredly presume that every reader will look up every word with which he or she is unfamiliar. It would seem that *that* action would be a direct consequence of their *motivation* to do so.

What motivation to learn then, does collaborative hyperfiction inspire? I propose several. Firstly, the mere *interactivity* of any piece of functional hyperfiction is necessarily concomitant with a reader's attention and involvement, at least to *some* degree. When a reader makes a choice in a work of hyperfiction, the reader is effectually saying: I have read what I have been presented with to the extent that I have desired to. Now I want things to *change*. It may be that the reader wants the same elements of the story to be taken further. It may be that the reader wants things to be different. Nevertheless, the reader is *involved*, and asking for *new* stimuli. This is significant, for in contrast to the printed work, the only two options a reader has at any given moment traditionally are – *to read or not to read (that is the question!)*.

Thus I propose that when a reader *interacts* with a hyperfictual work, one may deduce that at that moment of their interaction and for some period thereabouts, they are interested, involved, and attentive, and are looking to become more so. Even if a reader is surfing through a hyperfictual site that they've deemed to be simply egregious – the mere act of continuation upon the part of the reader *to* investigate that site further is indicative of their interest in finding *more*, or seeing *more*, however better they want that material to be from what they are coming from. *Interest* equals involvement, it is grounds for

inspiration. Typically people follow their interests by definition of the word. Because hyperfiction is potentially *far* more interactive than a regular, static, printed work of fiction, it stands to reason that an interested party may investigate methods by which they may reap more enjoyment from the interests they are pursuing. That is, improving their reading skills and vocabularies – working on better understanding what one person is communicating to another through the written word.

Another way in which *collaborative* hyperfiction may provide more impetus to learn however, lies in the collaborative elements themselves. First, it might be important to a prospective contributor to present something that he or she feels is of satisfactory quality, and that will be well regarded amongst that person's fellow peers and collaborators. Secondly, and furthermore, however, *group feedback*, which the web facilitates in sundry forms and manners by way of emails, message boards, FAQs, other web site postings, chat rooms, voice to voice connections, and so forth, provide opportunities for collaborators to *give and take* feedback of myriad forms, and to utilize that social stimuli to hone and improve their work.

To consider the impact of such stimuli, and the communication involved from person to person, by way of comments, critiques, and compliments, is to delve into the realms of basic sociology and psychology. That these forms of expression have significant effects upon most people in any culture are not to be denied. Many people not only like, but strive for approval from their peers with regards to things that they do, and this very fact is an example of one of the social aspects involved in collaborative hyperfiction.

Feedback, approval, disapproval, comments, responses, posts, ripostes – all are elements of a burgeoning virtual community working on any given collaborative work of hyperfictual art. Surely contributors consider their connections to the work itself and others like them that have contributed to that same work. There is the sense of being a part of something, contributing something, being able to say – “I did a part of that...” and so on.

Simple feedback is not the only element of social camaraderie involved in collaborative hyperfiction however. As the members of Dark Lethe soon discovered, new ideas blossomed regularly, and collaborators could build from and upon those ideas - the ideas of each other - to rapidly create things new and fresh. Personal approval or disapproval is not the only social stimuli one derives from embarking upon such a collaborative venture – there is the hope and possibility of working on and creating things greater than oneself, and a single person – “two heads are better than one”, as the adage goes...

Still, these are not the only social elements involved in creating a work of collaborative hyperfiction. A person has the ability to talk to another involved on some project about things outside the scope of that project. New friendships may arise and form by using the mutual story as a springboard by which to relate. Working on collaborative fiction allows different people interested in similar ideas and themes to come together – to meet, discuss, and become friends. There are many communal aspects.

Finally, in collaborating with people around the world, collaborating upon the story directly, or simply communicating with one another, provides people the opportunity to learn about one another and the different cultures from which they come. A collaborator from China may incorporate an object into a story with which he or she is very familiar as a consequence of their culture. A co-author from England may inquire upon that object, and come to learn something that he or she previously had not known.

Collaborative fiction brings people interested in the same stories, themes, and ideas together. It creates a true community, albeit virtually, by which interested parties work, communicate, and of course, collaborate. Such possibilities, and such an art form were not possible prior to the advent of the Web. Collaborative hyperfictual authors are a subsection of that tremendous community of people who use the Web daily; that virtual community which shares cyberspace and sees the world online.

The quantity of people that may participate in works of collaborative fiction depends upon that particular work of collaborative fiction, and its purpose as designated by its initial creator. One creator may limit the number of authors to a hundred, another may set no limits.

The quantity of people working on collaborative fiction today is hard to calculate, however, certain issues related to the phenomenon may be considered and speculated upon.

Firstly, because collaborative hyperfiction is still a very new art form, considering the advent of the WWW itself is still relatively new, it may be deduced that that population involved is not yet very significant. One reason for this is because the Web offers *so many* different things a user may explore, diverse users are going to have very diverse ‘surfing’ priorities.

Also, despite the education level of people in industrialized countries today, compared with the net population of educated people in those same countries (if they even existed), a hundred years ago, many people are not interested in books, novels, or fiction, whether or not they are on the Web. Because the Web does allow multimedia content, and hyperfiction typically presents a smaller amount of fodder before a person involved makes an interactive decision, more people may flock to hyperfiction and collaborative hyperfiction as an art in general. However, for the most part, the people that find hyperfiction interesting are liable to be the same people that find regular fiction particularly interesting and moreover, worthwhile of their time. Because this population of people is not very great in comparison to the quantity of those people whom would rather spend their leisure time watching television, we may also assume that the population of people involved in hyperfiction on the web is in similar proportions.

Nevertheless, as more and more people get connected to the Internet and explore different things, including the many lures and advantages of hyperfiction as an art, it would be fairly safe to assume that the population involved in hyperfiction will continue to grow with time.

Two wonderful and very different examples of collaborative hyperfiction that may be found on the web today are “Addventure” and “Dark Lethe.”

The goal of the ‘*Addventurers*’ is to create and present vast, textual, first-person oriented adventures, in which the user traverses link upon link of a variety of choices created by collaborators around the world. Their goal here is to create a virtually *never-ending* story. By soliciting contributions from their reading/playing public, they greatly increase their chances of achieving this pretense. A thousand people working on a project may obviously produce more material for that project than one or two people could. However, the quality of that material produced is obviously open to question.

This leads to an interesting issue. Should collaborative hyperfiction creators review, revise, and possibly censor public submissions, or should they preach and practice an ‘anything goes’ philosophy? The bottom-line is, this all comes down to a matter of personal preference and the primary goal that a prospective creator is trying to accomplish.

