Hypertext Non-Fiction: Seven

Practicum Report

submitted to

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The purpose of this practicum is to demonstrate my research, Web design, and Web coding skills while following several key phases of the interaction design process. In addition to demonstrating my skill as a technical communicator, the practicum serves as a tool for science communication. In my proposal, I outlined the scope of the primary deliverable in my practicum: a hypertext non-fiction with 100-150 pages (nodes). The nodes would consist of interlinked stories about several constellations and asterisms from different cultures around the world. Each node would include text or graphics with hyperlinks to other nodes. Navigation would include a navigation bar with links to each constellation and the homepage.

I applied several phases of the “Waterfall Model” while developing the hypertext non-fiction. Interaction designers and software developers have used original and modified versions of this model since it first appeared in an article, “Managing the Development of Large Software Systems,” by Winston Royce in 1970. The original model was rigid and methodical; Royce acknowledged that it would require revision in the future. Today, the “Waterfall Model” is more flexible and iterative. The model enables developers to communicate with their users throughout the entire lifecycle of a product, which increases the product’s overall quality and relevance to the users’ needs. The modern “Waterfall Model” includes five stages: Requirements Analysis, Design, Implementation, Testing, and Maintenance (“What is the Waterfall Model?”).

During my practicum, I chose to focus on the Requirements Analysis, Design, and Testing phases of the “Waterfall Model.” I excluded the Implementation and Maintenance phases of the “Waterfall Model” because interaction design typically occurs during the Requirements Analysis, Design, and Test phases (Sharp, Preece, and Rogers 449-450).

Requirements Analysis
Before conducting research or developing prototypes, I defined my target audience and a conceptual question. In the “Waterfall Model” of the interaction design process, such activities fall within the Requirements Analysis phase (Sharp, Preece, and Rogers 449-450). The purpose of this phase is to identify groups of potential users and their needs. By understanding the users’ needs, a designer can build a product around processes and concepts that are useful and intuitive to users (Sharp, Preece, and Rogers 430-433).

Target Audience
During TSC 530, Research Methods in Technical and Scientific Communication, I distributed a survey to JMU students in the Department of Physics and Astronomy. Early in Requirements Analysis phase, I realized that the hypertext non-fiction would target a similar group of users—JMU students who are enthusiastic about astronomy, ancient history, and mythology.

Many of the primary users of my hypertext non-fiction are majors or minors in the Department of Physics and Astronomy at JMU. The age range of my primary audience is between 18 and 24 years old. These students are familiar with astronomy from coursework and extracurricular activities. While astronomy coursework accounts for their general interest or expertise in astronomy, extracurricular activities (e.g., stargazing and observational astronomy) account for their interest in ancient history and
mythology. My primary users also frequently use the Internet to read astronomy news and are comfortable absorbing content through an electronic medium.

Secondary users of the hypertext non-fiction are the planetarium staff at the John C. Wells Planetarium and professors of astronomy and intercultural studies at JMU. These users have a substantial understanding of astronomy and other cultures because they communicate science and intercultural topics to the public and JMU students. One such user is Professor William Alexander, Director of the John C. Wells Planetarium Director at JMU. He frequently discusses constellations, asterisms, planets, and Greco-Roman mythology with students and the general public during the stargazing events.

Tertiary users include my practicum committee members, visitors of my online portfolio, and hypertext fiction or non-fiction authors. My practicum committee members have a general understanding of astronomy; however, it is neither their primary interest nor their area of expertise. This means that I will need to avoid jargon and technical language in the hypertext non-fiction. In addition, I have posted the hypertext non-fiction to the Internet (www.rperrino.com/practicum). Anyone reviewing my online portfolio (e.g., employers, peers, friends, and anonymous users) has access to the project. Hypertext fiction and non-fiction authors with access to the Internet can also view my hypertext non-fiction.

All user groups either have access to the Internet or a personal computer. To access the hypertext non-fiction, users have a broadband connection and use Internet Explorer 7, Mozilla Firefox 3, or Safari 3. In addition, users have JavaScript enabled in their Web browsers. Users who access the hypertext non-fiction via CD-R have access to a personal computer with a CD-ROM drive.

