EVALUATING ONLINE NEWSPAPERS USING ESTABLISHED WEB DESIGN
GUIDELINES

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This study describes the results from an evaluation of 10 online newspapers against Web design guidelines from Jared Spool's *Web Site Usability*, Jakob Nielsen's *Designing Web Usability* and CNET Networks' *Tips From CNET Designers*. Evaluating a Web site against design guidelines is valuable in determining a site's usability.

Newspapers have turned to the World Wide Web as an additional medium for distributing information and are now depending on their Web sites to generate additional revenue. Usability is an essential factor in attracting and preserving a large Web site audience. Web sites that scored high in this evaluation generally relied on a clear, thorough hypertext navigation system and efficient use of images.

The sites evaluated in this study were BayArea.com, CJOnline.com, islandpacket.com, latimes.com, NOLA.com, NYTimes.com, Projo.com, tampatrib.com, USAToday.com and washingtonpost.com

Headings:

Web-Sites

Web-Sites—Evaluation

Design—Evaluation

User-interfaces—testing

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Introduction

The idea of an online newspaper seems like an oxymoron. The newspaper is crisp fiber rumpling as pages are turned. The newspaper is ink smudging a reader's fingertips. The newspaper is comic strips, coupons, crossword puzzles and a brown ring in the corner left by a coffee mug. The newspaper is not a collection of ones and zeros traversing fiber optic lines at the speed of light—or is it? In today's Internet-centric world, it most certainly is. In fact, the newspaper was a set of ones and zeroes before booking a flight, meeting a date, and bidding for that long, lost knick-knack ever were. The newspaper industry was well positioned to take advantage of the Internet and World Wide Web boom because its business has always been to share information. In fact, it would be logical to think that since newspapers have so much expertise in organizing, packaging and spreading information, they would be able to transfer their stockpiles of data on to the Web effortlessly. Unfortunately for the newspaper establishment, this was not the case. Newspapers have struggled to find a way to shift their traditional business practices on to the World Wide Web. This study will not address the moneymaking aspects of newspaper Web sites, but it will examine how newspapers package and present information on the Web. Specifically, this study examines the effect the designs of online newspapers have on how easy people find it to interact with newspaper Web sites. The guiding question behind this research study is: How closely do online newspapers follow established Web design guidelines? To help guide this question, three topics must be explored further: usability on the World Wide Web, the process of creating design

guidelines and using them as an evaluation tool, and the current trends in online

newspaper development.

The Importance of Usability on the Web

As the personal computer has infiltrated more areas of society, designers of

information systems have recognized the need for software products to be usable.

However, usability extends beyond electronic information systems. Think about a

situation where a friend invites you to a basketball game at the Dean Smith Center. You

are unfamiliar with the area, so your friend gives you detailed directions so the two of

you can meet at the arena before the game.

- Take I-40 West to Exit 273.

- Turn right off the exit ramp on to Highway 54 West.

- Proceed on Highway 54 West.

- Exit on to NC 54 West/15-501 South.

- Turn right on to Manning Drive.

- Turn left on to Skipper Bowles Drive and find the first parking spot you can.

These directions will lead you to the Smith Center, unless a prankster has removed one of

the street signs along the route, or an essential sign is placed too close to one of the turns

causing you to miss it, or one of the signs is so weather beaten that it is invisible. These

are examples of usability problems.

Print editions of newspapers contain features that are designed to enhance their

usability. For example, most papers include a table of contents or an index on the front

page that point out popular pages like the horoscopes, weather forecast and television

listings. In the early 20th century, the tabloid paper format was introduced to compete

with traditional broadsides because the smaller size of the tabloid paper made it easier to read while sitting in a crowded subway car.

Whether the topic is driving to a basketball game or reading a newspaper, usability refers to making it easy for users to work with information systems. According to human-computer interaction professionals Jenny Preece, Yvonne Rogers and Helen Sharp (2002), usability ensures that "interactive products are easy to learn, effective to use and enjoyable from the user's perspective" (p. 14). The authors identify six specific goals in designing usable products.

- Effective use

- Efficient use

- Safe use

- Good utility

- Easy to learn

- Easy to remember how to use

Ideally, a usable information system makes the system's interface disappear. A user's energy is focused on completing a task instead of manipulating the system being used to fulfill the task. Understandably, building this kind of interface on top of a complex information system requires a lot of time and energy from the design team (Shneiderman, 1998).

Since satisfactory usability is such a daunting task, it is frequently glossed over in the design process as companies rush products to the market. System developers assume that if they and their peers do not have problems using a product, other people will not encounter problems. This is usually unrealistic because the general population does not

have the expertise that is inherently gained by being involved in a development project. However, as items like the personal computer, cellular phone and personal digital assistant become more ubiquitous, manufacturers have gradually realized that building usable products is essential. A Palm Pilot may contain more capabilities than a paper address book, but if it takes too long to learn how to operate the device, there is little reason for a person to buy it. Thus, it is important for designers to test usability before their products are released.

Usability testing techniques are numerous and varied. Preece, Rogers and Sharp specify four evaluation paradigms that are integral to usability: "quick and dirty" evaluation, usability testing, field studies and predictive evaluation. Quick and dirty evaluation is done informally and involves short sessions where feedback is gathered from potential users or consultants to guide the design process. Usability testing calls for quantitatively measuring users' performance on specific tasks that will be carried out repeatedly. Generally, testers keep track of the time needed to complete the task and the number of errors committed while performing the task. Field studies involve observing users interacting with a product in their natural environments. Unlike usability testing, field studies rely on qualitative data, which can be obtained through observation, interviews or a combination of the two. In predictive evaluation, experts utilize their previous experience with and knowledge of typical users to see if a system follows certain usability guidelines that generally lead to success. The distinguishing feature of predictive evaluation is it does not require users, so this paradigm is quick and relatively inexpensive.

In most cases, it is necessary to use more than one of the above paradigms to carry out a usability evaluation that yields helpful data. It is a common practice for designers to form a test plan at the beginning of a new project to guide their evaluation strategy. Evaluation plans hinge on the time a particular test takes place in the design process, the novelty of project, the size of the expected user population, the importance of the interface, financial and time costs of testing, and experience of the design team (Shneiderman, 1998). Furthermore, usability professionals will almost undoubtedly be juggling more than one usability test at a time. No matter what type of strategy is fashioned, experts emphasize that usability evaluation is iterative and must take place while the system is being designed. Preece, Rogers and Sharp (2002) write:

> Iterative design often involves carrying out different parts of a project in parallel and under tremendous pressure. The need to deal with different sets of demands and trade-offs (e.g., the need for rigorous testing versus the very limited availability of time and resources) is a major influence on the way a design project is carried out. (p. 461)

Whether a test involves releasing a product demo to a segment of the user population, gathering a focus group to discuss appropriate headings for menu items, or simply giving a colleague a pencil-and-paper drawing of a screen to gauge that individual's feelings, testing usability is essential and must be repeated throughout the design process.

In the case of Web sites, the importance of usability is magnified. For most products, transactions take place before a user experiences the product's usability. For example, a person might decide to buy the print edition of a newspaper to find movie listings. After buying the newspaper, the user may discover that a printing problem rendered the movie pages unreadable, an obvious usability flaw. In this case, even if the person decides to throw the newspaper away, the newspaper company has already

collected its fee. Another movie buff might decide to find movie listings by accessing a newspaper's Web site. However, when this person tries to find the Movies section on the site's home page, the site is so cluttered that it is impossible to find anything, which constitutes another usability flaw. According to research, in this situation, the individual will almost certainly give up quickly and try to find the desired information at another source and remember to never try accessing the information at the cluttered site again. In the case of an online newspaper, the site is not necessarily losing a monetary transaction, but it is losing valuable traffic to its site that might be valuable to advertisers. This situation shows that on the Web, users experience a site's usability before a transaction takes place (Nielsen, "Designing…," 2000). Clearly, usability is important for any information system.

Guideline Evaluation and Its Place in the Usability Test Process

The meticulous nature of usability testing makes it hard to imagine a full usability test of an information system as vast as an online newspaper being completed within the context of a master's paper. However, completing an important portion of a usability test is feasible. Evaluating Web sites according to existing Web design guidelines, part of the predictive evaluation paradigm mentioned in the previous section, is a vital part of any usability test strategy. This strategy is an extension of the more widely utilized process known as heuristic evaluation.

Pinning down an actual definition for "heuristics," or even guidelines, is difficult because the terms are frequently used interchangeably. According to Nielsen, heuristics are "recognized design principles." Preece, Rogers and Sharp write that heuristics are design principles that are used in the practice of evaluating usability problems (2002).

They draw a designation between design principles and usability principles by asserting that design principles are used for informing a design, while usability principles are used to evaluate prototypes and existing systems. Shneiderman calls heuristics "underlying design principles" derived from experience (1998). In any case, it appears that heuristics refer to a set of common characteristics that designers have found to be successful when incorporated into different information systems.

Heuristic evaluation involves enlisting a person, or persons, familiar with design rules to check an information system against a prescribed set of heuristics. It is a relatively quick and inexpensive way to find a system's usability problems and can be repeated at numerous stages during the design process. These factors make heuristic evaluation an essential part of any usability test plan. A survey of 134 usability professionals in 1999 found that 70 percent of them worked at organizations that employed heuristic evaluations in usability test plans. The popularity of heuristic evaluation was partially supported by the fact that 28.6 percent of respondents cited lack of resources as the biggest obstacle to usability testing (Rosenbaum, Rohn, Humburg 2000). Also, heuristic evaluation is particularly useful in combination with user testing since it allows obvious problems to be discovered without wasting the time of test subjects, or with systems that are so complex that problems only become obvious after a long period of use (Nielsen, "Characteristics…," n.d.). In fact, a survey of participants in an online usability course at an INTERCHI conference by Nielsen rated heuristic evaluation as the second most useful testing method out of eight ("Technology Transfer," n.d.).

When conducting heuristic evaluations, it is customary to rate the severity of the violations found. Some violations are severe, such as clicking on a link to an audio file that causes a user's computer to crash, while others are slight violations, such as inconsistent font types being used within pages. Although rating systems are more reliable if three to five people make up the group of evaluators, Nielsen points out that conducting heuristic evaluations with two people or even one person only leads to slightly reduced benefits ("Technology Transfer," n.d.).

There are many sets of heuristics related to interface design including Shneiderman's Eight Golden Rules of Interface Design (1998), Nielsen's ten main usability principles and Bruce Tognazzini's *First Principles* (2001). These sets of principles, while somewhat useful for Web sites, are not directly concerned with Web interfaces. Nielsen recognizes this fact and has designated three main differences between interface design for software products and Web sites. First, in software product development, designers know the system they are designing for, while in Web design, designers have no idea how users will be viewing their sites. Web sites can be viewed on a 21-inch monitor that supports millions of colors, WebTV or a cell phone. Second, in software products, the developer is able to maintain some sort of control over the user's navigation, but on Web sites, users can take completely unpredictable paths by typing in another URL. Third, users are usually able to differentiate between different software products and realize that conventional features will change between products. On the other hand, users view the World Wide Web as one product and expect certain conventions to apply to all Web sites (Nielsen, "Difference Between," n.d.).

As a result of these distinctions between Web design and general interface design, when evaluating Web sites, it is more informative to use design principles geared specifically toward the Web. Since the Web design field is younger than the software design field, the collection of literature on Web heuristics is not as deep and varied. Specifically, there are not as many usability "checklists" for Web sites that resemble Shneiderman's Eight Golden Rules or Tognazzini's *First Principles*.

