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Interactive Fiction: Literature in the Making

Andrew Armour

Such terms as “literature” and “the novel” are notoriously difficult, some would say impossible, to define. This has never proven to be an insurmountable problem, however, because there is no shortage of works which can be safely placed within these categories. The problem arises when one is dealing with borderline cases, for the borders are decidedly “fuzzy”—something which is after all only natural. Lofti Zadeh, who first expounded fuzzy logic two decades ago, puts it this way: “fuzziness is pervasive [in] . . . humanistic systems, that is, systems in which human judgement, perceptions and emotions play a central role.”¹ In this paper I will introduce a relatively new textual development which lies on the misty borders of literature and is known as “interactive fiction”, or “living literature”. Already boasting protean possibilities, interactive fiction will be examined for possible inclusion—now or in the near future—within the fuzzy set of literature, with a view to forecasting a future direction for the novel, which is so often depicted as an endangered species.

Many artists have explored the possibilities of audience participation. The performing arts are somewhat complex in that they normally involve three parties: composer/playwright, performer, and audience. The interpretation offered by the intervening performer—directed or otherwise—has always been an accepted part of the formula, although the scope of such interpretation can be expanded, as in the case of aleatoric music, which involves the supposedly random decisions of the performer. However, there have been instances where the listener is invited to join in the creative process: a John Cage record comes with a unique computer printout of instructions for “playing” the volume, treble and

bass controls of one's stereo system while the disc is turning on the platter²⁾. In drama, the greater potential for audience participation has often been exploited by avant-garde theatrical companies. Turning to the world of literature one discovers other possibilities, and other problems.

In literature, it is the text which comes between author and audience. Typically a text is unidimensional and unidirectional, a linear progression from start to finish. The lure of literature lies, of course, in the stimulation of the reader's imagination, his inner world. Depending on the character, experiences, education, and mood of the reader, the same text may produce varying mental images, associations, reactions and emotions. Nevertheless, the external, physical freedom of the reader is limited to the speed of ingestion, making the process of reading essentially passive and thus usually relaxing.

From the time of Sterne, however, authors have attempted to modify the normally ordered progression of the novel and thus make sometimes unusual demands of the reader. This is frequently achieved by dislocation, convolution and fragmentation. Chronological order can be destroyed, as in Aldous Huxley's *Eyeless in Gaza*, where dislocation of the time sequence is employed to create important juxtapositions; in Kurt Vonnegut's *Slaughterhouse Five*, it becomes an essential part of the plot. The use of multiple perspectives is another technique: four different views of the same events and characters in Lawrence Durrell's *Alexandria Quartet*, and two simultaneous narratives (in parallel columns) in John Barth's *The Floating Opera*³⁾. Moreover, one of the supposed objectives of the *nouveau roman* was to cause the reader to work hard at his reading, usually by denying him the support of a reliable narrator or a clear plot. But although such approaches may appear to add a new dimension, the fact is that the progression is still linear.

Linearity can, of course, be transformed into circularity—as in James Joyce's *Finnegans Wake*, or Barth's frivolous “Frame-Tale”⁴⁾—but it is still unidirectional. The reader is granted no more freedom than he would enjoy with traditional novels.

Nevertheless, in addition to being didactic and diverting, some novels

can indeed be heuristic, generating an environment in which the reader makes decisions and discoveries by himself. For instance, in *Pale Fire*, Vladimir Nabokov presents a poem in four cantos, together with a lengthy commentary that appears to have been written by a madman; the reader must find his own way through the maze, jumping from one part of the work to another in a distinctly non-linear progression.

More often, the author provides a set of alternatives. Stories for children invite the reader to either climb the tower or explore the secret garden, each choice requiring that one jumps to another page. In serious fiction, a choice of both Victorian and modern endings greets the reader of John Fowles' *The French Lieutenant's Woman*⁵⁾. In this case, one might say that the "choice" is only superficial, since the different versions are obviously expected to be read in the order presented. More unusual is Marc Saporta's *Composition No. 1*, which consists of separate pages intended to be shuffled like a pack of cards, giving endless variations in the sequence of episodes in the hero's life⁶⁾. Two famous exponents of such techniques are Julio Cortázar and B. S. Johnson.

