Not Just Usability Testing: Remembering and Applying Non-usability Testing Methods for Learning How Web Sites Function

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A ppropriately applied, usability testing is a worthy tool. However, it imperfectly informs Web site design. This article will briefly describe usability testing, review literature that considers (or fails to consider) its limitations, and propose that content and rhetorical analyses can compensate for usability testing’s limitations. Finally, the article argues that a broader analytical approach to Web site design can better inform design practice and improve Web sites.

WHAT IS USABILITY TESTING, WHAT ARE ITS LIMITATIONS, AND WHY SHOULD WEB DESIGNERS CARE?

Usability testing, a method borrowed from human factors and commonly applied in Web design, typically consists of identifying the targeted visitors for a Web site, identifying tasks the designers desire the targeted visitors to complete, and systematically observing 5 to 10 users completing those tasks. Systematically observing the user often provides information about how a site enables a person to complete a task; for example, a usability test may demonstrate how users have difficulty choosing an appropriate menu term to find desired information.

Wichansky notes that usability testing remains popular—and practiced—because it is effective.

For this type of data, empirical techniques with users provide the greatest credibility. (Wichansky 2000, p. 999)

While usability testing a Web site, however, Web designers also must recognize the real limitations of usability testing as an analytical method. These limitations include a narrow focus and a failure to consider Web sites contextually.

No single research method can provide comprehensive information, but usability testing’s widespread popularity makes its limitations particularly important: as Web designers increasingly depend almost entirely on usability testing to inform Web site design, they learn how users interact with individual site design features. However, constrained by usability testing’s limitations, Web designers fail to inform site design with more contextual information about site use. This approach is like testing the usability of a software manual without also considering how people are trained to use the product, whether they will ask others for help rather than use documentation, or whether they are more likely to use online or paper documentation. While testers learn something, they also have a limited sense of the importance of what they learn.

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Usability testing's first major limitation is its narrow scope. While traditional usability tests guide Web site revision, testers usually address specific tasks, like whether someone can find or buy a product. Therefore, most current usability testing deals largely with micro-design or delivery issues. These are important but are too seldom placed in a larger rhetorical context.

There are some notable exceptions: research into the use of the Web in political election campaigns (McAndrews 2000, Klotz 1998), for social action (Gurak 1998, Mele 1998), or for environmental advocacy (Killingsworth and Jacobsen 1999), and Klopfenstein's article about social, political, and economic dimensions of the Internet (2000). These researchers move beyond testing for tasks and look at why people visit sites or how sites match user's expectations. However, the vast majority of published research about the Web primarily guides decisions such as choice of a site metaphor, color, and navigational scheme. When research considers traditional rhetorical concerns, as does Winn and Beck's article "The persuasive power of design elements on an e-commerce Web site" (2002), it still may (as that article does) focus mostly on small visual and navigational elements.

Another problem with usability testing is that it too seldom considers Web characteristics contextually. As van der Geest and Spyridakis explain, "An approach to Web site design from a comprehensive communication perspective is missing" (2000, p. 301). Nardi and O'Day suggest that Web designers study technology application within larger social and institutional contexts (1999). Russell (1997) and Engestrom (1990) encourage designers to conduct research through the theoretical lens of activity system theory, which helps design focus not just on the final product, but also on how and why it exists and how and why it is used.

These researchers urge designers to consider how technology affects real people and problems. This broader context may focus not only on choices about Web content, but on Web sites as one element of larger communicative efforts: How do the content and visual design of a Web site help it interact with other publications? How do Web sites promote non-Web-based activities? Addressing these questions can improve a group's communication.

WHAT HAS ALREADY BEEN DONE TO ADDRESS USABILITY TESTING'S LIMITATIONS?

Published research does not ignore usability testing's limitations. However, much research into it focuses on how to do it more quickly or cheaply. For example, Nielsen promotes discount usability testing (1989), and other publications, such as de Jong and van der Geest's (2000) "Characterizing Web heuristics" argue for heuristics for Web design. These researchers advocate new methods that either supplement or replace usability testing, making it faster or cheaper while still mimicking a user perspective. (See Jones' 2003 article on "Lessons learned from discount usability engineering for the U.S. federal government.")

