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Corporate America and Web access for the blind: are public relations practioners communicating with the blind public?

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CORPORATE AMERICA AND WEB ACCESS FOR THE BLIND: ARE PUBLIC
RELATIONS PRACTITIONERS COMMUNICATING WITH THE BLIND PUBLIC?

A Thesis
Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree
Master of Mass Communication

in

The Manship School of Mass Communication

by
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B.S., Louisiana State University Medical Center, 1996
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I dedicate this thesis to my parents, Joan and Joseph Daigle, who have consistently given me unconditional love and support to achieve my goals and turn my dreams into reality. They are my source of strength and wisdom, whose encouragement has never faltered in the face of new challenges in my life. My parents have given me vision in a world that is just beginning to understand the needs of the blind. Thus, I acknowledge their contribution to my studies and offer thanks beyond which mere words cannot describe.

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ABSTRACT

Advances in technology have given the blind public a new voice in corporate America. Today, blind individuals are able to utilize the Internet independently using screen access software. However, like ramps for wheelchairs in physical spaces, Web site accommodations are needed in cyberspace for successful use. A review of the current literature indicates trends in public relations are shifting toward a corporate ethic of social responsibility, but on-line concerns for the disabled are not clearly demonstrated among the leading corporations in the United States. The purpose of this research is to determine if blind consumers are being accommodated on corporate Web sites in a manner that is conducive to public relations efforts to establish and maintain positive relationships with this new public. A content analysis of the Web sites maintained by the top 100 Fortune 500 corporations in the United States was performed to identify the current Web design practices being used to relate to blind publics through the Internet. The results indicate the needs of the blind consumer are not being met in mainstream business practices on the World Wide Web, despite government initiatives to support Web accessibility for the disabled.

CHAPTER 1

INTRODUCTION AND BACKGROUND

Because of rapid developments in communication technology at the end of the twentieth century, the world has become increasingly computer-oriented. Humankind is standing on the cusp of a new era where the *Star Trek* genre is more often viewed as a realistic possibility than an impossible fantasy. In this postmodern world, the universe has shrunk to the size of a television monitor, computer screen, or cellular phone, as the changes in new information media continue to position data at the fingertips of all computer-savvy citizens.

Many may view this new era as boundless opportunity for growth, education, and accessibility; however, the technology may be changing faster than its human counterparts. Current demands on individuals to become computer literate have created a rift in the population. Despite awesome new developments in computer technology, one definitive population has been surpassed. Individuals who are blind, or visually impaired, face a unique challenge in today's Internet environment. Computer operating systems, such as Windows XP, have become dependent on graphic recognition and visual operation for software applications management and function. Thus, blind computer users must rely on specialized software programs (screen access software) to perform all computer-based tasks.

The Internet poses a particular problem for the blind computer user. Cluttered Web pages, dynamic text, and thin, colored fonts make sites difficult to decipher by blind individuals. Technology for the blind (assistive technology) has provided a means for blind and visually impaired computer users to access standard software applications and the World Wide Web through the use of screen magnification software, screen reader programs, and Braille technology. However, present assistive technologies appear to be struggling with the fast-paced

changes in computer technology and Web design, creating Internet accessibility problems. The existence of assistive software is not enough to allow blind individuals to function at a competitive capacity at home or in the workplace. Web sites must be designed in accessible format to accommodate assistive software programs. Although this may sound simple, the literature indicates Internet accessibility for blind computer users remains problematic.

Few research studies have been conducted in regards to Internet accessibility problems for blind computer users. This may be a result of several factors. First, dependency on the Internet for performing daily tasks --- such as research, shopping, and correspondence --- is a fairly recent development in this postmodern era of computer technology. Thus, focus on access for the blind has not received considerable attention prior to the past five years. Second, statistics have shown that 74 percent of working-age blind individuals are unemployed (National Federation for the Blind (NFB), 2000). With a lack of representation in the workplace, the needs of the blind have not received immediate recognition from corporations and other businesses due to lack of awareness. Awareness is the first step toward a solution. Additionally, assistive technology for the blind in its earliest forms was designed as self-contained devices, limiting the blind computer user to specialized programs as opposed to off-the-shelf applications. The technology eventually progressed into hardware components to allow blind computer users to utilize standard software packages; however, comprehensive assistive software, such as JAWS 3.5, were not in existence five years ago. With the elimination of the need for hardware components, these recent developments in assistive technology have made computer accommodations more efficient and cost effective, but new problems continue to develop as communication technology pushes forward.

The tangible affects of assistive software must be supported through research to justify the complexities and expense that accompany computer accommodations for the blind. Baumer, Hean, and Ven (2000) conducted an experimental study to determine whether computer-mediated communication (CMC) provides opportunities for people who are visually impaired to increase functional performance. The results of this research indicated that the audio connection of CMC systems is of great importance to the visually impaired person as opposed to a sighted individual. The results of this study suggest the importance of screen reader technology as a means for improving the visually impaired individual's ability to communicate during complex visualization tasks. Thus, the study demonstrated that increasing communication capabilities for the blind can directly affect their level of performance. This should be an important consideration for employers and vocational rehabilitation counselors when justifying the need for assistive software with screen reader capabilities.

"It makes good business sense in today's economy to hire people with disabilities and obtain assistive technology," stated Dave Zelinski (2000) in *Presentations*. "The U.S. work force is increasingly graying." Zelinski contends that disabilities are likely to increase as the baby boomer population ages. New technologies can help these people remain productive on the job for longer periods of time. Employability is a key concept in discussing the importance of assistive technology for the blind. "The ability to perform proficiently with e-mail, computer software applications and the Web is more crucial than ever to the employability, and productivity, of blind workers" (Zelinski, 2000). Unfortunately, the logic of Zelinski's statements has yet to penetrate corporate America. "Awareness and sensitivity remain the biggest stumbling blocks," he wrote.

The purpose of this research is to determine whether blind consumers are being accommodated on corporate Web sites in a manner that is conducive to public relations efforts to establish and maintain positive relationships with this new public. This study examines corporate Web sites to determine their level of conformance to Web standards established by the World Wide Web Consortium (W3C) and the U.S. federal government. The data gathered identifies the current Web site practices being used by leading U.S. companies to relate to blind publics, demonstrating the level of concern for blind consumers in Corporate America.

CHAPTER 2

LITERATURE REVIEW

Defining a “Public” in Public Relations

Throughout the evolution of public relations, scholars and practitioners have debated to define its role in the corporate world. Research has indicated that public relations is often viewed as a means of influencing consumer value and behavior, of cultivating markets, of corporate image control, and of issue management (Karlberg, 1996, p. 266). However, new trends in the field have demonstrated a shift in the practice from a purely commercial management function, or press agency, to a more socially responsible profession, focused on the development of strong relationships, consensus building, and ethical behavior (Daugherty, 2001, p. 389). Although the role of public relations has evolved, it continues to be most frequently defined from an organizational perspective. For example, in *Effective Public Relations*, Cutlip, Center, and Broom (1994) present a commonly accepted definition of the practice, describing public relations as “the management function that establishes and maintains mutually beneficial relationships between an organization and the publics on which its success or failure depends” (p. 6).

Crable and Vibbert (1986) define public relations as “the art of adjusting organizations to environments and environments to organizations” (p. 413). Other theorists have broadened this perspective by acknowledging the role of multiplicity in the organization-public environment. Deviating from the traditional organizational perspective, Leitch and Neilson (2001, p. 134) contend that public relations is about multiple publics interacting with multiple organizations on a strategic terrain of competing discourses and unequal access to power and resources. Shedding a new light on this people-oriented approach to public relations, Wilson (1994a, 1994b) draws

from a social consciousness perspective to define the field. She asserts the role of public relations “is to facilitate positive communications between an organization and its publics and that requires building relationships” (1994b, p. 136). Additionally, she states that public perception of “corporate social responsibility” must form the foundation of organization-public relationships (1994b, p. 136). From this perspective Wilson views the public relations practitioner as the agent of corporate social responsibility who “functions in the role of corporate conscience” (1994b, p. 186). According to Wilson (1994a), corporations in the United States are realizing a need to shift from a rational approach to a “more people-oriented, rational approach based on a few core corporate values like quality and service” (p. 334). Likewise, futurists predict that organizations will be judged less on their products and services and more on their social policies; and key publics will become increasingly influential (Daugherty, 2001, p. 389). This trend in public relations offers hope to publics, like the disabled, who may have been overlooked by large corporations in the past because they were focused solely on the largest markets and the biggest bottom line.

Once the role of public relations has been defined in an organization, the next challenge is to identify its key publics. Prior to taking a socially responsible approach to the practice, these groups could easily be identified as stakeholders, customers, consumers, and employees.

However, new responsibilities to society require new perspectives on defining a public.

Moffitt (1992) contends the only focused conceptualization of publics is offered in public relations textbooks. She states, “Textbooks usually accept, without question, the notion that publics can be groups with shared linkages or shared relationships to the organization” (p. 18). According to Vasquez and Taylor (2001, p. 147), researchers have yet to single out and concur on the enduring characteristics and composition of a public as guided by their conceptualization.

John Dewey's definition of publics is often the starting point for analysis in public relations literature. Dewey (1927) offers an organization-centered perspective by viewing a public as a group who sees themselves as having a common interest with respect to an organization and "endeavor(s) to act through suitable structures and thus to organize itself for oversight and regulation" (p. 29). James Grunig and Hunt (1984, p. 143) modernized this definition by combining Dewey's perspective with sociologist Herbert Blumer's view of publics to explain how to identify these groups. They asserted that a public can fall into two categories: an easily identifiable group that functions as a linkage to the organization or any number of groups who share a relationship to the organization but come at random from the society at large (p. 145). Though these views have been widely accepted in the field by scholars and practitioners, such definitions offer an organization-centered approach to identifying publics, in which "the public is often understood as a means to an organization's end goal" (Vasquez & Taylor, 2001, p. 139).

Moffitt (1992) noted that "public relations has always recognized that the 'audience' is not measured in shared demographic variables, but rather, in the shared relationships of the public to an organization" (p. 18). However, the concept of multiplicity, once again, broadens the traditional scholarly definitions and points public relations research toward a more people-oriented approach. Cutlip, et al, (1994) summed it best when they stated, "there is simply no such thing as the general public" (p. 360). The new trend in public relations indicates that the concept of public can be maintained as representing one possible configuration of individuals within a framework where multiple configurations are possible (Leitch & Neilson, 2001, p. 131). Conceptualizing publics in this fashion allows them to be viewed as groups of individuals who

develop their own identities, and perhaps representations of their shared interests, in relation to the system (Leitch & Neilson, 2001, p. 131). As Heath noted (in Leitch & Neilson, 2001):

The member of a public may come to share a zone of meaning in relation to an issue, an event, or an organization. Individuals are not, of course, members of single publics but instead participate in the multiple sites of the public sphere as members of diverse publics. They may simultaneously hold a number of different subject positions within these sites and publics. (p. 131)

Heath's perspective provides an understanding of publics that is most conducive to understanding the blind public discussed in this research. Blind individuals are a collective who have begun to organize themselves to address issues that affect them as stakeholders, customers, consumers, employees, etc. They are individuals who belong to multiple groups who have come together to solve a common problem. This perspective is further supported by Vasquez and Taylor (2001) who contend:

A public is no longer viewed as a permanent collection of individuals with enduring characteristics; rather, it is viewed as a collection of individuals, identified by social-psychological variables, that emerges in response to a problem (p. 144)...A public is viewed as a situationally developing social entity that emerges through spontaneous argument, discussion, and collective opposition to some issue or problematic situation. (p. 142)

With trends in public relations directed toward a more socially responsible corporate world, it appears that organizations may begin to abandon the traditional organization-centered approach to defining publics for a new people-oriented approach to understanding them.

Forming A Public

There has been little debate in public relations literature to indicate an argument among scholars and practitioners regarding the formation of publics. A brief review of "group" literature reveals that groups form through a process with beginning, middle, and end stages. These groups develop through five phases: forming, storming, norming, performing, and

terminating, which explain why they organize and change over time (Wheelan & Kaeser in Springston & Keyton, 2001, p. 116). Similarly, J. Grunig (1992) describes the formation of publics as a result of issues recognition. He states “Publics organize around issues and seek out organizations that create those issues – to gain information, seek redress of grievances, pressure the organizations, or ask governments to regulate them” (p. 128).

Dewey (1927) recognized publics play an important role in American democracy (in J. Grunig, 1992, p. 138). He explained that publics organize into issue groups to pressure organizations that are the cause of or solution to problems. Thus, publics form out of disconnected systems of individuals experiencing similar problems, but they have the potential to develop into organized and powerful activist groups who engage in group behavior (Dewey in J. Grunig, 1992, p. 138). As previously mentioned, J. Grunig based his concept of public on Dewey (1927) and Blumer’s (1966) theories. “They observed that publics arise around problems that have consequences on them. Problems, therefore, define publics more than publics define problems” (Grunig & Hunt, 1984, p. 143). In addition, “a rather important implicating that follows... is that there is not a single undifferentiated public; a public is always specific to a particular situation or issue” (Cobb & Elder, 1972, p. 102).

In summary, scholars have indicated that publics form as a means to resolve problems once common issues have been discovered. Using this theory, one may observe that the blind population has recently organized to address accommodation issues with companies hosting Internet Web sites. However, public relations practitioners must rely on a theory of publics to help them identify and classify their publics, because groups that develop around issues may differ in their level of awareness and eagerness to act for change.

A Situational Theory of Publics

A situational approach to identifying publics defines a public as a single collection of individuals that form in response to a problematic situation (Vasquez & Taylor, 2001, p. 140). Researchers in communications (cited in J. Grunig, 1992, p. 134) have defined situations as a general type of recurring circumstance, such as a heart problem, AIDS, or environmental pollution. Other situational variables have included physical and social surroundings, time, the specific task for which a product is used, personal state of mind at purchase, social or financial pressure, uncertainty, or a situation served inadequately by existing products (J. Grunig, 1992, p. 134). Problems, situations, and issues are the key factors in J. Grunig's situational theory of publics (Grunig & Hunt, 1984, chapter 7). And, in public relations literature this theory is the only segmentation theory that has been researched extensively (J. Grunig, 1992, p. 128).