Cortázar (1914–84) was an Argentine novelist who experimented freely with the narrative form, producing what are sometimes called "open novels". His major work, *Rayuela* (1963), is completely open: the reader may read its fifty-six main chapters in the chronological order, or alternatively insert ninety-eight "expendable" chapters in a sequence suggested by the author⁷⁾. Depending on the choice made, the "accomplice-reader" (Cortázar's terminology) will arrive at one of two completely different experiences. Other arrangements are also possible.

B. S. Johnson (1933–1973), a British novelist and poet, also "beligerently pushed at the frontiers of the novel"⁸⁾, while making a somewhat naïve and puritanical attack on the "lies" inherent in fiction. His fourth novel, *The Unfortunates* (1969), consists of twenty-seven sections in a box; the order in which the sections are read is left up to the reader. It should be pointed out that, rather than trying to involve the reader in the creative process, Johnson was aiming at expressing the essential randomness of the material, free from "the artificial sense of order imposed by the conventionally bound book", trying "to represent

the random workings of the mind within the enforced consecutiveness of the book.”⁹⁾

It is interesting to note that *Genji monogatari*, the eleventh-century classic of Japanese literature (sometimes referred to as the world’s first novel), was originally produced in separate, unnumbered quires. Over the centuries, an orthodox, chronological ordering was established, but there is considerable doubt as to whether this order is the same as that in which the quires were originally written by Murasaki Shikibu¹⁰⁾.

When evaluating such works as *The Unfortunates*, it is easy to conclude that—fuzzy or not—there are limits to the habitat of the novel. In fantasy, Vonnegut can speculate about such developments as the Tralfamadorian novel—in which all events take place at the same time—but real-life experiments that venture too far into the disintegration of the text not only cross the fuzzy border, they also forfeit accessibility, the chance of reaching anyone outside a small, cult audience. Avant-garde writers do their best to “expand the envelope”, to stretch the skin of what they perhaps view as a sort of rubber balloon, not yet inflated to its full potential. But the edges are porous and insubstantial. The pioneer only succeeds in propelling his work and even himself into obscurity, while “the novel” remains essentially unchanged. And to a world that equates change with progress, this situation suggests death.

When people discuss the future of the novel, and its possible demise, the assumption is that, whatever else changes, the novel is essentially a text-based phenomenon. This rules out cinematic works, for instance. Over the centuries, literature has developed from the oral mode, to manuscripts, and thence to paper. The printing press and, more recently, the paperback have brought literature to the masses, but they have also brought with them problems, such as acid paper and rising costs. In the interests of efficiency, more and more textual matter—whether literary or otherwise—is being electronically processed. Many authors already compose with word processors, thought processors, style and spelling checkers, and even on-line thesauri. At the other end, there are “on-line novels”, which are read from a computer screen and may never find their way onto paper. Similarly, reference

books are being rapidly digitized—a very welcome development.

Of course, reference works are not true literature, and the aesthetic and tactile pleasure to be gained from handling and reading a bound book is undeniable. Printing still has a long future ahead of it. Nevertheless, electronic media are making a very significant contribution, one which may herald a new future for the novel: interactive fiction.

Interactive fiction is usually published, much like printed fiction, by so-called software houses, the most successful of which is Infocom of Cambridge, Mass. Just as the medium—floppy disks—is high-tech, so too are the names of the various collections: Spinnaker's Telarium line and the Synapse Electronic Novel, for example. The drawback is that the reader must possess a microcomputer to "read" or interact with any work, but it is a tool which opens up new horizons. A computer could, for instance, very easily shuffle Saporta's pages and provide thousands of variations within just a short time. The same could be done with *Rayuela* and *The Unfortunates*, because in these the reader's "participation" is really limited to organizing, a mechanical procedure. Fortunately, in the late 1960s, two Americans devised a far more imaginative way of utilizing the capabilities of the computer. The result was simply named *Adventure*⁽¹⁾.

