A Framework for Authoring Interactive, Tablet-based Books

Multimedia Textbooks and Multiplatform Storytelling

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A Framework for Authoring Interactive, Tablet-based Books: Multimedia Textbooks and Multiplatform Storytelling

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Abstract: The tablet computing environment offers authors a rich interactive palette for telling stories that combines the best of the written word, visual design, cinematic storytelling, and game mechanics. This emergent storytelling form has taken root in places such as The Atavist, a digital storytelling company that focuses on long-form, cinematic stories rooted in journalism. While the opportunities for authors are great, this new paradigm for publishing presents significant problems, as the technological acumen to produce such a book likely falls outside the skill set of any single author. Instead, small teams will need to work together to produce a single narrative. For instance: when developing a narrative, teams will need to determine the media best suited for particular elements of a story (e.g. video versus text) and weave those seamlessly into the narrative and the production cycle. The authors have explored this phenomenon through the creation of a tablet-based interactive textbook written to teach students the basics of transmedia storytelling. In this paper, the authors explore the intersection of the written word, visual design, cinematic storytelling, educational multimedia, and game mechanics, describe the inherent problems associated with multiplatform and multi-authored pieces, and offer a framework for authoring an interactive tablet-based book.

Keywords: Transmedia, Tablet, Multimedia, Digital Textbooks, Storytelling, Interactive Book

INTRODUCTION

Digital publishing is evolving at a rapid pace with the advent of the tablet and eReader environments. At the same time, the tools for digital authorship are becoming more versatile, accessible, and easy to use. This provides authors with new, dynamic methods for telling multimedia stories and distributing work across many platforms. Thus, the role of author has the potential to be more robust than ever. While the opportunities for authors are great, this new paradigm for publishing presents significant challenges as the technological acumen to produce such a book likely falls outside the skillset of any single author. Instead, small teams will need to work together to produce a single narrative that takes advantage of the native elements of the digital, interactive environment. For instance, when developing a narrative, teams will need to determine the media best suited for particular elements of a story (e.g. video versus text) and weave those seamlessly into the narrative and the production cycle. In this sense, publishing is evolving from a traditional development model that separates storytelling and writing from design and production to a contemporary model in which there is a seamless intersection of the written word, visual design, cinematic storytelling, educational multimedia, and game mechanics.

Understanding the skillset associated with successful authorship for the tablet and eReader environments arose as we developed a transmedia storytelling class in which students would...
produce a cross-platform, cross-genre story package that includes a multimedia, interactive fictional eBook that takes readers on a chase through Indiana’s state history. The project also includes character blogs, podcasts, interactive information graphics, non-fiction websites associated with Indiana history and referenced in the fictional narrative, and a culminating live event at the Indiana State Museum. To prepare students for this rich, multilayered authoring experience, we also created a tablet-based interactive textbook written to teach students the basics of transmedia storytelling. We felt that any textbook on this topic should make use of the multimedia storytelling tools and digital authoring environments it was intended to promote. Thus, *Making Transmedia* is a 19-chapter, interactive book that readers navigate through a multimedia experience built around thematic content that includes video, audio, interactive graphics, and text. The book was created using the Adobe Digital Publishing Suite. In addition to explanatory text, the book contains video discussions and demonstrations, interactive graphics, and an architected glossary and index navigation system developed to enhance studying.

The more we explored the particulars of authoring an interactive digital textbook, the more we pondered the definition of *author* in the digital publishing environment. For example, when design grows from its traditional role, as aesthetic mediator to a primary means for shaping reader experience, doesn’t the designer become a co-author? And in the interactive, multimedia environment of the tablet-based book, shouldn’t video lectures, information graphics, and intricate photo presentations be developed as equal partners to traditional text-based narratives? If answers to these questions are affirmative, as we believe they are, then understanding the new paradigm for authorship in the multimedia, interactive, digital publishing arena is critical.

**Related Work**

Although digital reading devices (e.g., iPad or Nook Color) continue to gain traction in the commercial market, much reading research continues to focus on putting words in front of readers at a particular point in time. Because tablet and eReader environments are still relatively new, there has been little scholarship related to re-conceptualizing the reading experience for these platforms. However, the fact remains that tablets and other eReader environments have facilitated that opportunity, giving readers the option to search, write notes, share information, and save their own thoughts within their own digital reading environments. This literature review will address four key areas of related work: users’ habits and opinions about consuming content in the digital environment, interaction design as it relates to the tablet environment, collaborative authorship, and eTexts in the educational environment.