The situational theory states that, "communication behaviors of publics can be best understood by measuring how members of publics perceive situations in which they are affected by such organizational consequences as pollution, quality of products, hiring practices, or plant closings" (Grunig & Hunt, 1984, p. 148). For the purpose of this research, inaccessible Web sites for blind publics would be the consequence at the center of the issue. The theory explains when and how people communicate about these situations and what effect communication about the situations might have (J. Grunig, 1989, p. 5). The basic theory is composed of two dependent variables (active and passive communication behavior) and three independent variables (problem recognition, level of involvement, and constraint recognition) (Grunig & Hunt, 1984). Modifications to the theory have incorporated cognitive, attitudinal, and behavior effects as additional dependent variables (J. Grunig, 1989, p. 5). The theory states that publics are most likely to become active when they perceive that the consequence of an organization's behavior is

a problem, that the problem involves them, and that they are not constrained from acting to solve the problem.

J. Grunig further argues that problem recognition and constraint recognition can be combined to identify four types of perceived situations, which identify publics that demonstrate similar types of communication behaviors. First, problem-facing behavior can be expected from publics with high problem recognition and low constraint recognition. Second, constrained behavior is common among publics with high problem recognition and high constraint recognition. Third, routine behavior can be expected from publics with low problem recognition and low constraint recognition. And, fourth, fatalistic behavior recognizes publics with low problem recognition and high constraint recognition. Additionally, the theory incorporates referent criterion, which accounts for previous knowledge or experience among individuals in the group (Pavlik, 1987, p. 78).

Research using the situational theory has confirmed that active information seeking and passive information procession increase with high problem recognition and low constraint recognition. Additionally, active information seeking may increase with level of involvement, but involvement has little effect on passive information processing. In summary, research has indicated that people seldom seek information about situations that do not involve them. However, they do randomly process information about low involvement situations, especially if they also recognize the situation as problematic. Conclusions have also shown that people communicating actively develop more organized cognitions, are more likely to have attitudes about a situation, and more often engage in a behavior to solve the situation (Grunig, 1989, p. 6).

J. Grunig's situational theory of publics brings the concept of segmentation in public relations to a complex level. However, studies have shown the theory to be effective in

explaining the relationship between public opinion and communication within the context of active publics that develop around specific issues. Though the theory is more commonly applied to academic research, practitioners may use similar methods to determine if their publics are active or passive. Organizations who become aware of publics that have begun to transition from latent to active can benefit from efforts to build relationships with these groups before problems for the organization arise. For example, practitioners who become aware of the blind public and their concerns regarding Web site accommodations may choose to investigate the issue with their company's Web designers before being approached with a complaint from the community. This action could put the organization in a more positive light if the issue were to be addressed by that particular public.

Building Relationships With Key Publics

Many organizations appear to develop communication programs for a general public, or a mass audience. These programs might build relationships accidentally with stakeholders, but, most often, they communicate with no one important to the organization. Plus, they can cost the organization significant funds (J. Grunig, 1992, p. 118). Dozier asserts communication should be used as "a strategic management function that helps manage relationships with key publics that affect organizational missions, goals, and objectives" (Dozier, Grunig, & Grunig, 1995, p. 85). Similarly, J. Grunig (1992, p. 128) argues that more successful public relations programs focus efforts to communicate with publics that threaten the organization's mission or provide opportunities to enhance that mission.

Though common sense may assume that support for or opposition to organizations by publics is a product of the relations between them (Leitch & Neilson, 2001, p. 135), the notion that relationships should be at the core of public relations was not addressed until M. A.

Ferguson in 1984 (Ledingham & Bruning, 2000, p. xiii). Since then, Broom, Casey, & Ritchey (2000, p. 16) have proposed antecedents to relationships to explain why organizations enter into relationships with specific publics. They define these antecedents as “the perceptions, motives, needs, behaviors, and so forth, posited as contingencies or as causes in the formation of relationships.” Grunig and Huang (2000, p. 30) suggest that public relations departments make organizations more effective by building relationships with strategic publics – the publics with which organizations need relationships. In the strategic management theory of public relations Grunig and Repper (1992) (in Grunig & Huang, 2000) contend that this can be achieved by identifying stakeholder categories, then segmenting the members into active and passive publics. They argue that the values of active, or potentially active, groups must be incorporated into the organization’s goals. “To do so means that an organization must build both short- and long-term relationships with strategic publics to be effective” (p. 32).

Communication within the relationship management paradigm is viewed as the means to link organizations and their key publics (Grunig & Huang, 2000). This perspective shifts the practice of public relations away from manipulating public opinion with communication messages toward combining symbolic communication messages and organizational behaviors to initiate, build, nurture, and maintain mutually beneficial relationships (Bruning & Ledingham, 2000b, p. 2). Ehling contends that this shift is “an important change in the primary mission of public relations (Ehling, 1992, p. 622). Because the purpose of public relations is to establish, develop, and maintain relationships, efforts to facilitate organization-public relationships should help to demonstrate the value of public relations in terms of effective relationship building, public satisfaction, and consumer purchasing behavior (Bruning & Ledingham 2000a, p. 172).

Results of an investigation by Bruning and Ledingham (2000b) to determine if perceptions of organization-public relationships influence evaluations from key public members indicate public relations programmatic initiatives should be based on multidimensional relationship building strategies designed to enhance key public perceptions of personal, professional, and community relationships. Research in field dynamics in public relations suggests that any strategy directed to one public must be selected while keeping in mind the potential impact on other publics in the field. Field theory recognizes that an organization and its publics are not isolated but instead react to and interact with others in an integrated environment (Springston & Keyton, 2001, p. 117). Finally, Broom, Casey, and Ritchey (2000) conclude:

1. The formation of relationships occurs when parties have perceptions and expectations of each other, when one or both parties need resources from the other, when one or both parties perceive mutual threats from an uncertain environment, or when there is either a legal or voluntary necessity to associate.
2. Relationships are the dynamic results of the exchanges and reciprocity that manifest themselves as the relationships develop and evolve; yet, they can be described at a given point in time (chapter 1).

A brief review of the literature demonstrates the importance of building relationships with key publics. However, the process of identifying publics and building mutually beneficial relationships has changed with advances in computer technologies. New resources for communication, such as the Internet, have provided vast opportunities for public relations practitioners to reach a savvy new society.

Building Relationships on the Web

Traditionally, public relations practitioners have functioned as the gatekeepers of information – controlling the messages corporations extend to their publics in order to maintain a favorable image. However, with the growth of communication systems, the role of public relations has changed, progressing beyond mere one-way communication techniques to include more two-way and multidirectional approaches to building relationships. The Internet has been a key factor in fostering this change.

December (1996) notes messages on the Internet can be distributed in the following ways:

- Point to point: A single user sends a message to a single receiver.
- Point to multipoint: A single user sends a message to a server, which can then be accessed by anyone with appropriate software.
- Point to server narrowcast: A single user sends a message to a server, which is then available to only a specific group of users who have log-in names and passwords.
- Server broadcast: A server contains stored information that is available to any user with an appropriate software client.
- Server narrowcast: A server provides information to only a specific set of authorized users (p. 22).

Springston (2001) contends that there is evidence to indicate public relations agencies are now viewing the Internet as an important tool to increase productivity, efficiency, and effectiveness. “There is growing evidence that new technology is enhancing, and to some degrees changing, public relations roles” (p. 605).

There are many benefits to maintaining a corporate Web site. For instance, Web sites tend to serve more active publics than passive, because the nature of the Internet attracts individuals who actively seek and process information. Additionally, corporate Web sites can set their own agenda by presenting unedited messages that are unencumbered by traditional news media practices. Engaging the Interactive features of the Internet, Web sites can also be used to collect information, monitor public opinion on issues, and proactively engage citizens in dialogue about a variety of issues (Esrock & Leichty, 1998, p. 2). Heath (1998) supports these assertions by stating, “This electronic medium offers increased opportunities for companies to display advertising and public relations messages to attract, persuade, and motivate customers. In addition, this medium is used with increasing regularity to support media relations and investor relations” (p. 3).

Although the literature indicates that Internet technology is having a significant impact on public relations (Springston, 2001, p. 613), some studies show the Web is not being utilized by public relations practitioners to its fullest extent. The results of a study by Esrock and Leichty (1998) indicated that relatively few companies used their Web sites as a research and communication tool to proactively correspond with publics, and even fewer used the medium as a tool to advance their positions on policy issues. “The predominant model of corporate Web pages seems to be top-down/information-push communications. At this time, relatively few corporate Web pages are designed to facilitate meaningful two-way interaction between organizations and their publics” (p. 11). Additionally, results of a survey by Springston (2001) indicate computer specialists, not public relations practitioners, design 84 percent of corporate Web sites. However, further results of the study report public relations specialists (86 percent) are routinely consulted in the creation process and involved in updating content on the sites.

Perhaps, public relations practitioners have yet to develop an understanding of the opportunities available on the Internet. Or, perhaps they simply lack the skills to implement new Web-based programs. According to Cozier and Witmer (2001), computer-based communication technologies present significant challenges to public relations practitioners who rely on information-based approaches to define, identify, and analyze publics. They argue that communication technologies create alternative venues for individuals to develop “computer-mediated” communities and for publics to evolve (p. 618). This means that public relations practitioners must learn to recognize new breeds of publics that have formed as a result of the Internet’s design, in addition to recognizing new tools for communication that are available because of the Internet’s size.

Despite the fact that studies show the majority of corporations are not yet utilizing the Web effectively to build relations with their publics, some corporate Web sites have been identified as being socially responsible to their audiences. A study to assess how large corporations are using the Web to present themselves as socially responsible citizens indicated that those Web sites that incorporate the greatest amount of socially responsible material also tend to use maps, indexes, and search engines. This suggests that companies who emphasize quality by utilizing technical means to develop more user-friendly Web pages also tend to develop content that goes beyond mere product information and financial materials (Esrock & Leichty, 2001).

Managing Issues

The blind Web-user community is testimony to Cozier and Witmer’s argument, because they are a public that has formed as a result of the Internet. The development of such publics on the Web is a phenomenon that warrants attention from public relations practitioners in this

expanding era of computer technologies. New challenges lie ahead for practitioners seeking to avoid problems for corporations who are utilizing this new medium.

According to J. Grunig (1994), a public perceives a problem when something is missing that it would like to occur. Publics make issues out of problems that have yet to be resolved (p. 146). Heath and Nelson (1986) define an issue as “a contestable question of fact, value, or policy” (p. 37).

Heath (1998) researched new communication technologies from an issues management perspective. The study demonstrated that dialogue does exist on the Internet, and even poor individuals are taking part in the discussion of issues. Public opinion is no longer limited to the elite, and issues are now being addressed by the common consumer in addition to the invested shareholder. This development coupled with the vast nexus of information and communication technologies available to all publics, enhances the issues management function of public relations (Heath, 1998, p. 1; Springston, 2001, p. 607).

Coombs (1998) contends that the Internet facilitates “corporate social performance-based issues management” (p. 5). However, Wilson (1994a) presents a value and relationship-based theory to explain the role of public relations in today’s issue-dominated corporate environment. She contends public relations, through communication, is key to realizing organizational goals. “Public relations provides the vision, the decision expertise, and the functionary communication skills to serve the corporation, its publics, and its community in building the relationships and resolving the problems blocking the achievement of organizational goals” (p. 4). According to Wilson, public relations practitioners are in a good position to change management style to a more value-based system, through its specific function of issue management. Bridges and Nelson (2000) further this point by asserting that corporations have a good probability of ending

organization-public conflict, if they can identify and cooperate with the affected public to work toward mutual interests and goals (p. 111).

Organizations and those who run them have to be willing to integrate legitimate requests and prove sensitive to the genuine needs of various publics residing in the institutional environment. Managers also have to be certain that these publics are aware of changes being made on their behalf. (p. 112)

Bridges and Nelson indicate that relationships should be at the core of issues management. And, with the “institutional environment” being expanded to include the “Internet environment,” the literature suggests a need for public relations practitioners to become aware of new publics on the Web, to identify potential issues, and to address genuine concerns out of corporate social responsibility. This trend toward value-based coalition building and corporate social responsibility presents new challenges to public relations practitioners and issues management. However, this modern perspective may aid corporations in avoiding potential threats from activist groups and possible litigation.

Activist Groups

Proactive public relations that emphasizes issues management focuses on understanding key public perceptions and appropriate modes of communication for successful outcomes. Such proactive programs became important in the 1990’s as a result of the environmental, consumer, and feminist movements (L. Grunig, 1992, p. 506). As previously indicated, both publics and activist groups develop out of situational issues. In an article discussing activist groups’ use of the Internet Taylor, Kent, and White (2001) stated, “Issues provide the necessary conditions for publics in the situational theory and the necessary conditions for activism in theories of voluntary groups“ (p. 12). Accordingly, a study by Salisbury (1980) found that individuals who are motivated by issues demonstrate increased willingness to participate in activities that address their concerns.

Heath (1998) contends the Internet may be one of the best tools for activists groups to communicate their messages and enhance public support for issues. And, it may be a place for previously unrelated publics to gather for a social or activist cause (Taylor et al, 2001, p. 2). Coombs (1998) identified the Internet as a potential equalizer for activist organizations, because it offers a “low cost, direct, controllable communication channel” that can enhance their efforts and develop linkages with other stakeholders of similar mind. Prior to the Internet, activist organizations were viewed as powerless, but its web of communication has enhanced strength and support for issue groups. Coombs asserts, “The Internet’s ability to alter the organization’s stakeholder network and the activist-organization power dynamic should not be ignored” (p. 11).