However, the explosion of Web use did yield a copious amount of literature on Web design in general. While this literature has not yielded plentiful checklists of design principles, it is not difficult to extract principles from these works. Nielsen has researched Web usability extensively and produced Web-specific design guidelines in *Designing Web Usability*. Jared Spool is another researcher who has conducted a multitude of Web usability tests to investigate design principles; he shares his findings in *Web Site Usability*. Other researchers have produced books that tell designers what they should not do. Examples from this category include *Web Pages That Suck*, by Vincent Flanders and Michael Willis, and *GUI Bloopers*, by Jeff Johnson.

One trick in determining the validity of a set of principles is by checking to see if the principles were tested empirically or emotionally. Nielsen's book was the compilation of usability tests with hundreds of users on hundreds of Web sites. Additionally, *Designing Web Usability* was supported by Nielsen's expertise with online information systems from the 1980s. Nielsen's work is especially relevant in analyzing online news sites because it contains a chapter on content design, which concerns how information is presented across a Web site. The book also contains chapters on site design, which is how information is divided up between different Web pages, and page design, which is related

to the appearance of a Web page on the monitor. Spool's *Web Site Usability* summarizes a study that examined the usability of nine general-interest Web sites in 1998, including Disney.com and Travelocity.com. An important facet of the study is the fact that it addressed the task of gathering specific information, as opposed to browsing or buying products. Spool (1999) and his partners chose to focus on information collection because information is a central theme of Web use, whether a user is researching a topic, shopping, downloading software, or an organization is marketing a product or disseminating information among employees and shareholders. Spool focused his tests on navigation, links, within-site searching, the comparison information within a Web site, readability and page layout, and graphic design.

A second factor that affects the value of Web design guidelines is their practicality. Some Web pundits denounce the use of any graphics because the large file sizes of graphics slow the download speed of Web pages. While it is true that graphics increase a user's wait in viewing a page, it is highly unlikely that the mass audience will find a Web site without graphics visually interesting enough to return on a regular basis. This statement is supported by the fact that photographic slide shows are becoming increasingly popular (O' Connell, 2002).

CNET Networks, which produces some of the most popular information technology Web sites on the Internet, has released some of guidelines used by the company's Web designers. CNET's portfolio includes a dozen award-winning Web sites including ZDNet (www.zdnet.com), winner of the Computer Press Association's Best Overall Site for last two years ("ZDNet…," n.d.), and GameSpot (www.gamespot.com), which won the Academy of Interactive Arts and Sciences' Best Entertainment Site award

in 1999 and 2000 ("GameSpot…," n.d.). The company also produces News.com, a technology news site. CNET designers are experienced in developing attractive, popular news pages; consequently, any principles adopted by their designers are very helpful for other Web designers, especially those that work for news organizations. The CNET Web design guidelines can be found at:

http://builder.cnet.com/Webbuilding/pages/Graphics/CTips/ss06.html.

At this point, it is worthwhile to mention that heuristic evaluation usually involves taking a list of eight to twenty general design principles and naming individual instances where these principles are violated inside an information system. Instead, I am slightly modifying the technique by using 99 guidelines and judging if or how much they are followed. I think this is appropriate because heuristics are inherently general. For example, one of Shneiderman's (1998) Golden Rules is to "strive for consistency" (p. 74). Since I was the only person that evaluated sites, it would have been highly unlikely that I would have been able to pick out every instance of a site failing to maintain consistency. Furthermore, I would have major problems with personal biases. Thus, I used detailed guidelines that could be judged more objectively than heuristics. However, to gain a wide enough picture of site usability, I had to use a much longer list of guidelines compared to the relatively short groups of heuristics.

Newspapers and Their Web Sites

This is an appropriate time to answer why this study focuses on newspaper Web sites instead of online magazines, e-commerce sites or online dating sites. One reason is because newspapers are uniquely positioned to reach the mass audience. The press is

known as the fourth estate of the American government; it existed before the birth of the United States. This history is precious in relation to the rest of the World Wide Web, which has only grown as a mass communication medium within the last decade. Newspapers have forged a reputation with the public. Thus, if a person decides to seek news online, it is logical to assume that the person will look for a Web site produced by an organization known for covering news instead of browsing to a random Web site that might be viewed with some skepticism. While 24-hour cable television news networks complicate this person's choice, newspapers will still attract a significant number of online news seekers, especially for local news. Additionally, online newspapers are seemingly equipped to take advantage of the media convergence trend, which is explained later in this section.

Before exploring convergence, it is necessary to briefly examine the history of newspapers online. Like the rest of the Internet industry, newspapers' Web sites have experienced a roller coaster ride over the past several years. In the early days of the World Wide Web, newspapers and the news media in general became the third major American industry to go online, trailing only the military and higher education. When Web use exploded in the mid 1990s, it only took about 18 months for most American newspapers to produce Web sites (Hall, 2001). In these times, newspapers jumped at the opportunity to participate in the new medium, which elicited romantic visions of interactivity, richness and timeliness that would revolutionize the industry. At the same time, others believed that the Web suddenly offered independent individuals to publish news for the worldwide population inexpensively, which would relax the media's stranglehold on the news industry. In reality, many online newspapers lost startling

amounts of money, while most independent publishers could not earn the credibility that established news companies already held (Scheer, 2000).

Though the initial craze over online newspapers has died down, industry professionals still believe the Web is a promising news dissemination medium. Freelance editor and producer Elizabeth Osder, who has served as product development editor at NYTimes.com and is a board member of the Online News Association, explains that the online news industry is still young in Christopher Harper's *And That's the Way It Will Be* (1998): "In new media, you have to walk before you can run. You have to crawl before you can walk. We are not in a running mode. We are not erect Homo sapiens yet in new media" (p. 43). Additionally, although the Web does give individuals the same capabilities of large newspapers from an exposure standpoint, it does not suddenly instill the newsgathering and producing expertise necessary to compete with established newspapers.

Experts also predicted online newspapers would fall victim to personalized news services like My Yahoo!. These services allow users to build a news profile with information like their home locations and personal interests so customized news can be delivered to them when they log on. Although these services are convenient and have gained some popularity, they still do not match the distinct character of newspapers. Jack Fuller, publisher of the Chicago Tribune writes the following in *News Values* (1996):

> Whether delivered on paper or electronically, the newspaper must have human editors. It must continue to embody the complexities of human personality, to demonstrate judgment and character, to have a distinctive voice that relates well to the community it serves. (p. 229)

Fuller notes that the aforementioned factors contribute to a newspaper's brand identity, which distinguishes the newspaper from other news outlets. Fuller's assertion that the

newspaper's identity helps attract users is supported by a recent survey that shows online

newspapers are the most popular Web sites for users seeking local news, beating out

Yahoo!, sites of local television stations, and America Online (Hernandez, 2002).

The muted success of online newspapers has produced renewed optimism among

industry leaders. Arthur Sulzburger Jr., chairman of The New York Times Company,

says:

> Newspapers cannot be defined by the second word—paper. They've got to be
> defined by the first—news. All of us have to become agnostic as to the method of
> distribution. We've got to be as powerful online, as powerful in TV and
> broadcasting, as we are powerful in newsprint. (Gates, 2002)

The reason newspaper companies are focusing on the Web is because it allows producers

to place textual, audio and video information next to one another, combining the abilities

of the traditional news media: newspapers, magazines, radio and television. The blending

of these news ingredients into one medium is commonly called convergence. With faster

broadband connections becoming more widespread, newspapers are banking on the

possibility of growing numbers of people using the Internet as a news source for different

types of communication media (Gates, 2002). Technology futurist Paul Saffo predicts

developed countries will soon reach a point where the population's consumption of

digital information will surpass the population's consumption of information on paper

(Outing, "Newspapers: Don't," 2002).

As a result of this forecast, convergence is a growing trend in the newspaper

industry. In January 2002, The New York Times Company purchased 15 percent of the

Boston Red Sox baseball franchise for $75 million, which included a stake in the New

England Sports Network cable channel. The following April, the Times Company

purchased half of the Discovery Channel cable network for $100 million. Business

analysts assert that the company was mainly interested in a breaking into the television.

However, communications experts contend that the Times Company is focused on the

Internet. Sulzberger Jr. remarked that the corporation's success on the Internet would

depend on combining the printed word with the moving image. Dominic Gates (2002), a

writer for the Online Journalism Review Web site, writes the following about newspapers

in his article *Newspapers in the Digital Age*:

> Confronting the challenges of a fragmented media marketplace, they cannot know
> exactly how the future will shake out. But they are getting ready for whatever
> comes, moving to acquire assets and expertise in other media, and mobilizing
> their vast networks of reporters to produce content for print, TV, online and other
> media.

Convergence is already happening in newsrooms and classrooms in the United

States. Every morning, Gannett, the owner of a diverse set of media holdings including

USA Today, beams video from the day's top *USA Today* stories to 21 television stations it

owns in 15 states. In Tampa, reporters and producers from *The Tampa Tribune*, WFLA-

TV and TBO.com work together in the same building. Additionally, *Tribune*

photographers carry digital video cameras to gather footage for the television station and

the Web site, WFLA's videographers use digital cameras to snap images for the paper

and the Web site, *Tribune* sports reporters post text to TBO.com and send audio feeds to

the television station, and some *Tribune* city reporters write text for TBO.com and gather

audio for WFLA from breaking news scenes (Stevens, 2002). Finally, the University of

Southern California is changing its curriculum to require all undergraduate and graduate

students to write, report and produce for print, broadcast and online formats beginning

this fall, joining the White School of Journalism and Mass Communications at the

University of Kansas as journalism programs that include multi-platform curricula for

most students (Outing, "USC J-School...," 2002). As the news industry allocates more time and money towards convergence, the importance of online newspapers will grow. Maintaining usable Web sites that attract users will be critical for the survival of the newspaper industry.

Web Strategies of Individual Newspaper Companies

To help store, process and distribute different types of data, the online news industry has developed and implemented software applications to manage all of a Web site's content. Knight Ridder, which owns 32 daily newspapers across the U.S. is also a partner with Belo Interactive, Media General, Scripps and six independent newspapers in the Real Cities Web site network. The Real Cities network is a collection of 54 metropolitan portals that contains information like news, directories, entertainment listings and classified advertisements specific to certain communities ("Real Cities," n.d.). Some examples of the 28 sites owned by Knight Ridder are BayArea.com, Charlotte.com and Philly.com. In order to make digital publishing and advertising across the network more efficient and cost-effective, Knight Ridder decided to design an internal Web publishing system to serve content to the company's Web sites. Out of the 28 sites operated by Knight Ridder where Knight Ridder also owns the market's newspaper, 27 have similar design templates that differ only in aesthetic features like colors and logos—the Web site of the *Detroit Free-Press*, http://www.freep.com, has a distinctive look and feel. The new design templates, which appeared in January and February 2002, have been criticized sharply. Designers at the Knight Ridder owned sites have not spoken about the issue, but Web managers at other sites have. Tom Pellegrene Jr., supervisor of Web operations at the *Fort Wayne (Ind.) Journal Gazette*, which is a

part of Real Cities as the result of a partnership with Knight Ridder owned *The News-Sentinel*, posted the following message on FortWayne.com on April 11, 2002:

> We know many of you don't like the redesign. More than 200 of you have been kind enough to e-mail us or phone us to tell us so. (Eight of you have said you like the change.)
>
> What you may not know is that we don't like it, either.
>
> The new site loads more slowly on your computer than the old one did. It's harder to find what you want…And our ability to make changes to what you see is very limited and time-consuming.
>
> So, currently, we're stuck with Knight Ridder Digital, and it's stuck with us. ("A special note…")

Knight Ridder Digital Vice President and General Manager of Site Operations Bob Ryan defends the new system by asserting that a single content management systems is the only way to make the company's Internet division profitable in the long term (Outing, "Content publishing systems…," 2002).

