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The Impact of Visual Design on Web Persuasiveness

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THE IMPACT OF VISUAL DESIGN
ON WEB PERSUASIVENESS

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
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by
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ABSTRACT

Many commentators of web persuasion have suggested that content is the key factor responsible for creating credible (and therefore persuasive) websites. Research in a variety of fields has been devoted to identifying accurate methods of determining a website's trustworthiness in order to help organizations promote credibility and teach users to critically analyze it. By focusing on the credibility of content, however, researchers are promoting an unbalanced perspective of web persuasiveness that privileges textual content over visual design.

This thesis hypothesizes that visual design significantly impacts web persuasiveness. First, exploration of current theories of web persuasiveness reveals the importance of persuasion in measuring a website's success and the need to expand consideration of persuasive factors beyond the credibility of content. Next, Chapter 2 demonstrates the impact of visual design through explanation of the perceptual process and the theory of halo effect. Then, design principles from theorists such as Tufte, Kress and Van Leeuwen, Mullet and Sano, and Kostelnick and Roberts are suggested as a means for determining whether or not a visual design is "attractive."

To study the effects of these design principles (or their absence) on web persuasiveness, I conducted a pilot study where one group of participants used an "attractive" website while another group used an "unattractive" version of the same website. Results from this study suggest that visual design does have a positive impact on web persuasion.

DEDICATION

For Homer

ACKNOWLEDGEMENTS

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CHAPTER ONE

WEB PERSUASION

The quest to attractively and affordably furnish our first house has taken my husband and me into three different states and, most recently, extended to an online purchase from a store we'd never heard of. Although a little unsure about buying furniture online—and from an unfamiliar retailer—we were persuaded by the apparent professionalism of the site. Muted, complementary colors and high-quality, scalable images spoke of a knowledgeable and time-consuming design process. Thus persuaded, we made our purchase and received the standard confirmation email instructing us to wait for detailed shipping information.

We waited. After nearly a week with no further correspondence we began to grow uneasy. Shouldn't we have heard something by now? Another week of making excuses for the retailer passed before, highly distressed at this point, we called the customer service number—and reached an answering machine. During business hours. Now we panic…and I feel more than a twinge of embarrassment. After all, I'm currently researching web persuasion. How does a person spend over two months reading about web credibility and then fall victim to a fraudulent website?

Fortunately for our credit card and my pride our order eventually arrived, delayed by a snowstorm and the need to re-stock the item, issues that could have been communicated more promptly but were actually lapses in customer service and nothing more sinister. Despite the relatively happy ending, experiencing two weeks of uncertainty was sufficient to illustrate why the Internet is so frequently considered a dangerous place. The absence of gatekeepers is a characteristic of the Internet that causes both celebration and concern—

while some herald the democracy of a space that "anyone" can publish to (Kaplan 20), others worry that this causes there to be no reliable way of determining a website's credibility (Nielsen 92). It is the latter perspective which considers the Web a dangerous place—how do we know what to trust? How do we know if a furniture store is authentic, or whether a bank notification email is a phishing scam? Organizations such as Consumer Reports WebWatch and authors such as Alexander and Tate promote rigorous evaluation of content as a more reliable way of determining credibility (Alexander and Tate 10). Critically examining a website's content can help prevent the sometimes disastrous consequences of web persuasion. In our experience, we were persuaded primarily by the visual design. If we had noticed, as I did when reexamining the site, the numerous misspellings in the "About Us" page and negative reviews, we would have been less likely to be persuaded by the "professional-looking" design. If a victim of a phishing scam noticed that the link they followed from an email directed them to a website with a misspelled URL instead of merely recognizing that the site looked identical, this more rigorous method of determining credibility could have prevented persuasion and protected their identity (Fuller, *Stanford Daily*).

   This thesis hypothesizes that visual design significantly impacts web persuasiveness. Independent of content, an "attractive" website will be more persuasive than an "unattractive" one. This is a notion that can (and has) been misused, as seen in the phishing example above; however, the emotional power of visual design remains a benefit and not a detriment to web designers. As such, designers' goal should be to grant the same degree of importance to creating a visually appealing design as creating usable, useful content. This concept somewhat contradicts much of the literature on web persuasion which tends to focus on credibility of content to the detriment of visual design. While credibility is a key

factor to the persuasion process (Wathen and Burkell 134; Fogg 147), it remains one component of a much larger subject.

To explore the hypothesis of the impact of visual design on web persuasiveness, I'll need to examine this subject in greater detail. How is persuasion defined? What types of websites are persuasive? How does credibility affect persuasion, and why is it the focus of so much current research? What can understandings of visual design add to the discussion?

Persuasion and Persuasive Technology

B.J. Fogg defines persuasion as the voluntary change of a person's attitudes or beliefs: "to embrace the site's cause, register personal information, make purchases, click on ads, complete surveys, or bookmark the site for future visits" (148). Andrew Chak's definition is similar, that persuasion is influencing a person to change his/her thoughts, feelings, or behaviors without using force (19). These definitions are actually reiterations of classical theory. Aristotle, for example, describes persuasion as changing beliefs or influencing decisions through speech (182). The main difference between Aristotle and more contemporary theorists is the persuasive media, not the concept of persuasion itself. Both Fogg and Chak make a distinction between persuasion and coercion—in each, change is voluntary, although Chak notes that in the online world the only action users are truly forced to make is "closing those annoying pop-up ads" (19). Further, persuasion is measurable when an internal change (of attitude, thought, or belief) is manifested by an external action. For businesses, this is often thought of as the "conversion rate," the frequency with which visitors to a website become customers. Conversion rate is a popular topic, with consulting firms like Future Now, Inc. providing services such as "persuasion architecture," redesigning websites to reach customers who "ignore marketing" (Future Now).

Web persuasion is not, however, limited to business transactions. Fogg includes such actions as registering personal information—think of the social networking websites like MySpace and Facebook or even newspapers, which are increasingly allowing users to post comments to stories after creating a profile—and adding a website to favorites (148). This final example opens web persuasion to encompass the entire Internet—what website doesn't want visitors? "Even sites that focus mainly on providing information and content, such as about.com or cnet.com, attempt to persuade" (Fogg 147). By this definition all websites have persuasive aims, whether the goal is specific, such as finding and making friends (Facebook) or using a search engine (Google), even if the goal is more general, such as persuading the user to return to the website in the future.

Websites are one example of what Fogg terms "captology," or computers as persuasive technology, the study of which intends to describe "the area where technology and persuasion overlap" (5). Persuasive technologies have an advantage over traditional media in that they are more interactive than magazine ads or bumper stickers (Fogg 6). Interactivity can also be described as hypermediacy, or the desire to be aware of and enjoy the process as well as the product, frequently manifested by juxtaposing one media with another, as is so aptly demonstrated by the Internet (Bolter and Grusin 31, 43). Persuasive technologies also have several advantages over human persuaders; while both are characteristically interactive, persuasive technologies are more persistent, available in places a human persuader may not be welcome, scalable, and more anonymous (Fogg 7).

While the media have changed, Aristotle's three modes of persuasion—logos, ethos, and pathos—continue to be influential. Of the three, ethos (or the credibility of the speaker) has received the most attention in research on web persuasion because determining the

trustworthiness of a website is considered to be the most important factor of web persuasion.

Credibility

Aristotle defines ethos as the credibility or good character of the speaker (182). Determining the "good character" of a website is difficult, and most notions of web credibility are based on research conducted by B.J. Fogg. Fogg's Web Credibility framework has three categories of variables: site operator, site content, and site design (Fogg 173). A diagram based on the categories and subcategories of Fogg's framework can be seen below.
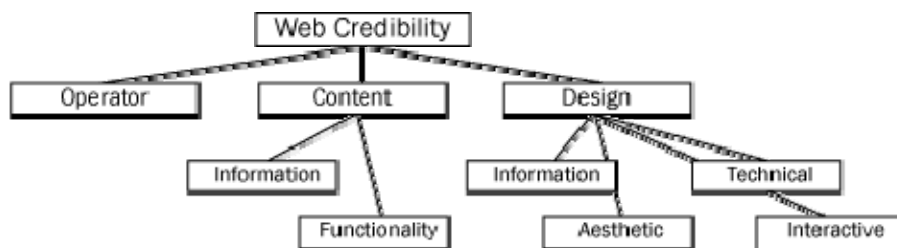
Figure 1
Fogg's Credibility Framework

Site operator refers to the person or organization behind a website. If the operator is a well-known and respected organization, such as Amazon.com or *The New York Times*, or if the operator is a non-profit organization then the website is more likely to be perceived as credible. Site content includes two categories: information and functionality. Here, perceived credibility increases in relation to how meaningful and up-to-date the information is and the degree to which a website helps users accomplish their goals. The final piece of the framework, site design, is divided into four categories: information design, or the arrangement of the content; technical design, how the site performs on a link by link basis; aesthetic design, or how the site looks, feels, or sounds; and interactive design, how the site

supports users as they accomplish their goals. Many design factors can influence

credibility—technical issues such as broken links and information issues such as cluttered

pages can have a negative impact while high-quality images and an overall "professional"

look can have a positive impact.

This framework seems to be the basis of nearly every other concept of web

credibility, evident in the frequency with which Fogg is cited in other works and reflected in

numerous "checklists" intended to help organizations promote credibility and to help users

properly and accurately determine what is and is not trustworthy. Consumer Reports

WebWatch, Alexander and Tate's *Web Wisdom: How to Evaluate and Create Information Quality*

on the Web (55-57), WebCredible, the Stanford Web Credibility Project, and Wathen and

Burkell's "Believe it Or Not: Influencing Credibility on the Web" (141) are all examples. In

WebWatch's five guidelines, for example, organizations are informed that they can promote

credibility by following the following five guidelines:

1. Disclose the physical location and contact information for the company,

2. Distinguish between advertising and actual content,

3. Disclose all fees charged and other relevant financial relationships,

4. Correct false, misleading, or incorrect information, and

5. Include a privacy policy. (Consumer Reports WebWatch)

Alexander and Tate likewise apply five traditional evaluation criteria to the context of

websites, adding a sixth that is specific to the web medium. Evaluating a source based on

authority, accuracy, objectivity, currency, and coverage can enable users to more accurately

judge its trustworthiness (Alexander and Tate 10), while considering any interaction or

transaction features can prevent identity theft (Alexander and Tate 49). In a detailed

checklist, Alexander and Tate provide a list of questions for each criterion—the greater

number of affirmative responses, the more trustworthy the source (54-57). "Is it clear what organization, company, or person is responsible for the site?" is one of thirteen questions in the "accuracy" category and "if cookies are used at the site, is the user notified?" one of five questions in the "interaction and transaction features" category (Alexander and Tate 55, 57).

Apparent in these two checklists is the emphasis on textual content. WebWatch's five guidelines are entirely focused on what content to include and remove, and only 2 of 39 questions concerning Alexander and Tate's evaluation criteria relate to visual design elements. Specifically, design consistency and the presence of a logo are credited with having a positive impact on perceived authority (Alexander and Tate 55). Although the information provided by these (and other) credibility checklists for the development and evaluation of trustworthy content is relevant and useful, it's necessarily incomplete. The Web is, after all, a visual medium. Appealing visual design can have just as much impact as useful, usable content, but even when visual design is mentioned in other checklists (Webcredible, Stanford) it's only to recommend that designers make the site "look professional."

The lack of specifics or complete avoidance of this topic is not due to its unimportance. Fogg's own research has found a significant "connection between design look and perceived credibility" (Fogg et al 25), and yet revisiting his Web Credibility framework shows the "look, feel, or sound" of a website (aesthetic design) buried at the bottom of the framework, seeming to contradict this finding.
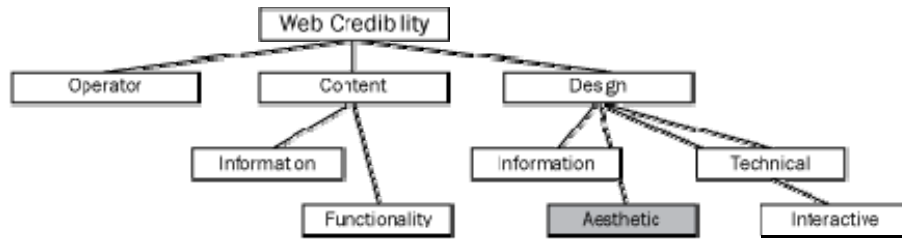
Figure 2
Credibility Framework Highlighting Emphasis on Textual Content

Despite research to the contrary, there remains a tendency to privilege textual content over visual design, a trend reflected in the development of the Internet itself, which has a nearly 30-year history as a tool for sharing textual data prior to the emergence of graphical browsers. In 1969, the Advanced Research Projects Agency launched ARPAnet, the result of experiments with networking computers in order to store data and share knowledge among geographically separated groups of researchers (S. Williams 33). ARPAnet, the origin of the TCP/IP protocol and the now-familiar "domain name system" (.org, .com, .edu), was initially a very exclusive academic experiment with only four nodes (S. Williams 34). As the Internet's popularity increased, its reach expanded to over 100,000 nodes by 1990. In this year, Tim Berners-Lee of the CERN research facility in Switzerland introduced "Hypertext Markup Language" (HTML) as a simpler method of posting and viewing information on the Internet (S. Williams 34).