Larissa Grunig (1992) presents a comprehensive view of activism as it pertains to the practice of public relations. She defines activism as “two or more individuals who organize in order to influence another public or publics through action that may include education, compromise, persuasion tactics, or force” (p. 504). Activists try to influence the behaviors of organizations. However, their success is greatly dependent on their ability to access and skillfully utilize powerful resources such as public support, financial support, political leaders, and media coverage (Heath, 1997, in Coombs, 1998, p. 2).

Tesh (in J. Grunig, 1989) prefers to call activist groups issue groups, because their members respond on the basis of deeply held beliefs about what is right, as opposed to mere economic interests (p. 9). However, regardless of what they are labeled, such groups can produce conflict between organizations and their environments. And, it is the presence of conflict that creates the need for public relations (Ehling in J. Grunig, 1989, p. 4). Members of active publics who join activist groups aid in creating constraints on organizational autonomy,

which forms the basis for public relations problems and subsequent programs (J. Grunig, 1989, p. 3).

Although some practitioners may believe the threat of an activist organization is proportionate to the size of its membership, research has shown that smaller groups should not be underestimated (L. Grunig, 1992; J. Grunig, 1989; Taylor et al, 2001). Olson explains that even very small groups have the power to affect organizational policies. Thus, small interest groups can often be more effective than larger more established organizations (in L. Grunig, 1992, p. 503). J. Grunig furthers this explanation by stating, “In small groups members realize that they must do their share or no one else will. Thus, small groups usually are more effective than larger ones” (J. Grunig, 1989, p. 11).

The literature suggests the Internet has provided new venues for publics to form, as it has created new challenges for issues management in public relations. Activist groups, or issue groups, once held little power against large corporations, but the World Wide Web has provided them with vast opportunities to solicit support and gain strength. Combining the powerful tool of the Internet with the dynamic of small interest groups, unique categories of publics are beginning to form, demanding attention in corporate and political arenas. Thus, corporations, through public relations, must become aware of the modern cyber environment to make informed decisions regarding corporate social responsibility and issues management.

The Blind Public

Prior to understanding the complexities of modern technology and assistive technology for the blind, one must have a clear understanding of the public being discussed. It must be noted, however, there is no national registry specifically dedicated to blindness or visual impairment; therefore, complete and accurate statistics related to vision loss are difficult to

obtain. Several sources were utilized to gather relevant statistical information for the purpose of this report.

Blindness in the United States is most often the result of eye disease. Less than three percent are due to injuries. Approximately 80 million Americans suffer from potentially blinding eye diseases. And, each year 6.4 million new cases of eye disease are reported (University of Wisconsin Board of Regents, Why Files, 1999). Coincidentally, blindness follows only cancer and AIDS as the public's biggest health fear in the United States (Braille Institute, 2000).

There are an estimated 180 million blind and visually impaired individuals worldwide. Of these, 58 percent are age 60 years and over; 32 percent are between the ages of 45 and 59, while 7 percent are 15 to 44 years old. In 1997, the World Health Organization predicted an increase in the number of blind people in the world by approximately 2 million per year (Leonard, 2002). According to Prevent Blindness America (1998-2000, in Leonard, 2002), the current number of blind individuals is expected to double by the year 2030.

According to Research to Prevent Blindness Inc. (in Braille Institute, 2000), 15 million Americans are blind or visually impaired. Estimates from the Lighthouse National Survey on Vision Loss (in Leonard, 2002) indicate 2.6 million Americans between the ages of 18 and 44 self-report a visual impairment, defined as blindness in one or both eyes or any other reported trouble seeing even when wearing glasses or contact lenses. Further estimates show 16.5 million (or 1 in 6) Americans of or over age 45 report some form of vision impairment even when wearing glasses or contact lenses. The majority of middle-aged and older Americans who report vision impairment are partially sighted rather than completely blind. However, estimates from the same study indicate that 8.7 million Americans report a severe vision impairment, which

includes self-ratings of vision as poor, very poor, or blindness in both eyes. Statistics indicate the prevalence of vision impairment increases with age (Leonard, 2002).

There are functional behaviors associated with severe visual impairment that directly affect an individual's ability to communicate effectively or efficiently on many levels. For the purpose of simplification, this report will focus on those characteristics that most commonly limit a person's abilities to utilize standard computer technologies and Internet services.

Diminished visual acuity is the most common symptom of blindness. A person with poor acuity may be limited in performing such tasks as reading, writing, and typing. Therefore, loss of acuity can significantly affect use of print materials, standard computer programs, and Internet access (National Eye Health Education Program, 1999, p. 2).

There are additional symptoms of visual impairment that may accompany diminished acuity, which are not as commonly addressed in society. Loss of color discrimination may confuse images in such media as print publications and Web pages. Sensitivity to light and glare may eliminate the use of computer monitors, creating difficulty with background and foreground images. Deficits in figure-ground perception limit the individual's ability to make sense of cluttered Web pages and Windows software. And, eye-hand coordination issues may reduce an individual's ability to manipulate electronic devices, while diminished visual tracking skills reduces the use of mouse pointer and cursor functions (Doherty, 1993, p. 9).

Computer graphics and Web sites present a particular problem for blind individuals, which will be discussed in additional sections of this report. The completely blind consumer must rely on screen reader technology to access computers successfully. However, this limits Internet accessibility. Web sites must be specifically formatted to support screen reader programs. In addition, individuals with low vision who utilize magnification software are

limited to Internet access because of detailed graphic images, cluttered Web pages, and thin, colored fonts that are difficult to read. This report will explore the present options for blind consumers and Web site producers, assessing the needs of both groups to assist corporate America in making the twenty-first century a true age of information and communication for everyone.

Technology for the Blind

Low vision devices are primarily “task specific” – the optical characteristics do not support the use of one particular device for all visual tasks desired. In a consensus statement devised by the National Institute on Disability and Rehabilitation Research (NIDRR) (Doherty, 1993) low vision devices have been classified as optical or non-optical. Optical devices use magnification to enhance images (such as magnifying glasses or binoculars), while non-optical devices use compensatory modalities to support loss of vision (such as lighting, color filters, or large print books) (p. 16). Magnification has been classified into four types: relative size, relative distance, angular, and electronic (Doherty, 1993, p. 17). Due to the nature of this subject matter, this research will focus on optical electronic devices (such as screen magnification software) and non-optical electronic devices (such as screen reader software). Combined, these devices will be referred to as screen access software because they allow individuals with varying degrees of blindness to utilize computer programs and Internet services using sight or sound.

Electronic devices for magnification offer future promise for low vision aids that are not limited by the optical principle of “more magnification equals smaller field of view.” In the 1960’s vision technology introduced the closed circuit television (CCTV). This device offered the visually impaired person greater magnification than any other device, a wider field of view, and contrast enhancement using reverse polarity. (Doherty, 1993, p. 17). Since then, the

technology has expanded to include head-mounted devices and small flat-screen monitors to allow portability and extended use. Some systems even allow an individual to toggle between a CCTV image and a computer screen image using only one monitor.

Computers and digital technology have created a whole new realm of opportunity for low vision aids. Many hardware and software devices have been developed to provide enlarged text and screen reader capabilities. Braille readers have also been developed to allow completely blind users to read computer applications with Braille text. Microsoft Corporation has put particular emphasis on making its products more disability-friendly. In 1995, the company officially adapted an accessibility policy that describes its commitment to meeting the needs of people with disabilities (Microsoft Corporation, 2000).

Hardware and operating systems adaptations from Microsoft include features that refine mouse and keyboard control, add sound, and increase visual contrast. Microsoft Windows 98, 2000, and XP have incorporated an Accessibility Wizard to assist people in adapting various operating system features as needed (Microsoft Corporation, 2000). Since Microsoft is the leading manufacturer of software and operating systems in the United States, its efforts may be of optimal importance for blind consumers. However, research measuring the practical usability of these features has not been found.

Microsoft has also incorporated some features into its software to improve accessibility, such as customizable color and zoom capabilities. However, these subtle enhancements are not usually sufficient for individuals with significantly impaired vision. Thus, mainstream programs are usually preferred. Magnification programs (such as Zoomtext and Magic) provide comprehensive image enlargement during the use of standard software programs (such as Microsoft Word or Bicycle Solitaire). Optical Character Recognition (OCR) systems (such as

Visibility and Open Book) allow documents to be enlarged and manipulated by a computer through the use of a scanner. Each of these programs has been designed to meet the specific needs of blind computer users, offering optimal features for the adjustment of color, text size, contrast, and type of magnification (full screen, half screen, magnifier box, scrolling, etc.). They provide assistance to individuals with low vision or moderate visual impairment by magnifying the images on the computer monitor.

For individuals who present with severe visual impairment or complete blindness, screen magnification software offers little assistance in managing the Internet. However, these individuals are able to access Internet sites and services using a standard computer, Windows applications, and supplemental screen access technology (to translate information into speech or Braille). Screen reader software translates the written text from a computer screen into speech using a voice synthesizer. This allows blind individuals to read up to 400 words per minute of simple text on the Web (Pash, 1998). A Refreshable Braille pad functions in the same manner as screen reader software. But, instead of translating the text into speech, it translates into Braille on a special monitor (or pad). The pad is approximately the size of a computer keyboard and is composed of hundreds of pins that are raised and lowered mechanically to form the images from the computer screen (Pash, 1998).

As Chong (2000) describes the process, most blind “surfers” use Microsoft Internet Explorer to access the Web. After entering a Web page, the individual may identify the hypertext links that are on the page by tabbing from one link to the next with the Tab Key. The screen reader software automatically reads each highlighted text. If the highlighted text reads “How to Contact Us” or “Visit Your Shopping Cart,” the link can be identified. However, if the text reads “Click Here” or “Here,” the meaning of the link is impossible to interpret.

Nevertheless, new screen access software/browser combinations allow the blind Web surfer to explore the site one line at a time, eliminating this problem. However, this technique can be very time-consuming.

The screen access software searches for ASCII text that it can convert to speech or Braille. This is obtained directly from the screen or by examining the HTML, which comprises the “source code” for the page. For example, if a graphic image is encountered that has no text, the spoken information will depend on how the graphic has been labeled. If an “ALT” tag has been used, the screen reader program will speak the text string associated with the tag. If not, the software will then try to ascertain the name of the file that constitutes the graphic. The blind surfer may extrapolate meaningful identification of the file if it has been named descriptively, such as “company-logo.gif,” but if the name of the GIF file is obscure, such as “image01.gif,” then the nature of the image remains unknown (Chong, 2000).

When the appropriate hyperlink has been located the link is accessed by pushing the “Enter” key. Forms, checkboxes, combo boxes, and radio buttons can be utilized with screen reader software if detected (Chong, 2000).

Chong acknowledges that this technology is “in a state of flux.” For example, fairly recent problems, such as frame identification by screen access software on Web pages, have been quickly solved with enhancements in Web-browsing and screen access programs. Thus, it is important for Web site producers to continue contact with blind access technology developers and related support organizations (such as National Federation for the Blind) to ensure that their Web sites maintain awareness of continually improving capabilities in access technology.

Joseph J. Lazzaro (1999), Director of the Massachusetts Commission for the Blind Adaptive Technology Program in Boston, discussed the growing concern of compatibility issues

regarding Windows-based screen-readers and mainstream applications. He defined successful access as receiving visual information through other means, including (but not limited to) speech output, Braille output, or enlarged output. Leventhal and Earl (1997) conducted a survey study to evaluate the performance of blind computer users utilizing Microsoft Windows with a variety of Windows-based screen reader programs. Results indicated general success in performing basic computer-based tasks (such as spell-checking and installation functions); however, success rates and experience diminished significantly with advanced functions (such as locating information in an encyclopedia and completing forms on the Internet). Conclusions identified an existing need for increased availability of training for the blind computer user population in the use of Windows-based (rather than DOS) applications. However, the study revealed accessibility difficulties even with experienced computer users. A similar survey was conducted in 1999 (Earl & Leventhal, 1999) in which formal training and access to databases were identified as continual problems. Once again, results indicated an essential need for further training and improvements in existing training for blind computer users.

A study of 19 Web sites in the United States and Japan conducted by Jacob Nielsen (2001) concluded Web site usability is three times worse for disabled computer users, due to Web design. The study focused on design usability with the objective to identify which design elements slowed users down, confused them, or caused them to make errors. Qualitative data was collected in addition to observing the 84 participants in the study. Nielsen concluded that greater Web site usability levels could easily be reached by reducing problems in Web designs. A French study conducted by Duchateau, Archambault, and Burger (2002) examined the accessibility of over 100 Web sites to determine the most frequently encountered problems for the visually impaired computer user. Conclusions revealed specific difficulties that could easily

be overcome with improvements in Web design. Results also indicated a need for education campaigns to increase awareness among Web designers regarding the needs of the blind public.

Though research indicates there is a need for further training among blind computer users, the literature also shows there is a need for special accommodations on corporate Web sites to allow access to the blind. Further education and awareness campaigns are needed to inform corporate Web designers of the problems facing blind computer users and the subsequent solutions. Increasing the usability of a Web site can benefit both the organization and the public. When more people become aware of assistive technology for blind computer users and their accessibility issues, companies may choose to make their Web sites more disability-friendly.

Making a Web Site Accessible

During the early years of the Internet, the standard computer interface was mostly text-based. This made access for the blind fairly easy with screen reader and screen magnification systems. The Internet began to open new doors of opportunity for this group, because it allowed them to access resources and information that were previously unavailable. However, the development of the World Wide Web and the graphical user interface (GUI) changed the nature of the Internet. Its focus shifted from the distribution of information to the presentation of it, emphasizing the manner in which data were presented over the actual facts. Thus, today's cyber world is a web of graphics, sound, video, animation, and text, designed to create appeal to users. For individuals who do not need screen access software, the Internet can be an exciting tool. However, people who rely on assistive technology to access the Web are encountering many difficulties (Pash, 1998).

