

PREFACE

Transforming Books and the Reading Experience through Interactive Technologies

For thousands of years people have been reading words etched in stone, written in ink, or printed on paper. However, recent technological changes are creating a revolution in reading, and the development of interactive computer interfaces has enabled the creation of dynamic reading experiences. At a time when computers were too large to move from desktops, Alan Kay imagined the DynaBook [4], a portable computer and reading device that could be used by children to enhance their education, which was seen as visionary. With roots in the Memex of Vannevar Bush [1], Ted Nelson's vision of Hypertext [2], and Englebart's NLS system [3] early computers from the 1970s and '80s explored new ways of viewing and manipulating text.

Thirty years later, and the recent development of smart phones, handheld tablets and ubiquitous networking has enabled Kay's vision to become a reality. Today a person can have access to an entire library in the palm of their hand, and easily search through huge collections of information. The latest generation of interactive technologies such as Augmented Reality [5], multi-touch interactive tables [6], and tangible user interfaces [7] can transform the reading experience even further. However, there is a lot of research that needs to be conducted to see how these types of emerging technologies can potentially improve the reading experience.

In this special issue, we have brought together four papers that represent the latest advances in interactive reading technologies. In the first of these, Girard et al. [8] describe how e-reading could be improved by understanding the experience of people who are attached to their e-readers. This builds on a recent trend in human computer interaction to explore how people become emotionally attached to their devices [9]. Girard conducts interviews with nine people who report high levels of emotional attachment to their e-readers. Based on the analysis of the interviews they provide some interesting design guidelines come to light that could be used to significantly improve the e-reader experience. For example, enabling users to be able to configure and change the display settings of the e-reader according to their own preferences, and in doing so giving them a feeling of control over the device.

Ribeiro et al. [10] describe how smart environments can be designed for story-telling geared towards children. Many previous researchers have focused on enhancing the electronic book, but in contrast Ribeiro explores how the reading environment itself could be improved. Using the Design Based Research approach [11] they conducted focus groups with teachers from a local primary school to come up with some prototype interface ideas. One of these is the "Reader's Theatre" which allows children to act out stories in front of their classmates with multisensory feedback. The design method successfully enabled the exploration of design space dimensions with a human centred approach using input from teachers and children. Smart environment technology was used to create the prototype story-telling environment that promotes the reader's engagement, involvement, enjoyment and social interaction.

The third paper from Bordegoni et al. [12] continues the multisensory focus, in this case exploring the role of odours in improving the reading experience. There have been many researchers who have explored how audio or visual feedback can be provided while a person is reading, but relatively little research has been conducted on odours. In this case, the authors explore whether or not releasing odours related to the text content a person is reading will have any effect on their mental workload, reading experience and learning efficiency. They conducted an experiment comparing reading conditions with and without odour release, where relevant scent would be released when the person is reading highlighted parts of the text they were studying. Overall, they found many interesting results, including the fact that odours don't disturb the reader, and can in fact make reading a much more immersive experience. However, there are many directions that this research can take in the future.

The final paper was different from the other four because it was looking at interaction with traditional books. In this case, Sonnenwald and McElligott explore how young adults interact with rare historical books [13]. Rare books such as the Irish Book of the Kells are difficult to access and read. So the authors hope that by studying how people interact with real books, this could provide some insights into how virtual copies of the books can be reproduced and interacted with in a similar way. Observational data was collected from two focus groups of young adults who got to handle a rare 16th century book under the guidance of museum staff. An analysis was performed on their behaviours, language used and impressions of handling the book. Based on these results, the authors produce a set of technological recommendations that can guide the creation of a physical/virtual book interface that duplicates as close as possible the experience of interacting with a real rare book.

Overall, these papers represent a number of exciting trends in how interactive technologies can be used to transform the reading experience. We see researchers explore how the physical and digital experience can be combined together to enhance traditional paper or screen based reading. We also observe how multisensory interactive technology can be used to engage sensors that aren't traditionally associated with reading. Finally, we are seeing researchers using participatory design approaches to capture people's attitudes to books and reading, which can be used to provide guidelines for future designs. Taken together, these trends show that the future of interactive reading is going to be even more exciting than the experiences we showcase here.

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