In January 2012, a Pearson Foundation survey found that ownership of tablet devices among high school seniors and college students has significantly increased. “The survey shows that ownership of tablets by college students has more than tripled, reaching 25 percent versus seven percent in 2011. Among high school seniors, tablet ownership has quadrupled, increasing from four to 17 percent” (Pearson Foundation 2012). Among the other key findings: Nearly all (90%) of college-aged tablet owners want to use them for educational purposes. Seventy percent of respondents reported they had read at least one digital textbook in the past year, the same percentage that said they favor tablets because of the potential for interactive features, including embedded multimedia and social networks.

According to Kostick (2011), digital publishers and authors must embrace the pleasurable elements of reading in print and find ways to translate that experience in entirely new ways in the digital environment. In order to create that experience, we explore some of what we know about readers and their opinions of these environments. For example, in non-fiction environments, users generally exhibit positive attitudes toward search-ability, access to ancillary information, and share-ability. On the other hand, people have negative attitudes toward functionality that was not easily learned or memorized, poor text layout and design, and a lack of agency within the text (Kostic 2011). In other words, readers want the freedom to search, share and
explore their own related ideas, and they want to easily understand how to do that and how to get back to where they started within the original story.

Thus, the design dynamic is also a common thread within digital reading literature. Publishers and authors, presented with a palette of unlimited functionality, can easily overwhelm readers within digital environments by focusing on what can be done instead of what should be done. Design in these environments should focus on searching and sharing, while mitigating feature creep and poor layout. Words—or other visual storytelling elements—should take center stage, while navigation metaphors should be divided into two distinct parts: home/library and page/book navigation. There should also be cloud functionality (e.g., multi-platform syncing), and exploratory searches that can be done alongside the book (and ideally attached within the text as well). There is also the sociability of the note-taking experience, which might include a social bookmarking setup (not mentioned in this text) or a note sharing capability. However, sociability should include the ability to export personal notes and create a personalized and annotated version of the text (Mod 2010).

The Nielsen Company’s 2011 research on mobile connected devices found that most tablet owners use them for gaming, consuming multimedia content, browsing the Internet, and reading eBooks. This also raises interesting questions about the potential for design strategies inherent in one genre—such as gaming—to influence or bleed into that of another—such as interactive eBooks. For five decades, game designers—both formally and informally—have tinkered with the integration of game mechanics and story as well as game mechanics and education. Certainly there is a continuum: some games may be seen as more mechanic and less story/educational, and others may be seen as more story and less mechanic/educational. But there is no doubt that innovation in the blending of design techniques will only continue to evolve as users increasingly turn to a single device (such as the tablet) to experience all of those different types of media (i.e., games, books, videos, websites, etc.).

Recent research in this area has also focused on the ethics of collaborative authorship (Teixeira da Silva 2011), collaborative research and joint authorship (Dreyfuss 2000), and the benefits and drawbacks of collaborative authoring through the use of social media tools (Forte & Bruckman 2005). Clearly, as a concept, collaborative authorship is rooted pretty firmly in the writing domain. The essence of transmedia authorship should encompass more the just story telling; it should consider elements of sociability and design within the storytelling paradigm in order to tap into the pleasure-able elements of tablet reading (Appelkvist 2011).

As authors work to contain feature creep, they should also focus on creating deep connections between the design of the story (e.g., the media created and the inter-connections between media) and the reader. Sheppard (2011) noted that students are often more engaged in reading within tablet and eReader environments, but that engagement doesn’t necessarily translate into learning. Some research even suggests that interactive texts may reduce reader curiosity if there are too many directed functions (e.g., author-driven) because readers will come to expect answers to be handed to them.

**Project Description**

In the summer of 2010, we constructed a yearlong, undergraduate class that would bring 40 students from multiple disciplines together to create a single, fictional, transmedia narrative. Our project partnered these students with the Indiana State Museum as a source for artifacts that would help frame a narrative that takes readers on a historical chase through the state’s history. Henry Jenkins (2006) popularly defined transmedia as any property that includes multiple delivery mechanisms. In this vein, the Transmedia Indiana project resulted in a multi-layered final product: a tablet-based book, complete with embedded audio, video and text, external websites, a live event, geocaching and puzzle-solving.
If the task of developing all that content over the course of an academic year doesn’t sound daunting enough, add to it the fact that no single textbook exists that provides instruction for collaborative transmedia authorship. But rather than view this as an obstacle, we viewed it as an opportunity to accomplish two results:

1. Provide our students with a roadmap for the journey that lay ahead.
2. Experiment with collaborative authorship ourselves through the development of a comprehensive, multimedia textbook that includes a number of different multimedia features in an interactive tablet environment.