In the case of the “Addventures”, many humorous, witty, and well written ‘rooms’ have been constructed alongside several puerile, ineffectual, and vulgar ‘rooms’ in the story. The variety of rooms have obviously been written by a variety of people, and are indicative of such. Nevertheless, given what the Addventures are trying to accomplish and *do* accomplish, as well as the sheer volume of ‘rooms’ that *do* work with regards to

language and content, story ‘rooms’ that deviate from the overall quality may not be hard to dismiss.

Nevertheless, some would argue that such deviations truly do detract from the overall quality and integrity of the work, and for these people, perhaps submissions that are reviewed with a critical human eye and censored so as to minimize the smallest number of persons offended while preserving the artistic merit of the work are desirable. The creator of “Dark Lethe” read and in some cases edited each submission adding it to the body of the story seen by the public [Winson, 2000]. As such, she was able to keep the theme and material of the piece more consistent, though one must always ask in the face of censorship - is it too much? Nevertheless, since the origins of the printed book censorship has existed, perhaps for the better and perhaps for the worse, and censorship in itself is not a controversy applicable only to collaborative hyperfiction, though the dynamics themselves may be different.

As such then, Dark Lethe is an *edited* collaboration built upon the theme of highly advanced and futuristic virtual technology practically indistinguishable from real life. The creator, Leonie Winson, chose such a topic partially because of the great many story paths it could lend itself to. Anything done in the real world today, and more, could acceptably fit within the environment of such a VR story. As such, its capacity for expansion was great.

To round things out, let's briefly consider three more different and unique examples of collaborative hyperfiction. No Dead Trees: An Interactive Novel, was created by David Benson as early as 1995. Benson's interest in soliciting submissions is clearly discovered in even a short perusal of the site. So far, over twenty contributors are *listed* on an author's page as having contributed to the collaborative 'gothic' work thus far, having spawned and added to the intermingling tales of such characters as Hakim, Pantillus, Sigiddur, Monica, Abduhl, Lord Wraith, Demon Ke/ock, and more... In addition to stressing a need for 'interactivity' (which is, of course, a requisite of hyperfiction by definition),

in his requests for submissions, Benson also asks for .html code, "stories, scenarios, sketches, jpegs of what the characters look like, mpegs of how they move, .au files of how they sound and other files," – an assortment of multimedia types that runs well beyond the average gamut for collaborative hyperfiction.

The Company Therapist produced by Christopher and Olga Werby, is a highly fascinating and provocative work of collaborative hyperfiction. The basic premise of the work entails making the sundry documents of the fictional *Dr. Charles Balis* – a San Francisco based, licensed psychiatrist who is serving as company psychiatrist for a computer-oriented company known as SII – available to the public. These documents include the doctor's personal journals, professional correspondence, computer files, "transcripts of therapy sessions, patient diaries and logs, doodles, personnel records, telephone conversations, and other written and graphical materials." A very interesting and distinguishing characteristic of the methodology of this collaborative work is that

contributing authors write for *separate* characters. That is to say, each author may write for one or more characters that he or she has created, and is encouraged to *continually* write for those characters, though an author is *not* encouraged to write for *another* author's characters. The producers state that by approaching this particular work of collaborative fiction in this manner, individual voices of characters emerge and can be portrayed more easily and aptly, and are not sacrificed or undermined by a collision of conflicting styles, decisions, and misinterpretations, despite the best intentions. The quality of The Company Therapist as a whole attests to the propriety of this design. The Company Therapist provides readers with windows into the fictionalized lives of over *thirty* characters as afforded by almost as many real-life contributors. The end result is a very realistic, rich, and deep collaborative representation and study of the annals of a hypothetical psychiatrist and his many disturbed clientele.

Some of the statements found at The Company Therapist website lend credit to the value of collaborative hyperfiction in and to society, in a variety of sociological ways. For example, a producer of the site says: "...many writers found it valuable to practice their craft and to be published in this manner. One writer used the opportunity to develop characters for a novel, while another fine-tuned their writing skills through practice. A third writer tried to call attention to a debilitating physical condition and the plight of its sufferers, while a fourth writer wanted their work to be discovered by an employer. All the writers enjoyed having their character come to life on the web." [sic] On the same page, the producer continues to tell how this project "served as a focal point for a community of writers", and also as "a unique opportunity for both writers and researchers

to study writing development over time... improvements in the writing style of an individual author can be...observed and measured. Researchers can trace the evolution of style and vocabulary of a particular writer or a group as a whole.” Finally, if the producers and contributors of this collaborative venture would not take credit for lending insight towards the processes of psychiatry and interpersonal, therapeutic dynamics (perhaps to avoid any liability in this department), it may be said, at least, that *some* readers will find some pause for reflection and analysis in the consideration and contemplation of the issues posed.

An interesting example of a work of collaborative hyperfiction to be built or in the process of being built is entitled “*Another One Along in a Minute*”, and is sponsored/produced by Geoff Ryman, author of 253. In fact, “*Another One Along in a Minute*”, is a collaborative *continuation* of that very same solo-authored work. At the same site the author is soliciting 300 word descriptions (“one for each second of time” (five minutes)) of the characters aboard the train stalled behind the one in 253, detailing the thoughts and actions of the people within that vehicle in a similar fashion. Ryman acknowledges receipt of some submissions, and claims “a new site to hold them is in preparation.”

For a summary of these examples, please check the collaborative hyperfiction table in the Appendix.

