VERIFYING WEB-BASED INFORMATION:
DETAILED ACCOUNTS OF WEB USE IN REAL TIME

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by

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Introduction: The study of verifying web-based information

That the printing press was selected the most important invention of the last millennium (Friedman, 1998) attests to the prominent status that information technologies—technologies that mediate and facilitate circulation of and access to information—occupy in Western culture. While such a mindset may be misguided by technological determinism that exaggerates the impact of information technologies at the expense of cultural movements and institutions that establish how such technologies are used (Chariter, 1999), cultural psychology (Ratner, 2000), and socio-cognitive development (Nystrand, 1989; Hayes and Flower, 1981), popular and scholarly views of information technologies have far-ranging influence on how human beings view the world of literacy, writing, and communication, and the assumptions they have about education (Selfe, 1999), information, and technology.

Today this mindset is evident in both popular and scholarly perspectives on a new information technology that has permeated nearly every aspect of daily life in the United States and many other parts of the world: the web. These perspectives range from highly optimistic views about the web’s potential to provide widespread, equal access information to deeply concerned views that regard the web as an example of decline in
media credibility, from advice on how to evaluate web-based information to accounts of fraud and misinformation, from emphasis on technical knowledge and skills to awareness of the rhetorical dimensions of assessing web-based content.

The breadth and variety of such perspectives on the web reveal there is little consensus on what the strengths and limitations of the web are, how to use it in the most intelligent, effective manner, and, perhaps most importantly, how to recognize and overcome the problems involved in web use.

The studies that comprise this dissertation focus on the problem of verifying web-based information. Here I am distinguishing between the public problem of verifying web-based information and the scholarly research question I address in this dissertation: how do web users verify web-based information in real time? This question addresses a gap in current research on web use by providing detailed descriptions of web use that go beyond retrospective reports and exclusively prescriptive approaches.

I have conducted two studies to address this research question. The survey study makes an attempt to determine if individuals with certain backgrounds and demographic characteristics do a better job than others of verifying web-based information. The think-aloud protocol study seeks to generate data about how web users actually go about selecting, reading, interpreting, and assessing the credibility of web-based information. How this process occurs in real time is important for researchers to know because, as I explain in chapter two and again in chapter five, real time studies of web use offer the best chance to identify and study in situ variables that are missed or overlooked through interviews or retrospective reports. That is, certain variables fundamental to how individuals verify web-based information only come into play while web use is in
progress. Absent an awareness of these *in situ* variables and the impact they have on how individuals verify web-based information, researchers’ understanding of this problem remains incomplete and falls short of providing the data and insight necessary to a fruitful study of how web users confront and manage this problem. By generating detailed accounts of how individuals verify web-based information in real time, my dissertation generates descriptive accounts of web use that offer potential prescriptive value.

As I proceed to illustrate in greater detail in chapter one, descriptive accounts of web use simply report how people use the web and make credibility judgments, often poor ones, of online content, but they are absent questions about whether or not such descriptions actually represent ways in which web users ought to go about dealing with the problem of verifying web-based information. Descriptive accounts, then, either reflect web users’ weaknesses and inability to deal with this problem successfully or they are offered without consideration of the quality, intelligence, and rhetorical awareness of such examples. Prescriptive approaches, on the other hand, present ideal methods for using the web, but they are exclusively theoretical. Without complementary descriptive accounts it remains unclear how such theoretical prescriptive approaches become operational in real time, everyday life situations, thus leaving unanswered the question of the extent to which these approaches are applicable in specific contexts of web use and in turn the limitations of their value.

In generating descriptive accounts of web use that offer potential prescriptive value, my hope is that this project provides examples of how different prescriptive approaches to web use become operational in different contexts where *in situ* variables—the motives and interests of the web user, and the particular sequence and types of
information being reviewed—influence how individuals verify web-based information. As the data from my studies show, the value of different prescriptive approaches depends partially on how realistically they can be implemented by web users depending on these variables. Thus, an important contribution of my project is that it reinforces the value of prescriptive, theoretical approaches to web use by observing how such approaches become operational in different contexts; in turn, my project contributes to research on web use by providing detailed, real time descriptions of how individuals verify web-based information and considering explicitly their prescriptive value.

Before I proceed to outline the content of the chapters that follow, I would first like to provide the reader with some background information about the origins of this project.

*The OBOR E-Credibility Project*

This project began in the summer of 2002 when I was selected as a research assistant for the e-credibility project, a project funded by the Ohio Board of Regents. The principal investigators of this project, Dr. Christina Haas, Dr. Stanley T. Wearden, and the late Dr. Stephen P. Witte, were coordinating a research project designed to identify individuals who do an exceptional job of verifying web-based information, and whose approaches to doing so could provide an example for others.

Before I commenced the research and data collection that comprise the studies I present in the chapters that follow, I first read a broad array of literature on credibility and media studies. I collected survey and think-aloud protocol data in 2005, after months of identifying and recruiting participants for both studies. My hope is that the research presented here provides a valuable contribution to the e-credibility project and to some
extent provides valuable data that address its primary goal: generating examples of how web users verify web-based information that can help both researchers and other web users in dealing with this problem.

For the purpose of clarification, the term “web-based information” here refers to non-interactive web sites authored by individuals or organizations. Web-based information is understood here as information that is accessed by way of and read on computers that have web access. The participants of the think-aloud protocol sessions presented in chapter four all accessed and read information at their computers logging on to various web sites and some of the links those sites provide. This working definition of “web-based information” is important because some information accessed by way of the web may have originated from non web-based sources such as newspapers or televisions stations that then became uploaded and digitized for web access. Other information that may have originated from web sources may become accessible through print, or circulates and becomes accessible through other media. Even though this information certainly could be considered web-based information, for the purposes of this project, which is interested in how people make credibility assessments of information accessed by way of a specific medium involving the use of a specific technology, it does not qualify as web-based information.

I will now proceed to outline the chapters that follow, with general details about how the concerns I have presented in this introduction are addressed by each chapter.

Outlines of the following chapters

In chapter two, “Scholarly and popular views on web use: Descriptive accounts and prescriptive approaches,” I provide a general overview of descriptive and prescriptive
approaches to web use over the last decade, and highlight the gap between these two approaches and the need to generate descriptive accounts of web use that offer potential prescriptive value.

In chapter three, “The rationale for a constructivist approach to web use,” I present an argument for a methodology designed to capture in situ variables at work when individuals verify web-based information in real time. This rationale provides a justification for the think-aloud protocol methodology I use to study three participants whose reading of web-based information in real time is the focus of chapter four. I claim that the work of Delia (1976) and Witte (1992), each of whom argues for constructivist approaches to the study of credibility and meaning-making as mediated by texts respectively, provides a theoretical grounding for the constructivist approach I take to this study of verifying web-based information.

In chapter four, “The survey: a macro view of frequency of web users’ verification strategies among experienced web users,” I present data from a survey adapted from Flanigan and Metzger’s (2000) study designed to determine the frequency with which adult professionals who use the web regularly or frequently for personal or professional reasons take different steps to verify web-based information. Results, I argue, indicate this demographic is a fruitful group to study to learn more about how web users deal with this problem. Comparisons of rank order of verification strategies between my survey participants and Flanigan and Metzger’s also suggest there may be differences in the priority web users with professional backgrounds give to verifying web-based information. Thus, the priority given to certain strategies may be more
revealing about how participants verify web-based information than the frequency with which they do so.

In chapter five, “A micro-level study of web users’ *in situ* verification of web-based information,” I discuss the results of three think-aloud protocol studies. Results are discussed both individually and cumulatively. I argue that these results provide grounds for claiming that the detail-intensive descriptions generated from these protocols offer some potential prescriptive value for scholars and other web users concerned with the problem of verifying web-based information.

In chapter six, “Web use, memory, and intertext sense: A hypothesis for future studies,” I argue that some comments made by think-aloud protocol participants reveal memory of prior information that becomes relevant to them as their web use is in progress. The hypothesis of an “intertext sense” offers a possible explanation of this information recall and the role it plays for web users as they determine whether or not current information under review confuses, contradicts, supports, or merely repeats prior information. I suggest that intertext sense may be a vital attribute for web users to manage and remember information on the same topic from multiple sites and texts, and that without it web users would be unable to ascertain whether or not the web-based information they examine cumulatively lends itself to being found credible or not. I also point out that information recall is an *in situ* variable because it happens in real time, while web use is in progress, and the identification of this variable affirms the benefits of a constructivist approach to the study of web use.
In this chapter, I will review recent reports and other literature on web use in popular and scholarly literature with the purpose of pointing out what is missing from these perspectives and how this project on verifying web-based information can at least partially fill the gap. My basic argument here is that literature on web use thus far consists of two primary types: descriptive reports and prescriptive approaches.