Tribune Interactive has also turned to a content management system to streamline its Web operations. The company implemented its proprietary Oxygen system in 2000 to store news articles and multimedia from its 11 daily newspapers and 22 major market television stations. Thus, this information is available to all 33 Web sites. Oxygen also creates new packages for advertisers and makes it easier to track advertising across the network. Tribune Interactive claims that the average page download time of some Web sites dropped from 13 to three seconds and the number of unique visitors to its site network increased 50 percent in the 12 months after Oxygen was first used ("Tribune Interactive implements…," 2001). Unlike Knight Ridder's system, Oxygen allows individual Web sites to maintain different appearances. This fact is illustrated by the dissimilarities in Tribune Interactive properties latimes.com, chicagotribune.com and

OrlandoSentinel.com.

Belo Interactive's Web strategy falls between the strategies of Knight Ridder and Tribune Interactive. The company operates Web sites for Belo's 18 broadcast television stations and four newspapers, and its VelocIT content management system serves information to each of those sites. Furthermore, the company embarked on a project it dubbed the Gold Standard to supply a partially customizable page template focused on usability for its network of Web sites. Jay Small, the manager of Web operations at eight Belo sites, says the following about the Gold Standard:

> A user will see similarities in the core navigation and the presentation of headline blocks and a mostly standardized look to the tile and banner ads, but within the framework, individual sites are able to customize the elements to permit a distinctive look and design. (Lasica, 2002)

Examples of Belo sites include www.pe.com from The Press Enterprise, located in Riverside, California, www.DallasNews.com from The Dallas Morning News, and www.Projo.com from The Providence Journal.

A fourth media company that is prominent on the online newspaper scene is Morris Communications, owner of 36 newspapers in the United States and the parent company of Morris Digital Works, which was founded in 1995 to help guide the company's online presence. Since 1995, Morris Digital Works has developed several software products aimed at electronic newspaper publishing including Morris Site Template, a Web template builder, and SiteWeaver, a daily Web publishing tool. Not surprisingly, the company's newspapers use these products to produce their online editions. The products allow a company to house all of its Web operations in one place and serve different pages to multiple locations or enable each individual division to

manage to its own Web publishing outfit ("Products," 2001). Morris owns

Jacksonville.com, AugustaChronicle.com, and AthensOnline.com.

The McClatchy Company, publisher of 11 daily U.S. newspapers, utilizes the

Digital Workbench, a product developed by its subsidiary, Nando Media, to manage its

online properties. The Digital Workbench stores, processes and distributes a newspaper's

content to the online edition. It also allows affiliated Web sites to cull stories from Nando

Media's different news wire services. Like Morris's products, the Digital Workbench

allows individual site publishers to maintain complete control over the site's appearance,

unlike the content management tools of Knight Ridder and Belo ("Features and

Benefits," 2001). Nando Media operates The Sacramento Bee's www.sacbee.com, the

(Minneapolis) Star Tribune's www.startribune.com and The (Raleigh) News and

Observer's www.newsobserver.com.

Finally, Advance Publications subsidiary Advance Internet produces 10 regional

Web sites across the U.S. that use content from the parent company's newspaper

portfolio. While the homogeneous appearance of Advance Internet Web sites indicates

that a content management system is utilized across the organization, the parent

company's Web site, http://www.advance.net, does not contain any reference to this

topic. However, Fusion, an American design company, mentions that the company had to

make sure its design incorporated Advance's content management system when Fusion

redesigned the Advance's Web sites ("Regional Portals," n.d.). Examples of Advance

Internet's holdings include OregonLive.com, NOLA.com and Syracuse.com.

Methodology

To carry out an evaluation of newspaper Web sites, the first task was choosing appropriate Web design guidelines. As mentioned earlier, the best guidelines are those that have been tested over time and those that are practical. The findings that can be extracted from Nielsen's *Designing Web Usability* and Spool's *Web Site Usability* fit these criteria. Nielsen's lessons are valid because they result from years of Web usability testing and some of his findings are related explicitly to publishing on the Web. Spool's conclusions are born out of thorough tests that were concerned with finding specific pieces of information, a task online newspapers must support. The third set of guidelines used in this study is the list of tips from CNET's designers. This collection is valuable because it was produced by a design group that designs several popular, award-winning Web sites.

While CNET provides an actual checklist of guidelines, a list of guidelines had to be dug out from the writing of Nielsen and Spool. In any case, whether the guidelines exist in checklist form or are pulled out of prose, some principles were either not applicable to this study or impossible to judge through heuristic evaluation. For example, CNET's DeBabelizer guidelines state "Don't sweat odd bit numbers." This guideline is related to use of the proprietary, image-optimizing DeBabelizer software program. It is impossible to decipher whether an online newspaper used DeBabelizer in image production, so it was unfeasible to check if a site's images are saved with an odd bit depth number. An example of a guideline that was unrealistic to use is Nielsen's advice to write all of a Web site's news articles in a way where all of the important information

appears at the beginning of the article. This style is referred to as the "inverted pyramid."
In the case of an online newspaper, it is not viable to rework all of a print newspaper's
articles into inverted pyramid format. Thus, this guideline was not included in the study.

A group of news Web sites also needed to be designated for evaluation. To fit the
scope of a master's paper, I decided to evaluate 10 online newspapers. Since 10 Web
sites is a small population sample compared to the copious amount of newspaper Web
sites, the sites selected for examination had to fit certain criteria. First, to make sure some
of the results from the study could be extended to other news sites, at least one site from
the Real Cities Network, Advance Internet, Belo Interactive, Nando Media and Tribune
Interactive is included. Then, to narrow the vast amount of newspaper Web sites down to
a manageable number, only nominees from the 2002 *Editor and Publisher* Eppy Awards
for online newspapers were considered. *Editor and Publisher*, a newspaper trade
magazine, presents awards to news sites for overall design, use of rich media and special
news sections. Online newspapers are also awarded based on categories related to a
newspaper's daily print circulation. The following categories are used: under 50,000;
50,000-99,999; 100,000-250,000; and over 250,000 ("2002 Eppy awards," 2002). At
least one nominee was selected from each of these categories so comparisons could be
made between national newspapers, regional newspapers and community papers. In order
to make comparisons between news companies, Web sites from a variety of newspaper
owners were chosen. Finally, the remaining selections were based on any site that has
adopted some sort of novel approach, like the use of multimedia or interactive features.
Presenting news on a computer screen is different from presenting news on paper, so any
site that appeared to be taking advantage of newer technologies warranted examination.

The table on the following page lists the chosen sites and how they fit the aforementioned criteria.

Web Site URL (title of print edition)	Parent Company	Circulation (mediaweek.com)	Eppy Nominations/Novelty
www.bayarea.com (*San Jose Mercury-News*)	Knight Ridder Digital	268,621	- Part of Real Cities network
www.CJOnline.com (*Topeka Capital-Journal*)	Morris Digital Works	64,724	- Winner, Best Overall U.S. Newspaper Online Service (circ. 50,000-99,999) - Nominee, Best Use of Rich Media
www.IslandPacket.com (*The Island Packet*, Hilton Head, S.C.)	The McClatchy Company	15,843	- Nominee, Best Overall U.S. Newspaper Online Service (circ. Under 50,000)
www.latimes.com (*Los Angeles Times*)	Tribune Interactive	944,303	- Winner, Best Overall U.S. Newspaper Online Service (circ. over 250,000)
www.NOLA.com (*The Times-Picayune*, New Orleans)	Advance Internet	254,897	- Example from Advance Internet
www.nytimes.com (*The New York Times*)	The New York Times Company	1,109,371	- Nominee, Best Overall U.S. Newspaper Online Service (circ. over 250,000) - Nominee, Best Design of a Newspaper Online Service
www.Projo.com (*The Providence Journal*)	Belo Interactive	160,610	- Nominee, Best Overall U.S. Newspaper Online Service (circ. 100,000 - 250,000)
www.tampatrib.com (*The Tampa Tribune*)	Media General	199,976	- Example of convergence with other media
www.usatoday.com (*USA Today*)	Gannett	2,211,370	- Winner, Best Design of a Newspaper Online Service
www.washingtonpost.com (*The Washington Post*)	The Washington Post Company	759,864	- Nominee, Best Design of a Newspaper Online Service - Nominee, Best Overall U.S. Newspaper Online Service (circ. over 250,000) - Nominee, Best Use of Rich Media

This sample covered small, community-oriented newspaper sites, medium-sized sites that serve as portals for metropolitan areas, and national online newspapers. It included Web sites operated by Knight Ridder, Advance Internet and Belo Interactive, which use content management systems and consistent design templates. Additionally, companies that utilize content management systems to produce Web sites and but operate the sites independently, like Tribune Interactive, Morris Digital Works, The McClatchy Company and Gannett are represented. The population sample was slanted toward larger newspaper organizations, but this was valid because more people view these sites.

The following list of steps was the procedure for the site evaluations.

1. Spend 10 minutes browsing the Web site to get familiar with its look and feel.

2. Evaluate the pages using Spool's guidelines.

3. Evaluate five of the site's pages using Nielsen's guidelines.

4. Evaluate the pages using CNET's guidelines.

The sites were evaluated by looking at five different Web pages from each site: the home page, the index page to the local news section, and the pages holding the three most prominent stories from the local news page. I judged the prominence of the story pages by looking at the links located nearest to the top of the screen with the largest headlines and accompanying graphics. It was important to judge the home page because the home page invariably receives the most page views on a Web site (Nielsen, "Top Ten Guidelines…," 2002). I selected the local news page because every online newspaper

contains a local news page and the online newspapers do not have as many competitors for online news as national and international news, which are covered by online giants like CNN.com and MSNBC.com. The exception to this statement was USAToday.com, so I used the "News" section from that site. Story pages deserved evaluation because they contain most of a news site's content.

Each Web page was reviewed using Spool's guidelines before moving on to Nielsen's and CNET's. The Web pages were viewed at a screen resolution of 800x600 because a 2001 survey from StatMarket, an Internet research firm, found that about half of American Web users set their monitors' resolutions at 800x600. This resolution has been used by about half of all Web users since 1999 ("Surfers click up," 2001). Of course, for guidelines that specified a certain resolution or call for pages to be tested across resolutions, different resolutions were used. Internet Explorer was used because its browser market share is over 90 percent at this time (Boutin, 2002).