Wroblewski describes this period as the Simple Sharing era of web development, where "Web pages consisted of text-based data and little else" (6). The remaining five "eras" of web development were made possible when the Internet was deregulated in 1992, changing the Internet's primary use from research to commerce, and when the first graphical browser (Mosaic) was introduced in 1993, allowing images to be incorporated into web pages (Wroblewski 7). The remaining eras of web development, according to Wroblewski, are (1) Image and Table, (2) Design Intro, (3) Techno-Hype, (4) Usability, and (5) Speaking

Web (4-13). The Image and Table era marks the first attempts to add images to web pages, which caused the Internet to appeal to a wider audience with varying goals and computing skills (Wroblewski 7). The Design Intro and Techno Hype eras are represented by increasingly visual, complicated websites that often sacrificed usability or accessibility in an effort to look good or use the latest animation or interactive technologies for their own sake (Wroblewski 8-9). In response, the Usability era focused on meeting users' needs and helping them locate information or services quickly and easily instead of overwhelming or frustrating them with cluttered pages and long download times (Wroblewski 10). The Usability era is what Wroblewski believes is the current stage of web development. The Speaking Web era is his suggestion for the future—where the lessons learned from the other eras (particularly Usability) are pieces of the larger puzzle of what makes a "good Web experience" (12).

Consideration of visual design has clearly complicated web design, as evidenced by the fact that after 24 years of "simple sharing" the Web evolves nearly every two years. This is partially what causes more emphasis to be placed on textual content than visual design. As seen in the often unusable websites of the Techno-Hype era, it is unnervingly easy to misuse visual design, and these misuses of visual design, whether intentional or accidental, can result in (1) deceptive or (2) unusable websites.

Visual Trickery
Another reason textual content is privileged over visual design is related to a longer history than that of the Internet—the tension between design and content is far from new. Images have often been equated with *pathos* because of their strong emotional appeal (LaGrandeur 120-1), and Aristotle writes that those who rely on emotion to persuade "might as well warp the carpenter's rule before using it" (179). Kienzler adds in "Visual Ethics" that care must be taken when crafting visuals, as they can have a greater emotional impact and be remembered

longer than words and are processed even when a document is "skimmed" (171). Visual persuasion, then, is frequently discussed as tricking or seducing the audience by lending "undue credibility to otherwise weak arguments," as in LaGrandeur's example of a hate group's website (130). "Slickly produced Internet sites" was also listed as a major contributor to the growth of hate groups in the late 1990s (Duffy 292).

The checklists' focus on content and information, then, is also the result of a laudable goal of cultivating in users a more rigorous screening process to protect them from misuses such as the previously mentioned phishing scams and hate group websites—instances where looks were indeed deceiving.

Simplicity is Usability
An additional factor is "user advocates," or usability experts such as Jakob Nielsen, who have been "fighting against design excess and fashion-driven sites that contradicted everything we knew about user behavior" (*Homepage* 1), or against Wroblewski's Design Intro and Techno-Hype eras. For Nielsen and many others, simplicity is the equivalent of usability; visual design complicates websites, distracting and/or confusing the user. In *Homepage Usability*, Nielsen has gone so far as to identify images that are not links or logos as "filler" (61).

Figure 3
Content is King: useit.com

Nielsen's useit.com is, not surprisingly, filler-less. He practices what he preaches, so because "content is king" it makes up at least 80% of the page (*Designing* 22). "Simplicity always wins over

complexity" (*Designing* 22), so the entire homepage is divided between three elements: the yellow bar containing a search box and breadcrumbs to help orient the user, the title, and the content area. The lack of graphical elements is intentional—Nielsen devotes an entire page to explaining "why this site has almost no graphics."

Useit.com represents an extreme example of the Usability era of web design (Wroblewski 4). The Usability era responded to the one prior to it, the Techno-Hype era (Wroblewski 4), a stage where technologies and graphics were used (and overused) for their own sake, producing the "design excess and fashion-driven sites" that Nielsen has been "fighting against" (*Homepage* 1) The usability era, by contrast, "focused on user and *content*" (Wroblewski 4; emphasis added).

The credibility of textual content and usability are important topics, the achievement of which can earn users' trust and help them achieve their online goals. It is also true that the persuasive power of visual design can be misused, but this is not sufficient cause to avoid it altogether. Like any tool, the manner in which it is used depends on the intentions of those using it. Credibility and usability, while important, do not provide a balanced view of web design. Combining the lessons learned from credibility and usability with the principles of visual design can create a more balanced, more persuasive, and more enjoyable web experience.

Balancing Content and Visual Design

"Good web design is both transparent and reflective" (Bolter and Gromala 74). Transparency, the idea that the medium should disappear, leaving only the message, is similar to Nielsen's model of a usable website. The goals of simplicity and clarity, according to Bolter and Gromala, are versions of the desire for transparency (36). Reflection is the counterpart of transparency—users are aware of the medium and are attentive to it (Bolter

and Gromala 62). The design isn't meant to disappear but to be appreciated as part of the experience. Good web design, according to Bolter and Gromala, is a combination of both reflection and transparency; users look at a website to appreciate its design and how it reflects their own values and personalities and look through it to explore the information it contains.

Visual design, after all, is more than "pretty pictures," more than filler (Wroblewski 132). Visual design helps convey the message—"great designs communicate first and are beautiful second" (Shedroff 278). One way that "great designs" communicate is establishing a mood through the use of color; another is using Gestalt principles to organize elements in a way that increases readability and coherency (Wroblewski 133). Design consistency exudes professionalism and verifies the authority of a page (Alexander and Tate 39), helping to establish credibility. Finally, visual design can increase the enjoyment of a website. "A usable design is not necessarily enjoyable to use," Norman writes (8); in fact, some research suggests that an attractive design makes a product (or website) more usable (Norman 19). Tufte's ideal graphic displays possess both "beauty and utility" (*Envisioning* 9).

Good web design, therefore, is a complicated thing, requiring both appreciable content and visual design. Defining "good" design more specifically is even more complex and relies entirely on context. The diversity of potential audiences and multiple exceptions to every rule led Bolter and Gromala to suggest that "perhaps the only rule is that the design of each site should suit its envisioned community of users" (103). Some designs will be more transparent, some more reflective, the true test of success is how well the site meets its users' needs.

Thesis Overview

This chapter has demonstrated that web persuasiveness is an increasingly common measurement of a website's success; however, persuasiveness itself is usually limited to an understanding of the credibility of a website's textual content. Instead of focusing on textual content to the detriment of visual design, "good web design" should seek to balance the two elements.

Although design preferences are not universal, to a certain extent they are predictable based on similarities in perceptual processing, cultural learning, and experience. The following chapter connects visual perception to persuasion by exploring the theory of halo effect, and then investigates how the process of visual perception and the influence of cultural learning and personal experience are reflected in generally accepted North American design principles from such theorists as Tufte, Kress and Van Leeuwen, Mullet and Sano, and Kostelnick and Roberts.

These principles were used to select an existing website for a pilot study testing the impact of visual design on web persuasiveness. Two versions of the website, the original "attractive" one that adheres to many of these design principles and a revised "unattractive" one that does not adhere to these principles but has identical content and information architecture were tested on two groups of users. The methods and results for the pilot study appear in Chapter 3.

Lastly, further analysis of the pilot study with suggestions for future research in the area of web persuasion is available in Chapter 4.

CHAPTER 2

VISION AND DESIGN

Wroblewski writes that good information will be more appreciated if given good

presentation (176). Defining and designing for "good presentation" or "attractiveness" is a

complicated issue, however, and while eventually arriving at any universal conclusions is

unlikely, examining the multifaceted process of visual perception reveals some helpful design

principles to apply to future research.

This chapter focuses on identifying how visual perception impacts persuasion, using

Barry's framework to discuss three factors of the perception process. After determining the

impact for web persuasion based on how visual perception works, the chapter concludes by

extracting general design principles from a global, cultural, or personal level.

Visual Perception

The persuasive power of visual design is a direct result of the perceptual process. A

multifaceted construct that functions on both the conscious and subconscious levels, the

immediate impact for persuasion originates from halo effect, a theory of social psychology.

The Impact for Persuasion

"What is beautiful is good" summarizes the concept of the attractiveness stereotype, or halo

effect (Eagly et al 109), a theory of social psychology which states that typically, "people's

impressions of attractive people are much more positive than their impressions of

unattractive people on a variety of evaluative dimensions" (McArthur 166). Attractive people

are more likely to be perceived as confident, intelligent, successful, or empathetic (Eagly et al 119); attractive people are more likely (all other factors being equal) to be more *persuasive* (Fogg 92).

The halo effect works because of pre-attentive processing, the capability of our eyes and brain to work on a subconscious level to form judgments before cognitive thinking has a chance to fully process all stimuli (Barry 18; Norman 11; Goleman 15). Barry discusses research by Ledoux to describe two different ways of responding to visual stimuli, one that is pre-attentive, unconscious, and highly emotional, and one that is conscious and analytical (Barry 19). Barry and Norman use this research to claim that "we are not the fully rational beings we think we are" (Barry 18), but instead a more complex and inseparable blend of emotional and cognitive reasoning (Barry 19; Norman 7). The impact of halo effect is that because visual stimuli are processed first and some of these stimuli can be processed subconsciously, preferences can be formulated without being aware of it, as in a study that found that "people acquired a preference for oddly shaped geometric figures that had been flashed at them so quickly that they had no conscious awareness of having seen them at all!" (Goleman 18, 20)

A study by Lindgaard et al extends this concept to websites. They found that different groups of users could consistently rank websites by attractiveness after as little as 50 milliseconds of exposure, demonstrating that visual appeal factors are detected first and suggesting that a favorable first impression is critical for a website's success (Lindgaard 115). This has a significant impact on web design and the issue of web persuasiveness—with competitors' sites just a back button away, a theoretical understanding of how visual perception works and the practical application of design principles (appropriate for the

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intended audience) based on perceptual theory is crucial for crafting a positive first impression for any website.

A Complicated Process

Above all, visual perception is a complicated process. Barry provides a helpful framework when she describes the components of the "visual world," or individual interpretations of reality (15). The visual world is "an image created in the brain, formed by an integration of immediate multi-sensory information, prior experience, and cultural learning (Barry 15). This framework does not consider perception as the result of passive reception of visual stimuli; instead, visual perception is the complex interaction of physiological, cultural, and experiential factors.

Physiological

"Seeing is believing," "what you see is what you get," and any number of other clichés embody the often simplistic assumptions concerning visual perception. Enns disproves four of the most common assumptions in order to offer a more complicated definition of visual perception. The first (and most common) assumption is that the eye works like a camera, faithfully recording whatever it's exposed to (Enns 4). This myth is disproved by the existence of visual illusions that can "trick" they eye (Enns 5; Barry 28-30) because of the blind spot caused by the attachment of the optic nerve that must be "filled in perceptually" (Barry 6). Two related myths are that visual perception is accomplished only by the eye, and that rational thought does not involve the senses while in actuality there is a complex relationship between the eye and brain (Enns 10, 12). Finally, Enns discusses the myth that visual perception is a passive process, without effort (7). This myth is contradicted by the active movement of the eye as it focuses on different parts of a scene—called saccadic movements—explaining why eyewitness accounts can so often vary.

Visual perception is in, essence, action. Kostelnick and Roberts make two main points about perception—that it is an active process and that it's about the relationships between different objects (48, 53). Barry describes it this way: "it is therefore *change* that signals vision and *relationship* that carries meaning" (Barry 41). Action in the sense that *changes* in color, texture, size, shape, or placement are the tools for constructing meaning; in the sense that we *search* for focal points amid an often overwhelming visual array; and in the sense that we *apply* past experience to what we see (Kostelnick and Roberts 49-50).

Norman suggests that this processing is a combination of the affective and cognitive systems (11). The affective system is frequently associated with "gut reactions" or automatic responses, which often occur (as demonstrated by halo effect) on a subconscious level. Visual perception is closely tied to emotion; in *Emotional Intelligence* Goleman describes an emotional hijacking:

> A visual signal first goes from the retina to the thalamus, where it is translated into the language of the brain. Most of the message then goes to the visual cortex, where it is analyzed and assessed for meaning and appropriate response…but a smaller portion of the original signal goes straight from the thalamus to the amygdala in a quicker transmission, allowing a faster (though less precise) response. Thus the amygdala can trigger an emotional response before the cortical centers have fully understood what is happening. (19)

In a sense, there's a neural shortcut that allows people to act literally before they have a chance to think. Evolutionarily, quicker judgments of imminent danger can save a life—as in the "fight or flight" response. When I see a snake while hiking, for example, my heart rate increases and my immediate response is to put a respectful distance between it and myself. If the snake in question happens to be a rattlesnake (or other poisonous variety), the amygdala and its neural shortcut have served me well; the same response to the stimulus of a garter snake, however, isn't quite as appropriate.

Norman posits that much of human behavior is subconscious (11). According to him, the human brain contains three different levels, two of which (visceral and behavioral) are subconscious and only one (reflective) is conscious (Norman 22-3). The visceral level is automatic, pre-wired, and responsible for quick reactions such as the "fight or fight" response. It is also responsible for halo effect, as the visceral level is "where appearance matters and first impressions are formed. Visceral design is about the initial impact of a product, about its appearance, touch, and feel" (Norman 37). The behavioral level is about use and usability—does the product (or website) perform as it's expected to? Does it enable the user to meet his/her goals? Both of these levels are about the "now," the reflective level, by contrast, is where interpretation and understanding come into play. "Through reflection you remember the past and contemplate the future" (Norman 38).