Descriptive reports either present ways in which web use takes place, (Fogg 2001; Goodstein 2007) or discuss examples of poor web use: falling prey to online scams (Leamy, 2007), failing to verify information with adequate frequency (Flanigan and Metzger, 2000), failing to get information in a timely manner, or getting false information (Pontiewski, 2007). What is missing from these descriptive accounts are examples of web use that offer prescriptive value. Rather than present the different ways and reasons individuals use the web, or analyze what web users do wrong, this project seeks to provide examples of ways web users verify information in an intelligent and effective manner which can serve as a guide for both researchers and other web users.

Also absent from recent descriptive accounts of web use are studies of web use in real time. Descriptive accounts thus far consist of reports rather than intensive, detailed
accounts of web use that capture *in situ* variables of this process as it is in progress. As I explain in chapter two and again in chapter five, attention to such *in situ* variables is vital to gaining an understanding of how individuals engage web-based information in real time that does not overlook important factors that, if not observed and studied closely, leave research on web use incomplete and hinder efforts on the part of scholars and web users to understand the problem of verifying web-based information.

Prescriptive approaches, such as the ones discussed at some length later in this chapter and again in think-aloud protocol analysis in chapter four, offer examples for web users to follow, but they are absent actual descriptive accounts that demonstrate how such prescriptive approaches become operational in everyday life. Without descriptive accounts to complement and ground these prescriptive approaches, the limitations and feasibility of these approaches remain unclear.

*Improvements in web technology and the persistence of problems with web use*

The studies of web use and electronic media discussed here range over a period of nearly a decade. Some readers may assume that the improvements to web technology over that time, and the fact the web has become integrated by mainstream media as well as schools, businesses, and households in many parts of the world indicate that problems with web use such e-credibility and verifying information would gradually go away, or at least minimize. Such a viewpoint derives from the assumption that widespread access to the web, and improvements in web technology, are the only necessary steps toward overcoming problems in web use. This assumption reveals the importance of the distinction I recognize between understanding problems of web use in the context of technical competence versus understanding these problems in the context of using the
web to mediate healthy, credible, and intelligent relationships between human beings and organizations. The goal of my research is to promote this kind of web use, and my focus in this project is squarely on the problem of achieving this goal.

To highlight the persistence of problems with web use when it comes to matters of verifying information, I would like to discuss briefly recent literature on web use. Goodstein’s (2007) report on how teens have immersed themselves in web environments and her inside accounts of what they really do online reveals that for the demographic she studies—teens in their high school years—access to web technology and technical competence is not a problem. In fact, Goodstein points out that it is not uncommon for high school students to help their teachers understand how to use the technology. But at the same time, much of Goodstein’s revelations of online teen behavior are cause for concern: online bullying, encountering predators online, the rift between these teens and their parents who are relatively unfamiliar with the web and uncertain how to monitor what their teens are doing online, and the difficulties teachers face with integrating a technology into their classroom that they know less about than their students. So while the web is easily accessible to teens who have considerable facility with the technology, problems of credibility—establishing relationships with individuals and organizations who are trustworthy and reliable—remain. Goodstein’s work, while contributing important insights about how teens operate online, does not provide accounts of web use that offer prescriptive value, unless, of course, one considers bullying and cavorting with predators to be prescriptive behaviors.

Teens are not the only demographic to encounter such problems online. According to abcnews.com, 136 million Americans who filed their taxes online
collectively lost thousands of dollars in tax refunds to con artists who set up bogus sites designed to steal money and personal identification information. Anyone who can file their taxes online has technical competence with the web. But the competence necessary to filing taxes online evidently make them invulnerable to falling prey to an online scam. In fact, as web technology advances, lack of technical competence becomes less of an obstacle hindrance to using the web. As an analyst quoted in this article explained, setting up an online scam is quite easy, so easy a teenager could do it. Thus, the problem of educating web users in how to ensure that they are mediating credible relationships online would seem to take on greater prominence in web research, since the accounts reported by Goldstein and abcnews.com reveal it is apparently easy to pull scams online, and consequently persistently difficult to verify the credibility of the information and individuals with whom one interacts online in order not to fall prey to such scams.

Widespread web access and technical competence could not mitigate the tragedy of the Virginia Tech massacre, either. As Poniewozik reports, a campus-wide email warning to students was not sent early enough for them to take action before the killings continued in an engineering classroom. This mistake exemplifies the rhetorical dimension of problems with web use since it highlights the role of kairos—or timing—in specific contexts of web use. I mention this point because attention to the rhetorical problems of verifying web-based information is a contribution my project makes to the study of web use. Poniewozik goes on to report that after the shooting some online identifications of victims turned out to be false.

Web access and technical competence also are no guarantees against less grievous occurrences such as unethical postings of web-based information. According to News
Services, the Brazilian government ordered an online auction site to remove a posting by a man offering to sell his wife for approximately $50. While the effects of such a posting are neither as tragic or financially costly as the two previous examples, once again this account reinforces the claim that even though web technology has improved and web users’ technical competence may have become more widespread in the last decade, problems of e-credibility—the credibility of information circulated and retrieved in electronic environments—persist, and the need for research that can eventually led to solutions to these problems becomes all the more urgent as web use becomes more prevalent along with the scams, untimely and inaccurate information, and unethical behaviors that it mediates.

*Problems with current prescriptive and descriptive accounts of web use*

Two works on web use epitomize the current mindset about how to approach problems concerning web-based information, one prescriptive, the other descriptive. Before I survey general literature on web use, I would like briefly to discuss these works and the drawbacks of the prescriptive and descriptive approaches they offer.

Sherman and Price (2002) explain one of the problems with the web is that search engines are unable to locate certain valuable websites, thus depriving web users of access to information they need. Having acknowledged the limitations of the web as an information source, however, the authors nonetheless represent this problem as one of accessing the information they claim search engines are unable to access. This prescriptive approach in many ways is a more recent version of Gilster’s (1997) book that treats problems of web use, including verifying web-based information, as a mere matter of mastering technical skills and learning how to access and decode information, e.g. to
determine the reliability of a web source by looking at the web address. Five years later, the same mentality persists, even though researchers have recognized the limitations of the web as an information source, and the fact that problems with web use go beyond questions of information (Bruce 2001; Burbules 2001; Haas and Wearden 2003).

Fogg (2001) devotes an entire chapter to web credibility. While his book is addressed to web designers, this particular chapter examines how web users make credibility assessments of web sites based on how the sites are designed. His approach—a descriptive one—is to report what kinds of websites web users find credible by outlining in detail different features of web sites that elicit either favorable or unfavorable judgments. There are at least two pitfalls of this approach. One is that just because web users look at web sites a certain way doesn’t mean their approach is sound, which means that just because they find certain web sites credible doesn’t mean that they are. Two, Fogg’s approach to understanding web credibility puts all its focus on the technology and the information; the comments and observations of the web user are left unexamined. This approach also does not take into consideration the reliability of these web users’ credibility assessments. Another problem is that it assumes matters of web credibility are only matters of judgment. Because he only focuses on technology and information, Fogg overlooks the fact that other variables of web use, e.g. identifications of interest or relevance, and analysis—two of the four coded types of thought used in the think-aloud protocol study in this project—are pivotal to how web users think about and verify web-based information. To this end, Fogg’s method does not allow for an understanding of how web users make credibility assessments of information they, not the researcher, pick
Descriptive accounts of web use: Issues in law, medicine, and education

As web use has become integrated into facets of everyday life—business, law, medicine, education, and others—reports about web-based information have become commonplace. The Kentucky Secretary of State, for example, began certifying political candidates’ web sites with the office’s seal in order to deter identify theft at a time when the web has been used with increasing frequency to raise campaign contributions (Alessi, 2005). This act of certification is an example of attempts to authenticate web-based information that addresses a political, legal, and financial problem. The Ohio Bar Association has produced a pamphlet on online law that addresses legal matters concerning the web and privacy, children’s web use, online transactions, including online taxation policies, online purchases of alcohol and tobacco, online casinos and gambling, online pornography, and online scams (“What You Should Know,” 2003). Broyles and Lynch (2003) discuss capturing online evidence for civil and criminal cases in Indiana. These authors provide a catalogue of recent court decisions concerning web and email use, tips for effective electronic data management, reviewing proper indexing of data and how to confront the difficulties of preserving evidence in electronic form. These reports do not provide, however, examples of real time web use that render how these approaches are actually executed in real life contexts.