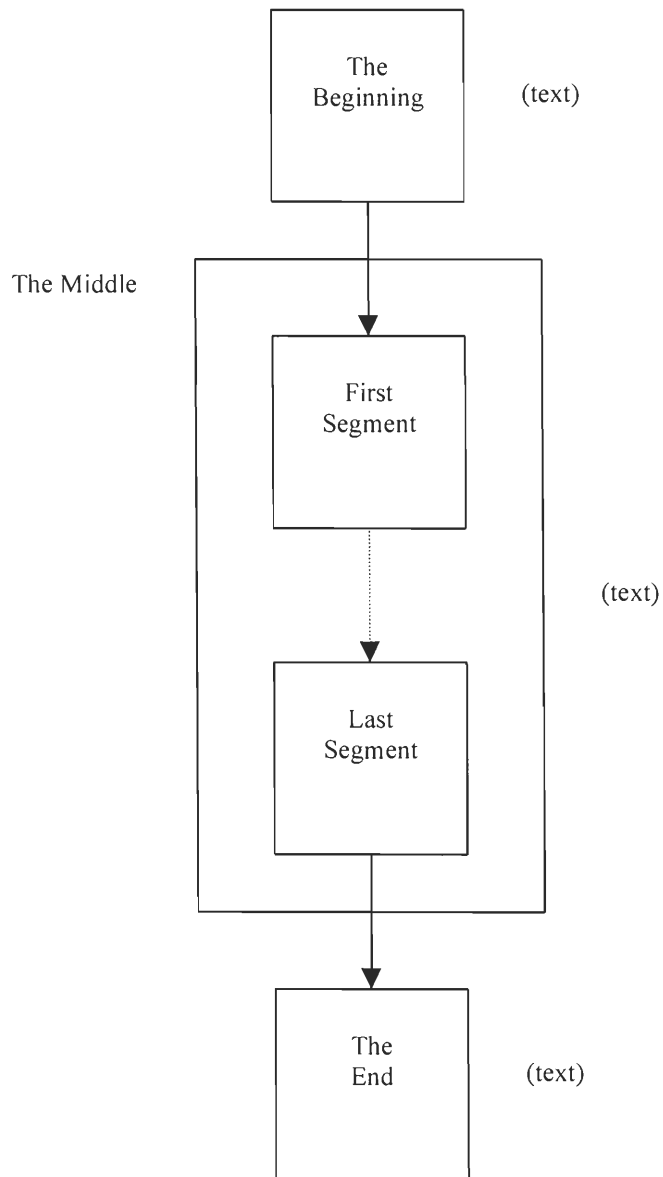
5. Conclusion

In this project we described the technological aspects behind the World Wide Web, and how these technologies facilitated a new variety of story types. We surveyed many sites on the Internet in which such story types are displayed and maintained. We also developed and instilled our own taxonomy to distinguish the characteristics of each story type discussed. We constructed a set of diagrams and tables in order to better illustrate these distinctions.

In addition to considering the new types of stories that current technologies allow us, we considered collaborative hyperfiction in especial detail. We discussed the manners in which it can be created. We also considered some of the sociological aspects involved in the creation of a work of collaborative hyperfiction, amongst fellow contributors.

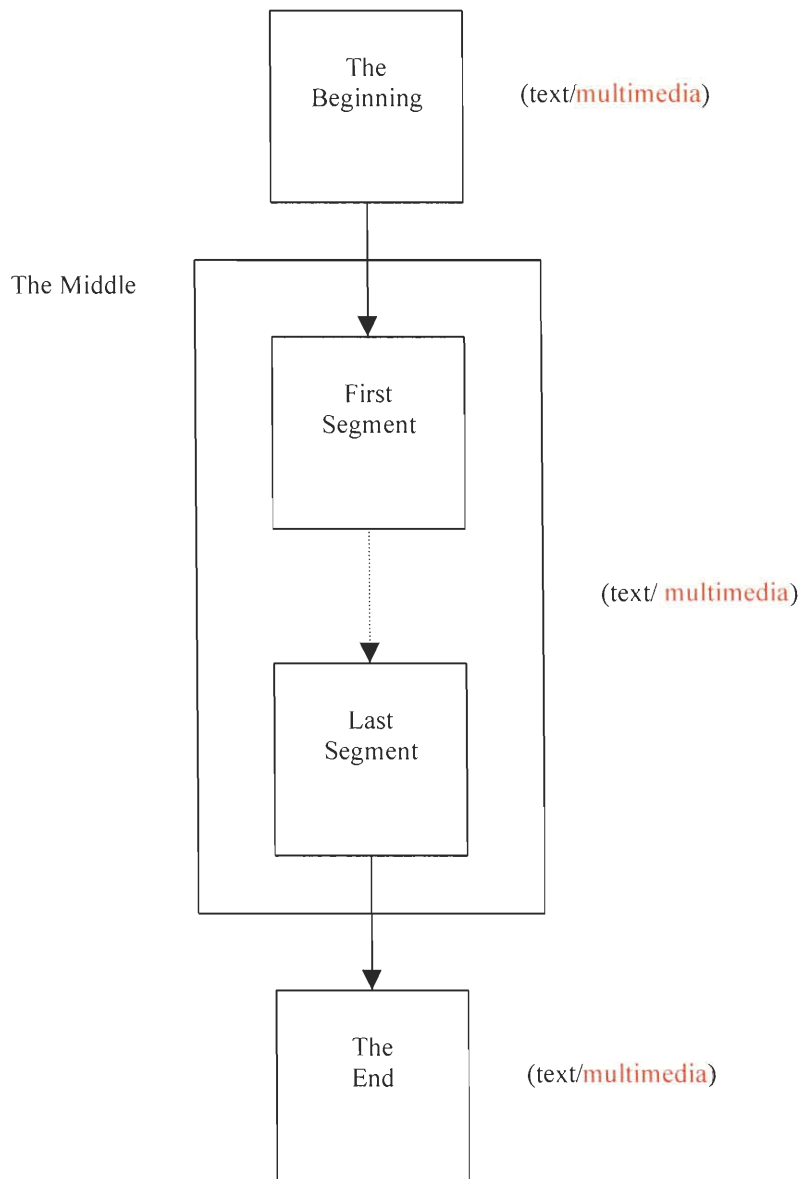
Those that may wish to continue the work started by this project might assemble a more replete collection of examples that demonstrate those qualities inherent in the different types of digital fiction discussed. Another option one might pursue is in the consideration of the sociological ties between collaborative hyperfiction participants by employing user surveys and generating or collecting statistical data. Yet another path one might follow would be in exploring the educational repercussions of the reception and creation of the aforementioned story types. In any case, this burgeoning extension of the classic art of storytelling as facilitated by developing technologies today provides a variety of opportunities for research and analysis that are almost as rich and bountiful as the diversity of stories that shall inevitably emerge as a result of new possibility.