Violations were measured in two ways. In cases where a particular design feature either had to follow or violate the guideline, the guidelines were rated as either disregarded or followed. For example, one of Spool's guideline stated that a Web site should include a search utility. A page received a one for a disregarded guideline and a five for a followed guideline. However, there were some guidelines where violations were not clearly apparent. Nielsen states that hypertext descriptions for links should be two to four words long. In this case, the severity of the violation needed to be rated because it is not fair to give a page with one overly lengthy link the same score as a page dominated by eight-word links. For these guidelines, a six-part Leickert scale was used

with one indicating a page that strongly disregarded the guideline and five signifying a page that followed the guideline closely. A page received a zero if it contained the feature mentioned by the guideline. The Leickert scale used criteria dependent on the specific guideline to judge the severity of the violation. For example, the criteria for the hypertext length guideline was the following:

- 5 = over 80% of hypertext descriptions are two to four words

- 4 = 60-79% of hypertext descriptions are two to four words

- 3 = 40-59% of hypertext descriptions are two to four words

- 2 = 20-39% of hypertext descriptions are two to four words

- 1 = less than 20% of hypertext descriptions are two to four words

Since assigning values on a scale of one to five is inherently subjective, use of the Leickert scale in most cases was limited to guidelines where objective criteria like percentages or amounts can be used to design standards. The above example is fitting for the rating scale because a links represented by hypertext descriptions between two and four words could be counted and divided by the total number of links on the page. However, even in this case, it is important to maintain some flexibility in rating sites. Consider the following situation. Examplepaper.com contains 100 links and 30 links are too long, while the remaining 70 are correct. Another site, Hypotheticaljournal.com, contains 200 links where 60 links are too long and 140 are correct. However, the incorrect links on Hypotheticaljournal.com are found in the page's navigation bar, while the incorrect links on Examplepaper.com are found at the bottom of the page. Hypotheticaljournal.com would receive a lower rating than Examplepaper.com because

the location of Hypotheticaljournal.com's erroneous links means they will be used much more frequently than the long links on Examplepaper.com.

This rating system yielded a few different comparisons. First, by keeping track of the number of points accumulated by each site, the system showed the Web sites that adhered to the study's design guidelines the closest. It is also possible to show that a number of sites might have followed a set of guidelines more closely than another, or a set of guidelines might have been ignored by a group of sites, by keeping track of the number of points scored by sites for individual sets of guidelines. Furthermore, by keeping track of the number of violations for each individual guideline, it is possible to show which guidelines are violated the most frequently and the degree of the violations. The list of guidelines used for the study can be found in Appendix A. Screen shots from each Web site can be found in Appendix B. Appendix C contains an empty evaluation matrix and Appendix D contains a sample data sheet.

Results and Discussion

Since this study analyzed a total of 50 Web pages across 122 guidelines, reporting the results of each Web page across every guideline would be a painstakingly slow process. Instead, this section will focus on summarizing results that were unexpected, interesting and practical. Results and discussion are grouped by Web sites, sets of guidelines and individual guidelines.

Inside the Web Sites

As I mentioned above, to rank each Web site, I divided the guidelines into two categories based on whether the guidelines were rated as one or five, which are referred to as binary guidelines, or one through five, which are referred to as ordinal guidelines.

The five pages from each Web site were then scored individually by each guideline category. The totals for each Web page were tallied up and divided by the number of guidelines. Then, I took the average score for the binary category and added it to the average from the ordinal category. This total is the final Web score. The results for each site can be seen in the table below.

Web site	Binary data average	Interval data average	Total Score
washingtonpost.com	4.21	3.38	**7.59**
NYTimes.com	4.02	3.44	**7.46**
CJOnline	3.73	3.37	**7.10**
islandpacket.com	3.76	3.32	**7.08**
USAToday.com	3.72	3.32	**7.04**
BayArea.com	3.74	3.05	**6.79**
tampatrib.com	3.81	2.95	**6.76**
latimes.com	3.90	2.80	**6.70**
Projo.com	3.69	2.95	**6.64**
NOLA.com	3.28	3.27	**6.55**

This ranking yields three tiers of sites. Washingtonpost.com and NYTimes.com occupy the first tier. CJOnline.com, islandpacket.com and USAToday.com make up the middle tier, while BayArea.com, tampatrib.com, latimes.com, Projo.com and NOLA.com are mired in the bottom tier.

The next logical topic is explaining how the best sites achieved higher scores than the poorer sites. One common characteristic of washingtonpost.com and NYTimes.com,

plus each of the second tier sites, is their extensive use of textual links to form navigation systems. The sites feature lists of text links of varying lengths down the left side of their pages. On the other hand, BayArea.com, Projo.com and NOLA.com use rollovers to serve as navigation systems. To navigate these sites, users must move their mouse pointers over images that serve as headings for categories of links; the location of the pointer over a heading triggers a more specific menu of links to appear below the image. Rollovers cause poor scores on guidelines that call for sites to shy away from using menus or images as navigation elements, keep from using images as links and headings, and show all options in their navigational interfaces. These guidelines are significant because relying on images to denote important page elements such as links or headings slows the user down because graphical content takes longer to load on a Web page than textual content. Pages also should show all of their navigational options so users do not have to remember what category a certain link falls under. Additionally, images do not indicate whether a link has been visited unless the image has a border; this violates the guideline that states a page's link colors should match the browser's default colors, which appears in both the Nielsen and Spool sets of guidelines. Although tampatrib.com does not include rollovers, it does employ two imagemaps to serve as the navigational mechanism for 54 links on each of its pages.

Besides relying on graphics for navigation and headings, most of the lower tier sites also used images to form their page templates. So instead of problems occurring on one or two pages, they occur across the site. For example, Nielsen recommends that a site's home page should not have a clickable home button and that the site logo on the home page should be larger and more prominent than the logo on inner pages. Since

tampatrib.com, BayArea.com, Projo.com and NOLA.com use identical page templates for every page on their site, the site logo is clickable on the home page and remains the same size on every page. The large logos affect a group of CNET's guidelines that relate to keeping information "above the fold" of a Web site, which refers to ensuring a page element is located high enough on the page so users with standard monitors do not have to scroll to find the element. These "above the fold" guidelines suggest information like a site's name, most popular links, navigation, and an individual page's feature graphic appear above the fold, no more than half the space above the fold be filled with graphics, and the user should be given text to read above the fold. The third of the previous guidelines is not hard to satisfy, but fitting in the above four page elements and making sure the top screen of a page is not filled with graphics is difficult when the site's logo remains large on every page, as well as when graphics are supplying the site's navigation interface. NYTimes.com and USAToday.com use graphics at the tops of their pages, but the graphics shrink as users navigate from their home pages, to section pages, and then to story pages. At washingtonpost.com, the logo on the main page is 77 pixels high, while a 42-pixel-high logo is used on the site's section and story pages. Conversely, each page at tampatrib.com contains an 85-pixel-high logo followed by a line break and a banner advertisement 60 pixels high. With so much screen space devoted to template graphics, it is difficult to fit the amount of information the guidelines require into the rest of screen.

The previous paragraph partially explains the relatively poor showing of latimes.com, which uses a page template that includes a fairly large, clickable site logo, and a navigation bar containing limited options at the top of the screen. However, it does not employ rollovers. This site simply faired somewhat poorer than other sites across

several categories. For example, both Spool and Nielsen state that a Web page should indicate where the user is located in relation to the Web site's hierarchy. The designers at islandpacket.com include a line of text that tells users where they are located beneath the bar that displays the weather and a search box on each page—on the local section page this line reads "Island Packet: Local News" to demonstrate that the page is the local news page located one level down from the main page. Other sites like washingtonpost.com show a user's location in the navigational bar. However, while the navigation bar of the California/Local section page at latimes.com changes, it does not give a clear indication of how that page fits into latimes.com as a whole, which causes a low score. The CNET guideline that suggests story text be laid out in a narrow column also hurt latimes.com. In the California/Local section, pages have the site logo across the top of the page, the navigational bar in a thin strip on the left side of the page, the story in the center of the page and a thin strip of graphics or related stories on the right side of the page. If the story runs further down the page than the strip on the right, the story text runs to the right edge of the page. After inspecting the page source, it seems the story runs 620 out of the 770 pixels available across the screen at the bottom of the page, which cannot be considered a narrow width.

The upper tier sites generally steered clear of these kinds of mistakes. Obviously, they scored higher over all guidelines, but the interfaces of washingtonpost.com and NYTimes.com demonstrate some overarching commonalities. First, the designs of these sites, along with the middle tier sites, rely on clean text links to form their navigational structure. Nielsen states that hypertext links should be two to four words long and Spool suggests that links should not wrap across multiple lines. Both sites score well on these

guidelines. Additionally, since each site does not rely on graphical templates to hold links as much as the lower tier sites, so they can tailor their sites' navigational interfaces to different pages more readily than the lower tier sites. When users are located on the New York Region page at NYTimes.com, they see a variety of links leading to stories or subsections of this section along with individual links leading to the Business section or Sports Section. However, at BayArea.com, when users are reading a local news story, the rollovers at the top of the page for other sections remain active, so a user can click to the Sports section's index page or 11 other Sports section subtopic pages. Besides violating the guidelines mentioned earlier, the rollovers also cause low scores for a Spool guideline that states pages should keep a minimum number of links and a Nielsen guideline that advises to keep text out of graphics.

It is evident that the upper tier sites are conscientious in their use of graphics since they choose not to incorporate graphics into their navigational systems. This conscientiousness extends into their use of editorial images. While the use of graphics may affect aspects of usability related to page size, it adheres to a Spool guideline that states users will not mind waiting for images that add to the content of the page. A complex graphical page template may look nice, but it does not add to the online news reading experience. However, smart use of editorial graphics to complement story text can make news seeking more enjoyable. The upper tier sites conform to guidelines by making sure graphics add to their pages' content and appear above the fold. Lower tier sites like NOLA.com and BayArea.com do not use editorial images. This means that most of the images on their sites are devoted to advertisements, which certainly does not add to the user's enjoyment of online news. Although washingtonpost.com and

NYTimes.com display advertisements, the ads on those sites are not as prominent as those on Projo.com or BayArea.com. In fact, the washingtonpost.com homepage included only two advertisements when it was viewed for this study; one was a tall 120-by-600 pixel "skyscraper" ad on the right side of the page and the other was a smaller 120-by-70 pixel "button" ad directly under the skyscraper. On the other hand, BayArea.com contained three different ads for its coverage of soccer's World Cup on its home page as well ads other ads. In summary, the upper tier sites by and large earned high scores by relying on customizable navigational systems of text links and efficient use of graphics. In addition to these aspects, the sites also satisfy guidelines related to Web site search mechanisms and page titles.

Inside the Sets of Guidelines

Besides investigating how individual Web sites rank according to usability guidelines, this study also explored how closely sets of guidelines are followed compared to their counterparts. To examine this topic, I took the number of points each site accumulated for each set of guidelines and divided it by the total number of points possible for that set. For example, 21 guidelines comprised the Spool set. The guidelines were examined on five pages with five points possible for each guideline, so a Web site could accumulate 25 points for 21 guidelines, yielding a total of 525 points. However, two of the guidelines only applied to the site's home page and two others applied to every page besides the home page. Thus, 50 points were subtracted from the original figure to arrive at the final possible total of 475. CJOnline.com amassed 342 points out of a possible 475 for the Spool guidelines, so the Spool set's score for this site is 342 divided by 475, which is .72. Once these percentages were calculated for each site, they were

added together and divided by 10 to gain the average guideline set score. The following

table shows the percentage of total possible points collected by each site; the average for

each set of guidelines can be found in the table's bottom row.