What William Crowther and Donald Woods made use of was the computer's ability to handle logical branching patterns, dendrograms of choice and consequence. This concept has also found its way into children's books and board games (often generically referred to as "Dungeons & Dragons", after a game of that name), but such structures are basically unsuited to purely print media. The real possibilities lie in software.

It will perhaps come as no surprise that, for many years, interactive fiction went under the name of "Adventure Games", in honour of the acknowledged progenitor of the genre. This new coining is a semantic change that reflects the more serious attention that such software is receiving. After the appearance of *Adventure*, numerous new works appeared, many of them unblushing mimics of the "Adventure" theme—Infocom's *Zork* series for example—and this is why the term "Ad-

venture Games ” came to be applied. However, we are now seeing new developments that expand the possibilities of this genre and merit the transition in nomenclature from “ games ” to “ fiction ”.

Although called a game, *Adventure* is quite a different experience to the sort of action and sports games that fill the arcades, or multiplayer “ interactive telegaming ” scenarios such as CompuServe’s *Megawars*. It demands a sharp intellect, not fast reactions, and—unlike computer chess—is purely textual. Some of *Adventure*’s offspring are text-graphics hybrids which include screen illustrations, but in this paper reference will be made only to the textual capabilities of such software.

Although now superseded by far more sophisticated works, *Adventure* is still popular and provides a good introduction to the genre. As Steven Levy says, “ Playing adventure games without tackling this one is like being an English major who’s never glanced at Shakespeare.”¹²⁾ If prompted, *Adventure* commences by providing a scenario and basic instructions:

Somewhere nearby is Colossal Cave, where others have found fortunes in treasure and gold, though it is rumored that some who enter are never seen again. Magic is said to work in the cave. I will be your eyes and hands. Direct me with commands of 1 or 2 words.¹³⁾

Immediately the “ accomplice-reader ” finds himself in contact with what appears to be a narrator. But the narrator is at the same time a surrogate: as well as describing what it sees, it moves around within the story in response to the commands of the reader. It is this that makes the fiction interactive. The story begins:

You are standing at the end of a road before a small brick building. Around you is a forest. A small stream flows out of the building and down a gully.

Having told you what it sees, the surrogate then stops and waits for you

to initiate some movement or action, either explicitly (as in ENTER BUILDING or GO SOUTH) or implicitly (as in just ENTER or SOUTH). *Adventure* was only equipped with a two-word parser, meaning that the reader is reduced to making short, mechanical commands, while the machine itself reproduces flowing prose. There is no limit to the vocabulary that can be produced by *Adventure*, but it can only recognize a few hundred words. What it can and cannot do is left up to the reader to discover, for there is no manual, only a few preliminary clues, available for the asking:

I know of places, actions, and things. Most of my vocabulary describes places and is used to move you there. To move, try words like forest, building, downstream, enter, east, west, north, south, up, or down. I know about a few special objects, like a black rod hidden in the cave. These objects can be manipulated using some of the action words that I know. Usually you will need to give both the object and action words (in either order), but sometimes I can infer the object from the verb alone. Some objects also imply verbs; in particular, “inventory” implies “take inventory”, which causes me to give you a list of what you’re carrying. The objects have side effects; for instance, the rod scares the bird.

In this way, you gradually explore above and later below ground, finding tools, artefacts (including a sword in a stone) and treasures, while being pursued by murderous dwarves and thieving pirates. The fiction is absorbing, and when a sharp knife is thrown suddenly, its target is not a “hero”, or even the surrogate—it is you, the reader. And you can lose your life if you fail to jump a chasm or recklessly challenge an ogre. However, all is not lost: you receive an offer of reincarnation. If you accept, you are engulfed in a cloud of orange smoke, which clears to reveal that you are back inside the building in the forest. This reincarnation incurs a point forfeit but it can be repeated, up to three times.