Classic Linear Story



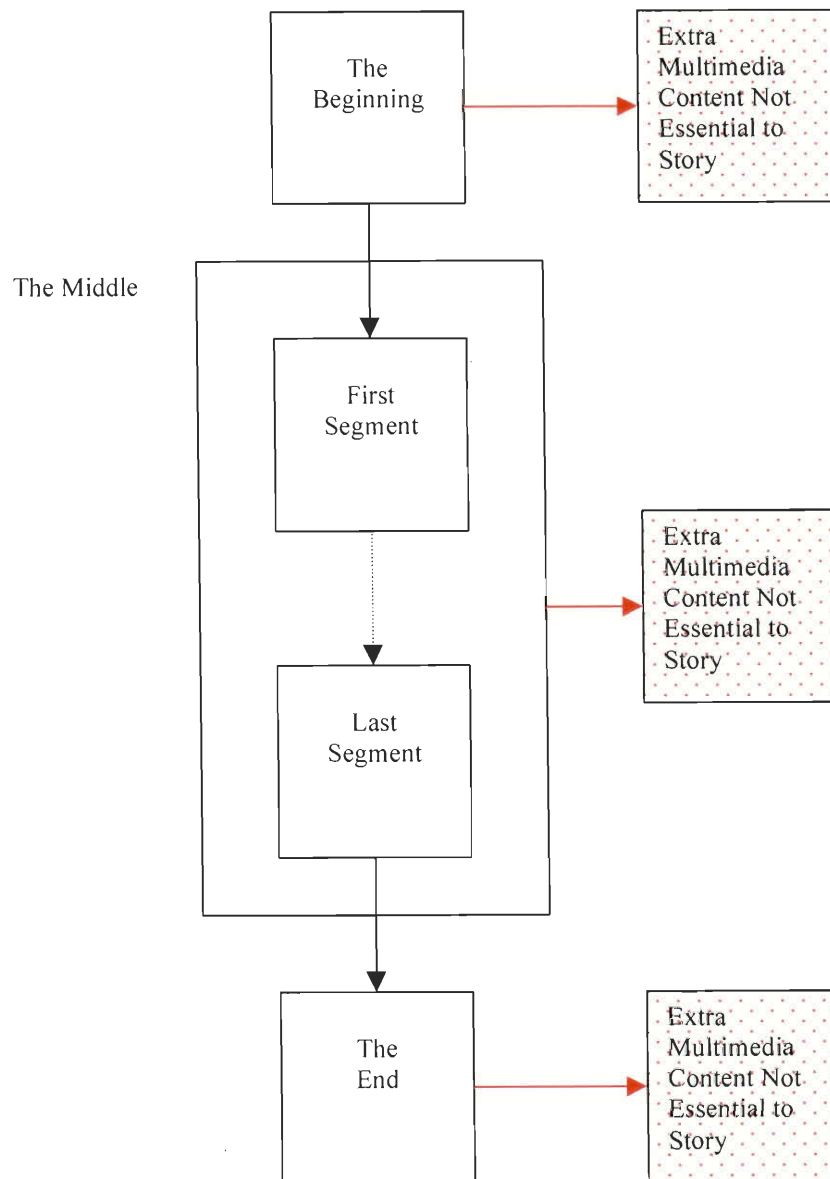
Classic Linear Fiction is comprised of text, and progresses from beginning to end.

Augmented Linear Story



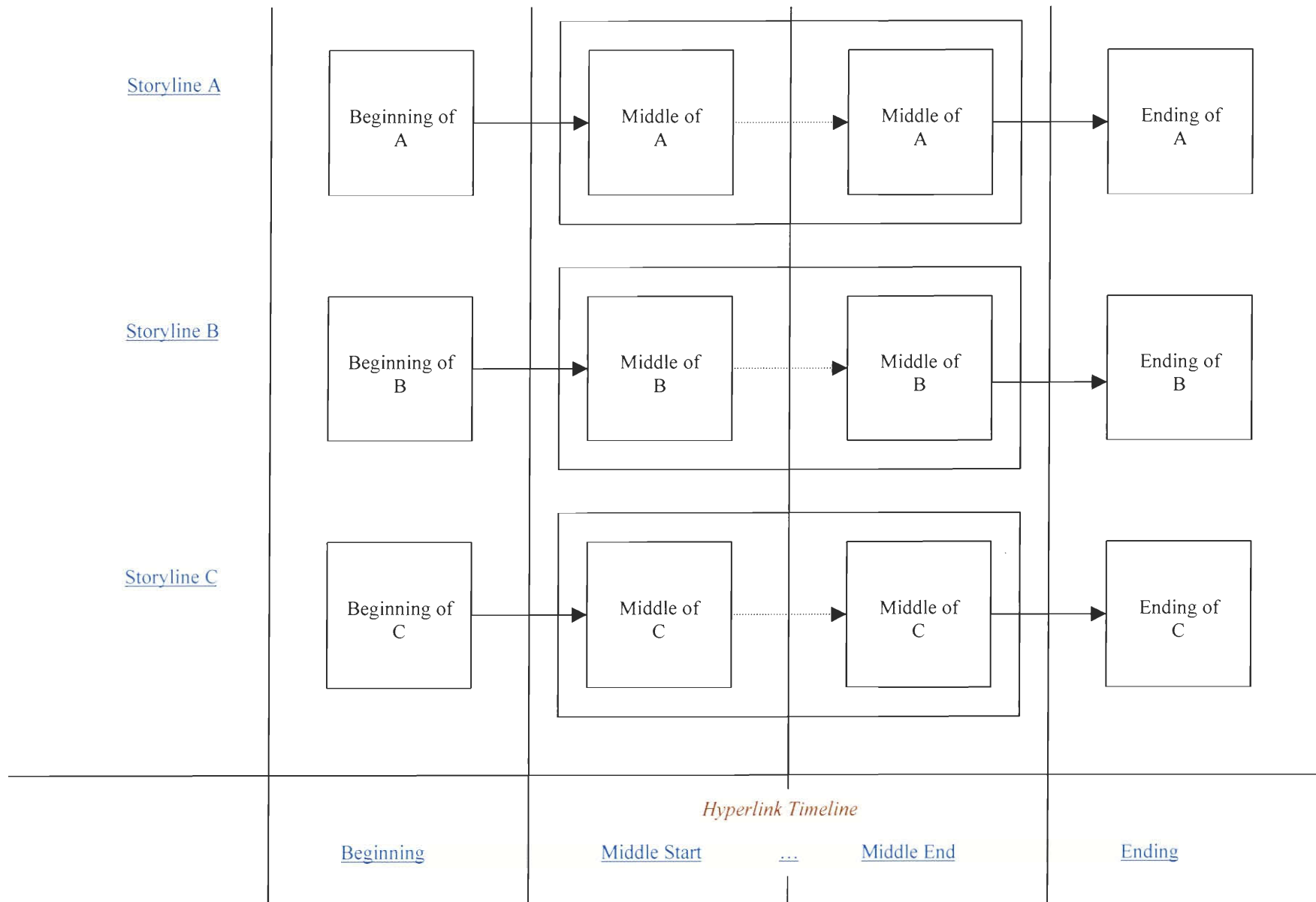
Augmented Linear Fiction follows the same path as Classic Linear Fiction, though multimedia is now available. Because multimedia is available within all of the following types of hyperfiction, the '(text/multimedia)' content option should be considered implicit henceforth.