The affective system makes judgments; the cognitive system interprets and makes sense of the world (Norman 11). More predictable than emotional responses is the processing of visual information based on relationship. The human brain is generally more comfortable with order than chaos, and consequently seeks to form a cohesive whole of unrelated parts (Wroblewski 139; Barry 42). The family of principles related to this concept, called Gestalt principles after the school of psychologists who in the early 20th century first began to "investigate relationship as the key to meaning" (Barry 42-3). Many of these principles have been adopted as guidelines by document designers, web designers, and visual communicators and can be grouped under two general categories: contrast and grouping. "These two principles are virtually universal—that is, most readers will have similar perceptual responses to visual language that displays these principles" (Kostelnick and Roberts 53). The number of Gestalt principles to follow varies from source to source— Williams' *The Non-Designer's Design Book* and Wroblewski's *Site-Seeing: A Visual Approach to*
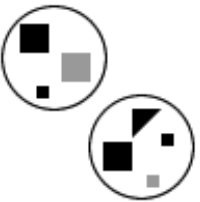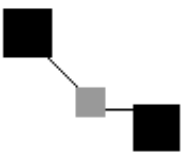
Web Usability which refer to them simply as design or organization principles. The table

below shows the variation between four sources:

Table 1
Sampling of Gestalt Principles Among Four Different Sources (see Barry 47, 51; Horn 75; R. Williams 13; Wroblewski 137, 147)

Barry	Horn	Williams	Wroblewski
Figure-Ground	Figure-Ground	Contrast	Contrast
Proximity	Proximity	Proximity	Proximity
Similarity	Similarity	Repetition	Similarity
Good Continuation	Good Continuation	Alignment	Continuation
Prägnanz	Closure		Closure
	Common Region		
	Connectedness		

All of the principles listed above describe how people perceive groups of objects and

help designers create documents and websites that work with the perception process. This

can make documents easier to read or easier to skim, websites more intuitive and less

frustrating, and increase credibility by creating a "professional" look; because while users

may not be able to list the Gestalt principles they're commonly enough used that they have

become design conventions in a number of different fields.

Table 2
Explanations and Examples of Gestalt Principles

Example	Principle	Alias	Explanation
	Figure-Ground	Contrast	The ability to separate one image from another and the background from the foreground.
	Proximity		When items are close to each other, they become a single visual unit.
	Similarity	Repetition	Items that are similar (color, shape, size, texture, or direction) are perceived to be related.
	Good Continuation	Alignment	A smooth path that provides visual connection for elements.
	Closure	Prägnanz	The tendency to group components as a closed whole rather than separate entities.
	Common Region		Items enclosed within a line are perceived as being a group.
	Connectedness		Any region connected by lines or points is seen as a visual unit.

Consistencies in the physiological aspects of the visual perception process are responsible for making "the active construction of perception very similar in different people" (Enns 16), which in turn makes many visual design conventions based on the Gestalt principles as well as the phenomena of halo effect possible. Understanding these conventions and applying them in a careful manner can increase the initial appeal of a website and render it more persuasive.

Cultural

Physiological similarities of perceptual responses are only part of the puzzle. Cultural learning also impacts interpretation. An excellent example of this is in the processing of color. Color is one of the first factors of Gestalt grouping and therefore part of the physiological response For example, yellow is registered first by the eye and therefore the most noticeable, while blue has been noted to have a calming effect (Barry 132). However, color also has different "meanings" based on cultural learning (Barry 130). The color red can signify "warning" or "danger" in North America, "joy" in China or "prosperity" in India (Bosley 263; Barry 130). Red also has different meanings to a Red Sox or Yankees fan.

Cultural factors can affect many different aspects of design. In an American business report, for example, graphics are usually intended to support the textual content. The burden of comprehension is placed on the author, who is responsible for creating clear, functional visual aids. Contradict these expectations, as with a Japanese business report that ranks high in aesthetics and ambiguity, and the result is confusion (Maitra and Goswami 200). In Maitra and Goswami's study, readers had trouble comprehending the document even with the verbal content translated.

Placement of elements on a page/screen and the ratio of elements to negative space also have cultural factors. Kress and Van Leeuwen theorize that the tradition of reading

from left to right and top to bottom causes the most important element to be placed in the top left corner. This grants the element greater "information value" (Kress and Van Leeuwen 183), in web design, this is conventionally the location of a company's logo—insuring that the brand remains in visitors' memory. Simplicity is a common goal of North American design that is defined as maximizing the data-ink ratio of the design (*Quantitative* 96). For Tufte, simplicity can be achieved by the strict avoidance of "chartjunk," or meaningless, distracting marks (*Envisioning* 34). Contrary to Nielsen's claim that simplicity is always preferable to complexity (*Designing* 22), Tufte also encourages "wondrously complex" graphics that reward the reader for intensive study (*Envisioning* 24).

Cultural learning affects the way we interpret the world and, in turn, affects responses to visual stimuli. This is why audience analysis is so frequently recommended prior to any design endeavor (Kostelnick and Roberts 5)—while the Gestalt principles can organize elements and help direct users' attention, cultural preferences and expectations are relative to the needs of a specific audience and should always be carefully considered.

Experiential

From physiological similarities to cultural differences, the final factor influencing the perceptual process is the most individualized—prior experience. Experience can refer to expertise; an individual trained in graphic design will evaluate a website using different criteria than a general user. Experience can also refer to familiarity, for example, an individual with no computer experience is likely to be disoriented by the Web, while someone with computer experience can transfer knowledge of navigating through one virtual environment (the "desktop") to another.

Websites are increasingly attempting to accommodate prior experience and personal preferences in a number of ways. Amazon.com personalizes its site by offering

recommendations to users based on their prior purchases, while accessible websites allow users to change the text size to suit their needs. Other sites, such as Blogger, MySpace, and Facebook provide the functionality for people to quickly and simply customize their own space.

The Search for Attractiveness
The concept of halo effect suggests that attractive websites are more persuasive than unattractive websites. However, the interaction of physiology, culture, and experience causes visual perception to be a complicated and sometimes contradictory subject. Universal and yet personal, simple but complex…with so many variables, specifying factors that contribute to "attractive" design may seem like a futile exercise.

By categorizing the principles of several visual design theorists into the framework of visual perception, I can suggest some general principles for "attractive" design according to the three factors influencing visual perception. These principles, while neither exhaustive nor necessarily appropriate for every design, provide a means for selecting an "attractive" website for the pilot study.

Visual Design
Many books about visual design—whether for document or website design—include in their discussion design principles based on Gestalt. This is likely because an important lesson, especially for novice designers, is learning to identify different design elements and analyze their relationship to the entire design. The Gestalt principles are highly predictable, virtually universal, and when "put on" a design increase its attractiveness. Other design principles rely more on cultural factors than sensory information. The most important design factor related to prior experience is consideration of the audience's familiarity with the interface. I've

chosen here several major theorists who have influenced North American design—Tufte,

Mullet and Sano, and Kress and Van Leeuwen. By applying these observable principles, I can

test for the impact of visual design on web persuasiveness.

Designing for Physiology
The Gestalt principles are the simplest, most predictable and most universal design

principles. There are two basic Gestalt categories: figure-ground contrast and grouping.

After becoming familiar with these categories, the task of the designer is to determine what

combination would be most effective.

Figure-Ground Contrast
Contrast emphasizes the differences between elements. Without contrast, it's easy for the eye

to get "lost" as it attempts to make sense of a website. Strong contrast is also imperative to

design for the colorblind or those with impaired vision; otherwise, the website may be

unreadable.

Grouping
"Grouping" is a general term for the remaining Gestalt principles, which include proximity,

alignment, similarity, and closure. Consistently using these principles indicates the

relationship between different elements on the screen. Global navigation can be separated

from content by placing the links closer to each other than to other elements (proximity),

using a different font color (similarity), or using a different background color (closure).

Designing for Culture
Many design principles are culture-specific, fitting application of which relies entirely on

context. This can be a complicated process, and the audience's reactions are not guaranteed.

Below are some principles taken from the writings of Tufte, Mullet and Sano, and Kress and

Van Leeuwen that emphasize some typical conventions of North American design—

specifically, conventional layout for emphasis, elegance, and simplicity.

Information Value

This is Kress and Van Leeuwen's term for the placement of elements on the screen (183).

Traditionally, the viewer's eye will go to the top left corner and follow the pattern of normal

reading—left to right, top to bottom. Visual weight (salience) can encourage the user to

follow a different pattern. Additionally, this effect may be less pronounced in experienced

web users, who are accustomed to the inverted L of conventional web design and focus

immediately on the middle of the screen, tuning out the global navigation while searching for

content of interest.

Salience

Salience, or "visual weight" (Kress and Van Leeuwen 183) is similar to figure-ground

contrast. Salience is essentially a measure of contrast—color, tonal contrast, size, or the use

of cultural important images can all increase visual weight. For example, a photograph has

more salience than a piece of clipart.

Framing

This Kress and Van Leeuwen concept is similar to grouping. It separates images from each

other, either through the use of physical frame lines, the boundaries of images, or negative

space. It's a critical feature of guiding the user's eye across the page and calling attention to

the relationships that help create meaning.

Elegance

Defined by Mullet and Sano as "selecting out," or reducing a design to its essential form,

elegance in website design can be described as conscious placement of each design element.

Elegance is not a website from Wroblewski's Techno Hype era, where bright colors are juxtaposed with no consideration for their effect and unprofessional animated gifs dance, twirl, or blink distractedly.

Simplicity
Simplicity is all about maximizing the data-ink ratio (*Quantitative* 96). A classic example of a successful simplicity is Google. With only a banner graphic, search bar, and links for different search functions, it provides the functionality its users crave without overwhelming them.

Color
Color is a factor in Gestalt grouping that can also be used within a specific context to establish the tone of a website. Because color is processed first (Barry 130), appropriate use of color can take great strides towards creating the favorable first impression that may positively impact persuasiveness.

Designing for Experience
Prior experience is the most local and varied of the design foci. For the purpose of this thesis, attempts to personalize or customize websites are not considered because the comparative technical complexity disqualifies them from general web design.

Conventions
Familiarity with design conventions impacts a user's experience with any website. For example, a common convention in web design is to place the site operator's logo in the upper left corner of the screen, where it serves as an indicator of brand identity and functions as a link to the homepage. I appreciate this convention as a more attractive method than a simple text link reading "home." One of the participants in the pilot study,

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however, was unfamiliar with this convention. The perceived absence of a "home" link annoyed him and negatively impacted his perspective of the website.

Summary

Visual perception is a complicated process that involves the interaction of sensory information, cultural learning, and prior experience. Balancing visual design principles extracted from each of these categories can theoretically help designers harness the emotional power and immediacy of visual perception to create a positive first impression that spreads to a generally more favorable judgment of the website.

Additionally, these design principles were used to select an "attractive" website to use in the pilot study testing the impact of visual design on web persuasiveness. Further detail about the methods used in and the results of this study is available in the following chapter.

CHAPTER 3

PILOT STUDY

Halo effect suggests that attractiveness is a powerful persuasive tool—that "all else being equal, attractive people are more persuasive than those that are unattractive" (Fogg 92). Although most research focuses on halo effect in forming impressions of other people, Lindgaard et al's study extends the concept to the web, demonstrating that users begin forming judgments of websites after merely fifty milliseconds of exposure and theorizing that creating a favorable first impression through visual design is a critical task for designers (115).

This thesis aligns with Lindgaard et al in hypothesizing that visual design significantly impacts web persuasiveness. While acknowledging that the notion of attractiveness varies based on culture and experience so that no design is universally appreciated, the principles discussed in the previous chapter represent those which, theoretically, the average North American user is familiar with, and the presence of which will meet their expectations for the medium and render a website more persuasive.

To investigate web persuasiveness I've conducted a small-scale, preliminary study shaped by review of existing web credibility studies and Andrew Chak's notion of "persuasion testing," a method that shares some characteristics with usability testing but has the goal of evaluating how a site influences users' behavior or beliefs (Chak 308) instead of measuring effectiveness in order to improve usability (Barnum 9). Further discussion of the methods used as well as the results of the pilot study is detailed in this section, with suggestions for revising the study for future research in the following chapter.

Methods

Chak claims that comparison is the best way to test for persuasiveness (Chak 309). Two of his three persuasive testing methods rely on just that, one on the local and one on site level. An example of site-level comparison is Fogg's 2002 credibility study, where participants were asked to select the more credible of two websites from the same subject category. Fogg's study was primarily exploratory—what features of websites get noticed, and are these the same as the content-focused, "rigorous" ones promoted by Consumer Reports WebWatch? (6) Because the purpose of this study is to isolate and test the impact of a specific feature—visual design—comparison is not the ideal method for this study.

Another limitation of Fogg's study is that participants are randomly assigned to one of ten basic subject categories, despite any personal preference (or lack thereof). This could be a negative thing—involvement level can have an impact on credibility, certainly on the initial level of persuasiveness of a website. For example, a travel site is likely to receive different feedback from users who are interested in traveling in the near future than simply users from a certain demographic.

Chak's third type of persuasive testing potentially resolves these difficulties. Goal-oriented testing evaluates how well a site supports users as they accomplish their goals (Chak 308). In this way, it's similar to usability testing—participants perform real tasks while the researchers observe and record their actions and comments (Barnum 9). The key difference is that use of the site is less restricted and more natural because participants are seeking to accomplish general goals instead of specific tasks. In the example of the travel site, users would be asked to explore the website to find a vacation in a location of their choosing. With this method, users are involved but comparison is not. A downside would be that the

number of users needed for this type of study increases substantially because the number of "general goals" a single participant can be expected to be interested in is necessarily limited.