According to Dr. Loy, consultant with the Job Accommodation Network, (Digital Divide Network, 2001), there are three components to accessibility for blind computer users: computer

hardware, Internet browsers, and Web design. Computer hardware refers to the type of screen access software and accessories an individual requires to access the Internet. Web browsers may offer accessibility options that can benefit blind users such as settings for default font size, text color, page background color to override graphics-based formatting of Web pages, and keyboard access to links. Browsers that do not require proprietary software to run their programs are usually conducive to working with mainstream screen access software, regardless of the special options they offer (Chong, 2001).

The most common problems that effect Internet access for the blind are related to Web page design. The *Simplified Web Accessibility Guide* (Hyatt, 2002) suggests a few of the obstacles that blind computer users face when surfing the Internet.

- Screen readers are unable to read images (graphs, maps, etc.). Therefore, information in this format is inaccessible. Blinking and scrolling text can also cause problems for screen readers.
- Without descriptive narration, information portrayed visually is missed.
- Inconsistent page layout and poor information design can be disorienting and confusing.

According to Pash (1998), a fully accessible Web page should:

- not use tables, frames, bitmapped text, graphics, audio, video, animation, Java, forms, alternate text formats (such as Adobe Acrobat's pdf), or browser plug-ins (such as Shockwave)
- use heading tags (H1, H2, etc.) for varied font sizes, rather than specifying fixed font sizes
- not use tags such as BLINK or Marquee that cause the text to move
- use , , and tags when presenting lists

- avoid using uncommon punctuation such as emoticons
- use font and background colors that are high in contrast
- use descriptive links – links should be able to make sense out-of-context.

For optimum usability of a Web site for individuals with or without a disability these guidelines would be of benefit. However, strict adherence would produce a Web page that lacks visual appeal and interest to many non-disabled users. Pash contends, “It is not necessary to forsake creativity, innovation, and aesthetics in Web design to ensure accessibility. It is quite possible to design the site you want, while still enabling everyone to have access to its content.” According to Pash, the key to accessible design is providing alternative formats. Web sites that indulge flashy texts and complex graphics must provide alternative pages that are more accessible. And, such pages should be announced in a prominent position on the home page to make them obvious to the blind user.

To improve Web site accessibility for the blind Web producers must provide sufficient meaningful information for screen access software to interpret. Curtis Chong (2000, p. 3-5), Director of Technology for the National Federation of the Blind, offers suggestions for Web site developers who are interested in the needs of the blind consumer. Once the developer understands what is required for successful access, specific strategies and action plans to achieve this goal are the sole responsibility of the Web site developer.

- Provide screen access software with the ASCII text it needs to produce speech or Braille.
- Provide meaningful text labels for hypertext links.
- Label each graphic with an HTML “ALT” tag or name the file so that it may be identified by the screen access software.

- Ensure that the use of tables and multi-colored text on the site does not preclude the ability of the software to access the pages in an intelligible manner.
- Design web-based forms for efficient completion by placing headings for specific input fields adjacent to those fields.
- Provide alternative access for sites requiring Java applet, JavaScript, or plug-ins, because these render Web sites completely inaccessible to screen access software.
- Provide a version of the Web site that eliminates navigational links on each page to avoid frustration.
- Provide a means to avoid splash screens or other displays that are updated on a timed basis, because screen access software requires a static display.

If a Web page designer is aware of the needs of the blind computer user prior to creating the Web site, alterations to accommodate screen access software can be integrated with little difficulty and minimal cost (Hyatt, 2001). However, the key to solving accessibility issues for the blind begins with awareness. It would be unrealistic to expect all commercial companies with Web sites to be aware of screen access software needs. The solution must begin with education.

Many organizations hold interest in ensuring the accessibility of the Internet for the disabled, but the World Wide Web Consortium (W3C) in the United States has the clearest position. The W3C is an international, vendor-neutral consortium with over 400 members that promotes the evolution and interoperability of the Web with a strong focus on universality. It has four domains: Architecture, User Interface, Technology and Society, and the Web Accessibility Initiative (Brewer, 2000b, p. 22). The W3C's mission is to lead the Web to its full potential which includes promoting a high degree of usability for people with disabilities (Brewer, 2000a, p. 1).

The Web Accessibility Initiative (WAI) works across all domains of the W3C internationally. It is sponsored by a variety of government and industry supporters of accessibility to include: U.S. National Science Foundation, U.S. Department of Education's National Institute on Disability and Rehabilitation Research, IBM/Lotus, Microsoft, European Commission, and additional contributors. The WAI (pronounce "way") enables industry, disability organizations, access research centers, and government agencies to work together at the design table. Because accessibility issues present multi-faceted problems, the WAI has 5 levels of work (Brewer, 2000b, p. 10-12):

- Ensuring that Web technologies support accessibility
- Developing guidelines for accessibility
- Developing tools to evaluate and facilitate accessibility
- Conducting education and outreach
- Coordinating with research and development.

The WAI Standards (WCAG 1.0) assist companies in making their Web sites accessible by presenting 17 high-priority rules, 33 medium-priority rules, and 16 low-priority rules that companies can begin implementing immediately at no cost (Pine, 2001).

There are solutions available for companies who are interested in making their Web sites user-friendly for the blind. The most reliable avenue for information and support is through W3C's Web Accessibility Initiative. There are Web site evaluation tools, such as *Bobby* that are free Web-based services to assist in making Web pages accessible by identifying HTML compatibility problems ([Access](#), 2000). These services are available to all Web producers and provide detailed instruction on the appropriate process for successful adapting, if necessary.

Specific information regarding the process for structuring HTML documents for successful transformation by screen access software can be obtained on-line as well (Perrochon, 1996).

The Law

The Internet has recently become the topic of a new legal debate over accessibility standards for Americans with disabilities. Section 508 of the Rehabilitation Act Amendments of 1998 has taken the first step toward regulating cyberspace by introducing accessibility features into mainstream information technologies used by the federal government. The regulations set forth in Section 508 may be setting a standard for Web-based entities that could filter into the private sector, forcing new accessibility guidelines on Internet Service Providers (ISP's), software developers and Web page designers.

The Rehabilitation Act of 1973 was the first step for individuals with disabilities on the obstacle-ridden road to independence. Several amendments were passed over time; but changes in technology steadily outgrew the law. And, many problems developed in the system that offered more barriers to independence than assistance (Bick, 2000).

The Americans with Disabilities Act of 1990 (ADA) paved a new way for the disabled population in mainstream America. The objective of this law was to ensure the equality of opportunity, full participation and self-sufficiency necessary to allow people with disabilities to compete for society's goods and services on an equal basis. Unlike the previous Rehabilitation Act, the ADA broadened anti-discrimination safeguards to persons with disabilities in private sector employment (Title I), to those who use public services (Title III), to access to public accommodations (Title III) and to telecommunications (Title IV) (Bick, 2000).

Though the ADA was very effective in ushering the disabled population into the mainstream of society, the existing laws were inflexible to changes in technology, focusing on

hardware. Consequently, as the turn of the century grew near, issues regarding electronic accessibility shifted toward software, interface systems, operating systems, and Internet services.

In response to this dilemma, Section 508 of the Rehabilitation Act Amendments was passed in 1998. As a result, all federal agencies are now required to ensure that all electronic and information technology that is acquired or used must allow equal access for federal employees with and without disabilities, unless an undue burden would be imposed on the agency. It also requires that all disabled and non-disabled members of the public seeking information or services from a federal agency have comparable access to and use of information and data (Bick, 2000). With the enactment of the ADA and Section 508 it has been established that federal, state, and local governments, as well as federally funded agencies, must not discriminate against the disabled by physical or electronic means (Architectural and Transportation Barriers Compliance Board [Access Board], 2001).

So, how does this affect the private sector? Privately owned companies are governed by Title III of the ADA, which states that places of public accommodation must be accessible to the disabled. The guidelines of Title III of the ADA are restricted to “places” of public accommodation. Currently, there is a legal debate over the word “place” in the regulations. The potential application of the ADA to cyberspace may be among the first significant applications of government regulation to the Internet (Bick, 2000). If the ADA wins this debate in the courts, disabled individuals must be provided Internet access in a similar manner as that which accommodates them in commercial public places.

Until experts and court officials begin to see eye-to-eye on the “place” debate, the ADA may be at a standstill. Those who see public accommodations as needing a physical forum, argue against the application of the ADA to the Internet. However, those who view public

accommodation as independent of a physical forum, argue that the Internet should be considered a “place.”

Then, what about ISP’s? In 1999, the struggle to draw the Internet into the “web” of ADA regulations was clearly demonstrated in a lawsuit filed by the National Federation for the Blind (NFB), the largest and most influential organization of blind persons in the United States, against America Online, Inc. (AOL), the largest Internet provider worldwide. The lawsuit was a result of a yearlong debate over Internet accessibility for the disabled, which primarily focused on compatibility between screen access software used by the blind and AOL software. It was the first big battle fought in the court system concerning accessibility rights and the Internet (Pierce, 1999).

The NFB agreed to drop the suit if AOL agreed to make specific programming changes to their software. The suit was settled out of court in July 2000, leaving no precedent for future cases to follow (Wagner, 2000). Curtis Chong (personal communication, October 29, 2001), the Director of Technology for the NFB, commented, “it would be more detrimental to the goal of the NFB’s campaign to push a lawsuit with a company that has obviously tried to comply with the NFB’s demands.” AOL released its new, more accessible version of software in 2001.

Activist organizations, like the NFB, are striving toward equal access for the blind through political and legal avenues. “The NFB supports a statutory approach to solving the issue,” Chong asserts. “We need to have laws passed and standards enforced.” AOL is not alone in the new cyberspace debate. H&R Block, Intuit, Bank of America, and Wells Fargo had legal action brought against them by blind activist groups for maintaining inaccessible Web sites (SSB Technologies, Inc., 2002).

With the federal government's declaration of accessibility standards in Section 508, the electronic and information technology industry has been forced to sit up and take notice of the needs of the disabled population (Bick, 2000). This means that Web site designers may be persuaded to make some adjustments in their services – through government regulation or competitive pressure within the industry. ISP's may also be called to meet new standards to become the first step in the road to regulating cyberspace. Though the enforcement of such regulations appears threatening to corporations, not all organizational regulation has unfavorable results. J. A. Bridges and Bridges (in Bridges & Nelson, 2000, p. 96) determined that 60.6 percent of the 66 corporate-related bills introduced into the 105th Congress were identified as pro-corporate.

The literature suggests design regulations for corporate Web sites in the private sector are not an unrealistic notion. Laws have already been established to show the public need for and support of equal access legislation for disabled computer users. This raises a red flag for corporations sponsoring Web-based products and services, creating new areas of concern for issues management in public relations.

Why Web Access for the Blind Public Is Important

The Internet poses a particular problem for the blind computer user. Complex or busy Web pages present as clutter, making the sites difficult to navigate. Thin, colored fonts on a white background may be flushed out due to color and glare sensitivity. Detailed color graphics demonstrate decreased contrast images which are difficult to discern as a result of figure-ground or depth perception deficits. Cursors and mouse pointers may be difficult to follow because of poor tracking skills. In addition, many Web sites are not compatible with speech reader

software, thus making these sites completely inaccessible for the totally blind consumer who cannot fall back on screen magnification for support.

Web accessibility is important to address because the World Wide Web is rapidly spreading into all areas of society. It is the fastest-adopted technology in history, quickly displacing traditional sources of information and interaction (schools, libraries, print materials, discourse of the workplace). The Internet has become a key resource for news, information, education, entertainment, coalition building, and workplace interaction; however, inaccessibility persists for the blind consumer (Brewer, 2000b, p. 4).

Trends in public relations are beginning to move away from emphasis on clip counting and broadcast placement (Gronstedt in Bruning & Ledingham, 2000b, p. 1). A realization has occurred in the field. Scholars and practitioners have recognized that publics are not isolated demographic groups without dimension. Gronstedt noted:

In today's world, people are actively seeking information they believe to be relevant. They are active, interactive, and equal participants of an ongoing communication process, rather than passive sponges. The role of communicator is increasingly to make information available to stakeholders in a user-friendly way, rather than shoving it down their throats, and to support an ongoing relationship rather than transferring information. (Bruning & Ledingham, 2000b, p. 1)

Taking a semiotic approach to studying the internal functions of publics, Botan and Soto (1998) argue publics should be understood primarily as self-actuated and interactive social entities with values and internal dynamics at least as complex and important to communication campaigns as are message content or client/practitioner intentions (p. 44). Public relations has expanded beyond the surface of demographic data to understand the nature of publics and their behaviors. Using an ethical approach to define publics, Moffitt (1992) states, "I am convinced that utilizing ethnography and privileging the unique meanings experienced by publics helps public relations feel a responsibility to the publics and the community it communicates to"

(p.30). Such outlooks are guiding public relations toward an era of corporate social responsibility, in which companies are beginning to recognize the value of attending to the special needs and interests of their publics.

Building relationships is a familiar concept in public relations. But, this new era of corporate consciousness stresses the need to connect with less traditional publics, like the disabled, who play a role in corporate interests though they maintain a smaller part. A general theory of public relations developed by J. Grunig's Excellence Study states relationship building with active publics can be of financial benefit to an organization:

When public relations helps the organization build relationships with strategic constituencies, it saves the organization money by reducing the costs of litigation, regulation, legislation, pressure campaigns, boycotts, or lost revenue that result from bad relationships with publics – publics become activist groups when relationships are bad. It also helps the organization make money by cultivating relationships with donors, consumers, shareholders, and legislators who are needed to support organizational goals. (Grunig & Huang, 2000, p. 32)

The blind public is a unique group that warrants attention, because they are woven throughout all markets and key publics. Blind individuals are shareholders, consumers, clients, customers, stakeholders, competitors, managers, employees, voters, and activists. They are not confined to demographics nor limited by stereotype. People with disabilities form well-connected, close-knit groups that utilize communication technology to teach and learn from each other. And, they form brand loyalties unlike any other public (Coyne in Pine, 2001). Thus, learning about this population can only enhance public relations strategies and corporate interests.