Enhanced Linear Story

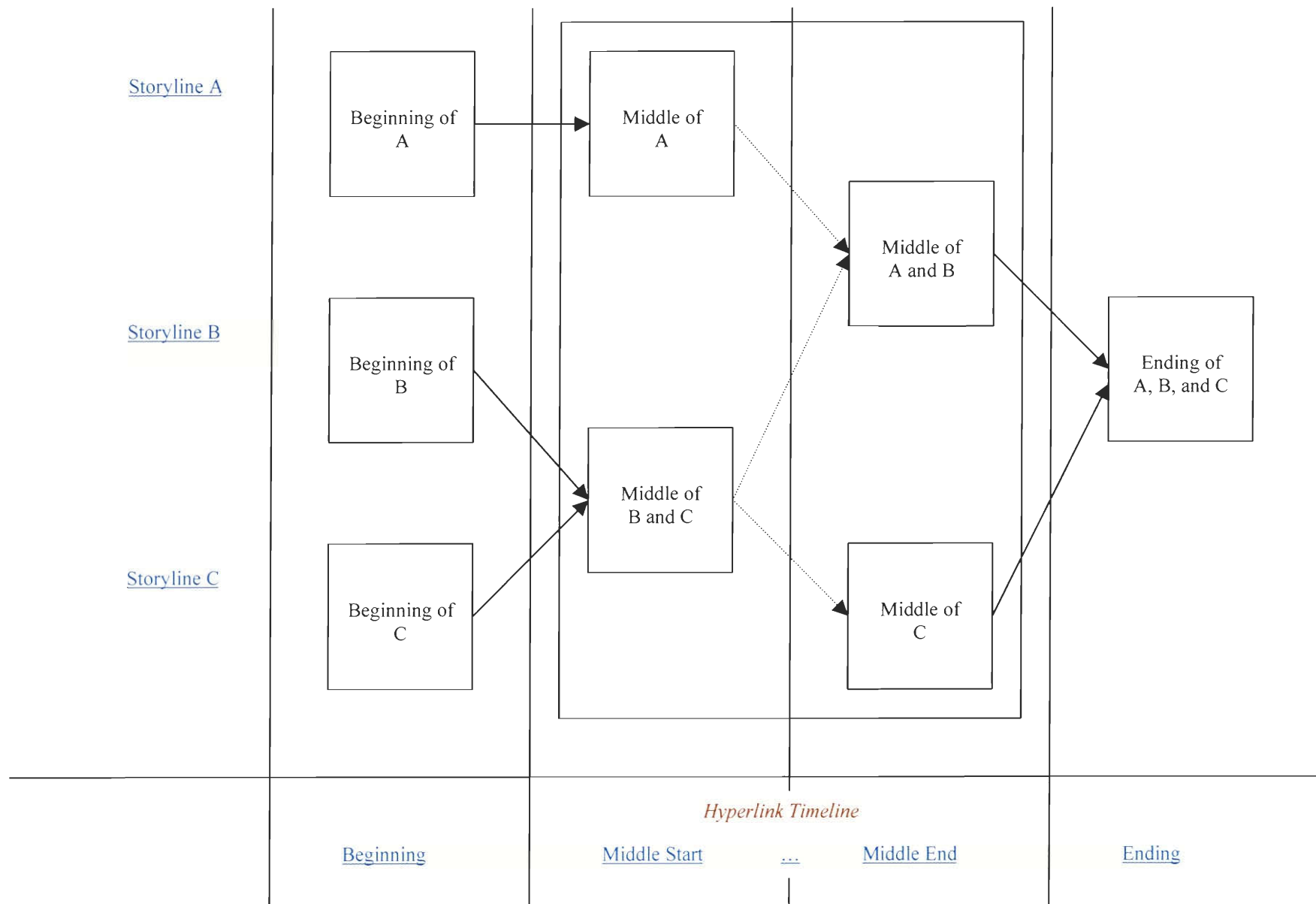


In Enhanced Linear Fiction, optional links (denoted in **red**) are inserted at the author's discretion, leading to information that the author feels may enhance the story. This information, however, is nonessential, and a reader can traverse the story in a linear fashion without ever having to explore a single enhancement.