Materials

My goal for this study was to find an "attractive site" and preserve the content and information architecture while altering the visual design. Based on my target audience, I chose the website of a nonprofit organization that is part of the "active transportation movement" (www.railstotrails.org). Rails-to-Trails Conservancy (RTC) advocates the recycling of unused railway lines to create multi-use trails and promote a healthy and active lifestyle, a topic that impacts runners (my target audience) but may not be a site already frequented (unlike www.active.com, where many runners register for races online). The first characteristic meets my goal of user involvement; the second insures that the users won't know the test website is obviously an experiment. Additionally, as a nonprofit organization RTC is actively recruiting users to join the RTC network and donate money to support the movement—clearly persuasive aims, as several participants quickly perceived. A screen capture of the RTC homepage is available below.

Figure 4
An "attractive" website (www.railstotrails.org).

This website was deemed attractive according to several of the design principles discussed in Chapter 2. It uses color to reflect the organization's personality—browns and greens to represent nature. It also uses the Gestalt principles of contrast, alignment, similarity, and proximity to differentiate between the content and navigation areas. The curved, "natural" lines of the logo are repeated in the shape behind the tagline, reinforcing the mission of the website and establishing RTC's identity. Finally, the highly salient image banner attracts the eye and holds users' attention as they interpret the collage.

For the "unattractive" version of the website it was tempting to break the design principles through the use of mismatching, even garish colors; however, I had no systematic method for making those choices and felt the result would (or would appear to) sabotage the content. I could also argue that typography and information architecture also fall under the umbrella term of visual design, the end result of such a broad definition of visual design being a single-column list of text and links. Although technically correct, I opted instead to remove only those portions of the design that could be considered decoration—basically any image or color. Despite my best efforts to remain systematic and unbiased, however, this is not a blind study because the "unattractive" website was designed (or un-designed) by me. The logo is an exception because in the original site it functions as a link, a convention supported by Jakob Nielsen (*Designing* 27). As you can see in Figure 5, the column widths, placement of navigation, and other layout items are identical. Links are also either the standard blue (unvisited) or purple (visited) another convention that is highly functional and, because the default, hardly a design decision.
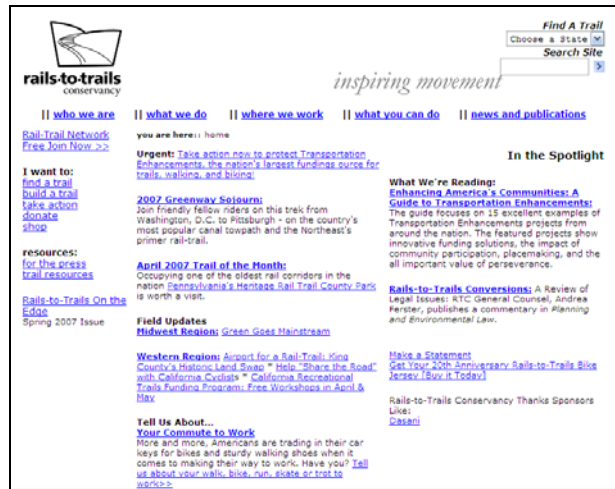
Figure 5
"Unattractive" version of RTC website.

For the test version of the website, I created 40 web pages. This is only a fraction of the pages on the live site; every link on the revised homepage is functional, and I then made pages for the completion of each of the four tasks. I tried to imagine possible errors and continued to create pages until I couldn't imagine a combination that would cause a participant to select a non-functioning link. Before using the revised site, I pre-tested it to see if any additional pages were needed.

Participant Selection
Based on Fogg and Chak, participant involvement is an important factor in evaluating either web credibility or persuasiveness. The goal in this study was to recruit a fairly specific subject population, all sharing a common trait to increase the likelihood that a single website can be selected that has the same potential for persuasion with all participants.

I initially decided to invite members of three different running clubs (a running club, a triathlon club, and a trail running club) to participate in this study. The benefit of recruiting club members is that a common trait can be determined without a screening process—members of a running club, logically, are interested in running. Additionally, at a larger university a general target interest (such as running) could yield a large and otherwise diverse

pool of participants, and a list of recognized clubs and contact information is readily available on the University's website.

I requested permission and a list of email addresses of the three club presidents and then, with their approval, emailed the members of their clubs to invite them to participate in the study. The list of email addresses was entered into a spreadsheet and sorted by club and then each club received a separate (but identical) email to protect members' privacy. The invitation included an informational letter that detailed the possible risks and benefits of participating in the study (see Appendix A). Because one of the clubs used a listserv instead of individual email addresses, I don't have an exact number of invited participants but the total number of email addresses for the other two clubs was 88.

The initial goal for the study is 20 participants. Unfortunately, response to the invitation was low—only two club members volunteered to participate, so I opted for convenience sampling among personal contacts. Of the participants, only one reportedly had no interest in the subject target site—three ran, six hiked, and two biked for recreation. Although this sampling method is not ideal and the eventual number of participants (twelve) falls short of my goal, the testing method insures a richness of information even from a small number of participants.

Testing

For this study, I've combined portions of Fogg's methodology with persuasive testing and standard experimental research. First, like Fogg and as Freeman and Spyridkis recommend, an actual website was used (240). Participants (with one exception) represent real users, and they performed actual tasks (Chak 308; Barnum 9). Additionally, there was a test group and a control group for this study. A list of the email addresses and first names (when known) of invited participants was maintained in a Microsoft Excel spreadsheet; numbers were assigned

chronologically based on when each person volunteered to participate. The first

email/phone call I received, then, was #1. I had previously decided that odd numbers would

use the original website (deemed "attractive" according to the principles discussed earlier)

and even numbers would use the revised version of the website with the same content and

information architecture but lacking visual design elements that should render it unattractive

and less persuasive. The size of the study made using a random number table impractical;

because I had no control over when a participant would respond to the invitation each

participant had an equal chance of being assigned either version of the website.

Each participant performed four tasks using the version of the website they had been

assigned while I observed, sitting in a chair behind and to the right of the computer screen.

The tasks were selected to cover a wide portion of the screen and utilize the content area,

main navigation, and left navigation:

Task 1: Find a trail in South Carolina.

Task 2: Find Rails-to-Trails' Mission Statement.

Task 3: Find the four regions where Rails-to-Trails has offices.

Task 4: Find the Trail of the Month.

The first task is probably the most common use of the target website. An extensive

database allows users to search for trails by state, region, or activity and provides

descriptions, maps, reviews, and other information about specific trails. It is likely that many

casual users of the site will access this resource and nothing else. For those who want to

learn more about the organization itself, the second and third tasks provide information

about how and where they work. The final task requires users to focus on the actual content

of the homepage instead of determining the correct link.

The purpose of this portion of the study was to allow participants to "experience" the website. They were not timed; however, the apparent level of difficulty of each task was noted in order to analyze the effectiveness of both versions. Participants were asked to think aloud during this portion of study; their comments and the subsequent interviews were recorded using a mini-cassette recorder and later digitally captured using Audacity and transcribed using Microsoft Word.

After experiencing the website, participants were asked a brief series of interview questions. The first three questions were intended to obtain information concerning their awareness and enjoyment of the visual design of each website:

1. How would you describe the visual design of this website?

2. What was your first impression of the website? Did your opinion alter as you used it?

3. Did you find this website enjoyable? Why or why not?

The second set of questions was intended to determine the perceived persuasiveness of the website, whether through the participant's own perceptions or through their actions:

4. Did you find this website persuasive? Why or why not?

5. Would you return to this website in the future? Why or why not?

6. Would you recommend this website to a friend? Why or why not?

Coding

Each participant's comments were recorded using a mini-cassette recorder, digitized and saved as separate WAV files using Audacity, and transcribed. Each transcript was then coded electronically using Microsoft Word and Excel. First, the four tasks were analyzed to determine the perceived level of difficulty of each task. The participants were not timed; however, a general understanding of the experience of each individual is important for

understanding their comments during the post-session interview. Therefore, a scale ranging from zero (least difficult) to three (most difficult) based on the number of clicks required to complete each task was used to establish the difficulty level and to see how the two versions of the website varied.

Table 3
Task Difficulty Scale

0	1 click
1	2-5 clicks
2	5+ clicks
3	Hint required for completion

In Appendix C and for all other data displays, results are displayed first by website version (original, then revised), then by participant number (3, 5, 7, 9…), so that first odd and then even numbers will be listed. It was possible for three of the tasks to be completed with a single click from the homepage; the fourth task (finding the trail of the month) technically required no "clicks" because it was located on the homepage itself, but the act of finding the item without leaving the homepage received a difficulty level 0. Exceptions to this were accepted via comments made during the think-aloud protocol. When looking for the trail of the month, for example, a participant who said "It's probably going to be in the spotlight maybe?" and proceeded to study that portion of the screen before diverting their attention the main content area (where the trail of the month was located) received a score of 1 for this task.

Moving deeper into the data, Word's highlight tool was utilized to differentiate between different types of comments. Several categories of comments emerged from the data: Visual Design, Content/Information, Usability/Ease of Use, and Expectations. The visual design category was anticipated—after all, the first interview question explicitly asks for a response to the visual design. Comments in this category were not limited to this question, however; one participant made references to visual design in each of her responses.

Content/Information and Usability/Ease of Use were distributed among the different responses as well. "It seems like a lot of information" is an example of the former, "that was easy" and "I could find what I needed pretty quickly" are examples of the latter. Expectations emerged more often during the think-aloud protocol, most frequently voiced as "I'm not seeing it where I would expect to" but occurred during the interview as well, usually revealing internalized conventions from prior web use, such as the statement "a lot of times in websites they do this thing on the left here."

After using different highlight colors to categorize comments, I created two Excel spreadsheets for each category—one for the original version, one for the revised version (see Appendices E and F). Each spreadsheet has seven columns (one column for each participant and one column for the total number of comments in each category), the number of the participant is bold, centered, and has a gray background to differentiate it from the cell below it, which contains the number of comments made by that participant. At the right of the table, the total number of comments in this category is listed. Below each participant, the text of each comment has been copied and pasted from the transcript.

Lastly, I transferred the complete answers to the interview questions from the transcripts to an Excel spreadsheet. In this way I was able to organize all twelve responses under a single question heading; I also tabulated the iterations of each category per interview question per test group (see Appendix D).

Results

The goal of this study was to determine whether visual design impacts web persuasiveness. The last three interview questions address persuasiveness through both the perceptions (Did you find this website persuasive?) and the future actions (Would you return to this website or recommend it to a friend?) of participants. The task portion focused on the usability of

the websites—to what degree could users accomplish the tasks, and was there a correlation between usability and persuasiveness? The first three interview questions were meant to gather information concerning each participant's subjective experience to investigate a possible relationship between enjoyment and persuasiveness. Are websites that are more enjoyable likely to be more persuasive as well? I imagined that the interrelation of these three components would provide greater insight to the perceived levels of persuasiveness, hypothesizing that a visually appealing website would score higher in each of the following:

- persuasiveness,

- usability, and

- enjoyment.

Persuasiveness

Defining the persuasive aims of RTC was a critical task that nearly every participant felt needed to be completed before answering this question. When asked to be more specific (as several participants did), I instructed them to answer according to their own interpretations of persuasion. Others qualified their responses, such as "I guess in the sense it's persuasive in that I'm persuaded that uh this is a reputable um organization based on this website." What impressed me at the time was the number of different definitions of persuasion among a relatively small sample size—during analysis, I divided the twelve participants into four different major definitions.

Table 4
Definitions of Persuasion

Definition	Original	Revised
Motivation for outdoor exercise/travel.	1	3
Reputable organization/source of information.	2	2
Appeal for donations.	3	0
Misleading/biased.	0	2

While interesting and question-provoking (for example, is there a reason why only participants who used the original site noticed the appeal for donations?), the real significance of this question lies beyond the interpretations of persuasion—was one website perceived as more persuasive than the other? Based on this question, it appears that the original website is more persuasive than the revised one. In fact, the responses were mirror images of one another—four participants felt that the original website was persuasive, while only two felt that the revised one was.
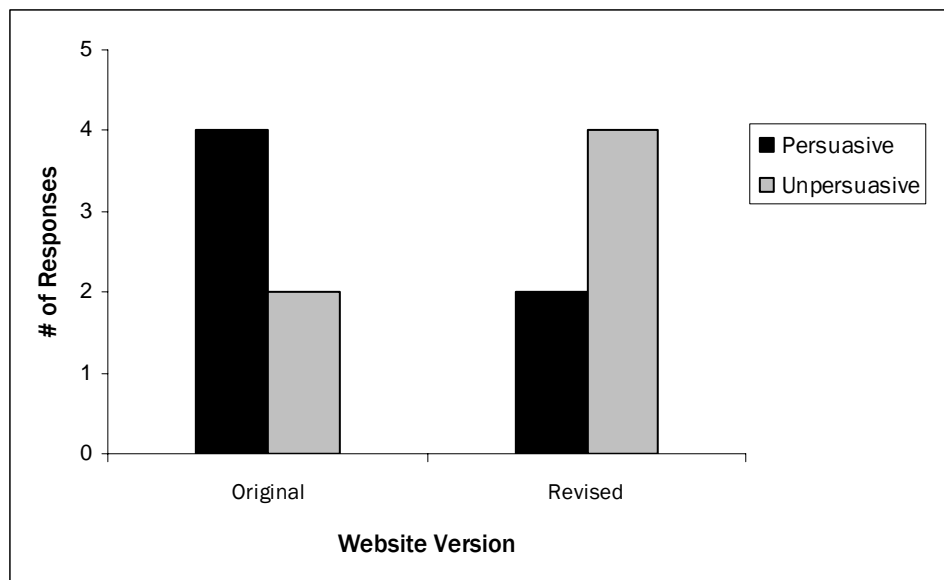
Figure 6
Responses to Question 4, Did You Find this Website Persuasive?