The story develops mainly in response to the reader’s decisions,

although there are random factors built in. The structure is dendro-grammatic, so that any one action can affect the entire outcome—something which the reader is usually unaware of until later on in the story. Fortunately, it is possible to save the story, to freeze it at any point for later resumption; this is important, for it can take tens or hundreds of hours for someone to “complete”. There are countless obstacles and apparent culs-de-sac to challenge the reader’s intellectual resources (including his abilities at both straightforward logic and lateral thinking). The Colossal Cave is an intricate web of passages and caverns, and it is important to draw a map. While negotiating a succession of narrow, gloomy, subterranean tunnels (by the light of a failing lamp), there is always some new experience awaiting around the corner, as in the sudden discovery of an underground volcano:

You are on the edge of a breathtaking view. Far below you is an active volcano, from which great gouts of molten lava come surging out, cascading back down into the depths. The glowing rock fills the farthest reaches of the cavern with a blood-red glare, giving everything an eerie, macabre appearance. The air is filled with flickering sparks of ash and a heavy smell of brimstone. The walls are hot to the touch, and the thundering of the volcano drowns out all other sounds. Embedded in the jagged roof far overhead are myriad twisted formations composed of pure white alabaster, which scatter the murky light into sinister apparitions upon the walls. To one side is a deep gorge, filled with a bizarre chaos of tortured rock which seems to have been crafted by the devil himself. An immense river of fire crashes out from the depths of the volcano, burns its way through the gorge, and plummets into a bottomless pit far off to your left. Across the gorge, the entrance to a valley is dimly visible. To the right, an immense geyser of blistering steam erupts continuously from a barren island in the center of a sulfurous lake, which bubbles ominously. The far white wall is aflame with an incandescence of its own, which lends an additional infernal splendor to the already hellish scene. A dark, foreboding

passage exits to the south.

Usually the prose in *Adventure* is not quite so florid, but it should be remembered that this is the work of a programmer, not a novelist. In recent years the tendency has been to employ professional writers—either to produce original work or adapt earlier novels—and the quality has improved markedly.

As stated earlier, *Adventure* has spawned a succession of clones, which have more sophisticated parsers. The material covered has also expanded from Tolkienesque fantasy into the realms of science fiction and detective novels. The “whodunit” would seem to be perfectly suited for this medium, because the onus for solving the mystery is entirely on the reader, who—as in Infocom’s *Suspect*—can even be framed for the murder of the high-society hostess of a Halloween costume ball:

› OPEN THE DOOR THEN ENTER THE OFFICE

You open the door. Slumped behind the desk is the body of Veronica Ashcroft. Her mask has been pulled off. Around her neck is the agent of death, a rope. In fact, it’s your lariat, which you got tired of carrying around and hung in the closet with your coat.

A full-sentence parser enables the reader actually to question witnesses and suspects directly in such detective stories, bringing them one step closer to the “living novel”.

A more recent development has been the so-called role-playing game, in which the reader can not only initiate actions, but also create characters¹⁴. Attributes can be assigned arbitrarily, or after an “interview” in which the reader’s own attitudes and characteristics are assessed (as in Origin Systems’ *Ultima IV: Quest of the Avatar*). These attributes determine the capability of the character in encounters and negotiations, and as you proceed their value grows. Steven Levy describes role-playing games (“not just variations on adventure games”) as “the closest thing we have to truly interactive novels.”¹⁵

Turning now to an analysis of interactive fiction at its present state of development, it would be pertinent to begin by outlining a typical structure¹⁶). A scenario usually consists of three elements: maze, quest, and hazards. The maze is divided into hundreds of individual units called “rooms”, and each room is assigned a description, sometimes as long as that of the volcano in *Adventure*. Maps and other printed reference material (including booklets of hints) may be provided. Travel is usually from one room to its neighbour, when permissible, although in fantasies travel over longer distances is often made possible by a magic word. The commands that can be used at any time depend in part on the nature of the room.