There are many benefits to accessibility. Coyne and the Nielsen Norman Group (NN/g) (in Pine, 2001) contend, "it pays to make a company Web site accessible to people with

disabilities.” Though the bottom-line business perspective may not deem such a small public to be of significant interest, Coyne and NN/g explain why all companies should be concerned:

1. People with disabilities represent an emerging market with substantial buying power that demonstrates unique customer loyalty to companies that serve them well.
2. Inaccessible Web sites, especially Intranets, may run afoul of laws such as the Americans with Disabilities Act (ADA).
3. As America ages, disabilities such as visual impairment become more common.
4. When you design a Web site with people with disabilities in mind, you end up designing a better Web site. This saves time and money spent on redesigns.

The W3C suggests four benefits of accessible Web design (Arch & Letourneau, 2002):

1. Increase market share and audience reach
2. Improve efficiency
3. Demonstrate social responsibility
4. Reduce legal liability

Business Case for Accessibility (2002) contributes two additional advantages. Companies with government contracts, or plans for government contracts, must comply with Section 508 of the Rehabilitation Act. Thus, companies in compliance with accessibility standards are in compliance with government standards, which can assist them in future transactions on a federal level. Additionally, accessible Web sites promote a favorable corporate image in the community, which is invaluable to public relations. Hyatt (2002), on the other hand, proposes

more specific benefits, asserting accessibility and usability are intertwined and of equal importance:

- Improved usability for everyone. Consistent navigation makes it easier to find desired content quickly.
- Clear navigation and clear content supports people with low literacy levels.
- Captioning is useful for people with hearing impairments, for people working in noisy environments, and for those having difficulty understanding the spoken word due to an accent or foreign language.
- Good color contrast aids people with color blindness, people using monochrome monitors, and those who prefer to read from printed pages.
- Providing text equivalents (e.g., ALT attributes and captioning), table summaries, and metadata improves search engine listings.
- By using style sheets, color independence, and avoiding deprecated elements, Web content will be more readily available to changing (and expanding) customer/client base and to any new technologies.
- Web content in alternate formats assists low-bandwidth users.
- Reduced site maintenance. Separating structure and presentation and using style sheets can easily change the look of a site changed by modifying only one file.
- Accessibility solutions, such as cascading style sheets, can increase the speed of file transfer, thereby reducing server load.

- Keyboard commands assist people with limited hand function and those working in confined spaces with little or no room to operate a mouse (e.g., on planes and in cars).

In the United States alone, there are more than 30 million people who have some type of difficulty using computer technology (Nielsen in Pine, 2001). And, consumers with disabilities control \$175 billion in discretionary income (President's Committee on Employment of People with Disabilities in Pine, 2001). A significant portion of this public can benefit from Web sites conforming to the W3C guidelines for accessibility (WCAG 1.0). In some countries, as many as 8 to 10 percent of the overall population are in need of assistance (Arch & Letourneau, 2002). This is a large portion of the consumer population that should not be ignored by big businesses that have the means to accommodate them. The *Wall Street Journal* has identified this public as the "next consumer niche" (Pine, 2001).

In summary, conforming to WCAG 1.0 guidelines for accessible Web design will enhance the market share and audience reach of corporate Web sites by increasing its general usability. Compliance demonstrates commitment to social responsibility and equity of access to information and services. And, it will improve the performance of Web services and reduce maintenance efforts (Arch & Letourneau, 2002). Accessibility reduces risk of lawsuits, supports government transactions, attracts new users, prepares for new technology, and creates a positive public image (SSB Technologies, Inc., 2002). Thus, there are many benefits that reach beyond simply pleasing one particular public.

The Internet is a liberating technology for people who are blind or visually impaired. It allows them to surpass the limitations that constrict their independence in society, providing opportunities to participate in the world market unlike any other time in history. Opening doors to the disabled supports corporate social responsibility and promotes a positive corporate image.

Thus, the goal of this study is to determine the level of awareness of this issue among public relations practitioners in large corporations, while measuring the accessibility level of their company's Web site according to specific standards.

Research Questions

Review of the current literature indicates a need for further scientific investigation of corporate Web site accessibility for the blind. Previous research has shown a trend toward increased efforts in corporate social responsibility and awareness of the multidimensional nature of publics. And, leading scholars in public relations have also declared the importance of building mutually beneficial relationships with key publics. Thus, the purpose of this research is to determine if blind consumers are being accommodated on corporate Web sites in a way that assists public relations practitioners in establishing and maintaining positive relationships with these potential customers, supporters, and stakeholders. Conclusions from this study will identify the current Web design practices for the top 100 Fortune 500 corporations, establishing a norm for commonly used Web sites in mainstream Corporate America.

RQ1: Are blind consumers being accommodated on the Web sites of leading U.S. corporations in a way that assists public relations practitioners to establish and maintain positive relationships, according to specific Web accessibility standards?

The corporate benefits to designing an accessible Web site indicate a need to assess the prevalence of accessible sites in the United States. There is a significant portion of the population with the means to enhance the bottom-line for businesses, while promoting a favorable public image. Determining the means of accommodation for blind computer users on corporate Web sites will identify potential areas of concern for public relations practitioners and potential problems to address in issues management.

RQ2: Are leading U.S. corporations demonstrating Web conformance to Internet provisions established by the U.S. federal government in Section 508 of the Rehabilitation Act of 1998?

The continuing battle of the ADA “place” debate in the court system allows privately owned businesses to legally ignore the Web design needs of the blind computer user. However, Section 508 of the Rehabilitation Act has set an example for the private sector by ensuring accessibility throughout federal, state, and local agencies. In addition, the law ensures that even federally funded agencies must not discriminate against the disabled by physical or electronic means. This may provide new incentive to private companies seeking government contracts or federal grants. The legislation may also serve as a premonition of change on the World Wide Web, thus, inspiring big businesses to take the lead and make the necessary adjustments to avoid costly lawsuits and consumer complaints.

For the purpose of drawing logical conclusions from the data gathered in this analysis of Web sites 2 assumptions are considered:

AS1: Public relations practitioners in Fortune 500 companies are involved in general decision-making and Web construction regarding the communication aspects of their corporate Web site.

AS2: The home page of each corporate Web site is a reflection of the normal status and design features of the entire Web site.

CHAPTER 3

METHOD

Definitions

According to Mosby's Dictionary of Medicine, Nursing, and Allied Health (1994), "blindness" is defined as the absence of sight. This term may indicate a total loss of vision or it may be used to describe a certain visual limitation (such as color blindness or word blindness). For the purpose of this research, the term **blind** has been used as an umbrella term to refer to all individuals who present with some type of vision impairment that affects their level of function when using a computer. The term **blind computer user** refers to those blind individuals whose lack of vision requires them to use screen access software when accessing the World Wide Web to perform Internet functions. **Web accommodations** are formatting guidelines that allow screen access software to successfully interpret the data on a Web site.

Web site accessibility for the disabled is an issue that is dominated by the needs of the blind community. Due to the highly visual nature of the medium, efforts to improve Web accessibility have placed much emphasis on Web accommodations for assistive technology designed to support blind computer users. Identifying information on a computer screen requires special software for the blind called screen access software. Such programs are helpful in navigating cyberspace; however, many Web access issues surround Web site design and screen access software compatibility.

There are three basic types of screen access software: screen magnification programs, screen reader software, and Braille technologies. Lazzaro's (1999) definition of adaptive technology is accepted and adapted to define **screen access software** as any software-based computer program that allows individuals who are blind to perform computer-oriented functions

independently at home, school, or work. This term includes systems that are dependent on hardware components due to the nature of their function such as voice synthesizers and Refreshable Braille monitors.

Screen magnification programs enable individuals to enlarge computer images on the screen to at least one inch in height or larger. In the *Guide to Assistive Technology* (Lacho, 2000), these systems are indicated as being most useful to people who maintain partial vision. The programs are memory-resident, requiring enhanced random access memory (RAM) to allow multiple application performance simultaneously (Jahoda, 1993). Some systems consist only of software programs, while others may use special video cards. Windows and DOS text screens are enlarged using this technology, allowing the visually impaired consumer to read and interact with all images, despite a smaller field of view.

Screen reader software sends signals displayed on the monitor to a speech synthesizer, which in turn reads the text to the individual. In the recent past, voice synthesizer capability required an external box or specialized sound card in addition to the software program (Jahoda, 1993). Today, screen reader programs are complete software packages, independent of additional hardware. These programs differ from applications programs, being memory-resident. The programs range in quality of speech and variety of control options. Speech can usually be varied in speed, volume, and pitch applications software.

Braille technology has produced astounding inventions to assist the Braille user in remaining competitive in computer-oriented tasks. This term is inclusive of all Braille oriented hardware and software for the blind. An interview was conducted with Mark Montgomery, Communications Instructor for the Elizabeth Pierce Olmstead M.D. Center for the Visually Impaired (personal communication, November 3, 2000) -- a specialist in the field of blind

technologies who is clinically blind himself – to clearly define the types of systems presently available for the Braille user. Refreshable Braille displays replace standard monitors in allowing the blind individual to create a “visual image” of a document. These displays are smaller than a standard monitor, allowing only a select number of characters on the display at any given time. However, documents can be scrolled and manipulated using this technology in the same fashion the average person would use a computer screen. Refreshable systems require hardware and software components, and some systems can work in conjunction with screen reader software. A Braille embosser replaces a printer to create documents in Braille. However, Braille translation software is required for the embosser to function. This software enables the computer to convert HTML documents, or word documents, into grade 2 Braille. As Montgomery explains, this technology is excellent for integrating printed documents (from an instructor) and on-line publications (magazines) into useful text for the Braille reader. Portable notetakers have provided freedom to the blind consumer as well. These devices integrate speech and Braille technology allowing an individual to create documents in Braille (using a Braille keyboard), to download standard files (from any word applications software) for translation into speech and Braille, and to print all documents in Braille (using an embosser). Most recent developments have created a system using a standard keyboard for those individuals who are not proficient in their Braille typing skills.

Sample

This study is a content analysis of Web sites maintained by Fortune 500 corporations in the United States. The home pages of the top 100 companies on the Fortune 500 list (www.pathfinder.com/fortune/fortune500/500list.html) have been selected to determine corporate practices in communicating with the blind public through the Internet (Appendix A).

All companies that support a public relations department and maintain a public Web site meet the criteria for this research; however, an index of such businesses is not available due to the inherent design of the World Wide Web. As a result, this study selects a purposive sample of leading U.S. corporations that are known to meet the appropriate criteria due to their size, financial status, and position in the corporate community. Thus, the Web sites of the top 100 Fortune 500 companies in America serve as the focus for this study for the following reasons:

1. Companies of such size and wealth are most likely to maintain a public relations department.
2. Companies of such size and wealth are in the public eye, and thus, are most likely to maintain a public Web site.
3. Companies of such size are most likely to offer products and services that are utilized by or of interest to the blind consumer.
4. Companies of such size and wealth are most likely to employ a Web Master who is qualified to perform necessary Web site formatting changes to accommodate assistive software needs.
5. Companies of such size and wealth are able to financially support formatting changes that are necessary to make the company Web site accessible to the blind.

Measurement

This study employs a Web-based program called BobbyTM (2002) to evaluate the home page of each Web site selected for this research. Bobby is a software program created by the Center for Applied Special Technology (CAST) in 1996 to help Web designers identify and repair barriers to access for individuals with disabilities. The Bobby program tests Web pages for conformance with Web Content Accessibility Guidelines 1.0 (WCAG 1.0) (W3C, 1996)

established by the W3C Web Access Initiative and Section 508 of the Rehabilitation Act of 1998 (Access Board, 2000) established by the Architectural and Transportation Barriers Compliance Board (Access Board) of the U.S. federal government.

WCAG 1.0

The provisions outlined by WCAG 1.0 (W3C, 1999) contain 14 guidelines (Table 3.1) to ensure accessible Web design. Each guideline is subdivided into checkpoints, which explain specific requirements and techniques for solving problems related to the concern (Appendix B). WCAG 1.0 is comprised of 67 total checkpoints that are utilized by the Bobby program to assess the home page of each URL submitted.

Table 3.1

General Guidelines of WCAG 1.0

Guideline 1	Provide equivalent alternatives to audio and visual content.
Guideline 2	Don't rely on color alone.
Guideline 3	Use markup and style sheets and do so properly.
Guideline 4	Clarify natural language usage.
Guideline 5	Create tables that transform gracefully.
Guideline 6	Ensure that pages featuring new technologies transform gracefully.
Guideline 7	Ensure user control of time-sensitive content changes.
Guideline 8	Ensure direct accessibility of embedded user interfaces.
Guideline 9	Design for device independence.
Guideline 10	Use interim solutions.
Guideline 11	Use W3C technologies and guidelines.
Guideline 12	Provide context and orientation information.
Guideline 13	Provide clear navigation mechanisms.
Guideline 14	Ensure that documents are clear and simple.

Once a Web page has been scanned by the Bobby program, it produces a report to identify accessibility barriers that do not conform to the checkpoints established in WCAG 1.0. The checkpoints are grouped into 3 levels of importance (Priority Levels) for Web developers: Priority 1 accessibility, Priority 2 accessibility, and Priority 3 accessibility. Aspects of a Web

page that are clearly detected by the Bobby program as noncompliant with WCAG 1.0 checkpoints are identified as errors. Aspects of a Web page that are possible violations, but cannot clearly be determined by the Bobby program, are identified as user checks. User checks require manual examination to determine their compliance with specified guidelines.