Both instances of "unpersuasive" responses to the original website were under the definition category of "appeal for donations," while the four "unpersuasive" responses for the revised website were more evenly distributed over three categories. Of the two "persuasive" responses for the revised website, one was from a participant who preferred that "there wasn't a lot going on which was nice it was easy to find what I needed," proving that no one design can be equally appealing to all. What others saw as "boring" or "confusing," she perceived as uncluttered and focused.

The next two questions were intended to determine any future actions the website may have persuaded the participants to make. Chak would expect the answers to these questions (Would you return to this website in the future? Would you recommend this website to a friend?) to be nearly unanimously affirmative (309). This is a situation where, he claims, comparison is the best method for determining persuasiveness because people are more likely to respond positively to questions about a single site/product. On the surface, this claim was substantiated by the responses to questions five and six. While the same number of participants (5) answered yes to question five (see Table 5) for both websites, two of the five affirmative answers for the revised version are tempered by the comments "if I was looking for a trail…it just doesn't look like something I'm interested in" and "only if for some reason we were looking for some great" trails. For the original website, on the other hand, one participant actually added the website to his favorites during the course of the study, strengthening his words with action.

Table 5
Responses to Question 5: Would You Return to This Website in the Future?

	Yes	Maybe	No
Original	5	1	0
Revised	5	0	1

Responses to question six were even more revealing. While all twelve participants claimed that they would recommend the website to a friend (as Chak predicted), two of the responses for the revised version were so strongly qualified that they can be interpreted negatively:

> Well, if it was the only website that existed for this type of organization I would recommend it…but if there was another site that was more interactive and better designed then I'd recommend that one. (#14)

If somebody was asking about hiking trails I'd say there's a website called Rails-to-Trails you can go, yeah. *Only because I don't I mean I don't know any other resources for it.* (emphasis added) (#12)

Because twice as many people claimed that the original website was persuasive, and because this claim was further supported (if slightly) by the responses to the remaining two questions concerning persuasiveness, it does appear that the original (and more visually appealing) website is more persuasive than the revised one.

Usability

After revising the RTC website, I hypothesized that the original would be much more usable. Color is used as a framing device, distinguishing between different sections of navigation (dark brown or light brown) and separating the navigation from the main content area. Looking at the results of my "undesigning" (see Figure 7), I particularly noticed how the top navigation blended in with the content—would users of the revised website notice the "who, what, where" categories as easily as users of the original website? I didn't think so. Results of the pretest corroborated my initial hypothesis. Although the subject in the pretest managed to complete all of the tasks with minimal errors, she spent (I felt) much longer scanning the website for relevant links than I thought she otherwise would have done.
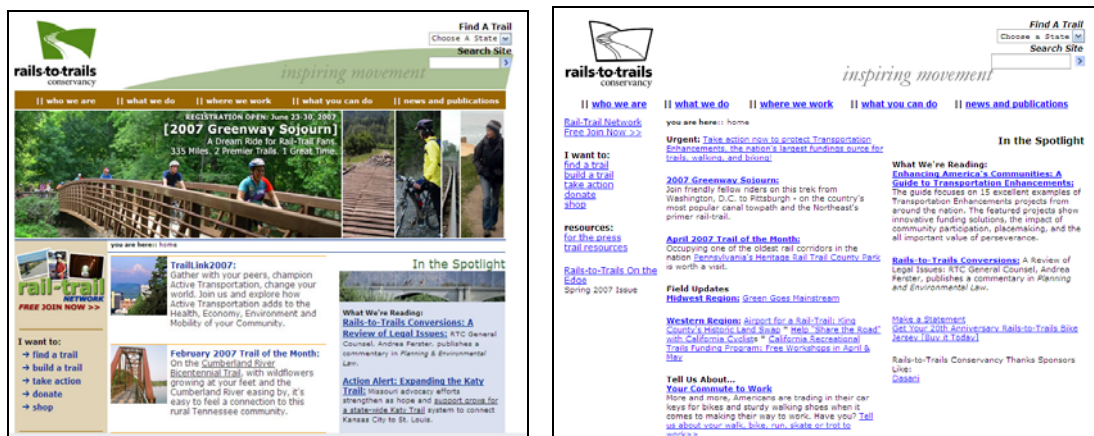
Figure 7
Which website looks easier to use?

The results of this study, however, suggest that visual design has little or no impact on usability. This could be due to the design of the study itself or to individual differences in web use or design preferences, but nearly every difficulty in navigation with one version of the website was balanced with a similar difficulty experienced on the other. Participant 4 couldn't find the RTC mission statement (located under "who we are", the link immediately below the RTC logo) because he assumed the link was a heading for the left navigation instead of part of the top navigation. After two and a half minutes of searching, during which he'd selected every other link from the top navigation and was growing increasingly frustrated, I suggested that he go back to the categories at the top of the page. When he saw "who we are," he couldn't believe that the link had been there the whole time. Later, he commented that "maybe like a little color coding around these to separate them" would have prevented his confusion.

This was a result that corroborated my hypothesis, because without color users are relying on font size and white space to distinguish between the different sections of the website. I didn't expect Participant 9 to be unaware that the top navigation was there at all, or Participant 7 to be unfamiliar with the convention of using an icon as a "home" link. The differences in task results by the two website versions can be seen in Figure 8.
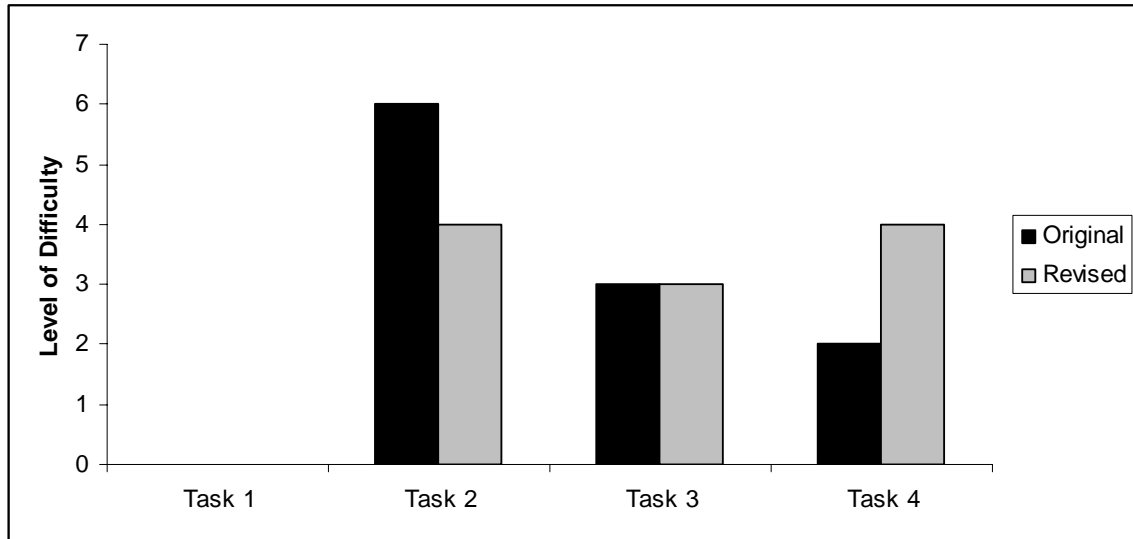
Figure 8
Overall Difficulty Level by Task

Difficulty was measured by the number of links selected (mouse "clicks") for the completion of each task. Based on this method, both versions of the website were equally difficult, with "difficulty" score of eleven. As you can see above, all participants completed the first task with no extraneous clicks. Participants were also evenly divided as to whether they used the search menu in the top right corner or the "find a trail" link in the left navigation area to complete this task. The second task was the most difficult, with the original website being slightly more difficult to use. The third task was distributed evenly, although as a whole the users of the original website (who saw the shaded regions on a map of the United States) located the information on the "where we work" page somewhat more quickly than users of the revised website (who read the names of the regions from links in the left navigation area). The fourth task, finding the trail of the month, is the only one that the revised website scored more difficult on, probably because for this version the pertinent text was buried in the middle of the main content area while in the original version the "stories" are separated by horizontal rules and thumbnail images.

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This is not what I expected. Instead of a distinct difference between the two websites, overall their ease of use was equal, and on a task-by-task level the original website was "easier" to use for only one of the four tasks. What does this mean? That visual design, in fact, doesn't matter? In the context of usability *for this study* this seems to be the case. A usable website, however, is not necessarily a persuasive one. I think that persuasion is tied more closely to another element of the web experience—enjoyment.

Enjoyment
Just because the participants who used the revised version of the RTC website were able to successfully complete the tasks assigned to them doesn't mean that they'd actually use the website if they came across it in a normal setting. As participant #14 commented, "I would rather find a similar program with a better-looking website and I would be more likely to return to that one." Or, as participant #5 commented about the original RTC site, "it's pleasing to look at and looks like it has some good information." Both participants seem to prefer an attractive website. In fact, while there is approximately the same number of comments about visual design for both versions, there are almost twice as many negative comments about the revised website.
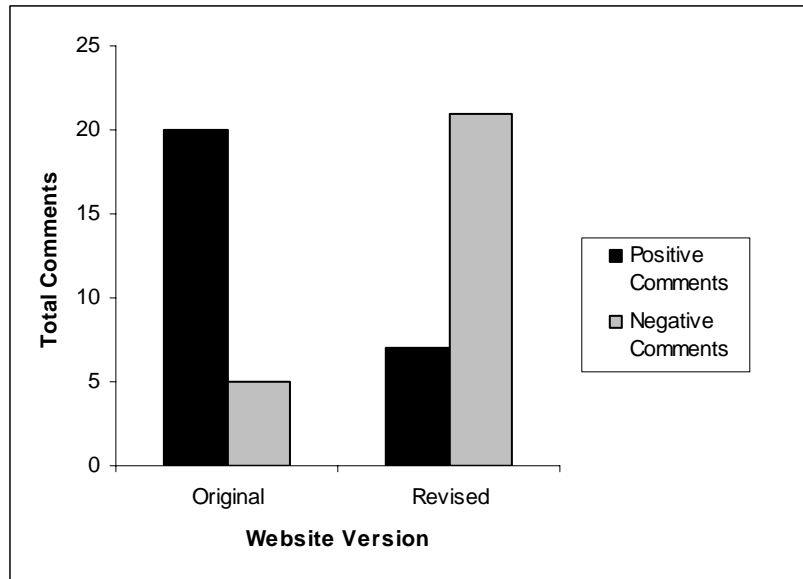
Figure 9
Total Number of Visual Design Comments

This shows that participants are aware of the visual aspects of the website and suggests that the more visually appealing website, while no more usable in this instance, is preferred to its relatively unadorned counterpart. Jordan claims that this is because usability is now a "dissatisfier" because people have grown accustomed to it: "people are no longer pleasantly surprised when a product is usable, but are unpleasantly surprised by difficulty in use" (3). Or, as Norman writes, "usable designs are not necessarily enjoyable to use" (8). What the results of this study suggest is while good textual content and information architecture can make a usable website, visual design increases the possibility of enjoyment of the website and thus makes a website more persuasive.

CHAPTER FOUR

PERSUASIVE DESIGN

This study suggests that visual design may impact web persuasiveness not because it contributes to greater usability but because it is linked to enjoyment/pleasure. This finding seems to confirm Wroblewski's claim that web design is progressing to a new era, one that builds on the lessons of usability but provides a more fulfilling experience by balancing a multitude of concerns, from technical issues to presentation, emotion, and approachability (12). This finding also aligns with several theorists who suggest a more holistic design perspective, whether designing products, websites, or experiences.

Jordan represents users' evolving needs in a hierarchy proceeding from functionality, to usability, to pleasure (6). Users first want a product to work—to perform a task as advertised (Jordan 5). Once basic functionality ceases to be a distinguishing characteristic, they prefer products that are easy to use. Finally, "having become used to usable products, it seems inevitable that people will soon want something more: products that offer something extra; products that are not merely tools…" (Jordan 6). A pleasurable product, according to Jordan, is the eventual need of all users and should therefore be the goal of all designers.

Chak's hierarchy of web user needs reaches the same conclusion. His hierarchy is represented as a pyramid, with the foundational needs of availability and usability obligatory before the higher-level needs of confidence and desire can be addressed (Chak 2-3). Availability and usability are necessary factors, but once a person has found a website and discovered ways to navigate through it other issues come into play.

Desire

Confidence

Usability

Availability

Willingness to Transact
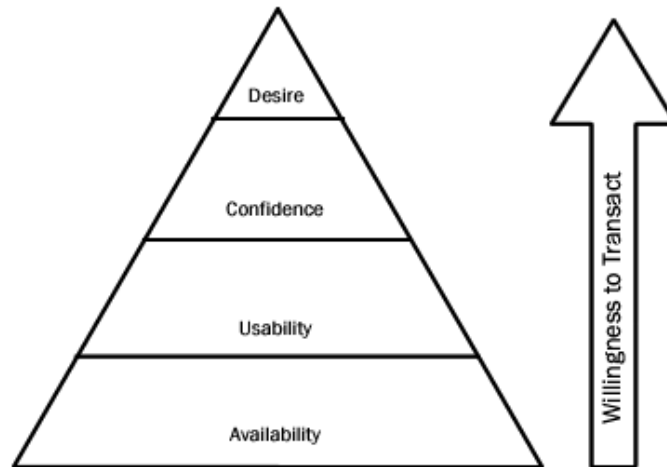
Figure 10
Chak's Hierarchy of User Needs

The main difference between the two hierarchies is that Chak adds a level for "confidence" which I believe corresponds with the notion of credibility, as both relate to the degree of trust a person places in a website (or its operators). Chak's need for "desire" is equivalent to Jordan's need for "pleasure." Both address subjective, emotional reasons for using and being persuaded by products or websites. This is a big step from the traditional view of people as entirely cognitive, rational beings (Norman 7). Additionally, "desire" and "pleasure" can be translated to the factor that was shown in the pilot study to most impact the persuasiveness of the RTC website—enjoyment.