**Conceptual Question**

After defining my target audience, I began the process of developing a conceptual question. A strong conceptual question is the cornerstone of the interaction design process. It enables the designer to determine his or her users’ mental model—a term often used by interaction designers to describe how a user thinks. A user’s mental model can affect how he or she interacts with an interface (Sharp, Preece, and Rogers 116-119). For example, if a user uses Apple’s iTunes software or an iPod, she may be familiar with the “shuffle” feature. She associates randomization of multimedia files with a “shuffle” button, whether in the virtual environment of iTunes or the physical environment of an iPod.

While developing a conceptual question, the brainstorming process is essential. It is important to avoid using the first question that comes to mind; successive questions will likely be more focused and relevant to the target audience’s needs. My first conceptual question was “What constellations and cultures interest you most?” The question would have enabled me to understand my users’ specific interests about the constellations; however, I found the question too limiting. Moreover, my primary concern when developing my first hypertext fiction had been navigation.

I decided to focus my conceptual question on navigation for my hypertext non-fiction: “How should the website navigate?” During the Design phase of the interaction design process, I developed prototypes for a focus group that presented two alternate designs and navigational schema. Typically, an interaction designer uses several methods to assess the mental model of his or her users, but because of time restraints, I spent substantially more time conducting informal interviews with planetarium
directors, planning a focus group, and developing prototypes (Sharp, Preece, and Rogers 449-450). Once I had defined my target audience and conceptual question, I gathered information about my topic.

Design
The second phase of the interaction design process involved research, content organization, and the visual display of content, which would later translate into prototypes with alternative navigational schema. I tested the prototypes in a focus group of target audience members. The results of the focus group enabled me to develop requirement specifications for the hypertext non-fiction.

Research and Organization
During my early research, I used Google Scholar to locate documents about constellation mythology. My initial keywords were “constellation stories,” “intercultural constellation stories,” “ancient constellations,” and “origin stories AND constellations.” These keywords yielded few relevant results. A couple of search results provided me with new keywords that would help me to focus my research (e.g., “astronomy folklore,” “Hindu astronomy,” “Navajo astronomy,” “archaeoastronomy,” “ethnoastronomy,” “prehistoric astronomy,” and “ancient astronomy”). Many of my Web-based search results directed me to published books, most of which were only available in print. I found dozens of books on archaeoastronomy available at the East Campus Library. While scanning the books for constellation mythology stories, I discovered a number of stories about the Pleiades. Online, I began to use keywords, such as “Pleiades mythology.” The specificity of this keyword yielded substantial results and after two to three weeks of research, I focused the content of the hypertext non-fiction to the intercultural stories of the Pleiades. I found enough stories about the Pleiades asterism to develop a sizeable hypertext non-fiction (70 nodes). As I refined my keywords, I improved my data collection technique and was able to narrow my research more effectively.

I was also careful to avoid gathering erroneous content about the Pleiades. Although I do not have a background in archaeoastronomy or anthropology, I was able to decipher between legitimate and illegitimate sources. I only collected stories that were cross-referenced between institutions or that were direct translations from ancient texts. This filtering process was arduous, but of tantamount importance in the development of my hypertext non-fiction.
Before developing the prototypes for my focus group, I selected and organized the content of the hypertext non-fiction. I selected five stories about the Pleiades and divided each story into chunks (see Figure 1).

In Figure 1, I show an example of how I chunked the story of the Matariki. This story comes from the Maori people of New Zealand. In the 1897 translation I use for the hypertext non-fiction, the story is over 1,500 words in length. I chunked the story into 14 nodes. Figure 1 illustrates the first node and the hyperlinks I inserted to other nodes of the Matariki story. After separating five stories into 48 nodes, I was ready to begin constructing prototypes. I kept the content and hyperlinks identical to maintain consistency between the prototypes.

**Prototypes and Focus Group**

By developing prototypes and conducting a focus group, I practiced iterative design (Sharp, Preece, and Rogers 428). This form of design is important because the developer or designer avoids an “echo chamber” that obfuscates errors or counterintuitive processes (Sharp, Preece, and Rogers 418). User feedback can introduce new ideas and highlight areas for improvement within a system; often, the designer overlooks these ideas because he or she becomes too close to the product in development.
Prototype 1 and Focus Group Results

My conceptual question and chunked content laid the foundation for the prototypes. In my first prototype, I created a hypertext non-fiction with a navigation panel to the right of the content (see Figure 2).