Bobby Priority Levels identified in the Bobby report are directly related to the Conformance Levels established in the WCAG 1.0. Approval status requires 0 errors, thus, a complete manual review of all user checks is needed to ensure conformance. Complete accessibility is achieved by receiving 0 errors on all 3 Priority Levels. Web sites that have reached this status (Bobby AAA Approved status) are eligible to post the Bobby logo on their Web site to display their commitment to Web excellence and the needs of the disabled computer user.

Priority 1 Accessibility

The Priority 1 accessibility section of the Bobby report identifies problems that seriously affect the usability of a Web page for people with disabilities. Web designers must address all issues indicated in this section to achieve a basic level of accessibility. Conformance to Priority 1 accessibility checkpoints receives a Bobby A Approved status. Refer to **Table 3.2** for a list of Priority 1 accessibility checkpoints.

Priority 2 Accessibility

The Priority 2 accessibility section of the Bobby report identifies problems that are not as vital as Priority 1 accessibility checkpoints; however, they are considered important for access and should not be ignored. Conformance to Priority 1 and Priority 2 accessibility checkpoints receives Bobby AA Approved status, which is the preferred minimum performance level for an accessible Web site. Refer to Table 3.3 for a list of Priority 2 accessibility checkpoints.

Table 3.2

Priority 1 Accessibility Checkpoints

1.1	Provide a text equivalent for every non-text element
1.2	Provide redundant text links for each active region of a server-side image map.
1.3	Until user agents can automatically read aloud the text equivalent of a visual track, provide an auditory description of the important information of the visual track of a multimedia presentation.
1.4	For any time-based multimedia presentation, synchronize equivalent alternatives with the presentation.
2.1	Ensure that all information conveyed with color is also available without color.
4.1	Clearly identify changes in the natural language of a document's text and any text equivalents.
5.1	For data tables, identify row and column headers.
5.2	For data tables that have two or more logical levels of row or column headers, use markup to associate data cells and header cells.
6.1	Organize documents so they may be read without style sheets.
6.2	Ensure that equivalents for dynamic content are updated when the dynamic content changes.
6.3	Ensure that pages are usable when scripts, applets, or other programmatic objects are turned off or not supported. If this is not possible, provide equivalent information on an alternative accessible page.
7.1	Until user agents allow users to control flickering, avoid causing the screen to flicker.
8.1	(if functionality is important and not presented elsewhere) Make programmatic elements such as scripts and applets directly accessible or compatible with assistive technologies.
9.1	Provide client-side image maps instead of server-side image maps except where the regions cannot be defined with an available geometric shape.
11.4	If, after best efforts, you cannot create an accessible page, provide a link to an alternative page that uses W3C technologies, is accessible, has equivalent information (or functionality), and is updated as often as the inaccessible (original) page.
12.1	Title each frame to facilitate frame identification and navigation.
14.1	Use the clearest and simplest language appropriate for a site's content.

Priority 3 Accessibility

The Priority 3 accessibility section of the Bobby report identifies problems that should be considered but are of lesser importance than the other sections. Conformance to Priority 1, Priority 2, and Priority 3 accessibility checkpoints receives Bobby AAA Approved status, which is the highest Conformance Level for WCAG 1.0. Web sties with this rating are considered fully accessible to the blind and individuals with other disabilities. Refer to Table 3.4 for a list of Priority 3 accessibility checkpoints.

Table 3.3

Priority 2 Accessibility Checkpoints

2.2	(for images) Ensure that foreground and background color combinations provide sufficient contrast when viewed by someone having color deficits or when viewed on a black and white screen.
3.1	When an appropriate markup language exists, use markup rather than images to convey information.
3.2	Create documents that validate to published formal grammars.
3.3	Use style sheets to control layout and presentation.
3.4	Use relative rather than absolute units in markup language attribute values and style sheet property values.
3.5	Use header elements to convey document structure and use them according to specification.
3.6	Mark up lists and list items properly.
3.7	Mark up quotations. Do not use quotation markup for formatting effects such as indentation.
5.3	Do not use tables for layout unless the table makes sense when linearized. Otherwise, if the table does not make sense, provide an alternative equivalent.
5.4	If a table is used for layout, do not use any structural markup for the purpose of visual formatting.
6.4	For scripts and applets, ensure that event handlers are input device-independent.
6.5	Ensure that dynamic content is accessible or provide an alternative presentation or page.
7.2	Until user agents allow users to control blinking, avoid causing content to blink.
7.3	Until user agents allow users to freeze moving content, avoid movement in pages.
7.4	Until user agents provide the ability to stop the refresh, do not create periodically auto-refreshing pages.
7.5	Until user agents provide the ability to stop auto-redirect, do not use markup to redirect pages automatically. Instead, configure the server to perform redirects.
8.2	Make programmatic elements such as scripts and applets directly accessible or compatible with assistive technologies.
9.2	Ensure that any element that has its own interface can be operated in a device-independent manner.
9.3	For scripts, specify logical event handlers rather than device-dependent event handlers.
10.1	Until user agents allow users to turn off spawned windows, do not cause pop-ups or other windows to appear and do not change the current window without informing the user.
10.2	Until user agents support explicit associations between labels and form controls, for all form controls with implicitly associated labels, ensure that the label is properly positioned.
11.1	Use W3C technologies when they are available and appropriate for a task and use the latest versions when supported.
11.2	Avoid deprecated features of W3C technologies.
12.2	Describe the purpose of frames and how frames relate to each other if it is not obvious by frame titles alone.
12.3	Divide large blocks of information into more manageable groups where natural and appropriate.
12.4	Associate labels explicitly with their controls.
13.1	Clearly identify the target of each link.
13.2	Provide metadata to add semantic information to pages and sites.
13.3	Provide information about the general layout of a site.
13.4	Use navigation mechanisms in a consistent manner.

Table 3.4

Priority 3 Accessibility Checkpoints

1.5	Until user agents render text equivalents for client-side image map links, provide redundant text links for each active region of a client-side image map.
2.2	(for text) Ensure that foreground and background color combinations provide sufficient contrast when viewed by someone having color deficits or when viewed on a black and white screen.
4.2	Specify the expansion of each abbreviation or acronym in a document where it first occurs.
4.3	Identify the primary natural language of a document.
5.5	Provide summaries for tables.
5.6	Provide abbreviations for header tables.
9.4	Create a logical tab order through links, form controls, and objects.
9.5	Provide keyboard shortcuts to important links, form controls, and groups of form controls.
10.3	Until user agents render side-by-side text correctly, provide a linear text alternative for all tables that lay out text in parallel, word-wrapped columns.
10.4	Until user agents handle empty controls correctly, include default, place-holding characters in edit boxes and text areas.
10.5	Until user agents render adjacent links distinctly, include non-link, printable characters (surrounded by spaces) between adjacent links.
11.3	Provide information so that users may receive documents according to their preferences.
13.5	Provide navigation bars to highlight and give access to the navigation mechanism.
13.6	Group related links, identify the group (for user agents), and, until user agents do so, provide a way to bypass the group.
13.7	If search functions are provided, enable different types of searches for different skill levels and preferences.
13.8	Place distinguishing information at the beginning of headings, paragraphs, lists, etc.
13.9	Provide information about document collections (i.e., documents comprising multiple pages).
13.1	Provide a means to skip over multi-line ASCII art.
14.2	Supplement text with graphic or auditory presentations where they will facilitate comprehension of the page.
14.3	Create a style of presentation that is consistent across pages.

Section 508 of the Rehabilitation Act

The Bobby program tests Web pages for conformance to the provisions established in Section 508 of the Rehabilitation Act (Access Board, 2000) in the same manner as the previous section. However, all Section 508 checkpoints are given equal value and are not divided into Priority Levels. Section 508 guidelines include provisions that are based on Priority 1 checkpoints of the WCAG 1.0, as well as other U.S. agency documents and recommendations on

Web accessibility. The first 11 guidelines are comparable to WCAG 1.0 with slight changes in language for regulatory purposes. The remaining 5 provisions are not comparable to WCAG 1.0, generally requiring a higher level of access or prescribing a more specific requirement. A Web page must demonstrate 0 errors and complete a manual examination of all user checks to achieve Bobby Section 508 Approved status, thus, making a corporation eligible to engage in business practices with the U.S. federal government. See Table 3.5 for a list of Section 508 guidelines.

Table 3.5

Section 508 Guidelines

Provision 1:	A text equivalent for every non-text element shall be provided.
Provision 2:	Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation.
Provision 3:	The use of color as the single method for indicating important information on a Web page is prohibited.
Provision 4:	Documents must be organized so they are readable without requiring browser support for style sheets.
Provision 5:	Web page designers are required to include redundant text links for each active region of a server-side image map on their Web pages.
Provision 6:	Client-side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape.
Provision 7 & 8:	The use of tables are permitted, but tables are required to be coded according to the rules for developing tables of the markup language used.
Provision 9:	Frames must be titled with text to identify the frame and assist in navigating the frames.
Provision 10:	Until user agents allow users to control flickering, avoid causing the screen to flicker.
Provision 11:	A text-only Web page shall only be provided as a last resort method for bringing a Web site into compliance.
Provision 12:	When Web pages rely on special programming instructions called “scripts” to affect information displayed or to process user input, functional text shall be provided.
Provision 13:	Web pages, which provide content such as Real Audio or PDF files, are required to provide a link to a plug-in that meets the software provisions established in Section 508.
Provision 14:	People with disabilities are required to have access to interactive electronic forms.
Provision 15:	A method must be used to facilitate the easy tracking of page content that provides users of assistive technology the option to skip repetitive navigation links.
Provision 16:	When a timed response is required, the user shall be alerted and given sufficient time to indicate that additional time is necessary.

The data collected from this research identifies the current Web site practices being used to relate to blind publics through the Internet. This information is useful to determine if the needs of blind computer users are being addressed in mainstream business practices. And, it is useful in evaluating the current trends in public relations, regarding concern for blind consumers.

CHAPTER 4

RESULTS

The Bobby Report

Eighty-nine Web sites were tested using the Bobby on-line program (2002) to determine their level of conformance with accessibility guidelines established in WCAG 1.0 and Section 508 of the Rehabilitation Act of 1998. The remaining 11 Web sites were unable to be tested due to connection errors with the Bobby program.

Priority 1 Accessibility

Using the 17 Priority 1 checkpoints established in WCAG 1.0 (Table 3.2), the average Web page tested for conformance demonstrated 1 Priority 1 accessibility error and 6 user checks. The mode for errors in this category equaled 1 with 45 instances noted, while the number of errors identified in a single report ranged from 0 to 3. The mode for user checks identified by the Bobby reports was 7 with 29 instances found, while the number of user checks identified in a single report ranged from 0 to 11. Twenty-eight Web sites demonstrated 0 Priority 1 accessibility errors, but at least 1 user check was noted in each circumstance, barring approval status for this level.

Priority 2 Accessibility

Using the 30 Priority 2 checkpoints established in WCAG 1.0 (Table 3.3), the average Web page tested for conformance was found to have 3 Priority 2 accessibility errors and 6 user checks. The mode for errors found among Web sites was 3 with 21 instances identified, while the number of errors indicated in a single report ranged from 0 to 6. The mode for user checks among sites tested was 9 with 17 instances, while the number of checks found in a single report

ranged from 1 to 11. Only 3 Web sites demonstrated 0 Priority 2 accessibility errors, but at least 1 user check was found in each circumstance, barring approval status for this level.

Priority 3 Accessibility

Using the 20 Priority 3 checkpoints established in WCAG 1.0 (Table 3.4), the average Web page tested for conformance demonstrated 3 Priority 3 accessibility errors and 6 user checks. The mode for errors found among all sites tested equaled 4 with 27 instances, while the number of errors on a single Web site ranged from 0 to 5. The mode for user checks in this category was 8 with 40 instances, while the number of checks identified in a single report ranged from 3 to 9. Only 1 Web site demonstrated 0 Priority 3 accessibility errors, but it triggered 3 user checks, and failed to pass Priority 1 and Priority 2 Levels barring it from approval status at this level.

Section 508

Using the 16 guidelines established by Section 508 of the Rehabilitation Act of 1998 (Table 3.5), the average Web page tested for conformance demonstrated 1 error and 7 user checks. The mode for Section 508 errors among the 89 Web sites tested was 2 with 30 instances, while the number of errors found in a single report ranged from 0 to 4. The mode for user checks indicated in the Bobby reports equaled 9 with 25 instances, while the number of checks identified on a single Web site ranged from 1 to 12. Twenty-one Web sites demonstrated 0 Section 508 errors, but at least 1 user check was noted in each circumstance, barring approval status for Section 508 conformance.

Zero percent of the Web sites tested met the requirements for Bobby A, Bobby AA, or Bobby AAA Approved status, as determined by their level of conformance to WCAG 1.0. In addition, 0 percent of the Web sites tested met the requirements for Bobby Section 508

Approved status. However, 31.5 percent of the Web sites tested demonstrated 0 Priority 1 errors, indicating a strong probability for achieving Bobby A Approved status for basic accessibility. Only 3.4 percent of the sites demonstrated a second-tier level of accessibility with 0 Priority 1 and 2 errors, showing a high probability for Bobby AA Approved status. Zero percent of the sites tested demonstrated a high probability for achieving Bobby AAA Approved status, the highest level of accessibility for a Web site. However, 23.6 percent of the sites tested maintained 0 errors, indicating a strong probability for achieving Bobby Section 508 Approved status. Refer to Table 4.1 to review the results of the Bobby reports gathered in this study.