The addition of desire, pleasure, or enjoyment reflects a more holistic and greatly complicated perspective of design. Meeting the needs of the audience becomes more than providing information, more than usability, more than credibility. Indeed, complicating design may be a way to create a balanced, persuasive web experience.

Limitations of the Study

The major limitation to this study was its size. Because there were only twelve participants, this study is in no way generalizable. Retrospectively, I realize I should have offered a small incentive in exchange for the inconvenience posed by the requirement to travel to campus and be observed by the researcher. This tardy insight arrived too late to assist with the completion of this study, but for future work it would be preferable not to be required to rely on a convenience sample for participants. Another limitation is that the tasks were not diverse enough in their difficulty level, which may have contributed to the equivalent difficulty score for both versions of the website. Selecting tasks at varying depths within the site (instead of merely those with links in a number of different locations on the homepage) could have significantly altered the results.

Lastly, the use of different computers could be perceived as a limitation. As all twelve of the participants were using high-speed Internet and either Internet Explorer 6 or 7, however, the variation based on apparatus is thought to be minimal. Additionally, testing in a more natural setting (even allowing users to perform the test on their own computer) could actually be a benefit to persuasion testing as it enables researchers to get a better idea of how users actually use websites.

Implications for Future Research

This study suggests that visual design may impact web persuasiveness. How and to what extent it does so are topics for future research. This thesis theorized that the perceptual process—as a combination of physiological, cultural, and experiential factors—is responsible for determining what makes an "attractive" and what makes an "unattractive" design. The design elements identified and removed from the RTC website were either physiological (the Gestalt principles) or cultural (color associations, design conventions such as logo

placement); while personal experience certainly played a role in participants' preferences and responses to the websites, it's impossible to know precisely what experience each individual contributes to their interpretation of the website. An interesting topic for future research would investigate attempts by designers to personalize web design through PHP and the efficacy of these efforts to increase the level of engagement and enhance the web experience.

Another question raised by this study is, how long does a positive first impression last? An attractive but inaccessible or unusable website would disappoint and eventually lose visitors. Because most other studies (such as Lindgaard et al) investigating halo effect focus on demonstrating its existence, future research could explore the duration of its influence and the stimuli necessary to negate its effect. One key to this question may be user's needs. Google, which is almost entirely devoid of graphics, is enormously popular because it successfully assists users in accomplishing their goals.

This study provides one possible methodology for persuasion testing of websites. In a future study, I would use a larger sample size to increase the size of the study and offer a small incentive to encourage greater participation from the target audience to test the reliability of the findings in this pilot study. For a larger study, I would also seek to diversify the testing methods by conducting both a goal-oriented test (such as the one described in this thesis) and a site-level comparison test. To accomplish this, I would need at least four websites and eight test groups. I would identify an "attractive" and an "unattractive" website from the same topic area and then create two revised versions. Ideally, selection and revision of the websites would performed by a test team for greater reliability. Then, four test groups would see a single website (as before) and perform the goal-oriented test while the remaining four test groups would compare two of the websites.

As the Internet continues to evolve, much research is needed to identify factors influencing web persuasion and understand the relationships between them. Studying how people actually experience websites is critical to creating more balanced designs that have form as well as function and meet users' needs in an enjoyable manner.

APPENDICES

Appendix A: Participant Recruitment Email

To: [Email list provided by club presidents]
From: Megan Nelson, megann@clemson.edu
Subject: Participation in Research Study at Clemson University

Greetings! I'm emailing to invite you to participate in a research study that will be used to complete my graduate thesis. Please take a moment to read the information provided below. If you'd like to participate in this study, please contact me by email (megann@clemson.edu) or by phone (785.249.7460) to express your interest and schedule a session.

Thanks for your help!

Megan Nelson

Graduate Student, Clemson University
megann@clemson.edu
785.249.7460

Information Concerning Participation in a Research Study
Clemson University

User Preferences Concerning Website Design

Description of the research and your participation
You are invited to participate in a research study conducted by Megan Nelson, under the direction of Dr. Sean Williams. The purpose of this research study is to gain a better understanding of users' preferences for website design.

Your participation will involve visiting a trail advocacy website while being observed by a researcher and responding to a series of interview questions.

The amount of time required for your participation will be approximately 30 minutes (in addition to any time required to travel to Clemson University).

Please note that you must be at least 18 years of age to participate in this study.

Risks and discomforts
There are no known risks associated with this research.

Potential benefits
Results of this study will be compiled to gain a clearer understanding of what users want in a website. Your participation could help designers craft more enjoyable websites in the future, benefiting your own Internet use.

Protection of confidentiality

We will do everything we can to protect your privacy. Your identity will not be revealed in any publication that might result from this study; instead, you will be assigned a numerical identifier (i.e. Participant #1) and your name will be dropped to insure confidentiality.

Voluntary participation

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

Contact information

If you have any questions or concerns about this study or if any problems arise please contact Dr. Sean Williams at Clemson University at 864.656.2156. If you have any questions or concerns about your rights as a research participant, please contact the Clemson University Office of Research Compliance at 864.656.6460.

Appendix B: Instructional Script

Thank you for your decision to participate in this study. Your participation is greatly appreciated but entirely voluntary—you may choose to withdraw from the study at any time, with absolutely no negative consequences.

Your participation in this study is composed of two parts. First, you will visit a trail advocacy website and be asked to complete several tasks, such as finding the "News" section or locating a trail in the state of your choice. I'd like to ask that you think out loud as you navigate through the site to complete these tasks. Whether positive or negative, your opinions are important and your observations about the website's strengths and weaknesses have great value for this study.

After you've completed this portion of the study, you will respond to a brief series of interview questions that essentially summarize your experience of the website. The total time required for this study is approximately 30 minutes.

We will do everything we can to protect your privacy. Your identity will not be revealed in any publication that may result from this study; instead, you will be assigned a numerical identifier (such as Participant #1) in the event of any reference to your comments.

Thank you again for participating in this study. If you're ready, we can now begin.

(Participant is seated at the computer, Website Version 1 or 2 is brought up on the screen)

Tasks

Task 1: Find a trail in South Carolina.

Task 2: Find Rails-to-Trails' mission statement.

Task 3: Find the four regions where Rails-to-Trails has offices.

Task 4: Find the "Trail of the Month."

Appendix C: Task Analysis

	Find a Trail in SC.		Find RTC's mission statement.	
	Difficulty	Comments	Difficulty	Comments
3	0	Used top menu; this is where "my eye always goes first"	1	Scrolled down to read the fine print first;
5	0	Used top menu; found immediately even though "I'm unfamiliar w/ this website"	0	Momentarily debated btw 'who we are' and 'what we do'; opted for 'who'
7	0	Used left menu;	0	Immediately went to 'who we are'
9	0	Used left menu; 9 seconds reading list of links before clicking	2	Found the mission statement in a dif. section of the site, 3 levels down
11	0	Used top menu; "that was easy"	3	Needed to be redirected from Traillink mission, then from tagline
15	0	Used left menu	0	Debated between 'who we are' and 'what we do' ; chose 'who'
4	0	Used top menu; noticed it immediately	3	Hint required; thought 'who we are' was a header for the left nav, not a part of the main nav; "was that there the whole time?"
6	0	Used top menu;	0	
8	0	Used left menu;	0	
12	0	Used top menu	0	"who we are maybe...here we go!"
14	0	Used top menu;	1	selected 'who we are,' but then looked for mission statement in left nav instead of content area
16	0	Used top menu	0	

	Find the 4 regional offices.		Find the trail of the month.	
	Difficulty	Comments	Difficulty	Comments
3	0	"That would be where we work probably"	1	"I'd expect it to be one of those sidebars or spotlight maybe."
5	0	Used map; "I wonder if it would be under where we work"	0	"I'd expect it to be on the top level and here it is."
7	0	Used map;	0	"Right here."
9	3	Noticed 'field updates', but then needed a hint to be redirected to the main nav; used map	0	"Trail of the month, saw that" ; noticed it previously while scanning for task #2
11	0	Used map; found it easily, commented that he'd prefer 'where we are' to 'where we work'	0	"Here it is right in front of me"
15	0	Used map; "where we work, I assume"	1	It's probably going to be in the spotlight maybe?"
4	0	"where we work is what I'm going to click on"; wanted there to be a map	0	Was hesitant to click before scanning all of the text after the trouble with the mission statement;
6	0		0	Had noticed it on a previous task
8	1	First used guesswork, was pleased by how many he got right	1	Couldn't find it by scanning, used Ctrl-F on the homepage -- good strategy!
12	1	Went to the right page, then asked for help; "Is this it?	0	
14	0		0	
16	1	Went the right page, looked at the main content area, not to the left nav	3	Eventually found it, but went down 2 levels and needed a hint first.

0	1 click
1	2-5 clicks
2	5+ clicks
3	Hint required for completion

Appendix D: Participants' Answers to Post-Study Interviews

Participant	How would you describe the visual design of this website?	Comments
3	I think when I first look at the and maybe it's just because this is all white and it just feels kind of crowded. I think if it had more white space or if things were spread out and like I said it could just be because of all this white space here and it's not maybe if I minimized the window it'll look different to me but um I yeah, I think with websites especially with kind of that modern, sleek, classic, clean look um and it seems like I like the um the bar the task bar up here with the pictures, but then this is where my eye kind of just gets lost. And there's so many you know things are the same size so nothing really stands out um but I think this part um, works it's just when I get farther down the page my eye kind of just gets lost it's trying to find one thing to focus on and it can't really find something to focus on there.	Visual 16 Content 0 Usability 2 Expectations 2
5	Um I think that it's effective um I think that it's there's a lot of visuals here. It looks like the visuals are mostly tied to um text with a couple of exceptions um here on the top right um there's some visuals that seem to be more for just appearance's sake. Um but I would say that it's it's not distracting.	
7	Well, a lot of times in websites they do this thing on the left here, and this thing on the top across here, but they left some stuff off. And so, when I go up and down here and across here I'm a little bit not always seeing what I'm expecting to be seeing, like a home button. Like there isn't a home button, you know, in the main links. That that didn't really, you know. But as far as visual I don't know, I mean it's ok. Just isn't maybe what I'd go after. I guess if they're kind of doing a newspaper kind of thing they're putting these little articles things up here, you know, little little link to a…like a headline you know, a headline. I don't know, it's visually, um they used color and some pictures that they chopped up into pieces so you can't really tell what's going on.	
9	A little hard to get to things but it's it's nice, I mean it's nice a nice setup.	
11	How would I describe it…um, other than the word fine? Do you want more words than just fine? I mean it tells me what you're all about or what it's all about I've got a broken down bike and some horses and some railroads so it tells me exactly what it's about.	
15	Um, it's got a lot of natural colors which reminds me of nature. It's got pictures of nature mixed with some sports but sporty bikey people so it seems energetic and outdoorsy kind of kind of setting the mood for me to be in the kind of an adventurous kind of mood.	

4	Um, everything's pretty easy to find I think the for some reason I don't know why I wasn't looking at that first column at the left. Like, I usually look just in the center and I don't go towards the navigational parts right away. So, yeah I think that was throwing me off. But no I like the I like the, um link that takes you back home right up right up in the, um, upper lefthand corner and I like how there's different, um, subject headings up top here. I guess for some reason it was confusing me that this one was also a subject heading and I was just thinking it blended in with all these over here. Maybe if there was some sort of distinguishing marks around, or not distinguishing marks but maybe like a little color coding around these to separate them.	Visual 13 Content 2 Usability 3 Expectations 2
6	I thought it was very, like, plain, like there wasn't a lot going on which was nice it was easy to find what I needed. Unlike a lot of junky websites.	
8	Um, you mean you mean how much it stands out or how it's laid more of the layout where it's are colors. Ok well, there needs to be more color and stuff, more stand out. Um, let's see. If you could put stuff like, um you know, trail of the month stuff like that that could be because it's more of a feature you can put it on here. You can put it on uh you know the right when I said trail of the month I automatically went to the upper right corner since that's with a lot of sites where I'll see that type of stuff. And uh, yeah.	
12	Am I allowed to ask who designed it? //laughs// Oh ok. Um, I think it's a little bland. It's a little plain. A lot of words and not much else.	
14	It is extremely simple, very plain, it's three colors, black, white and blue, purple if you go to links. Um, the only image you see is the Rails-to-Trails icon, there are a few menus, and other than that it's really plain. It's kind of hard to differentiate any major areas 'cause it's all solid white. It looks like a Word document that they converted into a website.	
16	Um well, I guess it's pretty clear-cut, and very little aesthetics I guess. Whatever you're looking for is right there. You'd have to be looking for something particular or know what you're looking for to find it.	