Issues of identify theft and security have also been big concerns for businesses that have lost thousands of dollars to viruses and hackers who steal passwords, bank account numbers, and confidential company data. The Securities and Exchange
Commission created an office to deal specifically with investment fraud on the web (Clausing, 1998).

Cumulatively, these reports reveal that efforts by government institutions to authenticate web sites and educate the public about web use are currently somewhat incomplete and ineffective, given online tax scam discussed above as well as other examples of web use that are unreliable, untimely, or unethical. The hope is that the research presented here can offer examples of web use that would likely avoid the undesirable consequences incurred by those involved in these kinds of examples.

Descriptive reports of web use in medical practice offer examples of success and failures, as well as ethical dilemmas. The Dutch Health Ministry, for example, has been conducting a three year trial study called the CamCare pilot project that uses web cams to mediate doctor-patient interaction in an effort to cut down on the expense and travel involved for sending doctors to visit patients such as elderly people who are bed-ridden (Deutsch, 2005). At the same time, an article out of London reports that people who use the web to seek medical advice have gotten sick with greater frequency than those who go visit the doctor (Gupta, 2004). These studies cumulatively present perspectives on web use which appear contradictory: on the one hand, web use helps medical practice by facilitating doctor-patient relations; on the other, it makes medical problems worse. A methodology for studying web use that takes into account in situ variables such as time and place, the needs and backgrounds of patients and medical experts interacting through the web, and the relationships they mediate online would seem a useful step in helping to understand why sometimes web use in medical practice meets with success and
sometimes does not. Such a methodology and attention to in situ variables of web use are central to my project.

Web use in medical practice has also raised legal and ethical questions. In March 2004, doctors decided to go ahead with a kidney transplant arranged between two men who met on a web site for private organ donations (Trujillo, 2004). Legal debates have also ensued concerning whether or not the web is a print or broadcast medium, a determination that influences how much information about pharmaceutical products must be provided on drug company web sites (Realto, 2002).

In addition to these educational efforts and institutional measures to ensure the soundest possible web use, other literature reports poor judgment on behalf of web users concerning the information they review. Opponents of cloning signed a petition against a fictitious web site about cloning deceased children based on the film Godsend starring Robert DeNiro (Eldredge, 2004). The failure of these people to identify this site as fictitious testifies to the continuing difficulty web users have in making sound judgments about the credibility of web-based information.

These reports cumulatively show a wide array of examples of web use that are descriptions of how web use takes place that result either in ethical or legal debates, or examples of the failure of web users to recognize information that is not credible. In none of these examples does one see a description of web use that potentially offers some prescriptive value. Nor do these examples take into consideration how web users operate in real time; they fail to consider how individual attributes may affect the way web users look at information. Each of these points is addressed by the goal and methodology of my project.
Descriptive accounts of web use that report arguably substandard efforts on the part of web users to discern the credibility of web-based information are found in scholarly work as well as popular media. Flanigan and Metzger (2000) constructed a survey to find out how frequently web users enact a set of nine different strategies to verify web-based information. These strategies include identifying the author and author’s credentials, the timeliness and comprehensiveness of the information given, and considering whether the material presented is opinion or fact. Flanigan and Metzger found that these web users do not verify information with much frequency, a finding they say is “alarming” since they claim the web is in some ways a less reliable source of information than traditional media since information gate-keeping protocols are absent in web environments. The combination of an unreliable information source and lack of attention to credibility issues on the part of web users arouse the researchers’ concerns.

The results of Flanigan and Metzger’s survey do show, however, that perceptions of content type did influence how rigorously information was verified, even though altogether information was not rigorously verified. According to their results, content described as “reference information” was verified with greater scrutiny than content described as “commercial or entertainment information.”

This point is interesting because other scholars share Flanigan and Metzger’s interest in how distinguishing types of information influences verification behaviors in web users. These scholars examine how digital or electronic environments affect credibility issues in advertising and journalism. One problem, these scholars report, is that web users’ recognition of persuasive influences in material presented as fact is potentially made more difficult in web environments because misinformation on the web
can take the form of “hybridized communications” (Moberg et al., 1998) where information and promotion, news and opinion, fact and advertising (Aufderheide, 1998; Williams, 1998) can be indistinguishable. Such a condition suggests web users face certain difficulties in making the distinction of information types Flanigan and Metzger claim influence verification behaviors, difficulties that stem in part from how the web differs from traditional media, according to these other scholars. Distinguishing information types on the web or with other forms of computer-mediated communication (CMC) may be particularly difficult because governments, businesses, and consumers have to establish what kind of content qualifies as a certain type of information, e.g. news versus advertising, or reference information versus commercial or entertainment (Bordia, 1997).

Determining what hybrid communication may be circulated on the web is one of the biggest challenges that the FDA and pharmaceutical industry face, according to Morberg, et al., (1998). Regulations concern two different means of disseminating product information: labeling and advertising. The former, the authors explain, consists of communication about drugs as “information” in that it makes claims about the reality of a drug that are verifiable. The latter pertains to communication about drugs as “promotion,” claims that are trying to entice the reader to purchase. Determining whether such online content is considered “information” or “promotion” is necessary to figure out which rules apply.

These conundrums should alert the reader to an important point concerning the value of my project as it concerns the problem of verifying web-based information.
contemporary media reveals that problems these trends pose to verifying information are not confined to the web alone. As other authors I will go on to discuss point out, the increasingly electronic and digital formats of all media—including traditional ones formerly in print form exclusively—has for various reasons led to a decreased emphasis on editorial concerns such as the credibility of content and the reliability of sources. Thus, the problem of e-credibility extends beyond the web. Understanding how web users grapple with the problem of e-credibility may be helpful for researchers and users of media in which texts, moving pictures, and audio converge in electronic environments.

This observation would indicate web users cannot carry over verification practices from other media, since these other media, according to some of the authors I review here, taken on characteristics similar to the web as they have become adapted to electronic formats. The result is that these other media present the same problems to readers as the web does in terms of distinguishing information types and accessing information that has not undergone traditional vetting processes through which some level of information credibility is maintained. My research will address this problem by capturing real time, detailed descriptions about how web users comment on the information they review, providing some insight as to how readers can make effective judgments of a digital medium that presents and often merges information of different types.

Audiences have had to deal with the challenges of discerning types of information in electronic media for nearly a decade. Aufderheide claims that web environments threaten news or fact-oriented information altogether. He argues that media space for noncommercial purposes is disappearing, which means the so-called “Information Age”
is really an “Advertising Age.” Williams (1998) affirms Aufderheide’s claims, arguing news and opinion have become less distinguishable in online news environments because commercial interests drive the selection of news. These accounts reinforce the hybridization of different information types and the problems it poses for audiences in making credibility judgments, as information or news are types of content one expects to be credible and verifiable, but audiences do not have those same expectations for advertising, which is assumed to be only interested in promoting and selling products rather than representing information that is accurate and verifiable. I argue a way for researchers to address this problem is to study closely adult professionals familiar with this type of media content, who can identify reliably content of questionable credibility without relying on explicit formats that tell them whether or not they are looking at “news” or “facts” instead of “entertainment.”

Another problem researchers of web use need to address is that the credibility of the web diminishes as the amount of information on it increases (Henderson and Fernback 1998), a problem these authors argue will prompt web users to flock to trustworthy information, such as newspapers online. This solution, however, overlooks that many of the same credibility problems with the web are problems in traditional media as well since these media in electronic formats more closely resemble the web than they do their traditional print format. Another problem with Henderson and Fernback’s prediction is that online newspapers may not be fulfilling the same role as traditional print newspapers (Singer 2001), raising another credibility issue about web-based information: the suspect selection of online newspaper content. Singer argues that online newspapers have become a ‘Daily Me’ where the content is so specialized in terms of
focus on individual interests that it fails to keep the reader abreast of what is going on in
the world beyond one’s own individual realm, which she argues has been a traditional
role and obligation of newspapers. Her point resembles those made by other scholars
about the importance of distinguishing types of information, in that, according to her,
online newspaper readers are confusing personal entertainment or content appealing to
individual interest with legitimate journalism.