Figures 1–2: Top-level Navigation (e.g., What Can I Do?) Allows the user to Choose from different Topics. Within each Top-level Topic, there are Key Terms that are Referenced in the Reading (in the Right-hand Column). By Clicking on Key Terms (e.g., Lance Weiler or Pandemic), The User can Read more about Important Transmedia Concepts, Famous Transmedia Producers, or Influential Transmedia Games, Movies or Products. The Image on the Right Represents one way that Multimedia Content is Integrated. A Video Trailer for the Game Plays when Users Click “the Tap to Play” Button over the Pandemic Image. Bottom-level Navigation (e.g., Bios, Media, and Interactive Graphics) Allow the user to Select Content Based on Type rather than Topic, giving users another way to Navigate the Material.
In the sections that follow, we’ll explore how the authoring experience of *Making Transmedia* significantly differs from that of a traditional textbook, the nature of our collaboration, the use of multimedia content, and how interactivity and nonlinear navigation may affect both the role of the author and the experience of the learner.

**Authoring Experience**

It’s worth noting that both of the authors of this text have written and published traditional textbooks through traditional means (i.e., collaboration with a publishing house). Thus, the experience of writing a textbook was not new. However, it’s safe to say that “writing” *Making Transmedia* has been nothing short of a brand new world of authorship that has, at times, been both filled with invigorating challenges and mired by technical and functional roadblocks. Three main themes emerged regarding the most significant differences between this and our previous experiences as authors:

1. The nature of collaborative authorship;
2. Design as content;
3. The ways in which interactivity and nonlinear navigation authorship and user experience.

**The Nature of Collaborative Multimedia Authorship in the Interactive, Digital Space**

Traditional collaborative authorship is always a tricky proposition. With any luck, co-authors share a similar work ethic, compatible writing styles, and an ability to compromise and find common ground. When authorship goes beyond the craft of writing and begins to include elements such as video lectures, interactive information graphics, image galleries, audio clips, and other similar multimedia story forms, collaborative authorship becomes much more than just co-writing. Rather, it becomes an intricate dance that must be carefully choreographed and approached with a relentless sense of detail.

For example, one section of a single chapter of *Making Transmedia* may include three video lectures, four key terms, three biographies of influential figures, 1,000 words of narrative prose, and two interactive information graphics. In this case, authorship includes scripting, performing and producing videos, writing key term definitions and gathering related media (i.e., images or...
video), writing the key text-based narrative, and illustrating and developing interactive graphics, complete with any audio narration that might accompany them. To execute this effectively, the common practice dividing the “writing” load through a “you write this part, and I’ll write that part” strategy will never work. The content is too varied and complex. Even if the authors collaborating each possessed a different type of expertise (i.e., videographer, writer, illustrator), this siloed approach would likely result in a very disjointed collection of media files.

Based on our experiences with *Making Transmedia*, we recommend the following four-step process to collaboration. First, authors must identify what types of storytelling skills each possesses and determine what are reasonable expectations for content development given those constraints. Luckily for us, the two authors of *Making Transmedia* are, by trade, multimedia journalists. Thus, we collectively possess skills in videography, photography, writing, editing, design, and information graphics reporting. If a team is lacking in one of these areas, it might be advantageous to add another author or collaborate with a production team that can pick up some of the slack where the technical aspects of storytelling are concerned.

Second, although the idea of authorship is changed in the interactive, tablet environment, the importance of storytelling remains. For *Making Transmedia*, we created an outline for the text and then wrote a draft of the manuscript from which we could begin “writing” into this environment. At some points, that means stripping away words and replacing them with other multimedia elements; at other points, that means reworking entire sections when design elements can better tell the story.

Third, it is important to brainstorm not just the types of media that will be used in the book, but how those media types will build on or support one another to form a cohesive narrative. In other words, what parts of the narrative will be presented through text, and what parts are better served by multimedia, such as video, images, graphics or audio? What we avoided was “chunking,” creating small, easily digestible but ultimately shallow pieces of content oftentimes used by online publishers. Instead, we worked to create a single, rich narrative that used the storytelling tools best designed for specific tasks within the narrative. To do this, it’s important to understand that the strengths of one media type may be different than others. For example, video is most effective when you tell a visual story that is best served through live motion. On the other hand, photographs are best for capturing moments or illustrating simple, single concepts. Likewise, information graphics take you where photos and video cannot. Thus, they are useful when maps, charts, diagrams or data visualizations help drive a point home.