	Spool	Nielsen	CNET
Islandpacket.com	.69	.67	.67
CJOnline.com	.72	.65	.78
Projo.com	.61	.60	.77
USAToday.com	.76	.67	.76
BayArea.com	.65	.58	.79
tampatrib.com	.65	.65	.64
NOLA.com	.60	.60	.70
LATimes.com	.64	.64	.70
Washingtonpost.com	.74	.72	.78
NYTimes.com	.73	.72	.73
Set Average	**.68**	**.65**	**.73**

The table shows that there is a relatively sizable difference in how close Web sites

adhere to CNET's guidelines compared to those of Spool or Nielsen. A finding that

seems particularly strange is how lower tier sites like Projo.com and BayArea.com

exceed the CNET average. One possible explanation for this fact is the attention paid to

graphics by CNET's guidelines, illustrated by these three principles: "Create GIFs to

avoid wrapping text," "use GIFs to add new fonts," and "when not to use HTML". These

guidelines refer to creating GIF images to allow the designer to control text sizes no

matter what the user's browser default size, using GIFs to add new typefaces to pages, and using GIFs instead of HTML in complicated navigational bars, respectively. There are not any guidelines resembling these three CNET principles in the Spool or Nielsen sets. In fact, they contradict Spool's recommendation against the use of images for links, since using GIFs in a navigational bar automatically means a page is relying on images to hold links. The CNET tips also work against Spool's and Nielsen's edict to use the browser's default settings as link colors because, as mentioned earlier, graphical links do not change colors when visited as text links do. On top of that, CNET's GIF guidelines conflict with Nielsen's advice that links be hypertext phrases between two and four words and images should not contain text. Not surprisingly, Projo.com and BayArea.com faired well against the CNET guidelines, but BayArea.com earned the fewest points from Nielsen's guidelines and Projo.com tied for the second worst Nielsen score with NOLA.com, another site that uses a navigational bar with rollovers. The significance of graphical navigation tools is supported by the high CNET scores for washingtonpost.com and CJOnline.com, two sites that use a graphical navigational bar for a limited number of links and supplement the graphic with an extensive textual link system. Finally, the margin the lower tier sites hold over upper tier sites for the CNET set is not as great as the margins the upper tier sites hold over the lower tier sites on the other two sets because most other sites still use GIFs in places to avoid wrapping text and add typefaces in page elements. For example, NYTimes.com uses a GIF to replicate its print newspaper's masthead, which uses an Olde English typeface that is not found on Web pages, and a group of GIFs on the left side of the page, some of which link to job market, real estate and automobile pages, while the others delineate different sections on the site. Thus,

BayArea.com and Projo.com generally gain points only for the guideline related to navigational bars, while it loses points in several other areas.

It is important to note that the CNET set contains a guideline advising that pages use no more than four GIFs, however, many of the pages evaluated in this study equally disregarded this principle so Projo.com and BayArea.com were not harmed by this violation. Out of the 250 total points available for this guideline, the 50 pages combined to earn 94 points. (The following scale was used for this guideline: four or fewer GIFs = 5 points, 5-8 GIFs = 4 points, 9-12 GIFs = 3 points, 13-16 GIFs = 2 points, 17 or more GIFs = 1 point.)

Another important aspect of the guidelines is the fact that Nielsen's set of guidelines was much more extensive than the Spool and CNET sets. Spool's set consisted of 21 guidelines and CNET's set consisted of 20, while 58 guidelines were taken from Nielsen's work. Out of Spool's 21 guidelines, seven yielded binary data, while 14 of the CNET guidelines generated binary scores. The Nielsen set contained 36 binary guidelines.

Inside the Guidelines

By assigning scores for each individual guideline, this study also allows for the examination of specific guidelines. Instead of going over 99 guidelines specifically, I will mention findings from guidelines that are especially important to usability. However, before investigating those guidelines, I will present the list of guidelines that were universally ignored or completely followed.

Guidelines that earned perfect scores on all pages (guideline set in parentheses):

- Offer a print version for pages with long text articles (Nielsen)

- Do not use frames (Nielsen)

- Avoid within-page links as much as possible (Nielsen)

- Do not use a, an, or the to begin a page title (Nielsen)*

- Make sure headlines clearly conveys the page's purpose to the user (Nielsen)

- Make sure there is a high contrast between a page's main text and the page's

background (Nielsen)

- Use either a plain or highly subtle image background (Nielsen)

- Do not use scrolling text (Nielsen and CNET)

- Make sure the site's name is included on all pages (Nielsen)

- Include the same structural links on every page (Nielsen)

- Use GIFs to add non-standard typefaces (CNET)

- Add colors to pages by making the backgrounds of table cells non-browser-safe

colors (CNET)

- Avoid using embedded links in a site's navigation system (Spool)

- Do not underline any non-clickable text (Nielsen)

- Reduce the technology burden on a site's home page by avoiding the use of audio,

video and shockwave plug-ins (CNET)

*NYTimes.com uses "The" as the first word of its page title on its home page and section index pages, but this was not considered a violation due to the fact that "The New York Times" is the newspaper's official title.

It is commendable that the group of online newspapers earned perfect scores on

these guidelines. Supplying a print version of a page that holds an article is important

because the HTML layout of pages can adversely affect the way a Web page is printed

and studies show that users often print information off the Web for future reference.

Online newspapers limit their use of within-page links to links at the bottom of long pages that explicitly state that they return a user to the top of the page; the context of the link eliminates the main usability problem with within-page links, which is the user expectation that all links lead to another Web page. Since the newspaper industry has expertise in writing headlines, it is no surprise that online newspapers earn high marks for headline clarity. A site's Web pages must contain their organization's name and the same structural links to orient users to their location on the Web and maintain consistency. By using table cell backgrounds to add colors and GIFs to add typefaces, Web designers can make pages more visually interesting and apply customization according to their organization's style. Web sites must reduce the technology burden on their home pages because users usually choose to find another site before trying to install plug-ins that are needed to view multimedia. Finally, the other guidelines in the above list, namely the ones about avoiding frames and a distracting page background, are generally principles that have been deemed problematic through trial and error during the early days of the Web. Frames are frowned upon because they present problems with printing, navigating by using a Web browser's back button and bookmarking pages. Underlining non-clickable text confuses users because underlined text is used to represent links.

The group of evaluated pages earned the lowest score possible for the guidelines listed below (guideline set in parentheses).

- Design pages for all screen resolutions (Nielsen)

- Break long story pages into multiple pages (Nielsen)

- Organize long story pages into logical chunks (Nielsen)

- Do not force users to scroll horizontally (Nielsen)

- Leave out the height and width attributes of tables in HTML code (CNET)

- Use link titles (Nielsen)

The evaluated sites all forced users to scroll horizontally for resolutions set to 640-by-480 pixels because the sites are optimized for resolutions set to 800-by-600. The resolution dilemma is tricky for page designer because it is difficult to fit the amount of information from a large site into the small amount of space available on a 640-by-480 monitor and, even if it is possible, the site will leave large blank spaces on screens set to higher resolutions. Many researchers suggest designing pages using code that will adjust to a user's resolution, but these relative designs present problems because it is impossible to predict how pages will look on the wide variety of system settings available to users as well as the fact that monitors set to higher resolutions will present many more words per line of text, reducing the readability of text (Mickiewicz, 2001). In early 2001, four research companies performed studies on resolution settings of Web users; the lowest percentage of monitors set to 640-by-480 found by this group was 6%, while the highest was 13% (Bailey, 2001). Since each study included an unknown category, it can be assumed that at least 6% of users were using 640-by-480 in 2001, which is a fairly large percentage of users to force into the practice of scrolling horizontally—a practice that Nielsen calls "one of the most hated interaction techniques in a Web browser" in *Designing Web Usability* (p. 175).

Another common problem across the study population sample is the rejection of breaking up long articles into multiple smaller pages, which Nielsen calls page chunking. Breaking long articles into shorter units forces users to click more to read an article, but it speeds up page loading. This finding was somewhat surprising because I have found

through personal experience that NYTimes.com and washingtonpost.com do break stories into chunks in other site sections. Perhaps the Web pages in the population sample did not contain long enough stories to warrant chunking according to the sites' editors, but Nielsen (2000) states a Web page with a height of 800 pixels is usable, while the usability drops precipitously when page height reaches 1,200 pixels (p. 116). The longest story from the washingtonpost.com sample was about 2,900 pixels high and the shortest was still 2,500 pixels high. Compared to Nielsen's guidelines, these page heights are clearly not usable.

CNET's recommendation to leave out height and width settings for tables in HTML code is somewhat surprising because of the difficulty in controlling Web page layout. After all, some of CNET's guidelines mentioned earlier in the paper encourage designers to take control of layout by using GIFs. Nielsen's link title guideline is also ignored, which must be discouraging for him because he offers five guidelines specifically for link title construction. Adding link titles to HTML code causes a phrase to pop up when the pointer rests on the link, much like text appears over an image when "alt" text is included in page's code.

Now that the guidelines that earned the highest and lowest possible scores have been discussed, it is time to move on to findings regarding specific principles. Since download speed was introduced during the page chunking paragraph, I will begin with that topic. It is also fitting to lead off with page speed because the most disappointing finding from this study might be the wide disregard for this guideline by online newspapers. On the one-to-five rating scale, islandpacket.com and NOLA.com averaged 2.0 across their five pages, CJOnline.com scored 1.8, and every other site scored 1. In

Designing Web Usability, Nielsen (2000) writes: "Every Web usability study I have

conducted since 1994 has shown the same thing: Users beg us to speed up page

downloads" (p. 42). Furthermore, Georgia Tech's Graphic, Visualization & Usability

Center's World Wide Web Survey of 5,000 users found that the second most frequent

complaint about Web browsing is slow download speed, which was mentioned by 61.4%

of respondents. The most popular complaint among the survey's participants, slow

advertisements, is also related to the speed issue ("Problems," 1998). This study used

Nielsen's download speed guideline that states pages should take a maximum of 10

seconds to download on the most popular Internet connection speed. At the end of 2001,

18 million American households out of a population of 102 online users subscribe to

home broadband service (Bannan, 2002). This means that the vast majority of Web users

use a modem to connect to the Internet. Nielsen recommends that Web designers keep

their pages to less than 34 kilobytes to ensure they download in less than 10 seconds for

modem users; however, this study used the slightly larger size of 40 kilobytes as a

standard to account for the adoption of faster modems by Web users since Nielsen's book

was published. The guideline was scored in the following fashion:

- 5 = page size under 40 kilobytes

- 4 = page size 41 – 60 kilobytes

- 3 = page size 61 – 80 kilobytes

- 2 = page size 81 – 100 kilobytes

- 1 = page size over 100 kilobytes

    Out of the 50 pages sampled, only nine were less than 100 kilobytes. Home pages

averaged 191.5 kilobytes. The smallest page in the sample, which came from

islandpacket.com, was 75.1 kilobytes. The worst three sites in average file size were

USAToday.com (217 kilobytes per page), BayArea.com (185.5 kilobytes per page) and

Projo.com (181.62 kilobytes per page). In most cases, graphics cause a Web page's file

size to skyrocket, but out of these three sites, only USAToday.com utilized editorial

images extensively. On Projo.com, editorial images were present on the index and section

pages to draw attention to certain stories; the only editorial image on BayArea.com

served as a link to pop-up window that displayed photos appearing in the print editions of

the site's affiliate newspapers. Besides publishing pages with relatively large file sizes,

Projo.com and BayArea.com seem to be publishing inefficient pages. This is especially

troubling in these two cases because as explained earlier in the paper, they are sites that

use page templates that are prevalent across the Web sites of their parent companies.

   A second important Web design guideline is related to link colors. This subject is

significant because hypertext is the feature that allows users to navigate the Web. It is no

wonder that both Spool and Nielsen thoroughly cover the topic and they both state that

link colors should be set to match the browser's default colors, which are blue for

unvisited links and purple for visited links, because users have grown accustomed to that

convention. I tested this guideline using the following scale.

- 5 = all text links match the browser's default settings and most links are text

- 4 = one or two variations on browser's default settings and most links are text

- 3 = three variations on browser's default settings or some important navigational
links are images

- 2 = four variations on browser's default settings or about half of a page's
navigational links are images

- 1 = five or more variations on browser's default settings or most of a page's navigational links are images

Any color other than a default setting was considered to be a variation. For example, if a page contained unvisited text links that were blue and others that were red and both groups changed to purple when visited, one variation was counted because one unvisited link color was incorrect and zero visited link colors were incorrect.