My study addresses the problem with online newspapers that Singer discusses
because real time, detailed description of how web use takes place can render specific
examples of the kinds of information individuals examine online, and the range of
interest web users have as they review content. Should such descriptions offer
prescriptive value, they can potentially help other web users avoid the pitfalls of the
narrow range of interest Singer finds worthy of concern.

Henderson and Fernback’s solution that the web mimic more traditional media is
problematic because they assume that credibility problems are for the most part confined
to web information and that the traditional credibility of print media remains intact. But
as Aufderheide (1998) and Christopher (1998) report, problems in media credibility are
attributable to cultural movements affecting all media practices and are not particularly
isolated to the web. This argument also calls into question Flanigan and Metzger’s
assumption that the web is less credible than traditional media, since the “vertical
integration and cross-ownership” of newspaper chains and their commercial interest have
steered newspapers away from their focus on public and civic life; these newspapers have
abandoned traditional roles and obligations, a point similar to the one Singer makes about
online newspapers. Rather than turn to traditional media for solutions to dealing with
credibility problems on the web, my argument is that a more fruitful approach is to observe and learn from individuals who have gained familiarity with digital media and provide some of the best examples for making sound, reasoned credibility assessments of web-based information. The problem of turning to traditional media for solutions to problems with web use is reinforced by reports from scholars such as Christopher who draw attention to the diminishing emphasis on editorial skills like accuracy and clarity as technology demands of design and production take on bigger roles for editors. According to Christopher, the increasing demand for technical knowledge and a production process that has become increasingly sophisticated mean that editors have less time to devote to their traditional tasks of verifying the accuracy of information presented in their publications and upholding civic and public interests. He reports that these technical demands impact the entire division of labor within newspapers, as editors look for journalists who have layout and design skills first and news judgment second.

Mayo and Lesner (2000) investigate similar concerns regarding online reporting and information credibility, finding that computer-assisted reporting presents particular difficulties to reporters when it comes to issues of accuracy, source attribution, and the speed of information flow.

Other reports support my claim traditional media practices do not offer a solution to problems with web use. Tuggle and Huffman (1999) also argue that judgment takes a back seat to technical skills in decisions reporters make to do live reporting. Like Christopher, these scholars argue that during the 1990s journalism practices emphasized the technical skills for increasingly sophisticated production techniques for both editors and reporters at the expense of upholding traditional skills of making sound judgments
about the accuracy and reliability of information. These reports complicate assumptions about how credibility problems on the web can be solved by integrating publications from traditional media. The same technology that has produced the web seems to have taken attention away from rhetorical skills like making sound credibility judgments that in theory make traditional media reliable information sources.

Again, Christopher as well as Tuggle and Huffman present arguments for why mimicking the practices of newspapers, magazines, and other forms of traditional journalism are inadequate for dealing with the problem of verifying web-based information: these traditional media are prone to the same problems one encounters on the web, rather than being autonomous from them. More recent literature underscores the lack of reliable and credible information in these traditional media. These reports again underscore why I maintain that attention to traditional media are less likely to yield solutions to problems with web use than a focus on adult professionals who frequently read and evaluate web-based information.

Even journalists have expressed that traditional media information is unreliable, in some cases even less credible than web-based information. Rich (2004) voices concerns that real journalism, with an emphasis on accuracy in reporting, is giving way to “faux news,” which he defines as fake stories based on “infoganda” that flourishes, he explains, because of its entertainment value.

Examples of recent journalism affirm his position. Gillan (2005) reports stories swirling about on television and in newspapers about atrocities occurring in the Superdome during the Katrina disaster were never verified. According to Gillan, the entertainment appeal of these horrible stories, and the breakdown of gatekeeping
protocols in chaotic conditions led to the circulation of false information. Elsewhere, Kurtz (2005) reports some politicians have praised blogs because they allow for an extended discourse on political matters that enables viewpoints to be expressed completely instead of in the out-of-context sound-bite form in which they come in traditional media. From this perspective, web-based information is perceived as more credible than information from traditional media; integrating traditional media with the web as Henderson and Fernback suggest certainly would not help problems of verifying information in web environments according to such a view.

These popular accounts of traditional media and information types support claims in the scholarly literature from the late nineties that information on the web and in other electronic media environments is suspect in part because of overemphasis on entertainment and technology at the expense of more serious types of information and editorial accuracy. Cumulatively both sets of literature demonstrate that the problems with web-based information concerning blurring of information types and lack of rigorous editorial practices are not confined to the web but prevalent in all contemporary media, as these media have been streamlined toward electronic and digitized formats. Help with the problem of verifying web-based information, then, is more likely to come from web users familiar with these formats and the hybridized information they contain rather than people immersed in the use of traditional media. This observation explains the demographic of adult professionals familiar with the web I have chosen for the survey and think-aloud protocol studies.

My project also will help understand how individuals establish credibility in online environments, a concern of Campbell and Wright (2002), who take a close look at
how individuals use web-based information by comparing online support groups to non-mediated, face-to-face group interaction. The authors find such an investigation to be significant because of the missing cues such as facial expression and body language in online contexts that are not available to determine the credibility of another person. Their hypothesis is that credibility takes longer to establish online than in face-to-face contexts. Campbell and Wright are interested to know just how credibility is established through computer-mediated communication (CMC). My research, because it focuses closely on how web users comment on online information in the context of making credibility assessments, should provide some insight as to how such credibility is established. Other descriptive accounts instead highlight the difficulty in doing so, or the consequences of failing to do so.

If the goals of my project are at least partially met, they should yield examples of web users who demonstrate strong reading knowledge, a skill Selfe (1999) worries is being lost in educational settings due to overemphasis on technical competence. Selfe, a literacy and technology scholar, studies how computer technology has been integrated in literacy education. Reports such as Tuggle and Huffman’s and Christopher’s illustrate the inattention to strong reading knowledge Selfe cautions against as integrating advancing technology becomes the priority in media and educational environments. The lack of concern for information accuracy and more serious journalism addressed by these scholars as well as Singer exemplify, I argue, why Selfe claims education and government have to do more than spend money on computers for classrooms to promote the best possible literacy education.
While there is disagreement among scholars like Flanigan and Metzger and journalism experts like Reid, Christopher, and Aufderheide about the comparative credibility of the web to other media, as well as the reliability of traditional media and their gatekeeping protocols, Flanigan and Metzger’s research shows individuals do not verify web-based information with much regularity, and other research shows web users face a variety of complications in distinguishing types of information and making credibility judgments in CMC. Again, however, I argue that these observations reinforce the need to learn about web use takes place in real time, a focus that should generate crucial details about how web users attempt to overcome the variety of problems they face concerning the credibility of web-based information.

Ideally, these data would offer some potential prescriptive value, thus filling a gap in research that currently is comprised of either reports absent prescriptive value or prescriptive approaches absent data that demonstrate how they become operational. Such data would go beyond current descriptions of how individuals use the web absent concern for the extent to which these examples offer prescriptive value or do not—as is the case with Fogg’s analysis that reports what kinds of sites web users find credible without asking the question of whether or not such assessments are sound and reliable enough to offer prescriptive value for other web users—or reports of poor examples of web use, such as those from Flanigan and Metzger or others that describe the consequences of falling victim to fraud, predators, or bullying online. The generation of descriptions of potentially prescriptive value descriptions of web use is the core goal of my study.
Prescriptive accounts: Common ground, dialectical reading, and the ethics of web use

Another set of scholars addresses the problems with web use in descriptive reports by offering prescriptive examples of how individuals can overcome these problems, both by way of recommending certain strategies and by providing insight about the problems web users face. These theoretically-based insights posit problems with web use as ones that concern how individuals read the web, the ethics of web use, and overdependence on web-based information for learning about one’s world. I would argue such treatments of problems with web use are rhetorical, rather than information-oriented, as the descriptive reports discussed above tend to be. In presenting a more in-depth understanding of the problems web users face, these authors in turn present solutions that address these new ways of understanding what the problems with web use are.