The program includes an all-powerful executive level, which controls the description and command subsections, and of course a large amount of data. The data is often encrypted to foil any attempt at cheating. However, that part of the software which is receiving most attention at present is the parser, which makes sense of the reader’s commands and questions. *Adventure*’s two-word parser was superseded by *Zork*’s full-sentence parser in 1977. A good parser can now handle adjectives, adverbs, prepositions and indirect objects. Synapse has developed a parser that employs special filters to help resolve ambiguities. Parser performance is also governed by the size of the word tables: the largest currently available is in the range of 2,000 words (in contrast, this paper employs about 1,600).

The nature of interactive fiction is such that conventional concepts, such as plot and chronology, are difficult to apply. The logical structure forms a dendrogram, and so—if one includes random elements—there are almost infinite possible experiences. It is linear yet multidirectional. Perhaps the nearest thing to a central plot is the shortest route to a successful completion, though this precludes many less successful subplots. As regards the passage of time, this is usually marked by the number of total “moves”, although moves can be explicitly translated into increments of time, as in Infocom’s *Deadline*.

With its roots in fantasy, interactive fiction is no doubt another reflection of a continuing trend away from didactic works. SF (such as *Star*

Trek) and detective works (including Sherlock Holmes adventures) have followed. Ghost and horror tales are surely not far away. But especially popular are the medieval and mythic tales; indeed, J.R.R. Tolkien's *Lord of the Rings* would provide an ideal scenario. Among adaptations that have already been published are Tolkien's *Hobbit*. Douglas Adams' *The Hitch-hiker's Guide to the Galaxy*, and Ray Bradbury's *Fahrenheit 451*. As long as a scenario can be formed into a quest of some sort—to acquire treasures or the throne, to uncover the real murderer, or to find a means of saving a doomed planet—there is a possibility of adaptation. This provides a greater degree of freedom than might at first be imagined. Some software allows the reader to modify the scenario, or even create his own. The day may yet come when the reader can play Macbeth in his own way, perhaps killing the wife instead of the king.

Overall, characterization in interactive fiction can be just as strong or weak as it is in printed fiction. To this is added the ability of the reader to experience character development himself, and, in some cases, to have his own traits reflected in those of the main character. The character of the “narrator” is also somewhat unique, although this depends on the work in question: in *Adventure*, it ranges from obedient servant, to lifegiving divinity, to enraged cave-sprite. The frequent use of the first person creates the impression that one is engaging in a dialogue with an electronic Sancho Panza, rather in the same way that one can “talk” to *Eliza*, the software psychologist¹⁷⁾.

Eliza only matches keywords with responses (hedging with “Can you elaborate on that?” when no match is found), and thus does not really “understand” anything in the way a traditional parser does. But studies in artificial intelligence and natural language processing are advancing at a fast pace, with linguists working on “English front ends” to enable computer conversation. Educators are developing language acquisition practices that make use of the heuristic nature of interactive tales. Programs are also being written for computer-generated fiction¹⁸⁾. And in hardware, microcomputer memories are expanding rapidly. There are thus many people working in diverse fields, some academic

but most commercially oriented, and as each new development provides further stimulus, we can expect great strides in the area of interactive fiction over the next decade.

This advanced level of participation in the creation of fiction has been made possible through a machine which is having more impact on the written word than perhaps the printing press itself. Just as the press brought major changes, so too will the microcomputer. Interactive fiction has just been born, but already it is approaching the realm of literature. True, it still has many characteristics of the game, but—as Johan Huizinga would have argued¹⁹⁾—play is a fundamental part of human culture. This new medium/genre shows great potential for growth, and it may alter entirely the way in which we react to and think about such fuzzy categories as literature and the novel.