Other research into usability testing improves testing procedures. For instance, Caulton (2001) and Faulkner (2003) consider how many users a meaningful usability test requires. Similarly, van Waes (2000), Boren and Ramey (2000), Krahmer and Ummelen (2004), and van den Haak, de Jong, and Schellens (2003) study how to apply the think-aloud method in usability testing. Finally, Molich and colleagues (2004) remind us that usability testers don't consistently apply testing techniques, hampering usability testing's effectiveness as a research method.

While the research I have just reviewed critiques usability testing as a method and strives to improve it, it doesn't address usability testing's limited scope, which is the focus of this article. Some publications come closer to doing so. In particular, several researchers promote ways to expand the practice of usability testing to gain richer information about the user. For instance, Buur and Bagger (1999) advocate relying more on user dialog, Guenther argues for learning about users earlier in the design process (2003, p. 65), and many, building on Coney and Steehouder (2000), now write about creating user personas. Swenson, Constantinine, and Gurak (2002) ask designers to gather audience information from empirical research; Park and Noh (2002) explain how a quality function deployment approach provides more information about audience, usability, and satisfaction. While these researchers urge Web designers to expand their understanding of their site visitors, they still don't address the problems of usability testing's narrow focus on task completion, nor do they consider, as this article will, how rhetorical and content analyses can improve Web design.

The publication that comes closest to the kind of critique this article makes is Cleman's look at how instructional designers analyze their audiences (2001). Cleman applies rhetorical and literary theory to move beyond studying Ede and Lunsford's "audience addressed" and instead consider their "audience invoked" (2001). She argues that designers can do so by examining the roles audiences are asked to play and matching them with the roles audiences want to play (Cleman 2001). Cleman also suggests borrowing techniques of successful texts and incorporating David Goodwin's fabula that place readers and creators into roles that fit what the audience expects (Cleman 2001). Her article advocates applying rhetorical analysis to better understand audience but doesn't demonstrate what happens if communicators do so.

This brief literature review shows 1) that usability testing is an imperfect method that does not provide all desirable information needed for Web site design, and 2) that
researchers have made inadequate efforts to modify current practices to compensate for usability testing's limitations. Cleman provides one rare exception, asking designers to consider the audiences they invoke. This article will provide another view—that to better guide Web design, Web designers need to expand or refine usability testing or apply other methodologies.

Designers must examine not only how site visitors perform particular actions on a site, but also how a site facilitates actions outside the site. In short, Web designers need to know how sites function rhetorically (meeting particular purposes for particular audiences) as well as how usable they are. Does a site meet its designers' goals as part of a communication campaign? Encourage visitors to join the group, donate money, attend real life events, or change their personal habits? Does a site meet its audiences' needs as they define them, rather than as the organization would?

Web design will benefit from contextual and rhetorical research, just as document design for printed documents benefits from research that moves beyond page production to how texts are used in real contexts. This expanded approach to studying Web sites during the design process would not always be practical, but Web designers who often design particular kinds of sites should find a more comprehensive understanding of how those sites work invaluable.

Therefore, this article examines one way to expand research into Web sites to compensate for the limitations of usability testing. While studying the Web sites produced by a small environmental group, I applied multiple research methods, drawing on methods from the social sciences and the humanities, and looking beyond the sites themselves.

MATERIALS AND METHODS

This section will explain the methods advocated in this article in more detail, explore how they work, and discuss some of their implications. The research was part of an investigation into the Web sites of the SEED Coalition, an environmental organization in Texas that advocates sustainable solutions to air pollution and global warming. Among other things, I desired to help the group improve its Web sites and investigate whether the ways in which I analyzed the group's Web sites could compensate for the limitations of usability testing.

