Enrichment of eBook User Interfaces: A Skeuomorphic Approach

Jaejeung Kim, Sangtae Kim, Soobin Lee
KAIST Institute for Information Technology Convergence
{jjkim, anne, soobinlee}@itc.kaist.ac.kr

Participant's Interest

For the past centuries paper books have been the major physical media for transferring and acquiring information. During the last few years the ecosystem has dramatically changed. With the wide deployment of smart tablets and smart phones, eBooks have become very popular. Dedicated eBook readers manufactured by multiple vendors are also successful in the market. There are numerous success factors, and we believe one of them is the touch enabled user interfaces.

Our main interest lies on research and development of eBook user interfaces for enhancing usability and user experience on touchscreen devices. Paper books are deformable due to the flexible characteristics of the paper. Such deformability provides a high degree of freedom and enables various book reading activities. However eBook readers are hard and rigid. Instead, they are equipped with touchscreen gesture interfaces and soft buttons supporting various way of page manipulation or navigation. We have developed touchscreen gesture based page turning and navigation user interfaces using skeuomorphic approach. By translating the real paper book metaphor into the touchscreen interface, we were able to achieve paper book like interaction on eBooks. We'd like to share our recent research and development on eBook user interfaces and find an opportunity to contribute to standardization in presentation and ergonomic perspective.

Point of View

Our point of view is that eBooks should resemble the paper book in terms of both design and functionality up to a certain level. There are still a large group of people unwilling to move on to eBooks and repulsed by the digital media. In order to satisfy and absorb the conservative users, a familiarity plays a huge role. Thus we employed a skeuomorphic approach in designing eBook user interfaces. Skeuomorphism has its ups and downs. However we received surprising positive

feedbacks with our initial prototype.

We went through user studies for extracting frequently performed paper book manipulation features among users. We would like to introduce two tasks the users performed in common which are not supported by current eBook applications. One of the interesting features was *thumbing-through* the book to get an overall concept. Another one was *temporal bookmarking* by holding a page with a finger and jump back and forth between pages, letting go of the bookmarked finger when done.

#1 Thumbing-through on the fore edge


Talk to any of the legendary image-makers whose work helped create what we today recognise as the "rock aesthetic" – first-generation lensmen such as David Gahr, Fred McDarrah, Henry Diltz, Jim Marshall, Mick Rock – and they'll all, to a man, bridle at the idea that they are, or ever were, "rock photographers". Unsurprisingly, they regard the term as a specious delineation, suggestive of mere "snappers" overseen by "flacks" interested only in servicing the greater glory of their acts. Instead, these men should be regarded as artists who just happened to share "Zeitgeist space" with the founding fathers of rock – the Stones, the Velvet Underground or, as is the case with the image-maker whose work is republished here, perhaps the most profoundly image-literate of them all, David Bowie.

Masayoshi Sukita was a commercial photographer working for an ad agency in Tokyo when he first visited New York in 1971, largely at the behest of a boyhood fascination with post-war American cinema and the cult of the "rebel" as expounded by Marlon Brando, James Dean and Elvis Presley. The following year, he went to London. "At the time there was very little information about David Bowie in Japan," he remembers. "When I arrived in London, I had never even heard his name before."

A chance sighting of Brian Ward's high-kicking cover image for Bowie's *The Man Who Sold The World*, advertising the singer's imminent shows at north London's Rainbow Theatre, changed all that. "I thought it was a sensational photo and an unusual image for a pop musician," recalls Sukita. "It reminded me of some of the alternative things I'd seen in New York. And the concert itself was amazing. I quickly realised David Bowie wasn't a regular performer. I felt there was much more going on, so much more depth and imagination than from a regular musician."

What he'd seen – and heard – inspired Sukita to approach Bowie's management with the idea for a shoot, their first session taking place in August 1972. It charts the beginning of what has turned into a lifelong association – the photographer was there to meet Bowie as he arrived in Yokohama in April 1973, for his first Japanese tour, and, in 2009, took his most recent official portrait, in which Bowie sits cross-legged on a Memphis table

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Figure 1. Fore Edge(boxed area)

Figure 2. Thumbing-through demonstration on the prototype

All paper books have the "fore edge"(Figure 1, boxed area) which is a stack of papers bound by the spine. In the paper books, people are able to touch and feel its thickness, perceiving the volume of the book. It also provides a visual cue of my relative position within the book. Unfortunately the sense of thickness cannot be implemented on eBook readers. However by presenting the fore edge in a GUI, the visual cue still remains. Such a small visual cue plays not a small role in book reading experience.