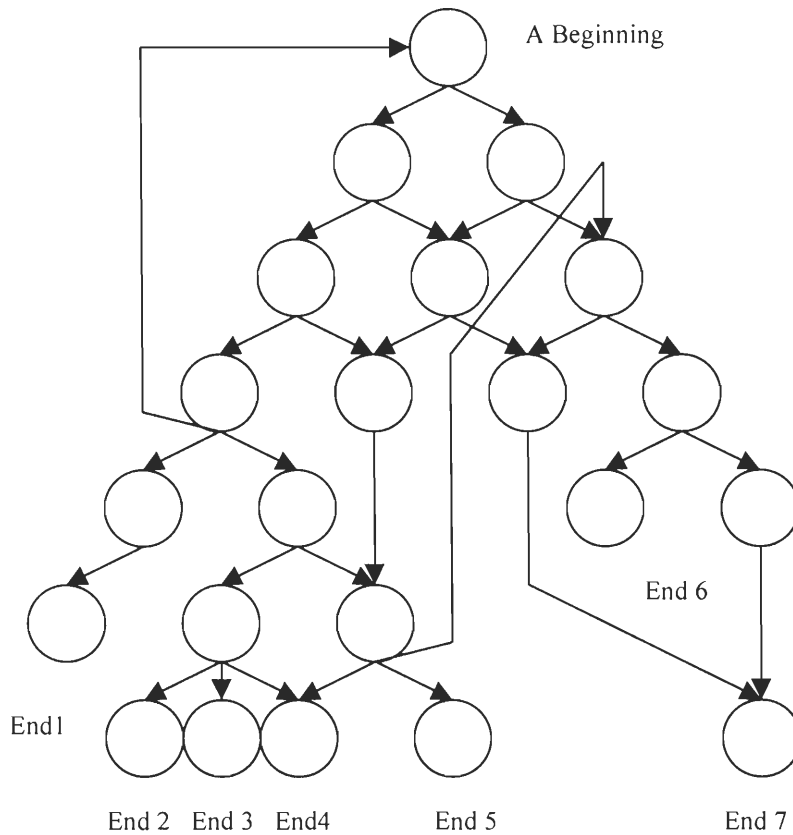
Parallel Story Type



Intersecting Story Type

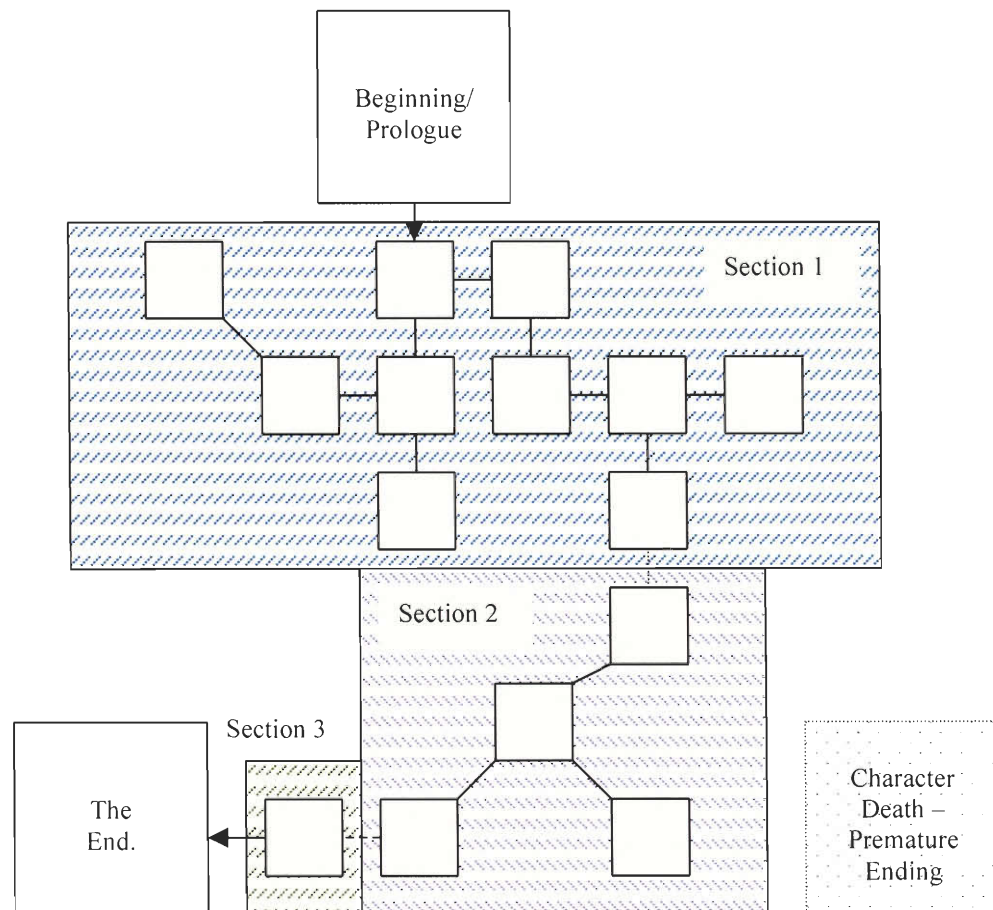


Standard Hyperfiction



Standard Hyperfiction presents at least one, though typically two or more different options a user may choose from within each section of the story, with the exception of ending sections. In our example diagram, there is a single beginning to the story, and seven different possible endings. Nodes or story sections not labeled are intermediary or middle sections of the story. An ending may be defined as a section that presents no options that further the story along the present story path. A path is comprised of those story sections a reader has read as a result of the particular links they have chosen to direct the story in a certain way. When a path comes to an end, the story is over, though the reader is free to start the story from the beginning and to choose a different path. In our example, we see that some nodes or story sections lead to the same subsequent story sections, and some do not. It is important to note as well that not all options lead to an eventual end. There is one option in our diagram that returns the user to the beginning of the story, and it is conceivable that the user could choose to go back to the beginning whenever presented with the ability to do so. Such a cycle would not produce any new content for the user, however. Notice in contrast to the linear story types the *multiple* paths available from most story nodes. This is an important distinction and is why this method of storytelling may appropriately be labeled *dynamic*.

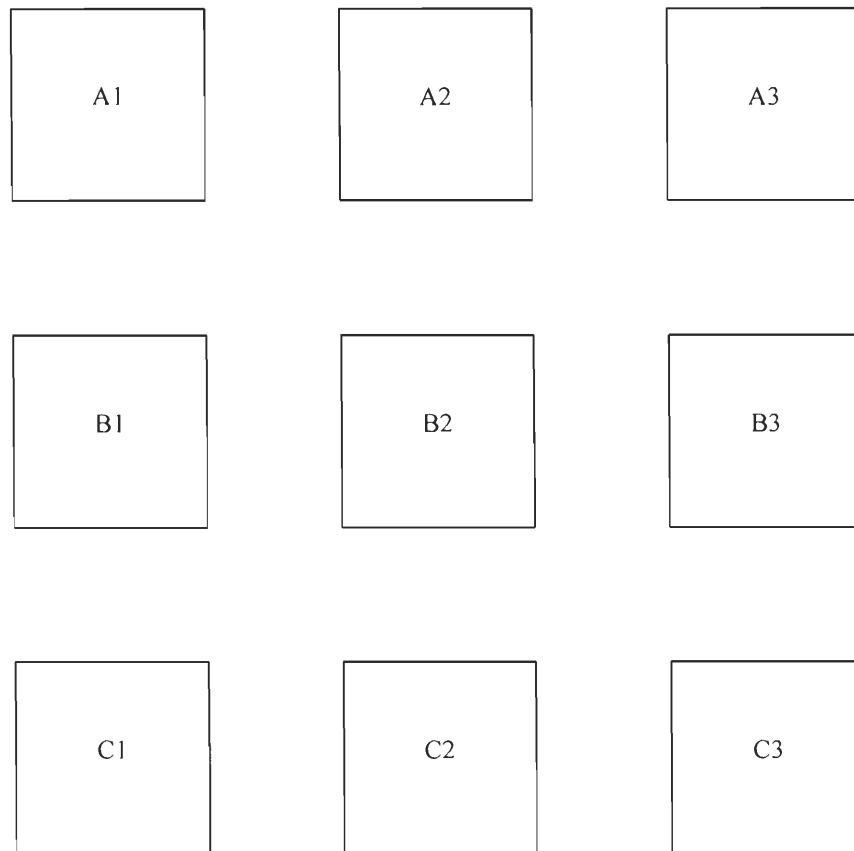
Interactive Story Type



The Interactive story type is certainly the most complex story type to create of those being discussed. It is also potentially the most engaging, however, because it is the most interactive. It is the only story type being discussed that cannot be implemented purely in HTML, because the Interactive story type requires implementation of a parser that can process user input in the forms of words and phrases. Providing the user a set of hyperlinked options in this story type is not enough.

Sections of the interactive story are usually classified as rooms, which are represented by the smaller white boxes in the diagram above. Using textual commands to specify direction, the reader/user navigates the rooms, to uncover room descriptions, items, and puzzles. Usually not all rooms are available for exploration in the beginning of the story. Instead, certain tasks have to be performed, which trigger flags within the code. Once all the pertinent flags have been triggered in a certain section, the user is free to go on exploring the next section. To reach the 'best' ending in this type of story, the user traverses all possible sections, performing all required tasks, idealistically enjoying the story interactively throughout. Some stories allow users to 'die' if they commit a wrong move, thus sending them to the 'death' ending before the rest of the story has been explored.