Figure 2. Prototype 1

Each button in the navigation bar is a hyperlink to a pre-selected node of a story about the Pleiades. For example, the Cherokee button is a hyperlink to “cherokee_01.html,” which is the first node of that story. When a user navigates to a new story, the glowing text, “Cherokee,” changes to the title of the new story.

When I presented the first prototype to target audience members of my focus group, they provided rich feedback. Participants liked the overall design from an aesthetic standpoint, but they were either confused by or frustrated with the sidebar navigation. Some users recommended eliminating the sidebar buttons altogether because they found the buttons to be distracting. Another frequent comment was that the hyperlinks were nonsensical. The words within hyperlinks did not relate intuitively to the nodes to where the hyperlinks sent the participants. I have included the notes and click tracking data of the focus group as an appendix (see Appendix A: Focus Group Notes and Click Tracking Data for Prototypes 1 and 2).
Prototype 2 and Focus Group Results

In my second prototype, I chose a more minimalist navigation scheme. I do not provide a navigation bar but I provide a button to the homepage. Similar to the first prototype, I use hyperlinks within the text of the hypertext non-fiction (see Figure 3).

Focus group participants preferred the simplicity of a one-button navigation scheme to that of a multi-button navigation scheme. The second prototype also displays white text over a black background, which was met with criticism and praise by some participants. Although the white on black color scheme received positive feedback, participants unanimously disliked the low contrast of hyperlinks in the second prototype. A couple of participants also commented that they preferred the graphics of the first prototype. While using both prototypes, participants said they were more likely to click the second link within the text of a node, particularly if it was located towards the end of the text. This feedback revealed that my target audience members are more comfortable with linear plots; they are unfamiliar with the hypertext environment (see Appendix A: Focus Group Notes and Click Tracking Data for Prototypes 1 and 2).

The focus group provided valuable feedback during the Design phase of my practicum because I was able to observe how target audience members navigate the hypertext non-fiction. The results also were
important to developing requirements specifications, which would inform the final design and lay the groundwork for the Testing phase.

**Requirement Specifications**

Before creating the final design of a product, the designer should produce a list of requirement specifications. He or she can provide requirement specifications to a client or developer who should then be able to develop the system without further documentation or instructions. These specifications outline what the system “shall,” “will,” or “should” perform. “Shall” is defined as a testable requirement. It is quantifiable and a core component of the system interface because of its specificity. For example, “The website must load in a JavaScript enabled Web browser within five seconds over a 28K Internet connection.” The “will” statements of a requirement specification are not as absolute as the “shall” statements. In short, the developer is not obligated to follow “will” statements as closely as “shall” statements. Similarly, “should” statements simply tell the developer how the system should operate. The requirement specifications I developed for my hypertext non-fiction were the result of my focus group and hypertext theory research.

**Requirement Specifications**

During the focus group, the most frequent criticism of the prototypes related to the navigation schema. Although basic features such as browser compatibility and layout are in the requirement specifications, the primary focus is on navigation (see Table 1).