For scholars such as Bruce (2000), Burbules (2001), and Haas and Wearden (2003), credibility is represented as something constructed from a process that involves how individuals engage information and how they approach the web as an information source. These scholars situate difficulties web users face in the context of larger rhetorical and ethical issues. My views on problems individuals have in verifying web-based information share this more rhetorical view, which provides the rationale for studies of web use in real time, since in situ studies of web use can identify and take into account the rhetorical and ethical contexts in which web use is situated.

Bruce (2000) for example, examines different ways individuals read the Web based on Walter Kaufmann’s 1977 essay “The Art of Reading” in which Kaufmann presents four different ways of reading: exegetical, dogmatic, agnostic, and dialectical. The first three ways of reading, Bruce points out, inhibit readers from making effective
and intelligent use of web-based content. He then recommends “dialectical reading,” which he argues is the best approach for reading the web because it allows for building knowledge. The result of dialectical reading, Bruce explains, is that web users learn to consider viewpoints previously unfamiliar to them and to see reading as a form of inquiry.

Burbules (2001) also offers a rhetorical view on the problems the web poses to readers. He argues that the origin of problems readers have in making judgments about web-based information lie in part in the “social dimension” of the web as a network (p. 450). He explains that the web often becomes a self-referential resource, where the comprehensiveness and quantity of information is actually at odds with the need to be selective in making judgments about information. For Burbules, the web is a paradox, because it is both an information source and a medium through which people learn and establish values. Another problem, he points out, is that readers who are well-trained to identify deceitful information from other media can fail to recognize it on the web because of how such misinformation can be doctored to appear to come from credible sources. This observation reinforces why the study of individuals familiar with the web are a better demographic to study than those familiar with traditional media when it comes to the study of verifying web-based information. It may also help explain the success of the recent tax return scam discussed above.

For Burbules, the paradox of the web is that its value as a social network is inseparable from the judgments people make about the information on the web, meaning such judgments cannot be made on information alone. Burbules recommends readers should see “an ethical dimension” to web credibility, meaning they should check their
judgments against those of communities they respect and trust. In both cases, Bruce and Burbules represent problems of web use as more than matters of fact-checking or getting access to the right information or having the right search engines. These authors are concerned with the assumptions web users have about information as an entity, and to make web users aware that these assumptions, not just the information they get on the web, influence how they engage web-based information.

Haas and Wearden (2003) share a similar philosophy with Bruce and Burbules on web use in this regard. Their argument about problems with web use essentially derives from the failure of web users to realize the limitations of the web as an information source and that human beings need to learn about the world through means other than using information technology. Haas and Wearden draw on linguistic theory to address difficulties web users face when making judgments about web-based information. These authors argue readers encounter these difficulties because they lack what linguist H. H. Clark (1996) calls “common ground” with the individuals and sources of information about which they are making such judgments. The authors present some examples of problems web users face in making determinations about the credibility of different kinds of information on the web: a man looking for information about an unusual medical condition, students doing research online about the environment, and a teacher’s concern about how to get students to verify such information. Haas and Wearden argue that approaches to reading the web recommended by researchers who only offer guidelines for evaluating information are unsatisfactory for dealing with these problems. Such ways of reading the web do not provide solutions to these problems, the authors explain, because “problems of credibility are problems of relationship, not just information.”
This insight reiterates that information retrieval and analysis are insufficient for confronting problems with e-credibility, and why close study of individuals, including their motivation for web use and their efforts to go beyond information technologies to gain knowledge is essential to research on web use. The authors conclude by demonstrating how Clark’s idea of common ground can help the individuals in their examples. Uncertainty about the veracity of web-based information on an unusual medical condition can be partially addressed, for example, by visiting hospitals, meeting doctors, and talking to patients undergoing different treatments. Likewise, Haas and Wearden recommend, teachers can take students out to waste sites, to visit endangered species, and to meet with environmental experts to learn more about the information they read on the web.

While this literature adds a new and enlightening set of perspectives to the problems web users face, they are exclusively prescriptive. Even though the approaches Burbles, Bruce, and Haas and Wearden make are original and theoretically based, if web users actually execute these approaches in real time is still unaccounted for by these theoretical perspectives. The result is that prescriptive approaches lack descriptive accounts that illustrate how such web use takes place while descriptive accounts lack prescriptive value.

Popular literature also offers prescriptive approaches to web use, although these fall far short of the rhetorical insight and awareness of how complex problems with web use are that the scholarly prescriptive models above offer. In addition to reports keeping the public up-to-date with developments in web use, another set of literature focuses on educating people who are learning to use the web.
Rosen (1998) and Gilster (1997) provide knowledge and advice about navigating the web, including considerations of making credibility judgments about information. Rosen outlines problems people encounter in trying to learn to use the web and makes recommendations for overcoming these problems. Problems Rosen reports that are still legitimate concerns today include difficulty in knowing how to conduct online searches, poor maintenance of web sites, not knowing what to do when encountering technical problems, reading text online, getting the ‘wrong’ information, or getting information from unreliable sources. Rosen recommends that those learning to use the web should have a clear purpose when using it, consult a more experienced web user, and practice using the web daily.

Gilster introduces readers to navigating the web and provides methods for evaluating web-based information. These include learning to identify sources of information on the web, investigating these sources’ credentials, and using web addresses and signature files to assess the trustworthiness of a source. The assumption behind Gilster’s book is that if people learn how the web works and follow a set of strategies for evaluating web-based information they will be able to make accurate and wise judgments about its credibility. The problem with Rosen and Gilster’s arguments for how to use the web is that they frame problems with web use as matters of information and technical competence, and such a framing of the problems of web use does not encompass the rhetorical problem of credibility and verifying web-based information, a problem that requires learning to use the web to mediate healthy, credible, and trustworthy relationships among individuals and organizations.
Kapoun (1998) and Caruso (1997) recognize that web use is more than a matter of technical competence, but their solutions to problems of web credibility revert to a simplified fact-checking approach that belies the complexity of these problems as articulated by scholars such as Bruce, Burbules, and Haas and Wearden. Kapoun and Caruso offer their own strategies for teaching students how to use the web. These strategies include verifying the source of content, determining when the information was posted online and when it was last updated, and checking other relevant sources to compare information. Guidelines published by the Association of College and Research Libraries (Kapoun, 1998) outline five criteria for evaluating web-based information: accuracy, authority, currency, coverage. Caruso offers a similar set of guidelines to teachers comprised of the ‘four Ws’: “Who wrote the site?” “What are they saying?” “When was the site created?” “Where did the site come from?” University library websites also provide similar guidelines (“Evaluating Web Resources,” 2002; Cotrell, 2001).

In providing these guidelines for evaluating information on the web, these authors treat problems using the web as problems of information and gaining familiarity with the technology. If people can gain experience using the web, the assumption follows, they will learn to assess the information they need and how to determine its source, timeliness, and so forth; it follows that they will make reliable judgments about web-based information. While these may be helpful first steps, especially for school children, in learning to use the web, they fall short of addressing the insights of the scholars whose prescriptive approaches complicate problems of web use beyond matters of information fact-checking. None of the guidelines, for instance, considers that students need to go
beyond the web and integrate with contexts seminal to their interests to learn about the world and gain the knowledge necessary to make credibility judgments about web-based information as Haas and Wearden do.

Other educational perspectives consider the impact of the web on curricula in higher education. Leonard (1999) advocates the virtual university, where the traditional barriers that separate individuals and institutions no longer exist. He sees the “digital age” of education to be interdisciplinary, meaning that students engage in creative problem solving, rather than repetition and memorization practices from industrial-age education. Walker (2002) sees web technology as an opportunity for students to learn about the genres of the web by producing websites, which she argues will help them address a wide range of audiences effectively. While one might consider Leonard’s and Walker’s views on the web to be predictive instead of prescriptive, they still offer a view of how the web can be best put to use, but these recommendations are also absent descriptions of web use that render how such approaches become operational.

**Verifying web-based information: The need for descriptive accounts of web use that offer prescriptive value**

In this final section, I will reiterate the need for research on verifying web-based information that can yield descriptive accounts that potentially offer prescriptive value to scholars and other web users.