Out of 25 possible points, the Web sites earned an average of 9.4. NYTimes.com scored the highest with 20 points and latimes.com, NOLA.com and Projo.com each earned 5 points. Surprisingly, although tampatrib.com uses images extensively in its navigational bar, its larger amount of hypertext links fits the default settings, so the site earned 15 points. Still, this is another important guideline where the sites performed poorly. Spool and Nielsen assert that designers are mistaken if they believe most users will be willing to learn new navigation conventions for every Web site. Visitors of NOLA.com can click on underlined hypertext that is blue, red, black and white before clicking on any hypertext in the navigational bar, where non-underlined, white hypertext serves as link category headings and non-underlined, black hypertext serves as links to individual site sections. Additionally, users will have to remember the pages they visited because none of the links change after they are visited. An example of a middle tier site that scored poorly on this guidelines is islandpacket.com, where the links on the front page alternate between black, grey, and two shades of blue, none of which change after being clicked.

The link color problem is exacerbated by the poor average score the sites earned for Nielsen's guideline that states links should be represented as underlined text. The

group scored an average of 8.2 out of a possible 25 points. Again, NYTimes.com scored

well with a 22. CJOnline.com, islandpacket.com, latimes.com, BayArea.com, Projo.com

and NOLA.com scored five points each. Nielsen (2000) writes: "Everybody learns the

meaning of this convention the first day they are on the Web, and there is simply no

doubt that underlined text means 'click here.'" (p. 195). Other usability studies echo this

conclusion. A 2000 study that measured link expectations by giving participants black-

and-white printouts of two Web pages with an equal number of links. However, one site

represented most links with underlined text while the other used a mixture of graphics

and text. Participants identified about 33 percent more of the links on the text-based link

page than its counterpart (Bailey, 2000). The link appearance guidelines may seem

restrictive, but user studies show that link color makes a sizable difference in the ability

of users to learn how to move through a Web site.

A guideline followed more closely by online newspapers is the CNET principle

that states the layout of article pages should include a narrow column for article text. User

studies of print media have show that reading speeds drop when the width of textual

columns exceeds four inches (Finck, n.d.). It seems CNET's designers stuck to this

standard when developing the pages for their guidelines since the text columns for the

guidelines are approximately 4 inches, or 400 pixels, wide. The column width principle

was evaluated according the following scale:

- 5 = column width less than 400 pixels

- 4 = column width approximately 400 pixels

- 3 = column width slightly more than 400 pixels

- 2 = column width approximately 75 percent of the screen

- 1 = column width over 75 percent of the screen

Keep in mind that the pages were evaluated with the screen resolution set to 800-by-600 pixels, which means a column that took up 75 percent of the screen was about 600 pixels wide. The study population sample averaged 9.3 out of 15 points for this guideline; 15 points is the maximum number of points available because this guideline only applied to the three story pages evaluated from each site. No sites achieved a perfect score, but CJOnline.com, USAToday.com, BayArea.com, Projo.com and NYTimes.com each earned 12 points. Latimes.com scored the lowest with 3 points. As mentioned earlier, all of these online newspapers were optimized for a resolution of 800-by-600, so the five sites that averaged 4 points per page placed story text in a column that took up around 400 pixels. Many sites ensured that users would not have to scroll right to read stories on lower resolution settings by making the right margin of their story columns around 620 pixels from the left side of the screen. Since disseminating news articles is the fundamental purpose of online newspapers, it is essential that sites make their text easy to read. While the study sample does not divide stories into manageable chunks, most of the sites ensure that the width of article columns is small enough to be readable. Incidentally, the CNET designers also mention that while narrow article columns increase readability, dividing bodies of text into multiple narrow columns reduces readability drastically because it forces users to scroll back to the top of the screen when they finish reading a column. None of the sites used multiple columns.

Another principle that elicited a range of ratings is Nielsen's screen real estate guideline. On an 800-by-600 pixel screen, there are 480,000 pixels available to fill in the top screen. If a page requires users to scroll down, the additional screens are also added

into the total screen real estate. According to Nielsen, designers should strive to fill 80

percent of screen's available pixels with content and leave 20 percent for navigation

elements and, if necessary, advertisements. Nielsen acknowledges that pages must

incorporate some whitespace to prevent users from being overwhelmed, but ultimately,

the 80 percent standard is a reasonable goal. Thus, the scale for this guideline was

derived with Nielsen's advice in mind.

- 5 = content fills 70 – 80 percent of screen real estate

- 4 = content fills 60 – 69 percent of screen real estate

- 3 = content fills 50 – 59 percent of screen real estate

- 2 = content fills 40 – 49 percent of screen real estate

- 1 = content fills under 40 percent of screen real estate

Due to the increased amount of time required to evaluate this guideline, evaluation was

limited to each site's home page. The sites averaged 3.2 points, with NYTimes.com and

CJOnline.com earning the maximum five points. The only site to earn one point was

NOLA.com. Screen real estate is important because users usually view Web sites with

information goals in mind. Users do not visit Web sites to click links that are part of a

site's navigational interface. That is why navigation should be minimized and content

emphasized. Currently, online newspapers are following economic models that depend on

advertising to produce revenue, so some space will be devoted to advertising. As a result,

sites will have to figure out how to provide a clear navigational interface in a relatively

small space to still leave enough room for content, which drives the site's business.

The Mythical Perfect Usability Rating

Now that the results of the study have been revealed and the issue of trade-offs in screen real estate has been raised, it is appropriate to discuss the possibility of the perfect usability score. In reality, attaining a perfect usability score is impossible in this study because designers must make trade-offs in several areas of Web design in addition to screen real estate.

One of the strongest findings of this study is the fact that three of the five lower tier sites rely on the use of rollovers in their navigational systems. Since these interfaces score so low across usability guidelines, why would site designers utilize them? The answer can be found in a Spool guideline that states navigation is easier when navigation bars are placed at the top and bottom of a page instead of the sides. Spool proposes two theories for this finding. First, he theorizes that users scroll through pages vertically, so they naturally look for links at the tops and bottoms of pages. Additionally, if a page is long enough to force users to scroll vertically and the navigation bar is on the side of a page, part of the navigation bar will always be blocked. Online news sites are very large and complex, so they demand fairly complex and thorough navigation systems. The two upper tier sites, washingtonpost.com and NYTimes.com, feature navigation bars down the left side of their respective index pages that contain 39 and 57 links. Cramming that many links at the top of the page would occupy a large portion of screen real estate available at the top of a Web page. While this would satisfy Spool's navigation location guideline and Nielsen's edict that users should not have to scroll for essential links, it would violate CNET's "above the fold" guidelines. Additionally, placing 40 or 50 links at the top of a page might not end up satisfying Nielsen's scrolling guideline because

with navigation links taking so much space on the tops of pages, users would have to scroll to see links leading to the stories online newspapers want their users to read. To try to solve this dilemma, BayArea.com, Projo.com and NOLA.com use rollovers to save space by hiding links from users. However, when the guidelines are viewed as a whole, the benefit of fitting links at top of pages is outweighed by the adverse effect the rollovers have on other usability factors.

Designers also face trade-offs in the phrasing of links. Each set of guidelines contains at least one guideline that states links should be concise while describing the content of the destination page to help users decide where to click. However, Spool advises that pages contain the least amount of links possible. Many usability experts disparage news sites for including a senseless amount of links (Outing, "Experts offer," 2002), but online newspapers contain massive amounts of news content in addition to classified advertising information. To help users reach this information, links must be specific enough to describe their destinations. Clearly, newspaper Web sites face a quandary trying to organize information. Incidentally, users could reach 308 different destinations on the index page of tampatrib.com by using text links, image links and dropdown menus, which edged Projo.com by one link for the most links on a home page in this study. The site with the fewest possible destinations on its home page was USAToday.com, with 84.

As a result of the trade-offs inherent in designing Web sites according to guidelines, the day where Web sites adhere to guidelines perfectly lies in the distant future. Still, it is important to recognize guidelines for two reasons. First, designing news sites as close to perfect as possible is a worthy goal because usable sites aid in

disseminating information. Second, as Nielsen (2000) writes in a message to Web

developers in *Designing Web Usability*:

> The skilled professional knows when to follow the rules and when to bend a rule or even break it. You must know the rules in the first place before you can consider whether it might improve a specific project to deviate from some of them. Also, a fundamental guiding principle for rule-breaking is that you only do so when you have a really good reason to do so. (p. 11)

While the state of the Web is growing rapidly and constantly in flux, the principles used

in this study can still help people find information quickly on the Web.

I would like to emphasize an idea raised earlier in this paper that a comprehensive

usability test should incorporate guideline evaluation with other usability testing

methods, especially user testing. When an aspect of a seemingly sound design fails a user

test, the failure is certainly an adequate reason to break a design rule to improve that

aspect of the design.

Areas of Further Research

If a version of this study is performed in the future, I think it would be very useful

to rate the significance of the design guidelines themselves. This would require a

substantial amount of time in the study's design, but it would be more informative. For

example, is making sure links do not wrap across multiple lines as important as including

a search mechanism for a Web site? Probably not. To assign a weight to guidelines, a

researcher might want to present usability professionals with a list of guidelines and ask

them to rate the guidelines' importance.

The guidelines from Spool, Nielsen and CNET cover a broad area of Web design

issues, however the guidelines do not address every usability factor facing online news

producers. One topic that deserves further research is how online newspapers present

multimedia. After all, if the trend towards convergence continues, newspaper Web sites will have a wealth of audio and video content to manage on top of their textual and photographic material. Broadband home connections are not widespread across the United States at the present time, but broadband home use doubled during the 13-month period from August 2000 to September 2001 according to a survey from the National Telecommunications and Information Administration, so bandwidth problems associated with multimedia figure to decrease ("Chapter 4…," n.d.). This study did include three guidelines related to multimedia from Nielsen, but it would be helpful if more multimedia design principles existed. Out of the 10 sites in the population sample, only four contained multimedia on any of the evaluated pages. Of course, only five pages from each site were examined, but the home page and the local news section page figure to be two of the most popular pages on any Web site. Furthermore, the site template from BayArea.com looks like it limits the possibility of any multimedia being placed on the page. Perhaps news sites would not be as reluctant to risk sinking resources into multimedia if a group of instructive multimedia production guidelines were produced.

This study also presents evidence that media companies must examine the content management systems that support their Web sites. Four Web sites backed by proprietary content management systems, latimes.com, BayArea.com, Projo.com and NOLA.com, all scored in the bottom half of the rankings. While Tribune Interactive, owner of latimes.com, does not mandate that company news Web sites maintain similar templates, Knight Ridder, Belo and Advance, owners of BayArea.com, Projo.com and NOLA.com, respectively, do maintain a high degree of control over the interfaces of all of the companies' Web sites. As a result, it is reasonable to assume that the flaws in the

aforementioned online newspapers extend to their "sister" sites. If the companies cannot make usability improvements on their sites, users may migrate to other sites causing revenues to drop to a point that could cancel out any gains triggered by the more streamlined distribution methods of content management systems. The performances of Morris's CJOnline.com and Nando Media's islandpacket.com support the case for autonomy in Web operations within a larger media company. Although Morris Digital Works and Nando Media develop publishing tools for their companies' Web sites, it appears that each individual newspaper's site designers have the ability to produce an original design. Take a glance at Morris sites like Jacksonville.com, AugustaChronicle.com, amarillonet.com and AthensOnline.com, or Nando sites like startribune.com, tribnet.com and fresnobee.com. Some page elements are similar to those from pages in this study's population, but the degree of resemblance between those sites pales in comparison to the resemblance between Knight Ridder's BayArea.com and Philly.com, or Advance's NOLA.com and Syracuse.com, or Belo's Projo.com and dallasnews.com.