I needed to overcome the limitations of usability testing in part because of the kind of information the group wanted about its Web sites and the kind of Web sites the group had. For example, usability testing mostly addresses measurable goals: can a person use the site to successfully select and purchase a product? Can a visitor successfully search for a particular kind of information? Do users become annoyed by long load times or seem confused by a busy page?

The SEED Coalition did want to know how people navigated its sites and whether they helped people achieve their goals. However, because the site was an advocacy site, not a commercial one, its content was intended to convince visitors to send e-mail through the site to a legislator or write a letter to a policy maker: things that traditional usability testing cannot meaningfully measure. In addition, I informed the group's Web design by studying other aspects traditional usability testing does not measure well, such as whether the content and design of the group's current Web sites reflected the group's goals.

In other words, to improve the SEED Coalition's Web site, I studied not only how easily visitors could use the sites but also how well the sites met the organization's goals and how well the sites invoked the audience the group wanted to invoke.

To inform the group about its Web sites, I applied a variety of techniques instead of a more traditional usability approach (see Table 1). These techniques created a more complex picture of the site's function than traditional usability testing generally enables.

Before studying the group's Web site, I learned about the SEED Coalition's Web goals by interviewing the group's five full-time employees and its contracted freelance Web designer, observing the employees for four days, and studying the group's internal e-mail about the site. After learning the group's goals, I applied rhetorical and content analyses to compare them to actual Web site characteristics on two of the group's Web sites—their primary site and a smaller site made for a specific environmental activism campaign. All of the content on both Web sites was divided into 287 discourse blocs and coded for a variety of traits. A second coder recoded all of the subjective traits in 15% of the discourse bloc units to check for coding reliability, and the inter-rater reliability rate was 94%.

Finally, in addition to studying the processes the organization used to produce its Web sites and analyzing the Web sites themselves, I surveyed the audiences for the site through 1) a survey linked to the Web site's home page and 2) a survey e-mailed to all SEED Coalition associates for whom the group had e-mail addresses. Accepting the limitations of Web-based surveys, including the fact that many site visitors may not complete the survey, which must be short to encourage participation, I asked about the sites, visitor expectations, and visitor actions on and after visiting the site.

This analysis of the SEED Coalition's Web sites was broader than usability testing. Specifically, it focused more on the sites' rhetorical functionality and investigated whether the sites reflected their producers' goals in more depth than typical usability tests.

Most of these methods are self-explanatory: interviews, observation, and audience surveys. However, the rhetori-
TABLE 1. COMPARISON OF TRADITIONAL AND MORE BROADLY IMAGINED APPROACHES TO ANALYZING WEB SITE CREATION, DESIGN, AND CONTENT

<table>
<thead>
<tr>
<th>Analysis Options</th>
<th>Traditional Usability Testing</th>
<th>A Broader Approach</th>
<th>Trial Use of a Broader Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewing site owners about goals for the site</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Investigating the processes for creating the site</td>
<td></td>
<td></td>
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<tr>
<td>Timing users</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Counting user actions</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Analyzing think-aloud protocols</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interviewing users about their experiences with the site</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Observing whether users can accomplish particular tasks</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Observing how users interact with the site</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analyzing site content with rhetorical analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analyzing site content with literary analysis</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surveying users about experiences with the site</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Having focus groups of users discuss sites</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asking users about actions taken before or after contact with the site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asking users about contact with the group through venues other than the Web site</td>
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</table>

Rhetorical and content analysis
Understanding the analyses proposed in this article requires understanding how rhetorical and content analyses of Web sites have previously been done and how they differ from usability testing. Klotz, who has thoroughly analyzed Web sites rhetorically, explains that current research into Web sites lacks two main elements: "an appreciation of how Web communication fits in the context of timeless aspects of rhetoric," and "basing assessments of the Web on systematic evidence" (1998, pp. iv-v). Klotz tried to apply these things in his assessments of political Web pages, and McAndrews (2000) similarly studied a variety of political sites. However, neither of these researchers combined their systematic analyses with empirical evidence about the creators' goals for the site and the audiences' views of the sites.