Participant	What was your first impression of the website, and did your opinion alter as you used it?	Comments
3	Um first impression. Hmm, interesting. I think I was more focused on the task //laughs// trying to find what I was supposed to and not really thinking about what the website looked like. I guess my first impression I was trying to find a trail so that was kind of the first thing I was looking for and I was reading the um just the names the titles of the links trying to find the trail in South Carolina so that's kind of the first thing I in fact I didn't even really look at anything down here yeah I just was focused right up at the top because I figured that's where it would be.	Visual 6 Content 7 Usability 5 Expectations 2
5	Um, my first impression was that it was a well designed website. Um, it looks professional, uh the information is laid out in a logical way um with the top navigation uh you know I was able to access most of the things and I also noticed on the left that there's also an I want to with several different actions there. So and as I moved through it um with the exception of the trail of the month being not quite where I expected it to be, um I think that it was very logically laid out and easy to get around in.	
7	Um, well, you know being the practical number seven that I am, I thought of using it //laughs// man I thought of using it like to find a new trail to go hiking you know, that was my first impression. It kind of ebbed and flows, you know, it up and down, kind of you know, at some points it was all right and at other points it was kind of //makes clicking noise//. 'Cause then we found a home button on this other section but it went to the wrong part of it so it's kind of like, well that was kind of cheesy but then other things like oh that was really cool because like right here was find a trail //snaps fingers// right there.	
9	At first I thought it was really organized, until I couldn't find anything!	
11	Well my first impression...that it was um, that it was um, really um, because of the greenway sojourn it made me think it was for the environmental wackos. It was too environmental. It was like, I want to bike I don't want to be lectured to that kind of thing. That's what it felt like. Um, ok?	
15	Um, first opinion, it's pretty neat uh, it's a lot of it seems like a lot of information. Um, it's probably probably the limit of the amount of text and links and stuff I'd want to see on the homepage. Um, but it looks like it's more information than I could ever explore which is good. But overall the visual I like and it's it doesn't seem bogged down clicking page to page.	

4	Um, no my opinion didn't alter. It seemed it's very clean and I was able to you know I like how it has little update, um, articles up here so I think it's very easy to use and after after the couple of minutes I spent on it I feel like I could find what I need to easily now I'm somewhat familiar with it.	Visual 6 Content 1 Usability 4 Expectations 0
6	The first thing I thought when I saw the website was that I liked the design in the top corner. And then, um, I started looking around for navigation and I could find what I needed pretty quickly.	
8	I don't know. //laughs// I was going to a website to help you out I don't know! //laughs//	
12	Um my first impression was that it would be hard for me to find those things because there's so much on here, so many words on the first on the homepage but it wasn't hard to find those. Uh-huh. No, but I thought I might.	
14	Um, I thought it was really plain. It didn't grab my focus anywhere and I kind of had a little bit of a challenge trying to find things because it wasn't right out there for me to find.	
16	Um...I don't even know. //laughs// Oh. Well, I just it doesn't look like something I'd be interested in but it looks like a nice website if I wanted to find a trail and it looks like it'd be easy to find a trail if I was looking for one but that's about what I got out of it anyway.	

Participant	Did you find this website enjoyable? Why or why not?	Comments
3	It was it was pretty easy, I mean things that I would if I was you know a hiker and I was looking for trails everything that I would want was very easy to find. Um the part I had difficulty the mission statement I I couldn't find because I was expecting it to be one of those tiny links at the bottom and it was right there first thing so um um it was you know easier to find and I was trying to make it more difficult I guess is the thing, so.	Visual 0 Content 0 Usability 3 Expectations 1
5	Yeah, and I think if I you know since I like to hike if I had more time I'd probably look at it some more.	
7	Hmm...well, it's ok. I guess I probably wouldn't, like, put it in my favorites to visit every day. But I might check it like once a month to find a new trail to go hiking on.	
9	Yeah, I do. Because I'm very interested in the rails to trails.	
11	Disclaimer: I don't find any websites enjoyable. //laughs// I find holding my wife's hand enjoyable. Um, um useful yes, enjoyable no.	
15	Um, yeah I did. I liked the you know most of the time you're just wanting to find a trail and go um in your state and in this one you didn't have to search by like an alphabetical	

	order list and then look for South Carolina you can just pull down the menu and you know it pulls down you know it just pulls up South Carolina and it's rail trails which is good.	
4	I think I w- I think I will be able to because especially for finding a trail around here. It'd be very effective. I think my only problem would be finding it afterwards. I feel like I could answer more about that one. Yeah, I also did I liked the trail of the month as well. I liked that idea that, you know, it highlights one each month so if I'm in the area or if I know I'm going to be in the area I'll remember that like "oh, that was a trail of the month I read about that one time and I happen to be in that area I'm going to go back and find that."	Visual 4 Content 1 Usability 2 Expectations 1
6	Um, I didn't find it unenjoyable, I don't know. Pictures, like when you get to the trails like I kept, that was one thing I expected to find and I was a little thrown off by…like, if that makes sense. So I think that would've been, that was the only thing that was just and that wasn't unenjoyable, but, just different.	
8	Yeah, it was cool.	
12	Not particularly. //laughs// Although useful if that's what you were trying to do. But I think it's boring.	
14	I would say it's not very enjoyable because it's not visually stimulating and I don't really know anything about the organization itself, um, but I I wouldn't recommend this website //laughs// based on its design and navigation issues.	
16	Um as much as any other website! //laughs//	

Participant	Did you find this website persuasive? Why or why not?	Comments
3	Persuasive, as far as I do I want to go out hiking now? //laughs// I think, um, if you know if I was looking for something to do on the weekend I definitely would keep this in mind and come back and say hey here's a nice trail I think I could take my dog out and go for a walk or um you know it has it organized by state so I can just say here's	Visual 2 Content 4 Usability 0 Expectations 0

	where I am you know here's the state I'm in what is around me um that I might not necessarily know, know about. And I really like the the names of the links just what it's called you know, who we are, what we do, where we work, what you know what you can do, it has this kind of I don't know kind of alliterated feeling it's just like...it just fits, I think. Um and the colors and it really evokes this you know outdoorsy the wood and you know the green and the brown um the blues, um, I think the color choice works especially just for what the topic is of the website so...	
5	Uh, hmm. Well, I I guess in the sense it's persuasive in that I'm persuaded that uh this is a reputable um organization based on this website. Um, I'm persuaded they that they thought through the way the information's laid out.	
7	Um, well I noticed that they were persuading, how about that? So the difference being persuasive of being persuaded and and and no I wasn't persuaded to give them money. But I did notice that they were attempting to persuade me to give them money and how that was so noticeable was was that back here in the I want to half of their things have something to do with giving them money. Donate, shopping, I'm sure if I let's try take action let's just see, hmm – oh yeah, support you know joining a support group basically.	
9	Not really.	
11	I put it in my favorites. So, yes.	
15	Uh, persuasive. Well, I'm seeing an American Express logo so that probably means that they want some sort of money. Um, I bet I could I bet I could if I read a little more about you know exactly what they're doing um I could see over time where they might persuade me to kind of join the effort and kind of do my part makin' all this happen because it's something I would use, you know. Um, I could see this website gaining my trust and like making me uh want to be part of the effort.	
4	You mean in a misleading kind of way or in a like I need get off the couch and go...? Um, no, I found it more informative. Well like I feel like if I'm going to come to this website then it's just going, it's, I'm already motivated.	Visual 2 Content 3 Usability 0 Expectations 0

6	Um…I didn't spend enough time looking at the website to to read or anything. I found what I needed to go to, and so I don't know that, so no, I don't necessarily know that I did (laughs). Just because I didn't spend time with it or reading it that much.	
8	Did it make me want to go find a trail? Um, actually, I am curious to see if the ones I used are on here so yeah hiking.	
12	I would say no. Like if I were looking for a trail I think it's a good resource. And I haven't looked at it enough to know if maybe it encourages you in one way or the other or if it speaks more highly of some trails than others but maybe if I looked through it more but just on what I did no.	
14	Persuasive. Um, not particularly. Um, if I just came across this website on my own I don't think that I'd look at it very much, it's too text-heavy, it doesn't really like I said before draw my attention. Um, maybe if it had some images on the first the homepage that actually told a little bit more about the rails to trails program maybe then I'd find it persuasive, but current state not persuasive.	
16	Um, no. Um, it seems like if you're looking for that subject that there would be things to look for but there's nothing really to make me want to go to any of these places or without reading further or looking into it.	

Participant	Would you return to this website in the future? Why or why not?	Comments
3	Yeah, kind of goes along with what I just said you know um I've been to a couple of state parks in the area and kind of curious now you know what else is in the state? What I haven't I seen before? Um, as far as uh like I guess suggestions, maybe something else you could add? Um I don't know if that's what you're asking but um maybe like a a section for you know a a person who's been to these places to kind of give a review and say oh hey this is the best time of year to go to this park, and you should definitely make sure not to miss you know the leaves changing colors in this park, here's a good spot to have a picnic, here's a good spot for a run, um you know maybe some kind of place where they the users can kind of communicate with each other and say oh you know I went	Visual 1 Content 1 Usability 0 Expectations 0

	to this this park at this particular time of year and this is what I thought of it. Um, I think that might be kind of interesting as one of those maybe sidebars or um highlights kind of highlighted just so people could could kind of get that personal feel. I think a lot of websites do that now, just have the users talking to each other and um so it might be kind of interesting.	
5	Yes. Yeah um, it's you know it's pleasing to look at and looks like it has some good information and I noticed that there's a rail trail network here at the top that sounds interesting, um, I'd take it just from what I've seen here that um this has to do with the intersection of trains and hiking uh so it's interesting stuff.	
7	Maybe.	
9	Yeah.	
11	Um, yes. //laughs// Yes, I put in my yeah.	
15	Yeah, I think I will. Um, in South Carolina where I'm at there's fourteen trails and it'd be kind of kind of cool to go see one of these.	
4	Definitely.	Visual 1 Content 1 Usability 0 Expectations 0
6	I think so, yeah. My family does a lot of hiking.	
8	Sure.	
12	Only if for some reason we were looking for some great like are these hiking trails or are they only like railroads? Cause we like to go hiking sometimes. So yeah. It's good to know it's there.	
14	No. I would rather find a similar program with a better-looking website and I would be more likely to return to that one.	
16	Sure if I was looking for a trail. If I was looking for somethi someplace to go. It looks like it knows what it's talking about it's just not something I'm interested in.	

Participant	Would you recommend this website to a friend? Why or why not?	Comments
3	Sure, definitely. Um, one of my really good friends actually hikes all the time and she tells me of all these great places that she goes in the area um I think she would definitely be interested in seeing what else what else there is.	Visual 0 Content 1 Usability 3 Expectations 0
5	I would, um, you know it's it seems to have a lot of good information in it. Um I like the fact that you can find trails in different states and that seems fairly easy to navigate in and it gives me good information fairly quickly um, so yeah.	
7	If they were looking for a rail-trail I would recommend them this site.	
9	Yeah, I would.	
11	I'm going to forward it to my brother, yes. He lives in Pittsburgh and he's a biker.	
15	Yeah, I think I would. Um, I'd recommend it to my runner friends or uh some some people that bike, um, I think I think I would because um it's very easy. I wouldn't think I'd tell them to go to this website and they'd tell me ok that was nice but I couldn't find anything so I so I think they could navigate their way around it and make it useful to them too.	
4	I definitely would recommend it to a friend um because I know people that are always trying to look for somewhere different to run and even if it's just hiking or taking a stroll somewhere, um, I think people would be interested in it and it would be an easy way for them to find what they're looking for.	Visual 2 Content 0 Usability 1 Expectations 0
6	Yes. And I would also recommend it for, like, the organization that I work for because they're doing a lot of nature trails and stuff like that…traveling sorts of things.	
8	Actually yeah sure, I'd recommend it to my brother. He's a hiker too. He's actually a bigger hiker than me.	
12	If somebody was asking about hiking trails I'd say there's a website called Rails-to-Trails you can go, yeah. Only because I don't I mean I don't know any other resources for it. So yeah.	
14	Well, if it was the only website that existed for this type of organization I would recommend it. I would be sure to warn them about it's simplicity and plainness, but if there was another site that was more interactive and better designed then I'd recommend that one.	

16	Yeah! Like I said, it looks like it's it's intelligent and it knows where to go, and if they're looking for something to do here, yes.	