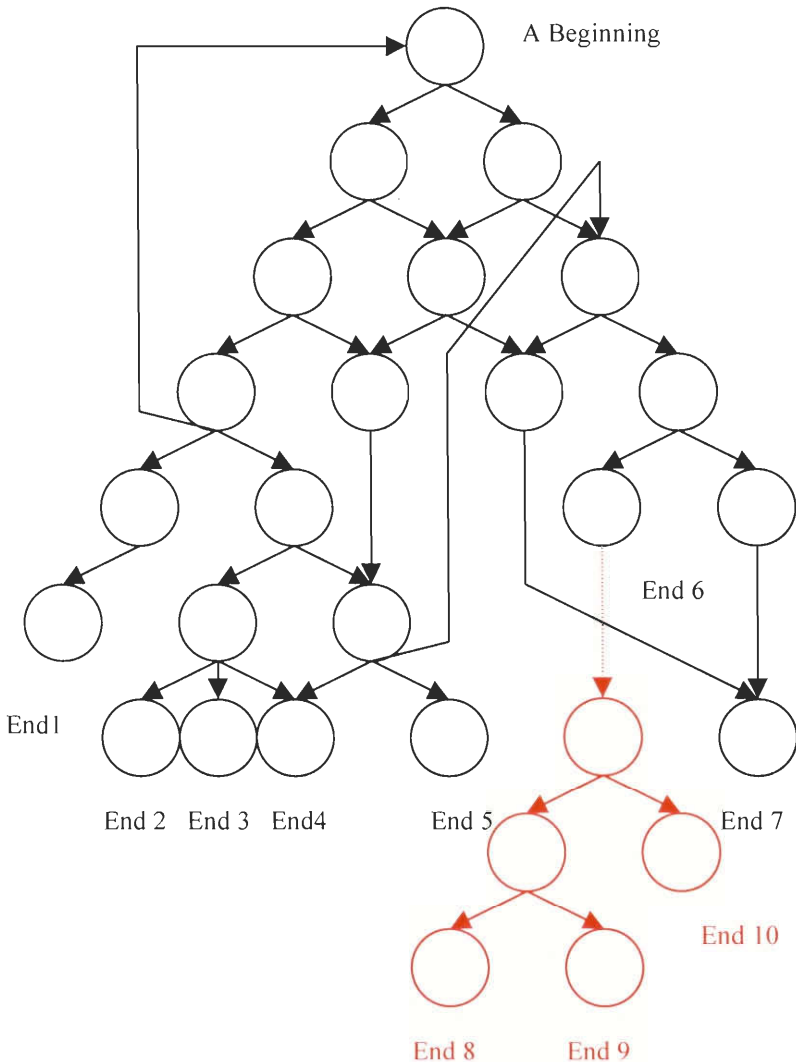
Non-Sequitur



A non-sequitur story is a story in which a reader may read any and all sections of that story in *any* order the reader pleases. Conceptually, the only link the sections have with one another is that they share a central theme – there is typically not some type of chronological order that must be adhered to when reading this type of story.

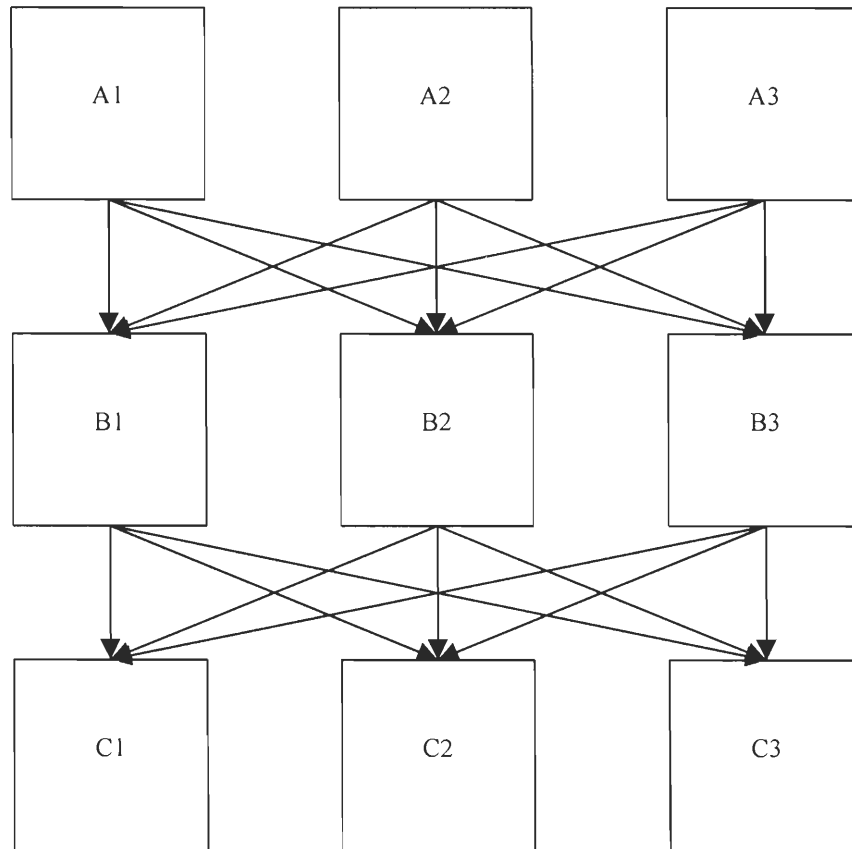
In our diagram above nodes are given arbitrary labels for reference purposes, no special ordering should be inferred. In this example, and providing the story has been written correctly, a reader may read either section A3, B1, or C2 after reading section B2 – there is no order sections should be read in. ‘Order’ is not a matter of fundamental consequence in this story type.

Random Facets



In a story with random facets, some story sections may be read or uncovered only if some random element occurs. In the diagram above, we have taken our sample diagram of Standard Hyperfiction, and added a random element to the story node labeled 'End 6'. If the random element is met (suppose the computer randomly picks a number from 1 to 3, with a drawing of 3 indicating the random element occurs), a new section of the story is revealed, allowing the reader to explore three new possible endings and a total of five new nodes. Random facets may conceivably be added to all story types, and without limit. They may be added to any node, including nodes that are only accessible if previous random elements have been met. Finally, it is possible for a story node to have more than one random element, randomly directing the story in more than a single way.