Contrast the limitations of their analyses with those of usability testing: the former does not build on concrete user
data, and the latter does not look at the sites as holistically. Few practitioners overcome the limitations of both by combining knowledge about the author's intentions and audience/ usability data with a systematic analysis of the Web site. For example, Klotz (1998) and McAndrews (2000) both guess at the purpose and audience for the sites based on the text, while usability testers usually know the purpose and audience well, but know less about the texts' larger contexts. Combining elements of McAndrews' and Klotz's analyses of textual traits with information from interviews, observations, and audience surveys yields a richer picture of a site's rhetorical use; adding usability test results deepens the understanding of how people actually interacted with the sites.

Klotz's (1998) and McAndrews' (2000) methods informed the research on the SEED Coalition's Web site. The methods applied in this article similarly consider motivation/purpose for material on the sites, study the combination of visual and textual elements on the SEED Coalition's Web sites, search for interactive Web elements, and consider how audiences used a site. However, the research discussed here enhances Klotz's (1998) and McAndrews' (2000) approaches by adding interview data and real audience feedback. In this way, the proposed methods combine the benefits of rhetorical analysis, content analysis, and usability testing.

Finally, the analyses examine how the Web sites do the following:

- Reflect the organization's goals
- Use rhetorical appeals
- Use other rhetorical techniques
- Use typical Web site characteristics

Analyzing how the Web sites reflect the organization's goals One objective was to determine how the Web sites reflect the group's goals, which was done by coding discourse bloc units on the Web sites for whether they would help the group meet each of its many goals, such as "providing a means for visitors to take action." This analysis told the SEED Coalition 1) what it sees as its sites' primary purposes and 2) who it perceives to be its sites' primary audiences. The analysis was beyond the scope of most usability testing, particularly in how it studied site content to see whether the group addressed the audience it wanted to invoke.

Analyzing the Web sites' use of rhetorical appeals Another analytical tool applied in this research is a traditional rhetorical analysis. The group's sites are inherently persuasive, because one of the group's major goals is to persuade people to take action for the environment. The Web sites encourage action by removing physical or temporal barriers such as the time it would take to design flyers or write letters, or by removing attitudinal barriers by providing arguments to change people's minds. The SEED Coalition's sites also use a variety of textual and design elements to persuade. These characteristics were grouped into the three primary rhetorical appeals—logos, pathos, and ethos—using Winn and Beck's sorting of salient factors of sales into Web design attributes as a guide for coding logos, pathos, and ethos in non-textual elements (2002). The coding noted both design and content considerations.

Winn and Beck, who address only design characteristics, consider only commercial sites, so not all of their attributes applied to the non-commercial sites that were the subject of my study. Among applicable attributes was the logos attribute of effort (Winn and Beck 2002, p.23), defined as how the difficulty visitors might have navigating, reading, or taking action would affect their likelihood to use a site. This factor was measured by considering the number of steps needed to read or take an action, text length and reading level, and the navigational depth of site information. In addition to design concerns, the kind of the information provided affects the sites' persuasiveness; for example, statistics or scientific data has a logos appeal.

Winn and Beck identify the pathos elements as playfulness, tangibility, and empathy (2002, p. 23). The SEED Coalition's sites could similarly use the entertainment potential of the site, sensory appeal through visual or other means, and personalization features to appeal to their visitors. In addition, the group's Web sites could build text-based pathos appeals by providing information that is likely to have an emotional impact on people, such as examples of personal suffering.

Finally, Winn and Beck consider design attributes that reflect product quality and recognizability and customer assurance to affect ethos (2002, p. 23). The SEED Coalition's sites could similarly use these factors to build credibility. The Web sites can also cite and link to outside sources to build credibility.

Putting the rhetorical and goal analysis together Finally, then, the Web sites were coded for characteristics relating to the group's goals or ethos, pathos, and logos; see Figure 1.