Even the middle and upper tier sites would be advised to focus on their sites' usability in the coming years. As explained earlier in this paper, convergence is a growing development in the media industry. If the current push towards convergence continues, the battle for media supremacy will likely take place on newspaper Web sites because they have the reputation and capabilities to combine textual, audio and video information into a single medium. In fact, in *Designing Web Usability*, Nielsen estimates that most current media formats, especially newspapers, will die and be replaced by an online medium by 2010 (2000). While he also predicts that bandwidth will increase

enough by that time to allow lower end users to access rich multimedia content, adequate bandwidth does not solve all usability ills. Designers will have to decide how to incorporate text with video and audio and how to let users navigate through an integrated information system to create positive user experiences. If they fail, users will have plenty of other options.

This purpose of this study was not aimed at establishing a foolproof way to rank the usability of online newspapers or trying to devise a way to figure out the coolest online newspaper. Instead, I tried to gain a snapshot of how a collection of newspaper Web sites follows reputable, widely disseminated Web design guidelines. To help achieve this goal, I selected a group of Web sites that would enable the study's findings to be extended beyond the sample and sets of tested, practical guidelines from different sources. It is clear that newspapers can improve the usability of their Web sites, but it is also clear that improving usability is a continuous process. As technology evolves, the Web offers new possibilities for the timely distribution of information by news organizations. The designers of online newspapers must make usability a top priority in order to fully take advantage of these opportunities.

Appendix A: the list of guidelines used in this study

Spool's Web Site Usability

1. Include a search utility
2. Do not include more than one set of Frequently Asked Questions
3. Make the home page accessible from every page because users will click back to a familiar page to find a link
4. Make sure link names are consistent (i.e. "Home" leads to site's home page in all cases)
5. Include a site index or table of contents
6. Navigation is easier when navigation bars of links are placed on the top and bottom of a page instead of the left or right side
7. When using a hierarchical map, a feature that shows where a page lies in the site's hierarchy, indicate where a user is in the hierarchy
8. Links should be describe the content of the destination page, either by the text that's part of a link or a combination of link text and surrounding text
9. Pages should contain a minimum number of links
10. Do not rely on links surrounded by standard text to form a site's navigation system
11. Do not wrap links across multiple lines
12. If possible, make it clear when a link leads to a page on another site
13. Indicate the search utility's scope
14. Allow the search utility to give the user an option to search a part of a site or the whole site
15. Whitespace makes it more difficult for users to find information
16. Don't use horizontal rules that extend across a page in the middle of the page
17. Link colors should resemble defaults
18. Do not rely on images as links
19. Do not rely on images as text headings for specific information
20. Users will wait for images that add to the content of the page to load.
21. Users will try to get of animation when reading through information

Nielsen's Designing Web Usability

<u>Page Design</u>
1. Content should account for 50-80% of a page's screen real estate, navigation (including advertising) should account for less than 20%. Navigation could account for more on home pages and intermediate navigation pages
2. Design for all screen resolutions
3. Ensure designs work with smaller and larger fonts for users who adjust the browser's text size
4. Do not include text in graphics
5. Provide a separate print version for pages containing long documents
6. A page's response time should be no more than 10 seconds for most of the site's audience

7. The top of a page should be meaningful even when no images have been downloaded (the top of a page should contain more textual content than graphical content)
8. Use alt text for images
9. Do not use "click here" for hypertext
10. Hypertext descriptions should be 2 to 4 words, but include additional verbiage around the link to describe the link's destination
11. Use the link title attribute
12. The color shading of links should match a browser's defaults
13. Don't open new browser windows with links
14. Don't use a person's name as an e-mail link
15. Don't use more that 2 fonts per page (or 3 if special text like computer code)
16. Don't use absolute font sizes
17. Don't use frames

Content Design
1. Divide long pages of text into multiple pages
2. Split long text documents into meaningful chunks
3. Make page heights relatively short (a usable height is about 800 pixels, an unusable height is 1200px)
4. Make sure users don't have to scroll for essential links, unless the page is a main navigation page where users would expect to find many links
5. Within-page links should be avoided as much as possible
6. Page titles should be 40-60 characters
7. Different pages need different page titles
8. Move information carrying terms to the beginning of page titles
9. Remove "a," "an" and "the" from beginning of page titles
10. Don't make all of a site's page titles start with the same word
11. Headlines should clearly explain a page's purpose to the user
12. A page should have a high contrast between text and background
13. Page backgrounds should be plain or highly a subtle pattern
14. Use big enough fonts so people can read it, limit tiny fonts to information nobody reads
15. Text should stand still
16. Almost all text should be left justified
17. Don't use all caps
18. For multimedia, indicate file size if the response time is longer than 10 seconds, along with file format and running time
19. Provide a preview of multimedia features; use still photos for video and a textual summary for audio and video
20. Higher level pages should be less graphic dependent than lower level pages
21. Never include something that looks like an ad banner
22. Video and audio clips should be less than one minute

Site Design
1. A site's home page should not have clickable home button
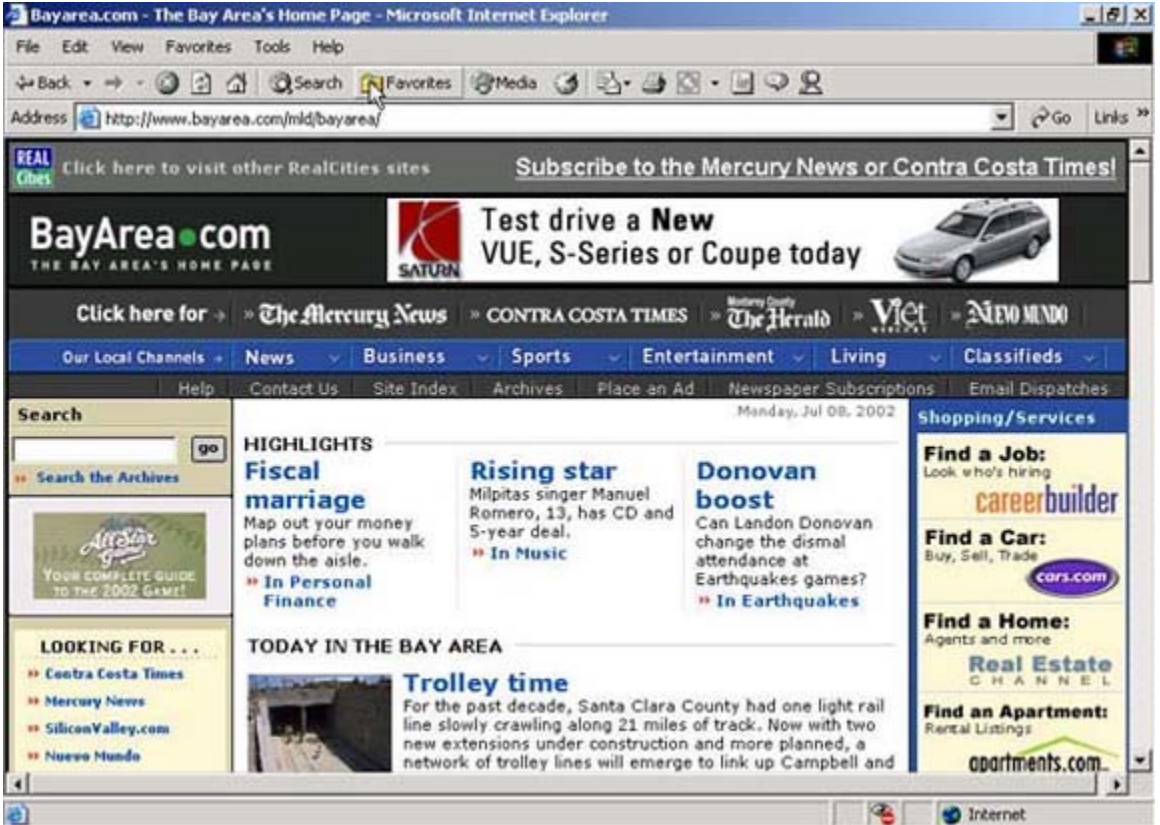
2. The home page logo should be larger and more prominent than the logo on inner pages
3. The home page should offer search
4. The search box should be located in the top-right corner of the home page
5. Page width should accommodate different resolutions
6. Users with small screens should not be required to scroll horizontally
7. The site's name should be included on every page
8. Include the site's logo and a "Home" button or text link in the top-left of every page and link each element to the site's home page
9. Show parts of the site's structure and where the user is located in the site's hierarchy
10. Have the same structural links on every page
11. Represent links as underlined text
12. Don't underline any text that's not clickable
13. Do not rely on pulldown menus or images as navigation elements
14. The site's navigational interface must show all available options
15. Never have a link that points back to the same page
16. A search utility should be available from every page on site
17. Avoid Boolean search on the simple search page
18. Use a wide search box
19. All URLs should be readable

CNET's Design Guidelines

1. Gain extra colors in table cells (non-browser safe colors will not dither in a table cell as they would in a GIF)
2. Vary fonts and warp text (break up blocks of similar text with initial caps set in a different font or "pull quotes," use non-standard fonts in navigation bars)
3. Create GIFs to avoid wrapping text (using images instead of text gives designer greater control over how text is displayed)
4. Use GIFs to add new fonts
5. Don't overuse animation (Avoid senseless animation, like animated icons, lists and bullets. Also, avoid using animation in a navigation interface and on the site's front page. On the site's front page, choose one key element and use animation to draw attention to that element)
6. Leave out attributes (leave out height and width attributes when coding tables)
7. Use HTML control characters for bullets
8. Handling large areas of one color (Use table cells to render large blocks of color instead of including large blocks of color in images)
9. When not to use HTML (use GIFs to control smaller navigation bars)
10. Keep vital elements "above the fold," such as the site name, the title graphic of a story or section, the most popular areas of the site and navigation)

11. No more than half the space above the fold on a story page should be filled with graphics
12. Give the user text to read above the fold
13. Lay out type in a narrow column (do not lay out text in stories across the entire screen, especially above the fold)
14. Use subheads for effect (insert subheads to break up blocks of text over 500 words long, but do not use images for subheads)
15. Determine content priorities (use design elements to draw attention to certain stories)
16. Avoid scrolling text
17. Respect the four-GIF limit (use no more than four GIFs per page)
18. Use white space (Make a space of about 10 pixels above a large text block and along both sides of a text block)
19. Reduce the technology burden (do not use audio, video or a shockwave plug-in on the home page)
20. Write good text links (Be brief and to the point, use "modems" instead of "Click here to get modems")

Appendix B: Screen shots of the online newspapers

http://www.bayarea.com on July 8, 2002

http://www.cjonline.com on July 8, 2002

http://www.islandpacket.com on July 8, 2002

http://www.latimes.com on July 8, 2002

http://www.NOLA.com on July 8, 2002

http://www.nytimes.com on July 8, 2002

http://www.Projo.com on July 8, 2002

http://www.tampatrib.com on July 8, 2002

http://www.usatoday.com on July 8, 2002

http://www.washingtonpost.com on July 8, 2002

Appendix C: an empty evaluation matrix

5=followed 1=disregarded

1=strongly disregarded 2=slightly disregarded 3=neutral 4=slight adherence 5=strong adherence 6=not applicable