While both popular and scholarly literature offer a variety of compelling perspectives on the problem of verifying web-based information, even those prescriptive approaches that address it as a rhetorical one do not provide descriptive accounts of the extent to which such prescriptive approaches become operational in real time. These
prescriptive approaches are quite valuable to my project, however, because they provide models of web use that can serve as examples of comparison to real time descriptions. In turn, these descriptions can test these prescriptive approaches as hypotheses to determine their theoretical and practical value. That is, upon generating in situ data of real-time web use, one can see to what extent such descriptions exemplify some combination of prescriptive approaches. In turn, such detailed descriptions of web use can reinforce the value of these prescriptive approaches by demonstrating to what extent they become operational in specific everyday contexts.

Questions and methods

There are three primary research questions driving my project: 1) how does verification of web-based information take place in real time, 2) what kinds of details and in situ variables influence how individuals verify web-based information in real time, and 3) do the conclusions generated by this project offer prescriptive value?

To explore these questions, there are two primary methods I have for this study: 1) a survey adapted from Flanigan and Metzger’s survey targeted to adult professionals with technical writing backgrounds, and 2) a series of think-aloud protocols designed to capture in situ variables of how individuals verify web-based information in real time. The justification for the survey is fairly straight-forward: a comparison of survey results with Flanigan and Metzger’s survey offers a chance to see if in general professional adults verify web-based information more rigorously than the demographic that constitutes Flanigan and Metzger’s participants. The behaviors outlined by Flanigan and Metzger’s survey are rhetorical behaviors. If individuals who perform such behaviors are studied from a constructivist perspective, their approaches to understanding the problem
of verifying web-based information should provide helpful examples of how individuals understand and confront this problem. Such examples could enhance the current corpus of educational advice on integrating web use in professional and everyday life by emphasizing credibility judgments—and the verification strategies upon which they are based—as a rhetorical practice. Flanigan and Metzger’s survey provides a set of rhetorical behaviors by which to study the extent to which web users apply prescriptive approaches to web use; think-aloud protocols, in turn, render detailed accounts of how and when these behaviors are applied to context-specific problems with verifying web-based information.

These behaviors are also valuable for understanding how individuals verify web-based information because they are reason-directed strategies directed toward making judgments about persuasive discourse. Thus, a study of verifying web-based information contributes to contemporary rhetoric’s interest in the role of reason in people’s daily affairs (Perelman & Olbrechts-Tyteca, 1969). The assumption behind Flanigan and Metzger’s survey is that executing the strategies the comprise the survey is more likely to lead to a more reliable assessment of credibility than an approach that ignored these steps and was based instead on impulse, emotion, or unexamined assumptions.

Think-aloud protocols provide the opportunity to pinpoint a specific factor in web use—verifying web-based information—that is observable and reportable. This point is significant because there are numerous factors that contribute to credibility judgments. As Burbules explains, credibility is not a single thing, and judgments are based on more than evaluating claims represented as knowledge or fact. Credibility, he points out, derives from judgments about worth, not just truth or accuracy (450). Since ultimately
credibility judgments go beyond the force of arguments, Burbules argues values and commitments sway how people think, especially in a vast network where reason-based arguments contradict one another and are inevitably absorbed in different groups’ assumptions and values. Think-aloud protocols are an effective method for capturing comments about web-based information that reflect web users’ values and commitments, and their responses to the numerous factors that influence how they read the web. Finally, analysis of think-aloud protocol data that considers how the details it provides compare with prescriptive approaches will partially determine whether or not these descriptions offer prescriptive value. In the following chapter, I elaborate on the value of think-aloud protocols as a method for learning about how individuals verify web-based information.
The rationale for a constructivist approach to web use

In this chapter I argue that think-aloud protocols are the best method for studying how web use takes place in real time in order to capture *in situ* variables that other methods, particularly the descriptive report method used by so many examples from the previous chapter, are less likely to identify for observation and analysis.

I will begin by explaining the connection between a constructivist approach to web use and think-aloud protocol methodology. A constructivist approach to web use is neither a methodology nor rationale but an epistemological perspective on how web use takes place. This perspective on web use sees the act of verifying web-based information as something that happens in real time and is not determined exclusively by variables that exist independent of the particular contexts of web use in which such verification takes place. Because verifying web-based information is actively constructed by web users, factors such as time and place, identity and background of the web user, and the motive for using the web in the first place, are operating while web use is in progress. One would expect more intensive review of web-based information from someone researching medical treatment for a loved one whose life is in danger than someone in a dispute with a friend over sports statistics or movie-star gossip. Thus the best methodology for
studying how web use happens is one that can capture *in situ* variables that are specific only to the particular context of web use in which they appear.
Such *in situ* variables are necessary because verifying web-based information is understood here as something that happens in real time and potentially under the influence of variables that arise as web use is in progress, as opposed to variables that are pre-existing and independent of a particular context of web use. Such pre-existing attributes would consist of, for example, demographic characteristics of web users, such as age, education, and professional background, or the details on web sites that direct the attention of Fogg’s participants who deem such sites credible or not credible depending on the presence of such details and the characteristics of those details. These variables of web use exist prior to and beyond any particular context of web use.

A constructivist approach to the study of web use, then, requires a methodology designed to allow for the identification and analysis of variables that become present only while web use is in progress. Absent an awareness of these variables, an understanding of how individuals verify web-based information—including the fullest possible perspective on what variables influence this process and what problems are encountered while it is under way—remains incomplete and driven by misguided assumptions about how it takes place. Any sound methodology should avoid the tendency to assume one knows what variables are the primary causes or influences behind the subject being studied before the collection of data takes place. Certainly researchers have assumptions about what variables will play key roles in a process that is being studied, and often prior research provides a theoretical grounding for such assumptions. Such is the case with the survey studies of my project here, where age and professional background are hypothesized to bare causal influence on the frequency with which web users verify
information, and the think-aloud protocol studies, the participants of which were chosen partially due to prior research that argues age and professional background enhance one’s rhetorical awareness as a reader, research I discuss more fully in chapter four.

But while such assumptions are part of a research process, they should not influence data collection to the point the presence and importance of other variables would be overlooked. For the study of verifying web-based information, I argue that a think-aloud protocol methodology is the best method for allowing potential variables that only become present while web use is in progress to be identified and integrated into data analysis. There are at least two in situ variables that such a methodology will certainly capture—the rhetorical context of web use, and the specific sequence of comments web users make as they examine information online. The rhetorical context of web use consists of the time and place where web use takes place, the motivation behind the use, the events or circumstances in one’s life that prompt a particular episode of web use, and the specific topics of information that prove relevant to that duration of time when web use is taking place. The specific sequence of comments web users make while examining web-based information are important for identifying the patterns in which web users comment about what they read on the web as that reading is in progress. The comparative frequency and places within a protocol sequence in which different kinds of comments about web-based information occur are also important variables think-aloud protocol methodology is designed to capture and integrate into data analysis.

Theoretical basis for a constructivist approach to the study of verifying web-based information
The theoretical basis for this approach to understanding verifying web-based information is the work of Delia (1976) and Witte (1992), both of whom argue for theories of credibility and meaning-making respectively which are generative in that they account for the *in situ* variables and active perception that drive human interaction with message sources and the texts they mediate. I am adapting these constructivist theories of credibility and meaning-making to the act of verifying web-based information, since it is an act of meaning-making oriented around making credibility assessments from the particular medium of the web.

This integration of Delia’s and Witte’s theories provides an interdisciplinary theoretical grounding for this project since it links credibility studies, a topic within the domain of rhetoric, and meaning-making as mediated by the production and use writing, a topic within the domain of literacy by way of a constructivist perspective on these respective topics. As such, this study reflects the interest these disciplines share in how individuals perceive and make meaning of texts, and the *in situ* variables involved in that perception. Thus the results of this project should provide value to research in these disciplines.

*Delia’s critique of early credibility studies*

Delia (1976) critiques early credibility studies primarily through an analysis of the concept of credibility. In outlining the findings of early credibility studies by Hovland et al. (1950) and others who followed, Delia argues that the concept of credibility is more complicated than the early studies indicate. For example, Delia claims follow-up studies to Hovland et al.’s study showed that credibility judgments extend beyond the characteristics of trustworthiness and expertise. I would argue that such characteristics
are examples of those variables independent of any specific act of making a credibility assessment, including, of course, acts of verifying web-based information.