Visual Design Comments (positive, negative)

3	5	7	9	11	15	
Positive	Positive	Positive	Positive	Positive	Positive	TOTAL
3	5	3	2	2	5	20
I like the um the bar the task bar up here with the pictures	but I would say that it's it's not distracting.	I mean it's ok	it's nice, I mean it's nice a nice setup	How would I describe it…um, other than the word fine?	it's got a lot of natural colors which reminds me of nature	
I think this part um, works	my first impression was that it was a well designed website.	it's visually, um they used color	At first I thought it was really organized	it tells me what it's about	it seems energetic and outdoorsy kind of kind of setting the mood for me to be in the kind of an adventurous kind of mood.	
I think the color choice works especially just for what the topic is of the website	it looks professional	then other things like oh that was really cool because like right here was find a trail			it's pretty neat	

3	5	7	9	11	15	
Positive	Positive	Positive	Positive	Positive	Positive	TOTAL
	I'm persuaded that uh this is a reputable um organization based on this website				overall the visual I like and it's it doesn't seem bogged down clicking page to page	
	it's pleasing to look at					
Negative	Negative	Negative	Negative	Negative	Negative	TOTAL
2	0	3	0	0	0	5
it just feels kind of crowded		they just don't have a home button				
there's so many you know things are the same size so nothing really stands out		they left some stuff off -- like there isn't a home button				
		Just isn't maybe what I'd go after				
		some pictures that they chopped up into pieces so you can't really tell what's going on				

Information/Content Comments

3	5	7	9	11	15	TOTAL
2	5	1	0	2	3	13
it has it organized by state	the information is laid out in a logical way	And and how that was so noticeable was was that back here in the I want to half of their things have something to do with giving them money.		because of the greenway sojourn it made me think it was for the environmental wackos	it seems like a lot of information	
I really like the the names of the links	it was very logically laid out			I want to bike I don't want to be lectured to that kind of thing. That's what it felt like.	probably the limit of the amount of text and links and stuff I'd want to see on the homepage	
	I'm persuaded they that they thought through the way the information's laid out.				but it looks like it's more information than I could ever explore	
	looks like it has some good information					
	it gives me good information fairly quickly					

Usability/Ease of Use Comments

3	5	7	9	11	15	TOTAL
2	4	2	1	2	3	14
I was more focused on the task	I think that it's effective	being the practical number seven that I am, I thought of using it	A little hard to get to things	That was easy.	you can just pull down the menu	
It was it was pretty easy, I mean things that I would if I was you know a hiker and I was looking for trails everything that I would want was very easy to find.	I was able to access most of the things	I thought of using it like to find a new trail to go hiking		useful yes, enjoyable no	I think I would because um it's very easy.	
	easy to get around in				I think they could navigate their way around it and make it useful to them too.	
	I like the fact that you can find trails in different states and that seems fairly easy to navigate in					

Expecations Comments

3	5	7	9	11	15	TOTAL
6	2	2	0	0	1	11
Mission statement usually that's gotta be on the bottom, so I'll just start down there.	I would think that that would be something that would be on the top level	a lot of times in websites they do this thing on the left here, and this thing on the top across here			It's probably going to be on the spotlight maybe?	
I'm not seeing it where I would expect to	with the exception of the trail of the month being not quite where I expected it to be	I'm a little bit not always seeing what I'm expecting to be seeing				
I would expect the mission statement to be around there but it's not unless they call it something else						
I would expect it to be one of these little sidebars or spotlight maybe.						
I just was focused right up at the top because I figured that's where it would be.						
I couldn't find because I was expecting it to be one of those tiny links at the bottom and it was right there first thing						

Visual Design Comments (positive, negative)

4	6	8	12	14	16	
Positive	Positive	Positive	Positive	Positive	Positive	TOTAL
2	2	0	0	0	3	7
I like the, um link that takes you back home right up right up in the, um, upper lefthand corner	I thought it was very, like, plain, like there wasn't a lot going on which was nice				it's pretty clear-cut	
it's very clean	I liked the design in the top corner				it looks like a nice website if I wanted to find a trail	
					it looks like it's it's intelligent	
Negative	Negative	Negative	Negative	Negative	Negative	TOTAL
3	1	1	4	9	3	21
I think that was throwing me off.	Pictures, like when you get to the trails like I kept, that was one thing I expected to find and I was a little thrown off by	there needs to be more color and stuff, more stand out	it's a little bland	It is extremely simple, very plain, it's three colors, black, white and blue, purple if you go to links.	very little aesthetics	

4	6	8	12	14	16	
Negative	Negative	Negative	Negative	Negative	Negative	TOTAL
I guess for some reason it was confusing me that this one was also a subject heading and I was just thinking it blended in with all these over here.			It's a little plain. A lot of words and not much else.	Um, the only image you see is the Rails-to-Trails icon, there are a few menus, and other than that it's really plain	it doesn't look like something I'd be interested in	
maybe like a little color coding around these to separate them			my first impression was that it would be hard for me to find those things because there's so much on here, so many words on the first on the homepage	It's kind of hard to differentiate any major areas 'cause it's all solid white. It looks like a Word document that they converted into a website.	there's nothing really to make me want to go to any of these places	
			I think it's boring.	It didn't grab my focus anywhere		
				it's not visually stimulating		
				I wouldn't recommend this website based on its design and navigation issues.		

4	6	8	12	14	16	
Negative	Negative	Negative	Negative	Negative	Negative	TOTAL
				it's too text-heavy, it doesn't really like I said before draw my attention.		
				I would rather find a similar program with a better-looking website and I would be more likely to return to that one.		
				I would be sure to warn them about it's simplicity and plainness		

Information/Content Comments

4	6	8	12	14	16	TOTAL
4	0	1	1	0	2	8
I like how there's different, um, subject headings up top here.		I am curious to see if the ones I used are on here	Like if I were looking for a trail I think it's a good resource.		You'd have to be looking for something particular or know what you're looking for to find it.	
I like how it has little update, um, articles up here					It looks like it knows what it's talking about	
I liked the trail of the month as well. I liked that idea that, you know, it highlights one each month so if I'm in the area or if I know I'm going to be in the area I'll remember that						
I found it more informative.						

Usability/Ease of Use Comments

4	6	8	12	14	16	TOTAL
5	2	0	1	0	2	10
everything's pretty easy to find	it was easy to find what I needed		useful if that's what you were trying to do.		Whatever you're looking for is right there	
I think it's very easy to use	I could find what I needed pretty quickly				it looks like it'd be easy to find a trail	
I feel like I could find what I need to easily now I'm somewhat familiar with it.						
It'd be very effective.						
I think people would be interested in it and it would be an easy way for them to find what they're looking for.						

Expectations Comments

4	6	8	12	14	16	TOTAL
1	2	2	0	2	0	7
Like, I usually look just in the center and I don't go towards the navigational parts right away.	that was one thing I expected to find and I was a little thrown off by	I automatically went to the upper right corner since that's with a lot of sites where I'll see that type of stuff		I'm looking down the left hand menu bar right now don't really see anything that I'm looking for		
				instead of the back button the Rails-to-Trails' icon takes me to the homepage.		

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WORKS CITED

Alexander, Janet E. and Marsha Ann Tate. *Web Wisdom: How to Evaluate and Create Information Quality on the Web.* Mahweh, NJ: Lawrence Erlbaum, 1999.

Aristotle. "From Rhetoric." *The Rhetorical Tradition: Readings from Classical Times to the Present.* Ed. Patricia Bizzell and Bruce Herzberg. 2nd Ed. New York: Oxford UP, 1991. 179-242.

Barnum, Carol M. *Usability and Testing Research.* New York: Longman, 2002.

Barry, Ann Marie Seward. *Visual Intelligence: Perception, Image, and Manipulation in Visual Communication.* Albany, New York: State U of New York P, 1997.

"Beyond Web Usability: Web Credibility." April 2004. *Webcredible: The Usability and Accessibility Specialists.* 4 Feb. 2007. <http://www.webcredible.co.uk/user-friendly-resources/web-credibility/beyond-web-usability.shtml>.

Bolter, Jay David and Diane Gromala. *Windows and Mirrors: Interaction Design, Digital Art, and the Myth of Transparency.* Cambridge, MA: MIT P, 2003.

--- and Richard Grusin. *Remediation: Understanding New Media.* Cambridge: MIT Press, 1999.

Bosley, Deborah S. "Visual Elements in Cross-Cultural Technical Communication: Recognition and Comprehension as a Function of Cultural Conventions." *Exploring the Rhetoric of International Professional Communication: An Agenda for Teachers and Researchers.* Amityville, NY: Baywood, 1999. 253-276.

"Consumer Reports WebWatch Guidelines Promoting Web Credibility." Jan. 2002. *Consumer Reports WebWatch.* 13 Feb. 2007. <http://www.consumerwebwatch.org/consumer-reports-webwatch-guidelines.cfm>.

Duffy, Margaret E. "Web of Hate: A Fantasy Theme Analysis of the Rhetorical Vision of Hate Groups Online." *Journal of Communication Inquiry* 27.3 (2003): 291-312.

Eagly, Alice H. et al. "What is Beautiful is good, But…: A Meta-Analytic Review of Research on the Physical Attractiveness Stereotype." *Psychological Bulletin* 110.1 (1991): 109-128.

Enns, James T. *The Thinking Eye, the Seeing Brain.* New York: W.W. Norton, 2004.

Fogg, B.J. *Persuasive Technology: Using Computers to Change What We Think and Do.* Boston: Morgan Kaufman, 2003.

Fogg, B.J. et al. "How Do People Evaluate a Web Site's Credibility? Results from a Large Study." 29 Oct. 2002. *Consumer Reports WebWatch*. 27 Nov. 2006. <http://www.consumerwebwatch.org/dynamic/web-credibility-reports-evaluate-abstract.cfm>.

Freeman, Krisandra S. and Jan H. Spyridakis. "An Examination of Factors that Affect the Credibility of Online Health Information." *Technical Communication* 51.2 (2004): 239-263.

Fuller, Andrea. "E-Mail Scam Snares Stanford Students." *The Stanford Daily via U-Wire*. 9 Feb. 2007.

"Redesign Your Site With Persuasion Architecture." *Future Now, Inc.* 23 Feb. 2007. <http://www.futurenowinc.com/designforconversion.htm>.

Goleman, Daniel. *Emotional Intelligence*. New York: Bantam Books, 1995.

Hopkin, Michael. "Web Users Judge Sites in the Blink of an Eye: Potential Readers can Make Snap Decisions in Just 50 Milliseconds." 13 Jan. 2006. *News@Nature.com* 27 Nov. 2006. <http://www.nature.com/news/2006/060109/full/060109-13.html>.

Jordan, Patrick. *Designing Pleasurable Products: an Introduction to the New Human Factors*. Philadelphia, PA: Taylor & Francis, 2000.

Kaplan, Nancy. Kaplan, Nancy. "Ideology, Technology, and the Future of Writing Instruction." *Evolving Perspectives on Computers and Composition: Questions for the 1990s*. Ed. Gail Hawisher and Cynthia Selfe. Urbana, IL: NCTE, 1991. 11-39.

Kienzler, Donna S. "Visual Ethics." *The Journal of Business Communication* 34.2 (1997): 171-187.

Kostelnick, Charles. "Cultural Adaptation and Information Design: Two Contrasting Views." *IEEE Transactions on Professional Communication* 38.4 (1995): 182-196.

Kostelnick, Charles, and David Roberts. *Designing Visual Language: Strategies for Professional Communicators*. Boston: Allyn and Bacon, 1998. 3-79.

Kress, Gunther and Theo Van Leeuwen. *Reading Images: The Grammar of Visual Design*. Routledge: London, 1996.

LaGrandeur, Kevin. "Digital Images and Classical Persuasion." *Eloquent Images: Word and Image in the Age of New Media*." Eds. Mary E. Hocks and Michelle R. Kendrick. Cambridge, MA: MIT Press, 2003. 117-136.

Lindgaard, Gitte et al. "Attention Web Designers: You Have 50 Milliseconds to Make a Good First Impression!" *Behavior and Information Technology* 25.2 (2006): 115-126.

Maitra, Kaushiki, and Dixie Goswami. "Responses of American Readers to Visual Aspects of a Mid-Sized Japanese Company's Annual Report: A Case Study." *IEEE Transactions on Professional Communication* 38.4 (1995): 197-203.

McArthur, Leslie Zebrowitz. "Judging a Book By Its Cover: A Cognitive Analysis of the Relationship Between Physical Appearance and Stereotyping." *Cognitive Social Psychology*. New York: Elesvier/North Holland, 1982. 149-211.

Mullet, Kevin, and Darrell Sano. *Designing Visual Interfaces: Communication Oriented Techniques*. California: Prentice Hall, 1994.

Nielsen, Jakob. *Designing Web Usability: The Practice of Simplicity*. Indianapolis, IN: New Riders, 1999. 17-97.

---. *Useit.com: Jakob Nielsen on Usability and Web Design*. 20 May, 2007. <http://www.useit.com/>.

--- and Marie Tahir. *Homepage Usability: 50 Websites Deconstructed*. Indianapolis, IN: New Riders, 2002.

Norman, Donald A. *Emotional Design: Why We Love (or Hate) Everyday Things*. New York: Basic Books, 2004.

Princeton Survey Research Associates. "A Matter of Trust: What Users Want From Websites." Jan. 2002. *Consumer Reports WebWatch*. 27 Nov. 2006. <http://www.consumerwebwatch.org/dynamic/web-credibility-reports-a-matter-of-trust-abstract.cfm>

Shedroff, Nathan. *Experience Design 1*. Indianapolis, IN: New Riders, 2001.

Tufte, Edward. *Beautiful Evidence*. Cheshire, CT: Graphics Press, 2006.

---. *Envisioning Information*. Cheshire, CT: Graphics Press, 1990.

---. *The Visual Display of Quantitative Information*. Cheshire, CT: Graphics Press, 2001. 91-121.

---. *Visual Explanations*. Cheshire, CT: Graphics Press, 1997. 27-54.

Wathen, C. Nadine and Jacquelyn Burkell. "Believe it or Not: Factors Influencing Credibility on the Web." *Journal of the American Society for Information Science and Technology* 53.2 (2002): 134-144.

Williams, Robin. *The Non-Designers Design Book: Design and Typographic Principles for the Visual Novice*, 2nd ed. Berkeley, CA: Peachpit Press, 2004.

Williams, Sean D. "Theorizing a Perspective on World Wide Web Argumentation." Diss. U of Washington, 1999. Ann Arbor: UMI, 1999. UMI Number 9944196.

Wroblewski, Luke. *Site Seeing: A Visual Approach to Web Usability.* New York: Hungry Minds, 2002.