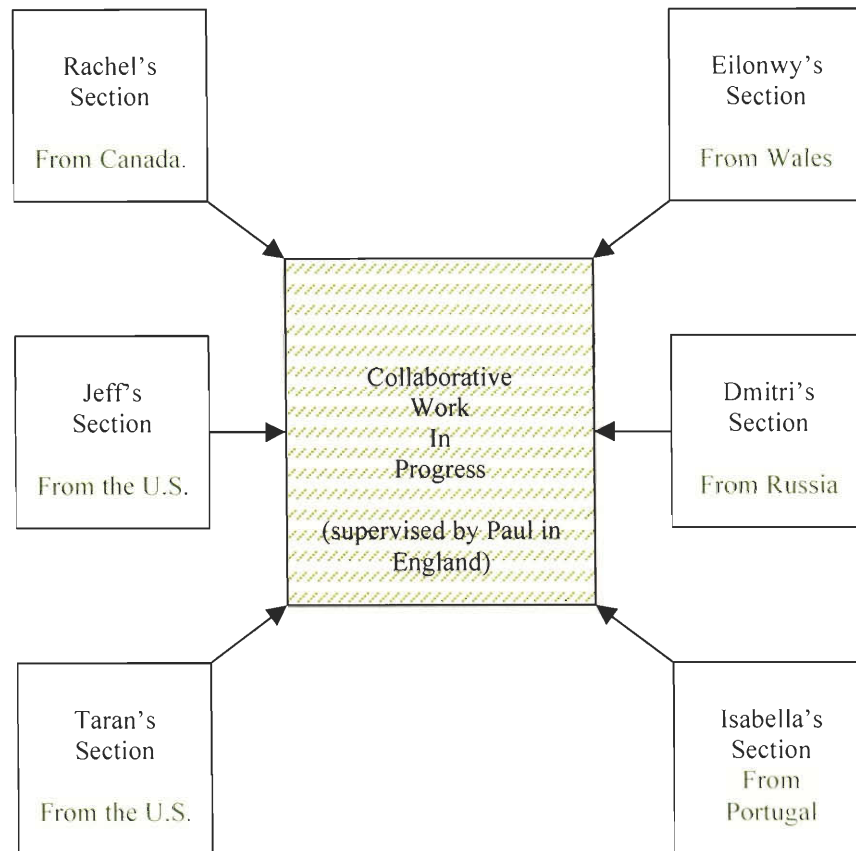
Random Progression



A story with random progression is not like a story with independent sections in which sections needn't be read in any particular order. Nor is it like a linear story type in which any given section (with the exception of the beginning and end) has one and only one section that follows and precedes it. There is chronology in a story with random progression, but it is from section *series to series*. That is to say, any section in a given series may follow any other section in the series immediately before it. Excepting this ordering, if elements of all series are chosen at random, the story should still work.

The diagram above shows that any section in series A may be followed by any section in series B and thereafter by any section in series C. The aggregate of these parts comprises a story with random progression.

Collaborative Hyperfiction



Collaborative hyperfiction is, as the name implies, written by several collaborators. With each contribution added, the work continues to grow, and nears completion, if it is ever supposed to end. Contributions can come from a variable number of people, and from variable places around the world. These people might be collaborating on a work of standard hyperfiction, parallel hyperfiction, or one of the many aforementioned story types. They may be submitting only one story section a piece, or several story sections.

In the example above, six people are currently adding to the collaborative work in progress. Two are from the U.S. The rest are from Canada, Russia, Portugal, and Wales. The work is being supervised by Paul, who lives in England. The story itself might reside on a web server in England as well, though it does not have to. Paul may be editing and adding submissions manually, or he may have installed a program that automatically adds each submission received. As we can see, there are many variables and possibilities involved in constructing collaborative hyperfiction.

<u>Story Type</u>	<u>Defining Character-istics</u>	<u>Digital Example</u>	<u>Printed Homologue</u>	<u>Digital Advantages</u>
Augmented Linear	Like a linear story but augmented with multimedia content.	“Baby Jason”, http://www.netrlover.com/~king skid/Jason/baby.html	Book with pictures (photos, sketches, et cetera).	The digital format can contain movies, music, and sound, in addition to static pictures, more of it, and without expensive printing costs.
Enhanced Linear	Like linear but with <i>optional</i> content enhancements a reader may <i>choose</i> to examine, which are independent of the flow and cohesiveness of the primary content.	<u>The Heist</u> http://www.mindspring.com/~walter/1.html	“Pop-up” book.	How does one incorporate <i>optional</i> content in a printed book? An appendix? Clumsy at best. The disadvantages for <i>augmented</i> may also apply.
Parallel Storylines	Although storylines are interrelated, they progress in parallel, or intersect minimally.	?	?	How are the parallel storylines placed <i>physically</i> in the book? Clumsily at best. A digital timeline affords ease of comparison and analysis.

<u>Story Type</u>	<u>Defining Character-istics</u>	<u>Digital Example</u>	<u>Printed Homologue</u>	<u>Digital Advantages</u>
Intersecting Storylines	Like parallel, though sometimes different storylines clearly intersect.	?	<u>The Lord of the Rings</u>	Same as the digital <i>parallel</i> advantages.
Standard Hyperfiction	Hypertext is used to allow readers to <i>influence</i> the <i>progression</i> of the story. Multiple paths.	“Lies” http://www.users.interport.net/~rick/lies/lies.html	<i>Choose Your Own Adventure</i> book series by Bantam books.	Page changing in printed form to reflect ‘choices’ made soon gets out of control. Sheer volume can quickly grow beyond a reasonably printable scope.
Interactive	User directs story by typing commands into parser. Story responds. Reasonable amount of programming skills required to construct.	<i>Zork</i> .	N/A	Books. They just can’t do it.
Non-Sequitur	Any denoted <i>section</i> of a story can lead to any other, w/o jeopardizing story integrity as a <i>whole</i> .	253 http://www.ryman-novel.com/home.htm	?	Facilitated more easily digitally like standard hyperfiction. How would this be done in a book? Would a user flip to a random page?

<u>Story Type</u>	<u>Defining Character-istics</u>	<u>Digital Example</u>	<u>Printed Homologue</u>	<u>Digital Advantages</u>
Random Facets	A story in which a user makes <i>choices</i> (standard hyperfiction, interactive...) in addition to and in response to random story events.	?	N/A	Can't be done in printed form.
Random Progression	<i>Any</i> story section in a given story <i>series</i> can lead to <i>any</i> story section in the <i>following series</i> .	?	N/A	Can't reasonably be done in printed form.
Collaborative Hyperfiction	People, potentially living around the world, contribute in a variety of possible fashions to a growing written work of hyperfiction online.	Addventure http://www.addventure.com	N/A	Firstly hyperfiction is digital by default. Secondly, organizational and postal delays in constructing collaborative fiction via print is extreme.

<u>Collaborative Hyperfiction</u>	<u>Web Address</u>	<u>Interesting Characteristics</u>
Dark Lethe	http://www.innotts.co.uk/~leo/index.html	Started as a school project; submissions are <i>edited</i> ; submitted via forms or email; work revolves around theme & concepts of Virtual Reality
Addventure	http://www.addventure.com	Collaborators add different ' <i>rooms</i> ' to story; submissions are edited and censored nominally; stress is on fun and story size over quality prose; hundreds of participants; theme is classic adventure
No Dead Trees: An Interactive Novel	http://www.nodeadtrees.com/NDT/novel_main.html	Begun in 1995; sundry character strains submitted by various contributors; story revolves around gothic themes; solicits extensive range of multimedia submissions
The Company Therapist	http://www.thetherapist.com	Extremely professional; chronicles annals of psychiatrist Charles Balis & patrons; each character strain is developed by only <i>one</i> author; over 30 characters created & portrayed; almost as many contributors
Another One Along in a Minute	http://www.ryman-novel.com/info/one.htm	Work in progress; not yet posted; extension of solo-authored hyperfiction <u>253</u> ; solicits 300 word character descriptions of passengers in train behind that detailed in <u>253</u>

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