Woggles from Oz: Writing Interactive Fiction

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The term "interactive fiction" describes any artifact — book, theater script, image, automaton, or computer program — allowing a reader to make choices that determine the unfolding of a story. Adventure, a textual computer game developed at MIT in the 1970s, is the patriarch of the genre. An Adventure "document" is a simple network of nodes representing places and links connecting them. A link can be traversed by typing its name, and each node carries some descriptive text — anything from half a page to a pithy phrase like "You are in a twisty little maze."

For the author, these primitive building blocks place few obvious constraints on the kinds of stories they can be used to tell; but in fact, the constraints are severe. The activities of non-reader characters cannot readily be described in such a static framework; nor are all kinds of scenes amenable to description in terms of nodes and links. An even more serious problem is the exponential branching of storylines. If the first scene offers a choice of two doors, the author faces the task of writing two complete sequels instead of one; in each case, another choice appears soon afterwards and the situation can quickly become unmanageable.

Oz, a new interactive fiction system under construction at Carnegie Mellon University by Joe Bates and his students, vastly extends some of the author's creative options compared to Adventure, while limiting others. Like Adventure, Oz can be used in an "expressionist" mode where the author simply constructs an interesting world for the reader to explore. But the richer structure of an Oz document actually inhibits this sort of use. In Adventure, the author is free to use all the expressive resources of English to describe a scene. In Oz, it is the system that describes scenes to the reader: the author's job is literally to *build* them, gluing predefined pieces into larger edifices like electronic lego blocks. This done, the system generates textual descriptions that take into account the reader's focus of attention, rearrangement of props during the story, etc.

In 1992, the Oz group decided to bring their ideas together with work at CMU on real-time animation. The result was the world of the woggles, imaginary land creatures with expressive eyes and shells of brightly colored putty, living in a Dr. Seuss landscape on the screen of a state-of-the-art graphics workstation. Lacking a mouth, their means of communication are simple: bobbing up and down to signal greeting, hopping back and forth, sulking, and, when angry or threatened, gathering themselves up into menacing discs. Some of the woggles are controlled by the Oz system, using a simple model of their goals, habits, and emotional states to determine their visible actions. Another is controlled by a human reader sitting at the workstation: pointing with the mouse makes the woggle hop to the indicated place on the screen; pressing buttons produces greeting or threatening motions that the others can see and respond to.

In a strict sense, this is not interactive fiction: we are free to impose a narrative reading on the events unfolding on the screen, but this is entirely a matter of interpretation after the fact; there is no story designed into the system itself. Even so, the immediacy of a graphical presentation evokes the creative possibilities of the new medium much more powerfully than its text-based predecessors.

Besides demonstration pieces, the Oz project has produced solid scientific results, including Mark Kantrowitz's work on automatic generation of realistic English and Bryan Loyall's modelling of characters with emotions. Moreover, as pure entertainment this is clearly a technology of the future; it is no accident that Oz has received substantial funding from Japanese game manufacturers. But what, artistically speaking, does it come to? Is the simple sequence of events really such an important element in the stories we enjoy hearing and telling? Reading a Shakespeare play or a yarn by Mark Twain, we respond to the narrator's wit, verbal music, and skill in showing characters from revealing angles. These qualities may also be present in a work of interactive fiction, but they do not depend on its interactivity for their effect. Of course, there are literary forms where interactivity in the literal sense might enrich the reader's experience. Authors of mystery stories go to great lengths to let readers second-guess the super sleuth. Why not just let the reader *be* the detective? But even in these forms, the difficulty of writing interactive fiction may seriously limit its uses.

A system like Oz is an experiment in illusion. The linguist William Croft once remarked that the famous computer psychoanalyst, Eliza, which succeeded in fooling a surprising number of people by using a tiny set of stock responses ("Tell me more about your mother..."), was a revelation less of its audience's gullibility than of an astonishing regularity in a certain kind of discourse. In this respect, the earliest versions of Eliza are probably the most successful: as more mechanisms are added to make the program "understand" a broader range of inputs, its actual lack of understanding becomes more and more apparent.

Moving from conventional, linear text to Adventure's web of nodes and links, the author confronts an explosion of plot possibilities. In systems like Oz, where the "document" is a tiny artificial world, this explosion is mirrored by a proliferation of complex interactions among its constituents. The author's attention is increasingly distracted from literary or dramatic effects to the intricacies of constructing props, sets, and scripts that will interact properly to produce these effects. Ultimately, the tasks of writing and programming — each of which is more than difficult enough in itself — begin to blur. To avoid overwhelming the author, designers of interactive fiction systems must find smooth regions in a vast space of possible designs: technologies that achieve precisely the right level of sophistication and that, together, can create seamless effects.