Table 4.1

Frequency of Errors and User Checks

Company	P1	P1	P2	P2	P3	P3	Sec	Sec
	Errors	User Chks	Errors	User Chks	Errors	User Chks	508 Errors	508 Chks
Walmart	0	1	1	1	0	3	0	1
Exxon Mobil	0	2	2	3	1	3	0	2
General Motors	0	2	2	4	1	4	0	2
Ford Motor	1	8	3	6	3	8	2	10
Enron	0	1	3	3	1	3	0	1
General Electric	0	6	2	8	2	8	1	9
Citigroup	1	1	1	2	1	3	1	1
Chevron	1	7	3	9	4	8	2	9
Philip Morris	2	7	6	8	5	8	3	9
Verizon Communications	0	1	2	1	1	3	0	1
American International Group	1	1	2	3	1	3	1	1
Duke Energy	0	1	0	1	1	3	0	1
AT&T	0	7	2	8	4	8	1	9
Boeing	0	2	0	5	1	4	0	2
El Paso	1	11	2	9	2	3	1	10
Home Depot	1	5	3	8	2	5	1	5
Fannie Mae	1	7	4	5	2	7	1	8
J.P. Morgan Chase	2	8	5	9	4	8	3	10
Kroger	1	6	1	6	2	7	1	7
Merck	1	8	5	7	3	8	2	10
State Farm Insurance	1	7	5	10	4	8	2	9
Reliant Energy	1	7	3	6	3	7	1	8
SBC Communications	1	8	5	8	3	8	2	10
Hewlett-Packard	1	7	2	5	4	7	1	9
Morgan Stanley	2	7	4	6	3	8	3	9
Sears Roebuck	0	2	1	3	1	3	0	2
Aquila	1	7	4	10	3	8	2	10

(table continues)

Company	P1 Errors	P1 User Chks	P2 Errors	P2 User Chks	P3 Errors	P3 User Chks	Sec 508 Errors	Sec 508 Chks
Target	3	7	5	8	5	8	4	9
Proctor & Gamble	3	8	5	8	4	8	4	10
Merrill Lynch	1	7	4	7	4	8	2	9
AOL Time Warner	0	2	3	4	1	3	0	2
Albertson's	1	8	3	9	4	5	2	9
Berkshire Hathaway	0	5	2	6	2	7	0	6
Kmart	0	1	2	2	1	3	0	1
Freddie Mac	2	6	4	9	5	8	3	9
WorldCom	1	7	3	9	4	7	2	9
Marathon Oil	2	8	5	6	4	8	3	10
Costco Wholesale	0	6	2	4	2	4	0	6
Safeway	1	7	3	7	3	7	1	8
Compaq Computer	0	1	3	2	1	3	0	1
Johnson & Johnson	0	4	1	4	2	4	0	4
Conoco	2	11	3	11	4	8	3	12
Pfizer	2	6	3	7	4	7	2	7
J.C. Penney	2	7	4	7	3	8	3	9
MetLife	1	8	6	9	4	8	2	10
Mirant	1	8	4	8	2	6	2	9
Dell Computer	0	1	1	1	1	3	0	1
Goldman Sachs Group	1	7	3	6	4	8	2	9
United Parcel Service	0	8	2	8	3	8	1	10
Motorola	0	6	3	5	4	8	1	9
Allstate	1	8	4	8	4	5	2	9
TXU	0	8	3	10	4	8	1	10
United Technologies	1	6	2	5	2	5	1	6
ConAgra	1	11	3	11	3	8	2	12
Prudential Financial	2	7	5	9	3	9	3	10
PepsiCo	1	1	1	2	1	3	1	1
Wells Fargo	1	8	4	8	4	8	2	10
Intel	1	7	4	9	4	8	2	9
International Paper	2	7	2	6	4	7	2	8
Delphi	1	8	4	8	4	8	2	10
Sprint	1	7	2	4	2	7	1	8
New York Life Insurance	1	7	6	7	2	8	2	9
Georgia Pacific	1	8	5	8	3	8	2	10
Microsoft	1	7	5	9	3	7	2	10
Walt Disney	1	5	2	7	2	5	1	5
Aetna	0	1	3	3	1	3	0	1
Ingram Micro	1	6	3	9	5	6	2	8
Lucent Technologies	1	8	5	10	4	8	2	10
Lockheed Martin	2	7	5	6	3	8	3	9
Walgreen	1	7	4	9	3	8	2	9
Bank One Corporation	0	7	3	9	2	5	1	9
TIAA-CREF	3	8	4	10	5	9	4	10
Phillips Petroleum	0	2	1	3	1	3	0	2
BellSouth	2	7	3	9	3	8	3	9
Honeywell International	2	8	4	9	4	9	3	10
UnitedHealth Group	0	7	4	7	4	8	1	10
Supervalu	1	5	1	6	2	5	1	5

(table continues)

Company	P1 Errors	P1 User Chks	P2 Errors	P2 User Chks	P3 Errors	P3 User Chks	Sec 508 Errors	Sec 508 Chks
PG&E Corporation	1	6	3	7	3	5	1	6
Alcoa	1	7	4	5	3	8	2	9
Wachovia Corporation	0	1	0	4	1	3	0	1
Cisco Systems	1	7	5	9	4	8	2	9
CVS	0	1	2	1	1	3	0	1
Lowe's	1	8	4	8	4	8	2	10
Sysco	1	8	5	7	4	8	2	10
Bristol-Myers Squibb	0	1	2	6	1	4	0	1
Electronic Data Systems	1	8	4	9	3	8	2	10
Caterpillar	0	1	2	2	1	3	0	1
Coca-Cola	1	5	2	7	3	7	1	6
Archer Daniels Midland	1	7	4	6	3	8	1	8
AVERAGES	1	6	3	6	3	6	1	7

Categories of Use

In order to establish a possible trend among Web sites in relation to their function each site tested in this study was placed into 1 of 3 categories of use: 1) shopping, 2) personal account, and 3) news and information. Web sites that are predominantly used for on-line shopping were labeled category 1. Web sites that are predominantly used for accessing personal account information (i.e. credit cards, insurance policies, phone services, etc.) were labeled category 2. And, Web sites that are predominantly accessed by the general public for the purpose of finding news or information (i.e. investor information, product and service information, related news events, etc.) were labeled category 3. Though most Web sites offer more than 1 category of use, the main function of the site was subjectively determined by observing the type of company and its Web page design. The products, services, and information provided on the home page of each site were sufficient to determine which on-line function was being emphasized.

The average number of user checks decreased by 1 for WCAG 1.0 and Section 508 for Web sites in the shopping category. In addition, the average number of Priority 3 errors

decreased by 1, demonstrating a 15.5 percent decrease in potential accessibility problems for the disabled on-line. No significant change was noted for Web sites grouped into the personal account category. The only deviation from the overall average was indicated with an increase in Priority 2 user checks by 1 point. Web sites in the news and information category demonstrated an average increase in Priority 2, 3, and Section 508 user checks by 1 with an additional increase in Section 508 errors by 1 point, demonstrating a 12.1 percent increase in potential accessibility problems. Refer to Table 4.2 to review the category averages.

Table 4.2

Averages for Categories of Use

Category	# of Sites	P1		P2		P3		Sec	Sec
		P1 Errors	User Chks	P2 Errors	User Chks	P3 Errors	User Chks	508 Errors	508 Chks
Shopping	16	1	5	3	5	2	5	1	6
Personal Accounts	24	1	6	3	7	3	6	1	7
News and Information	49	1	6	3	7	3	7	2	8
Total Averages	89	1	6	3	6	3	6	1	7

Because a norm for scores identified on the Bobby reports has not been established, it is impossible to determine the level of accessibility for Fortune 500 Web sites as compared to other highly visited sites. However, a sum of the averages was calculated to produce an average score of 25 for WCAG 1.0 tests and 8 for Section 508 tests. Scores higher than the average sums indicate Web sites with greater errors and/or user checks than the average site tested in this study. Additionally, Web sites scoring less than the average sums imply less barriers to accessibility for blind computer users. Results indicate 64.1 percent of the Web sites tested for this study demonstrate greater than the average number of errors and user checks reported for both WCAG 1.0 and Section 508 scans.

CHAPTER 5

DISCUSSION

Advances in computer technology have ushered society into a cyber-linked world of boundless opportunity. However, the fast-pace, ever-changing nature of the World Wide Web has created new barriers to independence for people with disabilities. This phenomenon is clearly demonstrated by the inception of federal laws designed to protect the disabled from “discrimination by physical or electronic means.” Section 508 of the Rehabilitation Act of 1998 serves to prove that problems exist on the Internet for people with varying disabilities. But, the majority of provisions established by the law indicate the blind population to be primarily affected by Web site design.

In accordance with J. Grunig’s Situational Theory, it is evident that the blind community has begun to organize to pass new laws and enforce standards for Web accessibility. Demonstrated in the NFB vs. AOL lawsuit, members of the blind population are forming a new active public in need of recognition and consideration from all Web-supporting organizations.

It is clear that the U. S. government recognizes the needs of the blind in dealing with government agencies. However, battles in the courtroom indicate a struggle between a persistent blind public and a reluctant Corporate America.

Though the mutual benefits of designing an accessible Web site are easy to comprehend, the literature does not clearly demonstrate support for or against the plight of the blind public among large private businesses in the United States. Thus, this study takes the initial step toward understanding the relationship between the blind and Corporate America by answering two very important questions.

RQ1: Are blind consumers being accommodated on the Web sites of leading U. S. corporations in a way that assists public relations practitioners to establish and maintain positive relationships, according to general Web accessibility standards?

According to the Bobby literature, Priority 1 accessibility checkpoints established in WCAG 1.0 represent the basic minimum standard for designing an accessible Web site for the disabled. The results of the Bobby test of 89 leading corporations in the United States show an average of at least 1 Priority error and 6 user checks at this level. Thus, the wealthiest companies in America have failed to maintain Web sites at a very basic level of accommodation for individuals who are blind. In addition, the W3C Web Access Initiative has declared Priority 1 and Priority 2 checkpoints to be the preferred minimum standard for Web accessibility. The results of this study show an average of 3 Priority 2 errors and 6 user checks for this level among the Web sites tested, further demonstrating the prevalence of access problems on leading corporate Web sites.

The test scores gathered in this study indicate an existing problem between large U. S. corporations and the blind public. Public relations practitioners and other issue managers should be aware of the possible consequences for maintaining an inaccessible Web site in today's Internet-oriented society.

First, because blind individuals are unable to drive, the Internet offers a unique opportunity for independence in fulfilling purchasing needs. Companies that maintain a Web site primarily for the purpose of shopping could lose significant revenue from a public that is eager to buy items on-line. Old reliable methods of purchasing can easily be maintained to avoid the frustration of an inaccessible Web site. Consequently, lack of accommodation may be construed as lack of interest in the blind public, resulting in a diminished corporate image and a

change in company loyalty. The literature shows that blind individuals are very loyal to companies that meet their needs. As a matter of fact, the results of this study indicate slightly improved averages for Web sites categorized for shopping. Definite conclusions cannot be made from this data alone; however, logic dictates a company that maintains a Web site for the primary purpose of producing revenue should demonstrate increased interest in making that site accessible to everyone.

Second, companies that offer on-line services to manage personal accounts may view the needs of special publics as less vital than those companies maintaining revenue-producing sites. Services on-line can usually be engaged through telephone interactions. However, public relations practitioners must be aware of the quality of services being provided on-line and by phone. Companies that continually urge customers to address problems via the corporate Web site must ensure the site to be accessible for all customers. Additionally, poor and time consuming services by phone with poor on-line accommodations may foster frustration among disabled customers, resulting in diminished corporate image and cancellation of accounts. Corporations that dominate the market risk possible lawsuits for failure to provide reasonable alternatives to publics in need of assistance. The results of this study show no significant difference between the total averages calculated as compared to the average errors and checkpoints identified on Web sites designed for personal account management.

Third, corporations that maintain Web sites for the purpose of providing general news and information may not foresee a threat from the blind public, thus, decreasing emphasis on accessibility in Web design. The averages tabulated in this research support this assumption by demonstrating an increase in errors and user checks for those Web sites categorized as news and information. Perhaps Web accommodations are overlooked on such sites because they are less

likely to attract blind constituencies. However, public relations practitioners should consider the investor potential and consumer support benefits related to a comfortably accessible Web site used for communication.

The results of this analysis of Fortune 500 corporate Web sites do not indicate an overwhelming interest in providing Web accommodations for the blind or disabled by Corporate America. In fact, the sum of averages score indicates 64.1 percent of the Web sites tested demonstrate greater than the average number of errors and/or user checks identified by the Bobby report. Additionally, 0 percent of the Web sites tested in this study received Bobby Approved status for conformance to WCAG 1.0 or Section 508. For these reasons this study must conclude that the needs of the blind are not being met on the corporate Web sites of the top 100 Fortune 500 companies, diminishing the ability of public relations practitioners to establish and maintain positive relationships with this new active public.

RQ2: Are leading U. S. corporations demonstrating Web conformance to Internet provisions established by the U. S. Federal Government in Section 508 of the Rehabilitation Act of 1998?

Because the checkpoints for Section 508 are so closely related to the Priority 1 accessibility checkpoints of WCAG 1.0, it is reasonable to expect similarity in the results. This study shows the average Web site tested demonstrates 1 error and 7 user checks. This represents only a slight deviation from the WCAG 1.0 averages, indicating Section 508 checkpoints to be a bit more stringent. These results imply that the majority of Fortune 500 corporate Web sites tested in this study do not conform to the provisions established in Section 508 of the Rehabilitation Act.

Limitations

The results of this study offer a collection of frequencies and averages among a specified sample of important companies in the corporate world. However, the data is not representative of the entire population of corporate Web sites. It serves as a cross section in time of the Web design practices of the 100 wealthiest companies in the United States. Furthermore, this study is unable to make assumptions regarding the level of awareness and consideration granted to the needs of the blind public from the perspective of public relations practitioners. Thus, no assumptions can be made to explain the reasons for the data found in this research.

Further research is needed to assess awareness among practitioners in public relations. Additional efforts could also be used to determine if practitioners perceive blind computer users to be an active public. Such information would help to determine the level of awareness and concern for this public among U. S. corporations. And, it would provide insight into the amount of emphasis being placed on Web accommodations in the private sector.