Web Site Usability

Guideline	1	5	0	1	2	3	4	5
1. Include a search utility								
2. Do not include more than one set of Frequently Asked Questions								
3. Make the home page accessible from every page because users will click back to a familiar page to find a link, even if it is Give users option to go back without using back button								
4. Make sure link names are consistent (i.e. "Home" leads to site's home page in all cases)								
5. Include a site index or table of contents								
6. Navigation is easier when navigation bars of links are placed on the top and bottom of a page instead of the left or right side								
7. When using a hierarchical map (a feature that shows where a page lies in the site's hierarchy), indicate where a user is in the hierarchy								
8. Links should be describe the content of the destination page, either by the text that's actually a link or a combination of link text and surrounding text								
9. Pages should contain a minimum number of links								
10. Do not rely on links surrounded by standard text to form a site's navigation system								
11. Do not wrap links across multiple lines								
12. If possible, make it clear when a link leads to a page on another site								
13. Indicate what the search utility's scope is								
14. Allow the search utility to give the user an option to search a part of a site or the whole site								
15. Whitespace makes it more difficult for users to find information—judge how spread out the information is								
16. Don't use horizontal rules that extend across a page in the middle of the page								
17. Link colors should resemble defaults								
18. Do not rely on images as links								
19. Do not rely on images as text headings for specific pieces of information								
20. Users will wait for images that add to the content of the page to load								
21. Users will try to get of animation when reading through information								

Designing Web Usability

Guideline	1	5	0	1	2	3	4	5
PAGE DESIGN								
1. Content should account for 50-80% of a page's screen real estate, navigation (including advertising) should account for less than 20%. Navigation could account for more on home pages and intermediate navigation pages								
2. Design for all screen resolutions								
3. Ensure designs work with smaller and larger fonts for users who adjust the browser's text size								
4. Do not include text in graphics								
5. Provide a separate print version for pages containing long documents								
6. A page's response time should be no more than 10 seconds for most of the site's audience								
7. The top of a page should be meaningful even when no images have been downloaded (the top of a page should contain more textual content than graphical content)								
8. Use alt text for images								
9. Do not use "click here" for hypertext								
10. Hypertext descriptions should be 2 to 4 words, but include additional verbiage around the link to describe the link's destination								
11. Use the link title attribute								
12. The color shading of links should match a browser's defaults								
13. Don't open new browser windows with links								
14. Don't use a person's name as an e-mail link								
15. Don't use more that 2 fonts per page (or 3 if special text like computer code)								
16. Don't use absolute font sizes								
17. Don't use frames								
CONTENT DESIGN								
1. Divide long pages of text into multiple pages	1	5	0	1	2	3	4	5
2. Split long text documents into meaningful chunks								
3. Make page heights relatively short (a usable height is about 800 pixels, an unusable height is 1200px)								
4. Make sure users don't have to scroll for essential links, unless the page is a main navigation page where users would expect to find many links								
5. Within-page links should be avoided as much as possible								
6. Page titles should be 40-60 characters								
7. Different pages need different page titles								
8. Move information carrying terms to the beginning of page titles								
9. Remove "a," "an" and "the" from beginning of page titles								
10. Don't make all of a site's page titles start with the same word								
11. Headlines should clearly explain a page's purpose to the user								
12. A page should have a high contrast between text and background								
13. Page backgrounds should be plain or highly a subtle pattern								

	1	5	0	1	2	3	4	5
14. Use big enough fonts so people can read it, limit tiny fonts to info nobody reads								
15. Text should stand still								
16. Almost all text should be left justified								
17. Don't use all caps								
18. For multimedia, indicate file size if response time longer than 10 seconds along with file format and running time								
19. Provide a preview of multimedia features—use still photos for video and a textual summary for audio and video								
20. Higher level pages should be less graphic dependent than lower level pages								
21. Never include something that looks like an ad banner								
22. Video and audio clips should be less than one minute								
SITE DESIGN								
1. A site's home page should not have clickable home button	1	5	0	1	2	3	4	5
2. The home page logo should be larger and more prominent than the logo on inner pages								
3. The home page should offer search								
4. The search box should be located in the top-right corner of the home page								
5. Page width should accommodate different resolutions								
6. Users with small screens should not be required to scroll horizontally								
7. The site's name should be included on every page								
8. Include the site's logo and a "Home" button or text link in the top-left of every page and link each element to the site's home page								
9. Show parts of site structure and where user is located in the site's hierarchy								
10. Have the same "structural" links on every page								
11. Represent links as underlined text								
12. Don't underline any text that's not clickable								
13. Do not rely on pulldown menus or images as navigation elements								
14. The site's navigational interface must show all available options								
15. Never have a link that points back to the same page								
16. A search utility should be available from every page on site								
17. Avoid Boolean search on simple page								
18. Use a wide search box								
19. All URLs should be readable								

CNET's Design Tips

Guideline	1	5	0	1	2	3	4	5
1. Gain extra colors in table cells (non-browser safe colors will not dither in a table cell as they would in a GIF)								
2. Vary fonts and warp text (break up blocks of similar text with initial caps set in a different font or "pull quotes," use non-standard fonts in navigation bars)								
3. Create GIFs to avoid wrapping text (using images instead of text gives designer greater control over how text is displayed)								

4. Use GIFs to add new fonts									
5. Don't overuse animation (Avoid senseless animation, like animated icons, lists and bullets. Also, avoid using animation in a navigation interface and on the site's front page. On the site's front page, choose one key element and use animation to draw attention to that element)									
6. Leave out attributes (leave out height and width attributes when coding tables)									
7. Use HTML control characters for bullets									
8. Handling large areas of one color (Use table cells to render large blocks of color instead of including large blocks of color in images)									
9. When not to use HTML (use GIFs to control smaller navigation bars)									
10. Keep vital elements "above the fold," such as the site name, the title graphic of a story or section, the most popular areas of the site and navigation)									
11. No more than half the space above 315 pixels on a story page should be filled with graphics									
12. Give the user text to read above the fold									
13. Lay out type in a narrow column (do not lay out text in stories across the entire screen, especially above the fold)									
14. Use subheads for effect (insert subheads to make sections stand out by subject, break up blocks of text over 500 words long, but do not use unique images for subheads)									
15. Determine content priorities (use design elements to draw attention to certain stories)									
16. Avoid scrolling text (scrolling marquees, applets, etc)									
17. Respect the four-GIF limit (use no more than four GIFs per page)									
18. Use white space (Make a space of about 10 pixels above a large text block and along both sides of a text block)									
19. Reduce the technology burden (do not use audio, video or a shockwave plugin on the home page)									
20. Write good text links (Be brief and to the point, use "modems" instead of "Click here to get modems")									

Appendix D: Sample Data Sheet, CJOnline.com

Spool Y/N	index	section	story1	story2	story3	TOTAL
searchUtil						
FAQ	5	5	5	5	5	25
siteMap	5					5
searchScope	5					5
searchOption	1	1	1	1	1	5
horizRule	1	1	1	1	1	5
imageContent	5	5	5	5	5	25
	5	5	5	5	5	25
Page Design Y/N						95
screenRes						
printVersion	1	1	1	1	1	5
nameEmail			5	5	5	15
noFrame	5	5	1	1	1	13
	5	5	5	5	5	25
Content Design Y/N						58
multiPages						
pageChunks			1	1	1	3
withingPage			1	1	1	3
titleLength	5	5	5	5	5	25
diffTitles	5	5	1	1	1	13
infoTerms	1	5	5	5	5	21
titleArticles	5	1	1	1	1	9
titleStart	5	5	5	5	5	25
headlinePurpose	1	1	1	1	1	5
contrastBg	5	5	5	5	5	25
plainBg	5	5	5	5	5	25
stillText	5	5	5	5	5	25
leftJustified	5	5	5	5	5	25
noallCaps	5	5	5	5	5	25
previewMulti	1	1	1	1	1	5
graphicDist			5	5		10
adBanner	5	1				6
avLength	1	5	5	5	5	21
			5	5		10
Site Design Y/N						281
clickableHome						
homeLogo	1					1
searchHome	1					1
searchLocation	5					5
scrollHoriz	1					1
siteName	1	1	1	1	1	5
siteLogoButton	5	5	5	5	5	25
structuralLinks		5	5	5	5	20

pulldownMenus	5	5	5	5	5	25
navInterface	5	5	5	5	5	25
linkBack	1	5	5	5	5	21
searchEveryPage		1	5	5	5	16
booleanSearch	5	5	5	5	5	25
readableURL	5	5	5	5	5	25
	5	5	1	1	1	13
						208
CNET Y/N						
gainColors	5	5	5	5	5	25
wrapGIFs	5	5	5	5	5	25
addGIFs	5	5	5	5	5	25
tableAttrs	1	1	1	1	1	
htmlBullets	1	1	1	1	1	5
colorBlocks	5	5	5	5	5	25
smallNav	5	5	5	5	5	25
aboveFoldGraphics			5	5	5	15
aboveFoldText	1	5	5	5	5	21
contentPriority	5	5				10
ScrollingText	5	5	5	5	5	25
whiteSpace	1	1	1	1	1	5
reduceBurden	5					5
TOTAL	176	167	175	175	165	236
COUNT	48	43	47	47	45	
AVG.	3.67	3.89	3.72	3.72	3.67	3.73
Spool Scale						
homePageAccessible		4	4	4	4	16
linkNameConsistent	5	5	5	5	5	25
navLocation	4	4	4	4	4	20
hierarchicalMap		5	5	5	5	20
linkDescribe	4	5	5	5	5	24
minimumLinks	4	5	5	5	5	24
embeddedLink	5	5	5	5	5	25
wrapLinks	4	4	3	4	4	19
linkAnotherSite	2	1	1	1	1	6
whitespace	4	5	3	3	3	18
linkColors	5	1	1	1	1	3
imagesLinks	4	3	2	4	4	17
imageHeadings	1	1	1	1	1	5
animation	5	5	5	5	5	25
						247
Page Design Scale						
screenRealEstate	5					5
adjustText	1	1	5	5	5	12
textInGraphics	1	3	1	1	1	7
responseTime	1	1	2	2	3	9

topPageMeaningful	1	4	3	3	4	15
altText	1	3	2	2	1	9
clickHere	3	5	5	4	5	22
linkLength	5	5	5	4	5	24
linkTitle	1	1	1	1	1	5
linkColor2	1	1	1	1	1	5
openWindows	4	4	4	4	4	20
fontNumbers	5	5	5	5	5	25
absoluteFonts	1	3	4	4	4	20
						178
Content Design scale						
pageHeights	1	1	1	1	1	5
essentialLinks	4	4	4	4	4	20
bigFonts	4	3	3	3	3	16
multimediaFactors			1	1		2
						43
Site Design scale						
pageWidth	2	2	2	2	2	10
siteHierarchy		5	5	5	5	20
underlinedLinks	1	1	1	1	1	5
underlineNonclickable	5	5	5	5	5	25
wideSearchbox	1	1	1	1	1	5
						65
CNET Scale						
varyFonts	3	3	3	3	3	15
animationOveruse	5	5	5	5	5	25
importantElements	5	5	5	5	5	25
narrowColumn			4	4	4	12
subheads	2	2	1	1	1	7
gifLimit	1	1	1	1	1	5
textLinks	3	4	5	5	5	22
TOTAL	114	131	134	135	137	111
COUNT	37	38	40	40	39	
AVG	3.05	3.55	3.35	3.38	3.51	16.84
						3.37

7.1

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