

Speeder Reader: a driving metaphor for dynamic text interaction

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ABSTRACT

We describe a working prototype of an interactive reading station built around two primary ideas: dynamic text (especially RSVP, that is, rapid serial visual presentation), and the interface metaphor of driving. We leverage people's knowledge of the familiar activity of driving an automobile to allow them comfortable and intuitive access to a possibly less familiar world of interactive text. We emphasize the power and ease of the familiar driving metaphor as a navigation device. The prototype, called *Speeder Reader*, is installed at the Tech Museum of Innovation in San Jose, California.

Keywords

Dynamic text, kinetic text, reading games, speed reading, interaction design, RSVP, video games, interaction metaphors, XFR, nonlinear narrative, navigation.

INTRODUCTION

Speeder Reader is designed as part of a six-month museum exhibit at the Tech Museum of Innovation in San Jose. The exhibit, "XFR: Experiments in the Future of Reading," is being designed and built by the RED group at Xerox PARC. It runs from March to September, 2000; over 350,000 visitors are anticipated during that time.

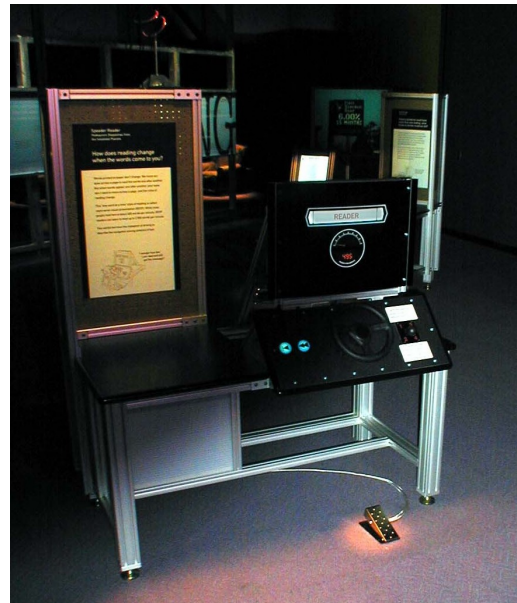
The exhibit presents a series of explorations in new ways of experiencing text, including new genres, new styles of interaction, and unusual media. In particular we wanted to associate a sense of excitement, fun, and personal control with the idea of reading. So, for *Speeder Reader*, we built a speed-racing interface onto a speed-reading software.

Dynamic typography

People read printed words on a page in "saccadic jumps," a series of somewhat erratic eye motions around a page. RSVP is a kind of dynamic typography where words or short phrases appear in sequence in one spot on a screen. As the words continually flash in one spot, the reader does not have to move his or her eyes, thus avoiding the saccadic jumps and eliminating the time used in moving and refocusing the eyes. With this protocol people have

been known to increase their reading speed up to 2000 words per minutes (an average fast reader can read about 400-600 words per minute). RSVP (rapid serial visual presentation) was investigated in the 1980s as a presentation protocol for text [2]. It has been used in several products as a speed reading technology, and is sometimes used as a research tool by neurologists and perceptual psychologists. Other affordances of dynamic typography have been explored by a number of people [1, 3, 4, 5].

Fig. 1. **Speeder Reader**



The driving metaphor: navigation

One problem with RSVP text is how to browse it. How does one find different sections of content, play them at an appropriate speed, and replay them at will? *Speeder Reader's* interface addresses these issues. The RSVP text is

visible through a rectangular window in a specially designed monitor bezel (Fig. 1). One navigates to different streams of text by turning the steering wheel, which moves the window to a different “lane” of text. A foot pedal (“gas” pedal) gives the user control over the speed of the text being displayed. The stick shift can switch between different subchapters in the text. Mapping of the navigation controls for text content is as follows: the steering wheel controls which lane of text the visitor is viewing, moving the lanes in a side-to-side motion. The cue and reset buttons allow skipping backwards to set points in the text, or starting over from the beginning.

Authoring for *Speeder Reader*

Authoring *Speeder Reader* raised several points besides navigation:

Rhythm as punctuation: Content-appropriate rhythms can greatly increase both speed and comprehension in RSVP and other dynamic text. For example, titles or subheadings may be given greater temporal weight than normal text.

Type design: Appropriate typographical choices also aid in comprehension and speed. Characters may possess particular typographical characteristics; for example, serif fonts are more readily recognizable as they flash past. Or some words and phrases may be given more size or greater color contrast.

Narrative structure: We tried several different structures for the content. We settled on five lanes of text, with four subchapters in each lane (the four states defined by the gear shift). Each state in this content matrix contained approximately 1000 words, since we wanted people to be able to remain in each state long enough to get a feel for really reading in RSVP. So, the authoring task is a minimum of 20,000 words.

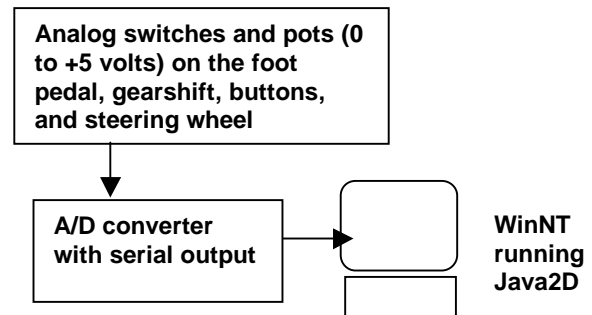
We made a test model with dynamic use of rhythms, fonts and colors using several of Lewis Carroll’s poems (*Jabberwocky*, *Father William*, *The Walrus and the Carpenter*, *Turtle Soup*). However, we wanted to tie the content of each of the XFR exhibits at least loosely to the physical form of the reading device. *Speeder Reader*’s current content is a travel diary, a fictional account of the travels of a young girl throughout the Solar System. As the girl visits each of five planets, she records salient facts and personal observations about it in her travel journal. Each lane features a different planet; each gear position is a new entry in her journal about that planet.

System design

All the devices, steering wheel, pedal, gearshift, and buttons are connected to an A/D converter which communicates with the host computer via serial line. A Java 2.0 program reads the serial information and converts it to actions in the program, thus affecting the text in response to user input. We use XML not only to specify the text, but also its layout and typographical qualities. Size, color, font, and background color of the text is determined

in XML and is authored along with the content of each lane of text.

Fig. 2. System signal flow



Future work

Speeder Reader runs robustly and is popular with museum visitors. We plan onsite user studies as well as exploration of alternative content and iteration of the interface design.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the support of our colleagues in the RED group at Xerox PARC. We also thank Jonathan Cohen for the software implementation and Jock Mackinlay of PARC, for consultation on RSVP.

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