Table 1. Requirement Specifications

<table>
<thead>
<tr>
<th>shall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. system shall consist of approximately 70-90 pages with hyperlinks</td>
</tr>
<tr>
<td>2. sidebar navigation shall include one rollover button that links to a random story by using JavaScript</td>
</tr>
<tr>
<td>3. sidebar navigation shall include one hyperlink to the homepage</td>
</tr>
<tr>
<td>4. introduction page shall include one rollover button that links to a random story by using JavaScript</td>
</tr>
<tr>
<td>5. every page will include a link to a clickable map of the hypertext nonfiction</td>
</tr>
<tr>
<td>6. every page shall have a footer with a browser compatibility, JavaScript, copyright, and credits statement</td>
</tr>
<tr>
<td>7. every external hyperlink shall open in a new window or tab</td>
</tr>
<tr>
<td>8. every page shall include a Google Analytics JavaScript for tracking</td>
</tr>
<tr>
<td>9. system shall fit to 1024x768 screen</td>
</tr>
<tr>
<td>10. system shall be accessible on Mozilla Firefox Web browser (Mac/PC)</td>
</tr>
<tr>
<td>11. system shall be available at <a href="http://www.rperrino.com/practicum">http://www.rperrino.com/practicum</a></td>
</tr>
<tr>
<td>12. system shall be available on a CD-R disc with an index.html file</td>
</tr>
<tr>
<td>13. pages shall include a minimum of two hyperlinks from which the user can exit the page</td>
</tr>
<tr>
<td>14. pages shall not have inactive hyperlinks</td>
</tr>
<tr>
<td>15. code shall be XHTML Transitional 1.0 compliant</td>
</tr>
</tbody>
</table>
In addition to the focus group results, the requirement specifications derived from my research in hypertext theory.

**Hypertext Theory**

In my practicum proposal, I discussed the hypertext non-fiction’s structure, navigation, layout, and design. In order to develop requirement specifications and the final design, I conducted further research, particularly about hypertext disorientation, looping, and interaction.

**Disorientation**

Reading hypertext fiction and non-fiction can be disorienting, particularly for a novice reader. The human mind works by association and many interfaces (e.g., books, reports, and movies) are presented to the user in a linear fashion. Hypertext fiction and non-fiction breaks from linearity in favor of a more disorienting, unpredictable interface. Participants in my focus group were familiar with linear plots and struggled with the hypertext non-fiction’s fragmented structure. Some participants thought the hypertext non-fiction was a game or a test of their knowledge. They said that the content was not the source of their frustrations; the order in which content was presented to them was the culprit. Participants had become disoriented. George Landow defines disorientation in hypertext as “the tendency to lose one’s sense of location and direction in a nonlinear document” (144). As Landow notes, “for more experienced users, disorientation is pleasurable and exciting, and is used as an effect in allegory or stylistic and narrative experimentation (146).

In “A Future for Hypertext Fiction,” James Pope describes how some users enjoy solving the puzzle of hypertext fiction, but they never feel as though they are fully immersed or “lost in a book” (461; Nell 42). Pope conducted an experiment on novice and advanced readers of hypertext fiction. He found that, regardless of experience with hypertext fiction, readers were frustrated when a story’s plot was replaced by abstraction (Nell 461). Moreover, even those readers who claim to be open-minded about hypertext found many links to be “baffling, pointless, or just random” (Pope 462). He points out, despite the
Works Cited


Bibliography


English examples for "hypertext fiction" - A single work of hypertext fiction can have a mixture of these three forms. There are different forms which the hypertext fiction can take. It is a very visual form, and is related to hypertext fiction and visual arts. Info Hypertext fiction is a genre of electronic literature, characterized by the use of hypertext links which provide a new context for non-linearity in literature and reader interaction. The reader typically chooses links to move from one node of text to the next, and in this fashion arranges a story from a deeper pool of potential stories. Its spirit can also be seen in interactive fiction. Arborescent fictions branch into mutually exclusive story lines, and networked fictions have multiple starting points and do not always have a set ending. The idea of hypertext fiction is older than the computer, but computer-based implementations of the idea are as new as the personal computer, and have many roots. Not just the precomputer attempts I will mention in a moment. It takes more than a new concept to create a new art form so, if we are to understand the development of this new form of literary art, we must explore the development of skills, peer groups, support institutions, and audiences. Computer-based hypertexts often resemble earlier experiments. But, just as often, they clearly have somewhat different roots. Whether hypertext fiction is "old" or "new" cannot be solved by investigating lineage, but rather by describing the kind of world that exists to support one or the other way of creating fiction. Hypertext most often refers to text on a computer that will lead the user to other, related information on demand. Hypertext represents a relatively recent innovation to user interfaces, which overcomes some of the limitations of written text. Rather than remaining static like traditional text, hypertext makes possible a dynamic organization of information through links and connections (called hyperlinks). Hypertext can be designed to perform various tasks; for instance when a user "clicks" on it or "hovers" over it, a bubble with a word definition may appear, a web page on