Additional research efforts could be used to measure the perceptions of practitioners in public relations regarding corporate social responsibility. Corporate social responsibility is a subjective term. Some scholars may believe it includes accommodations for the disabled, while other may not. Likewise, perceptions of social responsibility may vary among the public, scholars, government officials, and private industries. Thus, it is important to determine whether corporations identify the needs of the blind as a factor in maintaining a socially responsible image. Such information will assist in understanding the level of interest and awareness of the blind among public relations practitioners.

CHAPTER 6

CONCLUSION

The general goal of public relations is to establish and maintain mutually beneficial relationships with key publics. Further research is needed to determine if leading U. S. corporations consider the blind to be an active and important public. However, few people can dispute the mutual benefits that are procured when a fully accessible Web site is maintained by a reputable company.

The purpose of this study was to determine if blind computer users are being accommodated on Web sites in a manner that is conducive to public relations efforts. The results of a content analysis of the Web sites maintained by the top 100 Fortune 500 corporations in the United States demonstrates that Web accommodations are not being met successfully among the leading companies in America, creating a problem for blind consumers on-line.

Companies that strive to demonstrate corporate social responsibility should consider the needs of the blind public and strive to produce a fully accessible Web site. After all, Web accommodations are like wheelchair ramps and baby carriages; they benefit everyone.

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APPENDIX A

FORTUNE 500 CORPORATE WEB SITES TESTED

RANK	COMPANY	WEB SITE
1	Walmart	www.walmartstores.com
2	Exxon Mobil	www.exxonmobil.com
3	General Motors	www.gm.com
4	Ford Motor	www.ford.com
5	Enron	www.enron.com
6	General Electric	www.ge.com
7	Citigroup	www.citigroup.com
8	Chevron Texaco	www.chevron.com
9	International Business Machines	www.ibm.com
10	Philip Morris	www.philipmorris.com
11	Verizon Communications	www.verizon.com
12	American International Group	www.aig.com
13	American Electric Power	www.aep.com
14	Duke Energy	www.duke-energy.com
15	AT&T	www.att.com
16	Boeing	www.boeing
17	El Paso	www.elpaso.com
18	Home Depot	www.homedepot.com
19	Bank of America Corporation	www.bankofamerica.com
20	Fannie Mae	www.fanniemae.com
21	J.P. Morgan Chase	www.chase.com
22	Kroger	www.kroger.com
23	Cardinal Health	www.cardinal.com
24	Merck	www.merck.com
25	State Farm Insurance	www.statefarm.com
26	Reliant Energy	www.reliant.com
27	SBC Communications	www.sbc.com
28	Hewlett-Packard	www.hp.com
29	Morgan Stanley	www.morganstanley.com
30	Dynegy	www.dynegy.com
31	McKesson	www.mckesson.com
32	Sears Roebuck	www.sears.com
33	Aquila	www.utilicorp.com
34	Target	www.target.com
35	Procter & Gamble	www.pg.com
36	Merrill Lynch	www.ml.com
37	AOL Time Warner	www.aoltimewarner.com
38	Albertson's	www.albertsons.com
39	Berkshire Hathaway	www.berkshirehathaway.com
40	Kmart	www.bluelight.com

(table continues)

RANK	COMPANY	WEB SITE
41	Freddie Mac	www.freddiemac.com
42	WorldCom	www.worldcom.com
43	Marathon Oil	www.marathon.com
44	Costco Wholesale	www.costco.com
45	Safeway	www.safeway.com
46	Compaq Computer	www.compaq.com
47	Johnson & Johnson	www.jnj.com
48	Conoco	www.conoco.com
49	Pfizer	www.pfizer.com
50	J.C. Penney	www.jcpenney.com
51	Metlife	www.metlife.com
52	Mirant	www.mirant.com
53	Dell Computer	www.dell.com
54	Goldman Sachs Group	www.gs.com
55	United Parcel Service	www.ups.com
56	Motorola	www.motorola
57	Allstate	www.allstate.com
58	TXU	www.txu.com
59	United Technologies	www.utc.com
60	Dow Chemical	www.dow.com
61	ConAgra	www.conagra.com
62	Prudential Financial	www.prudential.com
63	PepsiCo	www.pepsico.com
64	Wells Fargo	www.wellsfargo.com
65	Intel	www.intel.com
66	International Paper	www.ipaper.com
67	Delphi	www.delphiauto.com
68	Sprint	www.sprint.com
69	New York Life Insurance	www.newyorklife.com
70	E.I. duPont de Nemours	www.dupont.com
71	Georgia Pacific	www.gp.com
72	Microsoft	www.microsoft.com
73	Walt Disney	www.disney.com
74	Aetna	www.aetna.com
75	Ingram Micro	www.ingrammicro.com
76	Lucent Technologies	www.lucent.com
77	Lockheed Martin	www.lockheedmartin.com
78	Walgreen	www.walgreens.com
79	Bank One Corporation	www.bankone.com
80	TIAA-CREF	www.tiaa-cref.org
81	Phillips Petroleum	www.phillips66.com
82	BellSouth	www.bellsouthcorp.com
83	Honeywell International	www.honeywell.com
84	UnitedHealth Group	www.unitedhealthgroup.com

(table continues)

RANK	COMPANY	WEB SITE
85	Viacom	www.viacom.com
86	Supervalu	www.supervalu.com
87	PG&E Corporation	www.pgecorp.com
88	Alcoa	www.alcoa.com
89	American Express	www.americanexpress.com
90	Wachovia Corporation	www.wachovia.com
91	Lehman Brothers Holdings	www.lehman.com
92	Cisco Systems	www.cisco.com
93	CVS	www.cvs.com
94	Lowe's	www.lowes.com
95	Sysco	www.sysco.com
96	Bristol-Myers Squibb	www.bms.com
97	Electronic Data Systems	www.eds.com
98	Caterpillar	www.caterpillar.com
99	Coca-Cola	www.cocacola.com
100	Archer Daniels Midland	www.admworld.com

APPENDIX B

WCAG 1.0 GUIDELINES AND CHECKPOINTS

Guideline 1: Provide equivalent alternatives to audio and visual content.

- 1.1 Provide a text equivalent for every non-text element
- 1.2 Provide redundant text links for each active region of a server-side image map.
- 1.3 Until user agents can automatically read aloud the text equivalent of a visual track, provide an auditory description of the important information of the visual track of a multimedia presentation.
- 1.4 For any time-based multimedia presentation, synchronize equivalent alternatives with the presentation.
- 1.5 Until user agents render text equivalents for client-side image map links, provide redundant text links for each active region of a client-side image map.

Guideline 2: Don't rely on color alone.

- 2.1 Ensure that all information conveyed with color is also available without color.
- 2.2 Ensure that foreground and background color combinations provide sufficient contrast when viewed by someone having color deficits or when viewed on a black and white screen.

Guideline 3: Use markup and style sheets and do so properly.

- 3.1 When an appropriate markup language exists, use markup rather than images to convey information.
- 3.2 Create documents that validate to published formal grammars.
- 3.3 Use style sheets to control layout and presentation.
- 3.4 Use relative rather than absolute units in markup language attribute values and style sheet property values.
- 3.5 Use header elements to convey document structure and use them according to specification.
- 3.6 Mark up lists and list items properly.
- 3.7 Mark up quotations. Do not use quotation markup for formatting effects such as indentation.

Guideline 4: Clarify natural language usage.

- 4.1 Clearly identify changes in the natural language of a document's text and any text equivalents.
- 4.2 Specify the expansion of each abbreviation or acronym in a document where it first occurs.
- 4.3 Identify the primary natural language of a document.

Guideline 5: Create tables that transform gracefully.

- 5.1 For data tables, identify row and column headers.
- 5.2 For data tables that have two or more logical levels of row or column headers, use markup to associate data cells and header cells.
- 5.3 Do not use tables for layout unless the table makes sense when linearized. Otherwise, if the table does not make sense, provide an alternative equivalent.

(table continues)

5.4 If a table is used for layout, do not use any structural markup for the purpose of visual formatting.

5.5 Provide summaries for tables.

5.6 Provide abbreviations for header tables.

Guideline 6: Ensure that pages featuring new technologies transform gracefully.

6.1 Organize documents so they may be read without style sheets.

6.2 Ensure that equivalents for dynamic content are updated when the dynamic content changes.

6.3 Ensure that pages are usable when scripts, applets, or other programmatic objects are turned off or not supported. If this is not possible, provide equivalent information on an alternative accessible page.

6.4 For scripts and applets, ensure that event handlers are input device-independent.

6.5 Ensure that dynamic content is accessible or provide an alternative presentation or page.

Guideline 7: Ensure user control of time-sensitive content changes.

7.1 Until user agents allow users to control flickering, avoid causing the screen to flicker.

7.2 Until user agents allow users to control blinking, avoid causing content to blink.

7.3 Until user agents allow users to freeze moving content, avoid movement in pages.

7.4 Until user agents provide the ability to stop the refresh, do not create periodically auto-refreshing pages.

7.5 Until user agents provide the ability to stop auto-redirect, do not use markup to redirect pages automatically. Instead, configure the server to perform redirects.

Guideline 8: Ensure direct accessibility of embedded user interfaces.

8.1 Make programmatic elements such as scripts and applets directly accessible or compatible with assistive technologies.

Guideline 9: Design for device independence.

9.1 Provide client-side image maps instead of server-side image maps except where the regions cannot be defined with an available geometric shape.

9.2 Ensure that any element that has its own interface can be operated in a device-independent manner.

9.3 For scripts, specify logical event handlers rather than device-dependent event handlers.

9.4 Create a logical tab order through links, form controls, and objects.

9.5 Provide keyboard shortcuts to important links, form controls, and groups of form controls.

Guideline 10: Use interim solutions.

10.1 Until user agents allow users to turn off spawned windows, do not cause pop-ups or other windows to appear and do not change the current window without informing the user.

10.2 Until user agents support explicit associations between labels and form controls, for all form controls with implicitly associated labels, ensure that the label is properly positioned.

10.3 Until user agents render side-by-side text correctly, provide a linear text alternative for all tables that lay out text in parallel, word-wrapped columns.

10.4 Until user agents handle empty controls correctly, include default, place-holding characters in edit boxes and text areas.

(table continues)

- 10.5 Until user agents render adjacent links distinctly, include non-link, printable characters (surrounded by spaces) between adjacent links.

Guideline 11: Use W3C technologies and guidelines.

- 11.1 Use W3C technologies when they are available and appropriate for a task and use the latest versions when supported.
- 11.2 Avoid deprecated features of W3C technologies.
- 11.3 Provide information so that users may receive documents according to their preferences.
- 11.4 If, after best efforts, you cannot create an accessible page, provide a link to an alternative page that uses W3C technologies, is accessible, has equivalent information (or functionality), and is updated as often as the inaccessible (original) page.

Guideline 12: Provide context and orientation information.

- 12.1 Title each frame to facilitate frame identification and navigation.
- 12.2 Describe the purpose of frames and how frames relate to each other if it is not obvious by frame titles alone.
- 12.3 Divide large blocks of information into more manageable groups where natural and appropriate.
- 12.4 Associate labels explicitly with their controls.

Guideline 13: Provide clear navigation mechanisms.

- 13.1 Clearly identify the target of each link.
- 13.2 Provide metadata to add semantic information to pages and sites.
- 13.3 Provide information about the general layout of a site.
- 13.4 Use navigation mechanisms in a consistent manner.
- 13.5 Provide navigation bars to highlight and give access to the navigation mechanism.
- 13.6 Group related links, identify the group (for user agents), and, until user agents do so, provide a way to bypass the group.
- 13.7 If search functions are provided, enable different types of searches for different skill levels and preferences.
- 13.8 Place distinguishing information at the beginning of headings, paragraphs, lists, etc.
- 13.9 Provide information about document collections (i.e., documents comprising multiple pages).
- 13.10 Provide a means to skip over multi-line ASCII art.

Guideline 14: Ensure that documents are clear and simple.

- 14.1 Use the clearest and simplest language appropriate for a site's content.
- 14.2 Supplement text with graphic or auditory presentations where they will facilitate comprehension of the page.
- 14.3 Create a style of presentation that is consistent across pages.

(W3C, 1999)

VITA

The author, Jenice Daigle, was born in New Orleans, Louisiana, where she was adopted as an infant by Joan and Joseph Daigle. By the time she turned four years old she was found to have significant vision loss and was diagnosed as being legally blind. Though the cause of her condition was unknown and medical technology offered no cure, Jenice thrived as a child with a loving family and a wide variety of low vision devices. She conquered the challenges of grammar school and high school with large print books, thick glasses, and hand-held magnifiers.

By the time she started her college career, assistive technology for the blind had begun producing black and white electronic magnifying devices and computer magnification systems. Though they were primitive by today's standards, these devices gave Jenice the vision to meet the demands of college life and later work endeavors. After four years of preparatory classes at Our Lady of Holy Cross College and Southeastern Louisiana University, she attended Louisiana State University Medical Center, graduating in 1996 with a Bachelor of Science degree in Occupational Therapy. Having practiced as a therapist in New Mexico for four years, she returned home to attend graduate school in the Manship School of Mass Communication. By this time, Jenice had begun to develop cataracts and was diagnosed with an eye disorder called Leber's Congenital Amaurosis. As her vision changed, Jenice became increasingly dependent on electronic devices to compensate for her loss. Thus, graduate school became a truly eye-opening experience.

Unlike her previous college experiences, the Internet had grown to play an important role in university life. Jenice encountered new challenges to independence as she was forced to overcome her difficulties with the World Wide Web. She acquired a new computer system to meet the current demands of graduate study, including the latest screen access software and color

electronic magnification system. She persevered by turning her frustrations into research projects and class reports, thus, gaining an understanding of the current needs of the average blind individual on-line. Her personal experiences with technology and insight into the disabled population became her greatest strength in graduate school. And, she will receive the degree of Master of Mass Communication from Louisiana State University at the December commencement, 2002.