The fore edge is also used to flip pages according to your thumb position. If you swipe the thumb outward, the pages held by the thumb are released and pages are flipped(Figure 1, round dot indicating the initial touch, arrow indicating touch drag; Figure 2 demonstrates thumbing-through interface on our prototype). *Thumbing-through* the book was also very frequently

performed in our user observation. It gives you an overall idea of the book, including the book structure or length. It specifically supports user in finding a certain piece of text or a picture without knowing the exact page. This feature shows a greater value when reading casual materials like magazine, where the users do not need to read in a sequential manner.

#2 Temporal Bookmarking

Figure 3. Initial touch"1" holds the page, second touch dragging"2" turns the page, releasing the initial touch either returns or stays in the remote page according to its released location or releasing direction

Figure 4. Temporal bookmarking demonstrated on the prototype

While reading textbooks or novels, readers tend to either read back a few pages to get the context going in mind or go a few pages ahead to preview what's to come. In case of reading a magazine, such task is similarly performed as well. With the paper book, they hold the page with one hand, or leave a finger in between the pages to come back. Most of the eBook applications provide a bookmarking feature. However when these tasks are frequently performed, traditional bookmarking could be burdensome: 1) click to bookmark 2) initiate menu for bookmarked list 3) find the bookmarked spot and select. Such *temporal bookmarking* behavior is similarly translated into touchscreen based interface as shown on Figure 3. The initial touch hold the page, second touch dragging (either inward or outward) turns the pages to the other location. After navigating other pages, the user can release the initial touch to either come back to the original page or stay in the remote page. Figure 4 demonstrates the temporal bookmarking prototype.

Conclusion

We introduced our interest and viewpoint along with our on-going research on eBook user interfaces. The features introduced above are implemented as a native application in objective C. Current EPUB 3.0 standard are based on HTML5 + CSS3 which is able to embed dynamic and interactive media. However further discussion is needed to implement our user interface on EPUB 3.0 and web based platform.

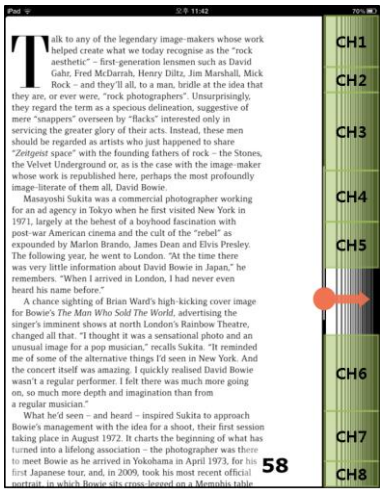

Figure 5. Fore edge used for indicating chapter information

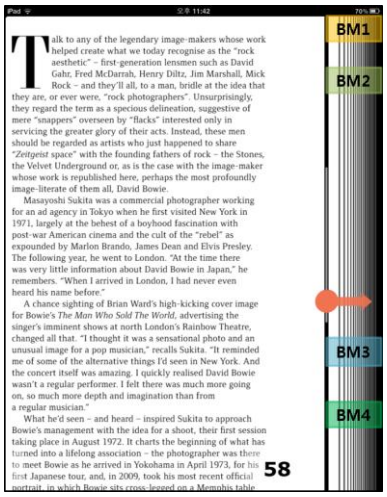

Figure 6. Fore edge used for indicating bookmark information

The possible requirements supporting the features above are as follows:

- A dedicated (or activated upon a certain command) fore edge interface layout which 1) renders the page stack behind the current view page 2) can manipulate pages upon touch dragging (in replacement of the slider bar for page jumping) 3) API for placing additional feature on the fore edge area (see Figure 5,6)

- HTML5 cache control of at least few pages back and ahead from the current page for efficient thumb-through flipping effect

Our demo video can be viewed here: http://www.youtube.com/watch?v=rVyBwz1-AiE