Units were coded for multiple characteristics: a report linked to the Web site was informative and persuasive, for example, and probably included both ethos and logos. The content analysis diagnosed discrepancies between the SEED Coalition's stated goals for its Web sites and the goals that the Web sites themselves seemed likely to facilitate; thus, it provided a more big-issue, content-based view of the site than most usability tests.
Analyzing the Web site's use of other rhetorical techniques

In addition to looking at the group's goals, the coding considered how the Web sites use rhetoric common to environmental communication. That is, I analyzed the sites in the larger context of environmental communication, rather than as isolated texts—again, moving beyond the narrow scope of usability testing.

Environmental discourse literature indicates that advocacy groups usually value participatory decision-making and consensus-seeking. Therefore, the analysis investigated the sites for evidence of these values, although the group did not directly express them as goals. Again, this approach moves into an area usability testing usually ignores, providing insight into how the organization's Web sites align with goals of similar organizations.

In addition, the content analysis coded for narrative characteristics common to environmental literature. It determined which units, if any, used an apocalyptic narrative (Killingsworth and Palmer 1992), the "loci of the irreparable" (Cox 1998), or jeremiads (Opie and Elliot 1996). All three of these narrative characteristics frighten people into action by warning of the dire consequences of current activities.

Besides considering the sites within the context of environmental communication, the analysis also considered the sites within the context of activist communication.

Analyzing the Web site's use of Web characteristics

In addition to considering rhetoric common to environmental advocacy groups on the SEED Coalition's sites, the sites were studied for characteristics common to online materials to provide a picture of the SEED Coalition's sites relative to Web rhetoric—another important perspective that usability testing cannot provide.

For example, the coding considered which of Pavlik's (1997) stages of Web maturity, each with increasing amounts of content produced specifically for the Web, the Web sites reflect. The coding also noted how often and how much the SEED Coalition's Web sites would allow audiences to interact with the organization, the Web sites, or other visitors. This study of interactivity, rarely comprehensively provided by usability testing, is particularly important due to research emphasizing its importance in Web site success (Teo, Oh, Liu, and Wei 2003). Finally, the SEED Coalition’s Web sites were coded to see how they used other characteristics of Web rhetoric or environmental discourse (Table 2).
FINDINGS AND ANALYSIS

Some findings yielded by the content and rhetorical analyses overlap with those usability testing would probably turn up. However, usability testing is unlikely to yield many of findings from this research, although it could provide some information that this approach does not. Some of the findings for which each method would excel are briefly discussed below.

Examples of findings that significantly overlap with usability testing

The rhetorical analysis yielded some findings that traditional usability tests would have probably also yielded, such as those in the examples below.

Example 1: Broken links

Twelve percent of the sites’ links did not lead to the information promised, a condition that damages the logos appeal of the site. While most designers test for broken links, the content analysis located them more comprehensively.

Example 2: Ease of using site

Design issues affect ease of site use: the number of steps needed, amount of time required, or external personal costs associated with taking action. For example, the average unit on the SEED Coalition’s Web sites requires approximately five steps (including moving to another place on the Web site; reading, filling out, and sending an electronic form; or attending a meeting). Seventy-five percent of the units require a short amount of time (five minutes or less), 23% require a medium amount of time (five to fifteen minutes), and only two percent require a large amount of time (more than fifteen minutes). Traditional usability testing would significantly supplement the technique applied here by providing a better estimate of how long each item would take—the one used here was based on how long it took the researcher to complete tasks—and would provide a better sense of the average visitor’s patience with each task. However, Web designers can see the benefits of the content analysis’ site-wide data about the Web site’s demands on visitors.

In addition to the number of steps or time required to take an action, some activities require external costs. Sixty-six percent of the units on the Web sites require reading, but 19% of units require time to find material elsewhere on the Web site or from the group itself, 11% require a public commitment to a particular political perspective, and 2% require money. These costs may discourage some visitors. For example, most visitors will not request information they cannot reach as a result of a broken hyperlink. Some external costs, such as political commitment and money, are inevitable. Others, like time to track down information, are avoidable, as the group could repair broken links. The real user data that usability testing provides could enrich these findings, telling the group how prohibitive these costs are for most visitors, but again, the content analysis provides an extremely comprehensive picture of the Web site.