Delia’s response to conceptual assumptions behind earlier credibility studies leads him to critique the factor analysis methods used by these early studies. Delia argues that factor analysis, a method of studying credibility by measuring how often certain factors are cited by participants in their assessment of source characteristics, does not allow for an understanding of how credibility impressions are formed by individuals in particular situations, and that no set of attributes is sufficiently comprehensive enough to accommodate the potential array of characteristics identified by audiences making credibility judgments about different sources and messages in different situations. It is these particular situations in which credibility impressions are formed, according to Delia, that I am attempting to account for a constructivist approach to verifying web-based information that is my rationale for think-aloud protocol methodology.

The problems with factor analysis Delia identifies prompt him to argue for a constructivist approach to studying and understanding the concept of credibility. He proceeds to focus his interest on a constructivist social perception of credibility as a basis for rejecting earlier credibility studies that represent credibility as a receiver’s already-formed image of a message source (p. 366). This move on Delia’s part then establishes grounds for him to re-conceptualize credibility as a process, or set of processes, by which the message receiver arrives at a particular point of view concerning the credibility of a message source.

This theoretical move by Delia is quite significant as far as this project is concerned, because the idea that an audience member, or receiver, actively constructs
impressions of credibility, rather than receiving that impression from the message source, is fundamental to the rationale for studying web use in real time in order to learn more about situation-specific variables that operate while verifying web-based information is in progress. The adaptation of Delia’s constructivist approach to credibility to the study of verifying web-based information serves as a rationale for a think-aloud protocol methodology, since it yields the in situ variables Delia argues construct impressions of credibility.

*Delia’s discussion of credibility and Witte’s constructivist semiotic*

Though Delia’s constructivist approach to credibility is broadly applicable to different kinds of media and different kinds of audiences, Delia does not explicitly address meaning-making processes situated around production and use of writing. While Witte is not explicitly concerned with credibility, his driving point is to account for the generative meaning-making processes undertaken by all kinds of individuals interacting with all kinds of texts in any imaginable circumstance. Like Delia, he holds the assumption that a theory of how humans perceive and construct meaning from texts, which would implicitly include impressions of credibility, must be generative and are not reducible to static, uniform paradigms, as evidenced by Witte’s rejection of Saussure’s linguistic theory of meaning-making in favor of Pierce’s semiotic model (pp. 287-300). Another pivotal similarity between Witte and Delia is the position that meaning-making is situated, both within the audience member (in Witte’s case the reader) and the particular situation in which the audience member engages a text. Witte’s construct intertext explains how an individual’s reading of a given text in a particular situation leads to a certain interpretation that in turn prompts a set of associations to other texts.
between the perceived text and the ensuing perceptions of meaning that occur within the context of text, reader, and situation. Intertext, I argue, is a valuable construct for analyzing how individuals verifying web-based information, since reading the web involves making links between and among a variety of texts. Intertext also helps to explain how the links a reader makes among texts plays a pivotal role in the construction of meaning. Since verifying web-based information is an act of reading and meaning-making mediated by a series of texts, Witte’s constructivist semiotic provides a strong theoretical grounding for the constructivist approach I am taking to the research that is the focus of this project.

The integration of Delia’s and Witte’s constructivist theories of credibility and meaning-making respectively thus establishes a theoretical and epistemological basis for a study of verifying web-based information as a process situated in audience members’ formations of credibility impressions of written texts mediated through web sites. The integration of these respective theories also serves as a methodological basis for studying this process in situated contexts, where individual’s identities and backgrounds, the circumstances that motivate and contextualize their reasons for using the web, and the credibility impressions they construct in real time during these situations are all recognized as fundamental factors in how individuals confront the problem of verifying Web-based information.

Think-aloud protocol methodology is designed precisely to account for and yield in the form of data these highly-situated variables that a constructivist approach to meaning-making and credibility deem essential to a comprehensive understanding of what happens at the interface of human perception, media, and text. By focusing on how
individuals verify web-based information in real-time, the infinite possibilities of credibility impressions, and associations to web users make among texts as they comment about verifying information, think-aloud protocol analysis can glean the most-detailed account of what happens in web users’ actual appraisal of the information they process. Such an approach to the study of verifying web-based information is consistent with the theoretical demands of the constructivist approaches to credibility and meaning-making put forth by Delia and Witte.

To summarize, the work of these scholars also provides another theoretical foundation for this study’s think-aloud protocol methodology. In verifying web-based information, web users invariably make links between and among texts, both because of the links already provided by web sites, and because of internal cues that lead web users to proceed from reviewing of one web site to another web site, or another source of information, such as the people and places highly relevant to an individual’s focus of interest, as described in the scenarios put forth by the common ground approach to e-credibility. Witte’s intertext is a construct that accounts for how meaning-making is a process that occurs within a series of texts; how such a series of texts is verified by web users is a highly-situated act of perception that Delia’s constructivist approach to credibility addresses. Think-aloud protocol analysis of how individuals verify web-based information is a methodology designed to yield data that will capture and render these highly-situated combinations of texts and sequences of comments about their credibility, thus generating rich, detail-intensive descriptions of web use.
Think aloud protocol and survey analysis as complimentary methods of study

Finally, a constructivist approach to the study of verifying web-based information and the think aloud protocol analysis in which it is theoretically grounded are necessary for this project because they complement the data generated from the survey study. Surveys are ideal for generating data from many participants in a relatively short period of time. This method of data collection is not well suited, however, for identifying variables specific to acts of verifying web-based information while in progress. Since think aloud protocols generate detail-intensive data but are time consuming to do even with a few participants, the two methods of study offer both a macro and micro-level picture of how web users confront this problem.

The think-aloud protocols allow for a wider perspective on how web users verify information by not limiting attention to the strategies itemized by the Flanigan and Metzger survey, and not depending on reports after-the-fact of how such processes take place. As Burbules’ analysis of web credibility suggests, those strategies alone do not account for the full picture of how online credibility judgments are made. Think aloud protocols can trace these judgments, by way of comments participants make about the web-based information they examine, to what Burbules points out are their beginning: identifying what is ‘interesting, relevant, or useful’ (p. 448). Here, Burbules offers a similar perspective to Delia’s in recognizing credibility as a process, one that for Burbules starts not with making epistemic assessments about information but with the selection of focus. The capacity to identify what web users find interesting and relevant, and the value systems they bring to the information they verify are examples of in situ variables specific to individual acts of web use in real time that think aloud protocols can
capture by way of the comments participants make as they review web-based information. Consideration of *in situ* variables is important because the study of verifying web-based information must take into account the needs and attributes of individual web users as situated in specific contexts of web use, not just the information they are looking at during a given episode of web use. These needs and attributes of web users are not static but rather dynamic, depending on their motives for using the web at a given time and their responses to the information they review while web use is in progress.

Before I present and discuss think-aloud protocol data, I will first turn attention to the survey study and its results.
The survey: A macro view of frequency of verification strategies among experienced web users

The first method this study employed to learn more about the verification strategies of web users is a survey designed to identify the frequency of specific verification behaviors of web users. The term “verification behaviors” is used by Flanigan and Metzger (2000) to describe the enactment of a particular verification strategy. This method, as explained earlier, was selected because of its capacity to gather a fairly broad view of how web users verify web-based information, albeit a view without access to transaction-intrinsic details. Those details were gleaned from the think-aloud protocols, discussed in the following chapter.

The Research Instrument. The survey designed consists of nine questions answered on a five-point scale about the frequency with which web users enact specific verification strategies, followed by nine questions about demographic characteristics (see Table 4.1). The first nine questions about enacting verification strategies were closely modeled from the questions asked in Flanigan and Metzger’s (2000) survey. The demographic questions asked seek to determine whether or not such characteristics correspond to certain types of web user verification behavior. The question of whether or not such characteristics influence web use is the basis for the first research question of the survey study.
RQ1: Will the individuals targeted for this study—those who have professional experience using the web as technical writers or communicators of some variety—verify web-based information more frequently than the participants in Flanigan and Metzger’s survey?