Fourth, collaborative multimedia authorship must include a very focused and often intense storyboarding session early on in which all authors discuss each chapter and segment of an interactive book in terms of its content and functionality. In the traditional authoring environment, this can all be captured in a simple text-based outline. However, in the interactive multimedia arena, outlines become visual storyboards that begin to show the information architecture for a particular text, as well as how the structure and design will facilitate a cohesive storyline in spite of the multifarious nature of the content. Early storyboards (Figures 6–7) for *Making Transmedia* took the form of low-fidelity prototypes that illustrated this information architecture and helped us begin to understand how all of the different types of content would come together.
Only after a comprehensive and well-conceived storyboard is developed, can authors begin “writing” the book. This roadmap is critical to ensuring that the steps that follow (explained in the following sections) are not bogged down by missing pieces and technical obstacles brought about by incomplete or ill-conceived narrative logic.

**Design as Content in the Multimedia, Digital Space**

Information designers have, for a long time, argued that design actually is content when it comes to building complex publications, such as magazines, newspapers and information-rich websites. Thus, the notion of information architecture—the art and science of organizing and labeling content—is certainly not new. In the traditional publishing model, the design of a book is generally a function of production. Once the book has been written, the illustrations, figures, and other visuals are integrated into the narrative and copy edited, a designer comes in to hopefully “make it all look nice” by drawing on tried and true principles of graphic design, color theory, typography and grid, to name a few. Good design helps facilitate a pleasurable reader experience, but the designer is rarely considered an author.

Enter the notion of “Design with a capital D.” While the traditional notion of design is predominantly focused on an aesthetic function, Design for the interactive tablet environment is both an exercise in aesthetics and a carefully planned consideration of the user experience as well. In this sense, “Design with a capital D” includes the consideration of how the type, placement, functionality and interplay of multimedia elements (including traditional text) on a single screen affect how the user comes to understand the information at hand. Design is, therefore, both a part of the storyboarding process outlined in the previous section and an iterative process that must be constantly evaluated by the collaborative authoring team to ensure these concepts enhance and support storytelling and ultimately higher-level learning.
The Effects of Interactivity and Nonlinear Navigation on Author and User Experience

As previously noted, a digital environment that includes a palette of unlimited functionality can easily overwhelm readers by focusing on what can be done instead of what should be done. And some research—although limited in scope—suggests that disorientation is a common problem with hypermedia as readers often struggle to determine where they are within the text and where they have been. On the other hand, cognitive learning theories have been used to emphasize that students obtain a deeper level of understanding through the use of multimedia tools that, by nature, combine a variety of formats for words and visuals than is possible with single media forms of content. So, it’s probably safe to say that the jury is still out on the extent to which interactivity and nonlinear navigation affect the learning process. Likewise, as more readers—and more schools—gravitate to tablet and eReader environments new cognitive theories of learning with hypermedia may emerge.

Figure 8 (Left): When the Glossary is activated; users see a List of Key Terms and Concepts, each of which includes a Brief Definition. When clicked, each Entry in the Glossary Links to the “Page” with which it corresponds elsewhere in the Book.

In the meantime, authoring interactive multimedia books must include careful consideration of the user experience. Of course, no one would ever question the “usability” of a traditional book (although in some cases we probably should), in which the rapid eye movement associated with reading and the simple act of page turning largely govern the user experience. However, a well “written”, well-designed, logically conceived interactive book requires careful usability study and sound interaction design strategies. Thus, the development of Making Transmedia has been an iterative process governed by contextual inquiry—a user-centered design and ethno-
graphic research method that includes structured interviews with and observations of users as they engage with early versions of the text. One feature that has emerged as a result of careful consideration for how a user might use *Making Transmedia* as a study aid (and beyond the book as simply reading material) is an architected index navigation system and interactive glossary. This system allows the user to call upon key information that has been concatenated into a single comprehensive menu. Once the menu is visible, the user can navigate directly to the elaboration of a concept with a single click. While relatively time-consuming compared to traditional methods of authorship, the process of contextual inquiry provides us with a means for understanding how every decision we make regarding the architecture of the book and integration of multimedia affects the user’s understanding of content and experience with the text as a learning tool.

**Conclusion**

Authoring textbooks within an interactive, multimedia, tablet-based environment requires a new framework for how we define authorship and the concept of the book itself. Authors must still understand the elements traditional storytelling. However, they must also understand a variety of concepts, including interaction design, multimedia capabilities, and contextual inquiry in order to conceptualize what is possible, and they must do all of this while understanding each as an equal partner within the authoring process. This means understanding the tools and skillsets available in other disciplines and a willingness to collaborate in ways that go beyond two or more authors getting together and sharing the writing workload. It also suggests that we will need to better understand the “grammar” and “literacy” of digital-age publishing so that we can train the next generation of authors. This paper represents an attempt to set the stage for future quantitative and qualitative research that begins to define the new paradigm of collaborative multimedia authorship. Future research will explore the student experience related to the use of *Making Transmedia* as a primary, required textbook.
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