NOTES

- 1) L. A. Zadeh, "Fuzzy Set Theory—A Perspective", in *Fuzzy Automata and Decision Processes*, ed. Madan M. Gupta et al. (New York: North-Holland, 1977), p. 3.
- 2) John Cage and Lejaren Hiller, *HPSCHD: for harpsichords & computer-generated sound tapes*, (including KNOBS computer printout for playback control), Nonesuch, H71224. I am indebted to Peter Evans for this reference, as well as for many useful suggestions regarding "false-directional" novels.
- 3) The two narrative voices are at first identical but gradually drift apart. John Barth, *The Floating Opera*, rev. ed. (1968; rpt. Harmondsworth: Penguin, 1970), pp. 163–5.
- 4) From *Lost In The Funhouse* (New York: Doubleday, 1968). "Frame-Tale" consists of the two phrases "ONCE UPON A TIME THERE" and "WAS A STORY THAT BEGAN" on opposing sides of the edge of a single page; the reader is invited to remove the strip from the book and form it into a Möbius strip.
- 5) For a discussion on the structure and endings of this novel see Robert Huffaker, *John Fowles*, Twayne's English Authors Series No. 292 (Boston: Twayne, 1980), pp. 91–115.
- 6) This "novel" appeared in France in 1962.
- 7) The title of the English translation (by Gregory Rabassa, 1966) is "Hopscotch", a reference to the way in which the reader must jump forward and backward through the novel when following the non-chronological order.

- Rayuela* is discussed in detail by Steven Boldy in his *The novels of Julio Cortázar* (Cambridge: Cambridge University Press, 1980), pp. 30–96.
- 8) *Contemporary Literary Criticism*, IX, p. 299.
 - 9) As quoted from the wrapper of *The Unfortunates*, in *Contemporary Literary Criticism*, IX, p. 300.
 - 10) For further information see Aileen Gatten, “The Order of the Early Chapters in the *Genji monogatari*”, *Harvard Journal of Asiatic Studies*, 41, No. 1 (June 1981), 5–46; and Andrew Armour, “Analysing an Author’s Idiolect: Murasaki Shikibu”, *Poetica*, 21/22 (1985), 164–80.
 - 11) Originally developed for the PDP-10 minicomputer (it became popular on many campuses), *Adventure* was later modified for microcomputer use. There are now two main versions: *Original Adventure* with a maximum of 375 points, and *Expanded Adventure* with 550 points.
 - 12) Steven Levy, “Adventure”, *Whole Earth Software Catalog* (New York: Quantum Press/Doubleday, 1984), p. 41.
 - 13) All quotations are from the CP/M-80 edition of the *Original Adventure*, version 1.0 (The Software Toolworks, 1982). Because of the nature of interactive fiction, no page or line numbers are available.
 - 14) The classic software in this category is Sir-Tech’s *Wizardry* trilogy: *Proving Grounds of the Mad Overlord*, *Knight of Diamonds*, and *Legacy of Llylgamyn*. In the public domain, *Eamon* provides over twenty scenarios, plus the opportunity for creating one’s own.
 - 15) Levy, “Playing”, *Whole Earth Software Catalog*, p. 29.
 - 16) For further information see Frank Dacosta, *Writing Basic Adventure Programs for the TRS-80* (Blue Ridge Summit: Tab Books, 1982). Commercial programs may be more complex, and many software houses have developed specialized programming languages, such as Infocom’s ZIL and Synapse’s BTZ (“Better Than Zork”).
 - 17) Developed in 1966 by Joseph Weizenbaum of MIT, *Eliza* was named after the woman in Shaw’s *Pygmalion*. It was written in LISP, a language which has something in common with human cognitive processes.
 - 18) One such published work is *Bagabone, Hem I Die Now* (New York: Vantage, 1980). In *The Literary Life and Other Curiosities* (Harmondsworth: Penguin, 1982), pp. 159–60, Robert Hendrickson reports that the creative computer was “programmed with the writings of James Joyce, D. H. Lawrence, some twentieth-century women authors, and the ‘angry young men’ of the sixties”. More recently, a microcomputer program called *Racter* (written by William Chamberlain and Thomas Etter; published by Mindscape) has created a collection of aphorisms and poems entitled *The Policeman’s Beard is Half Constructed* (New York: Warner Books, 1985).

Racter's style has been described as that of a slightly inebricated graduate student of philosophy or English literature.

19) *Homo Ludens* (1938).