Example 3: Text complexity

Another measure of ease of site use is text length and complexity, something sometimes considered as part of a heuristic analysis. For example, Jones discusses the SMOG grade-level index for the government site she analyzes (2003, p. 236), and Spyridakis (2000) recommends short pages over long pages. However, while traditional usability tests might discover whether users in the testing find text readable, again, the comprehensive information a content analysis provides is invaluable to Web designers. The SEED Coalition, for instance, learned how long its units of text were. Units of text were coded for length: short (less than 250 words), medium (250–500 words), and long (over 500 words). Forty-nine percent of the units on the Web sites were short, 15% were medium, and 36% were long. The majority of the units, then, allowed site visitors to read quickly. The fairly substantial number (36%) of longer units included mostly reports. This information allowed the group to consider improving the appeal of online reports by consistently providing abstracts.

In addition to learning about the length of the units on its Web sites, the SEED Coalition learned about the complexity of its Web units. The content analysis used Microsoft Word to calculate the Flesch reading ease score (based on average sentence length and average number of syllables) and the Flesch/Kincaid grade level (based on average sentence length and average number of syllables per word). While these measures are imperfect, they provide information that can help us gauge the relative complexity of text.

The average grade level for the 145 analyzable units of material on the Web sites was 9.7. Fifty percent of the units were grade level 12. The average reading level was 40.9, and the median reading level was also 40.9. Standard documents generally aim for a Flesch rating of 60 to 70 and a grade level of 7 to 8. The SEED Coalition Web sites’ average grade level of 9.7, with 50% of those units at grade twelve, is higher than that recommended for a standard document. This might be problematic online, where simpler text (especially shorter sentences) might be needed. The SEED Coalition Web sites’ average Flesch reading score, at 40.9, falls below the 60 to 70 guideline, probably reflecting the short length of most of the discourse blocs.

The biggest readability problems on the Web sites are with units that were not originally intended for online consumption, such as reports posted online. People could
### TABLE 2. THEORETICAL PERSPECTIVES USED IN CONTENT ANALYSIS OF THE SEED COALITION WEB SITES

<table>
<thead>
<tr>
<th>Author</th>
<th>Description of Characteristic</th>
<th>Related Web Site Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waddell (1996)</td>
<td>1. Technocratic: No communication between experts and the public, experts make decisions alone</td>
<td>1. Technocratic: SEED does not present itself as an expert in a bureaucratic sense</td>
</tr>
<tr>
<td></td>
<td>2. One-way Jeffersonian: One-way communication from experts to the public</td>
<td>2. One-way Jeffersonian: Coding noted where the SEED Coalition provides “expert” information to the public</td>
</tr>
<tr>
<td></td>
<td>3. Two-way Jeffersonian: Two-way communication in which experts maintain power, but the public and experts talk to one another</td>
<td>3. Two-way Jeffersonian: Coding noted where the SEED Coalition solicits public opinion, while keeping experts in control</td>
</tr>
<tr>
<td></td>
<td>4. Social constructionist: Two-way communication in which experts and the public communicate, each from their own sphere of knowledge, sharing power</td>
<td>4. Social constructionist: Coding noted where the SEED Coalition uses public opinions in citizens’ own voices</td>
</tr>
<tr>
<td>Killingsworth and Palmer (1992)</td>
<td>Apocalyptic narrative</td>
<td>Narrative about impending doom if people do not change their actions</td>
</tr>
<tr>
<td>Opie and Elliot (1996)</td>
<td>Jeremiads</td>
<td>Narrative about poor quality of life due to human error, with possible redemption if people change</td>
</tr>
<tr>
<td>Cox (1998)</td>
<td>Loci of the irreparable</td>
<td>Narrative arguing that taking no action will lead to irreparable damage</td>
</tr>
<tr>
<td>Kim (2000)</td>
<td>Ways to promote community</td>
<td>Chat rooms, novice vs. expert markers, celebrations, auditoriums, e-mail lists, community history, recognition of contributions</td>
</tr>
<tr>
<td>Leizerov (2000)</td>
<td>Connections to other advocacy groups</td>
<td>Link to or citation of other group</td>
</tr>
<tr>
<td>Yarborough (1999)</td>
<td>Build rhetorical power</td>
<td>Examples of compelling others to believe newspaper articles, picture of participants in a SEED Coalition event, discussion of a successful campaign</td>
</tr>
<tr>
<td>Leizerov (2000)</td>
<td>Amount of information provided that may not be provided by mass media</td>
<td>Press releases, reports, other data</td>
</tr>
<tr>
<td>Pavlik (1997)</td>
<td>Stage 1: Put print information online with little change, such as PDF reports available in print</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stage 2: Develop original content, with hyperlinks or interactive features like a search engine</td>
<td></td>
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<tr>
<td></td>
<td>Stage 3: Provide original content designed specifically for the Web, such as immersive story telling</td>
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</tr>
<tr>
<td></td>
<td>Stage 1: Put print information online with little change, such as PDF reports available in print</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stage 2: Provide original content for the Web, with hyperlinks or other interactive features</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stage 3: Develop content on the Web that could exist only there</td>
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print these and read them on paper, especially as several are provided as PDF files. However, the group learned that simplifying its text or consistently providing report abstracts could improve its sites. Usability tests could complement this data by discovering whether readability hampers readers or increases the appeal of the sites by making them seem professional or scientific. However, the comprehensive content analysis was more likely to result in the group's deciding to change practice across the site than an individual user task in a usability test.

**Summary**

The content and rhetorical analyses in most of these instances overlap with those of a traditional usability test or heuristic. Often, the content and rhetorical analyses fail to fully answer usability questions. For example, the content and rhetorical analyses probably found more broken links than a usability test, but could not show which would present a problem for users. The analyses provided rich information about site readability, but not how that relates to visitor expectations—traditional usability tests can provide more credible data about user patience.

However, while content and rhetorical analyses would best be combined with traditional usability testing to fully answer some questions, analyzing the SEED Coalition's Web sites in respect to environmental discourse conventions and Internet communication conventions demonstrates why Web designers should not depend exclusively on usability testing.

**Example of how findings supplement usability tests**

**Example 1: Insight into ethos**

Among the things learned from the rhetorical analysis: the Seed Coalition's Web sites do reflect all of the organization's goals, and they use pathos, ethos, and logos. For instance, a great number of units on the Web sites (187 or 93%) build the group's ethos. These include links to other group's Web sites, materials provided by other groups, and letters that demonstrate the SEED Coalition's good will. The SEED Coalition staff did not initially indicate that ethos was one of its goals for its sites. In fact, building ethos as a goal appeared only in follow-up interviews.

It appears to be such a major factor in the SEED Coalition staff's thinking about its Web sites and other communication tools, however, that perhaps the SEED Coalition staff is habitually, if not consciously, aware of this concern. If so, this habitual awareness would explain both why it was one of the last goals to surface from the interviews and why it was one of the most commonly targeted goals in the creation of Web material. Traditional usability testing probably would not have helped the group understand how important ethos is to the organization. Instead, through the rhetorical analysis, the group identified a heavy use of this rhetorical appeal, and could see particular ways in which it manifests itself. This allowed the group to reflect on its online practices. For example, coding indicated that the following percentages of units on the Web sites built ethos through the following techniques:

- Branding (use of the SEED Coalition logo)—51%
- Providing information about the organization—9%
- Community building: invitation to join the SEED Coalition staff or other site visitors, information about a group event in which citizens participated—38%
- Perceived quality of information: sound research, outside sources—57%

The group could use this data to determine which areas, if any, it feels it is investing too much or too little space in and adjust its planning accordingly.

**Example 2: Interactive Web elements**

The content analysis also noted the presence of interactive Web elements, specifically which units seemed to fit Pavlik's (1997) stage one Web site—merely posting online organization materials already available in print, with few if any revisions, like the press releases and many of the reports the group makes available online. Some units matched Pavlik's (1997) level two material—material produced specifically for the Web sites—or Pavlik's (1997) level three—materials produced specifically for the Web that take advantage of unique characteristics of the medium.

Out of 267 coded units for which Pavlik's (1997) levels could be determined, 53% represented material available in print or other media and merely posted online with few if any changes. Another 36% represented level two Web development, such as creation of text with hyperlinks, as on the SEED Coalition's "learn" page that consists of short paragraphs of information with hyperlinks to more information. The remaining 11% of the units, then, could not exist in the same way offline. These include the fax actions (forms which visitors complete and electronically send to the organization, which faxes them to decision makers) because the fax actions go beyond the form letters or postcards that the SEED Coalition makes available to people in hardcopy. Visitors can modify text in a fax action but not in a preprinted postcard. Although the fax actions represent the potential of the Web realized in the way that Pavlik (1997) and Parker (1997) think might help advocacy groups accomplish their goals of political action and involve citizens in this political action, the majority of the SEED Coalition site is not yet at level three—and a significant portion of it is not yet at level two. For Web sites to be optimal, more than 11% of their information should be interactive.

For example, the SEED Coalition could potentially use its Web sites to host auditorium presentations from experts...
or invite policy makers to chat rooms for discussions with site visitors. A coalition of groups including the SEED Coalition and a faith-based environmental group in Austin brought a noted global warming author to several Texas cities to discuss global warming in the fall of 2001. This contact with citizens across the state was wonderful, but Web capabilities could have expanded it. For example, an online auditorium might have helped this coalition effort reach not only the handful of cities chosen for onsite visits, but also people from other locations in the state. In a state like Texas, where travel distances to the capitol often prohibit most citizens from traveling there for face-to-face contact with legislators, groups like the SEED Coalition might arrange online discussions with political decision makers.

Here, again, content and rhetorical analyses provided information that a usability test might not have, as a test focuses mostly on what is present on the site, not on what people might want but is not present. A focus group or audience survey might yield information about how much interactivity visitors want, but it would not provide a comprehensive overview of the amount and kinds of interactivity the site currently provides.

Example 3: Environmental discourse techniques
One interesting finding was a negative finding. Despite coding for units that reflected techniques common to environmental discourse, none were found. This result indicates that the group’s Web sites are very unlike traditional environmental discourse. One potential problem with the method in this area, however, is that the narrative techniques coded for were established as common to printed environmental discourse. Environmental Web sites may use different techniques, and the SEED Coalition’s may be very similar to other group’s online techniques, but because there is little literature on online environmental communication from which to draw, it was impossible to code them. Still, though, the findings yielded information a usability test would not have and gave the group a sense of its discourse and the way it fits into a larger framework of communication.

CONCLUSIONS AND FURTHER RESEARCH
Web designers can apply rhetorical and content analysis, combined with audience analysis, to provide important design information that usability testing alone cannot provide. What this article advocates, then, is not that Web designers stop usability testing but that while they apply usability testing for good reasons—it provides quick, efficient, and effective information—they also have other tools, some of which can provide more site comprehensive and contextual information critical to optimal Web site design. Using some of the techniques applied in this study can compensate for usability testing’s limitations. Designers cannot always complete a comprehensive analysis like this. However, augmenting heuristic and usability information with these kinds of analysis can provide invaluable guidance for Web site design.

More research needs to directly compare the techniques applied here to usability test and heuristic results for the same Web site, then recommend which kinds of analysis to do when, and why. Still, this article may remind Web designers that while one tool in the design testing toolbox may shine as extraordinarily useful, other tools can provide other critical information. A hammer is useful, but most people want to own and use a screwdriver, too.

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Non-usability Testing Methods for Learning How Web Sites Function


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