If so, this could mean individuals with certain characteristics besides those of the typical Internet user studied by Flanigan and Metzger verify Web-based information more rigorously than the subjects of their study. Identifying such individuals could be helpful in learning how individuals who verify web-based information perceive and evaluate that information in real time. A selection of individuals from this pool would thereby serve as reasonable choices to examine specific individuals who verify web-based information more rigorously than the typical Internet user as studied by Flanigan and Metzger by way of think-aloud protocol. Thus, the results of the survey are relevant, though not completely determinant of, the selection process for the think-aloud protocol participants who ideally would reveal valuable transaction-intrinsic details that depict how web users verify web-based information. This research objective is the basis for the second research question of the survey study:

RQ2: Are the demographic characteristics queried on the survey influential in how web users verify Web-based information?

These research questions are the basis of the first two hypotheses of the study:

H1: The participants targeted for this survey, because their backgrounds consist of some combination of education, liberal arts, and work as technical writers or professional
communicators, will verify web-based information with more frequency than the typical
Internet user as studied by Flanigan and Metzger.

*H2:* Certain demographic characteristics—specifically a professional background in
technical writing and regular or frequent use of the web for professional reasons—will
likely influence frequency of verification strategies by web users, such that these
individuals will verify web-based information with more frequency than people who do
not have these characteristics, such as those individuals studied by Flanigan and Metzger.

*Adaptation of the Flanigan and Metzger survey.* As Marunowski and Rosen
(2002) point out, the difference in the verbs Flanigan and Metzger choose to describe
verification strategies could influence how survey participants interpret what they do
when they look at Web-based information. To consider, for example, is not the same as
to check, to seek out, to look for, or to verify, all verbs that are concrete and action-based
as compared to ‘consider,’ which is more abstract and cerebral, not necessarily detectable
by observation in the way the other verbs are. In any case, the variance in verbs could be
a factor in survey response. The solution was therefore to delete the verb from the
itemized strategy, so that all strategies are prefaced by the same verb ‘find out’ followed
by an ellipsis. The strategy for adapting the Flanigan and Metzger survey to the present
study way by way of eliminating variance in verb choice for descriptions of verification
strategies serves as grounds for consideration on the part of researchers that verb choice
can influence participant response.

Flanigan and Metzger identify their participant demographic as individuals who
represent the ‘typical Internet user’—someone with a mean age of 23.97 years, a mean of
14.43 years of education, and with an annual income between $50,000 and $60,000 per

These details are important for understanding how my survey study differs from the one conducted by Flanigan and Metzger. One should note that the characteristics as described above of the typical internet user do not convey the frequency with which these individuals use the web—rather one is left to assume that of individuals who report using the web, absent consideration of frequency or purpose of use, individuals with certain characteristics constitute most of them. This distinction is important since the frequency with which individuals use the web, and for what purposes, are criteria for participant selection, rather than concern for how closely they resemble the typical internet user in terms of age, education, and income.

*Participants and Procedure.* Survey participants consist of 170 individuals who identified themselves as individuals who use the web either regularly or frequently for personal or professional reasons or both. These participants range in age from their late teens to their late fifties. Participants include lawyers, teachers, professional actors and musicians, geotechnical engineers, journalists, salesmen, construction and restoration workers, and one self-described ‘self-employed generalist.’ All participants reported using the web in either a personal or professional capacity. This demographic for survey participants was selected on the theory that such individuals may practice verification strategies somewhat more rigorously than the average Internet users targeted by Flanigan and Metzger in their study.
Students ranging from high school to graduate school were selected on the rationale that they are immersed in educational settings and may have sharper reading skills than the typical Internet user, who, though despite being educated according to Flanigan and Metzger, might not be pursuing formal education at the time of survey participation. Students at any level were excluded, however, if they only used the web rarely in both a professional and personal capacity, although nearly all students answered that they used the web at least regularly in either capacity.

Technical writers were selected based on the rationale that the professional demands they face, their accountability to organization and clients, and likely educational background in English or the liberal arts would converge to make them promising readers to study. This rationale is affirmed by the fact that out of a cluster of survey participants who belong to the Technical Writers of Northeast Ohio Association (n’s= 69-75), six out of seven answered “Yes” to having a background in English or the Liberal Arts. The one who answered “No” reported having 25 years experience as a technical writer, including five at her current organization, a software company where she reports she uses the web “frequently” in her professional work, while only “occasionally” for personal reasons. Cumulatively, this group of technical writers is studied independently to explore the third research question of the survey study:

*RQ3: Do those technical writers with verified professional backgrounds and credentials, and membership in a professional technical writers association verify web-based information more rigorously than the survey participants as a whole?*

For results to this research question see Table 4.3 below.
The reason for singling out this group of technical writers leads to another important point: what exactly a technical writer or professional communicator is may mean different things to different people. Some workers for a government organization in a Southern state identified themselves as technical writers but also only reported their work on the web as consisting of logging on to the organization’s web site. Such individuals may not be doing the type of extensive research and highly skilled writing some social scientists might recognize as more legitimately being identifiable as technical writing. While assuming that self-reporting is reliable enough to use as data, it is not realistically possible to interview and verify the credentials of every single survey participant.

Participants 69-75 have been singled out, therefore, because of their known membership in a professional technical writers association, and the fact that in attending one of their meetings, this researcher was able to meet these participants, learn about their backgrounds and professions, and obtain professional credentials in the form of business cards, pamphlets, and handouts. Since their backgrounds as technical writers have been verified more thoroughly than those of most of the other participants, they are ideal to compare to other participants to assess how certain demographic characteristics influence frequency of verification behaviors. The purpose of singling out participants 69-75 is to see how individuals with verified backgrounds as technical writers compare with other participants whose backgrounds are not as easily verifiable. The rationale for singling out this group of participants is to ensure, with the greatest degree of reliability, that a background in technical writing and use of the web for professional reasons is in fact a demographic characteristic that influences the frequency with which individuals verify
web-based information, since that is a major assumption behind this survey study. The assumption that participants 69-75 may verify web-based information more rigorously than the participants as a whole is the basis for the third hypothesis of the survey study:

\[ H3: \] Technical writers with verified professional backgrounds and credentials will verify Web-based information more rigorously than participants as a whole.

Professional communicators were selected based on the rationale that although some professionals may not see themselves primarily as writers, they have extensive professional experience in oral communication, being teachers, lawyers, or some other profession that demands strong language skills and attention to the details of linguistic content, factors likely to be relevant in how web users look at web-based information.

Most surveys were administered electronically to participants in three different states—one Southern, one Midwestern, and one on in the East—between January and August 2005. Some were administered at local participant worksites via hardcopy, and responded to in ink. One hundred and seventy surveys were received, identified as usable, and recorded as data. Participants who left over half of the questions unanswered, or who did not use the web at all, were excluded. Participants who answered they had ten or more years experience as a technical writer or professional communicator were included even if they only use the web rarely in either a professional or personal capacity, but those who reported they use the web only rarely in both a professional and personal capacity with less than ten years experience were excluded.

Survey data were entered in a Microsoft Excel spreadsheet, and then converted to linguistic data by way of SPSS, whereby linguistic variables were entered for questions and response choices. Covariant analyses were then performed to see how frequency of
verification strategies correlated with demographic characteristics. The alpha level for statistical significance was set at .05. That is, correlations of covariates were determined to be statistically significant at the 0.05 level ($p < .05$) and particularly significant at the 0.01 level ($p < .01$). The extremely low probability that such correlations were random provides grounds for claiming correlations at or below the alpha level indicate there is a plausible connection between certain demographic characteristics and the frequency with which survey participants verify web-based information.

*Factors in using data from prior studies.* In acknowledgment of using Flanigan and Metzger’s survey data in this part of my study, and in also closely modeling my own survey instrument after theirs, it is important to point out some important differences between their study and the present one.

First, Flanigan and Metzger’s results are based on 972 surveys as opposed to the 170 on which the present study is based. While the difference in numbers may be considerable, the 170 surveys used in this study were enough to generate statistical significance for at least two correlations identified through covariate analysis (see Table 4.1 and discussion below).

Second, Flanigan and Metzger are not studying verification for the same reason I am. My interest, as explained in the introduction, is specifically on verifying web-based information. While Flanigan and Metzger’s interest in credibility is certainly relevant to the focus on verification, the two points of interest are not the same. Flanigan and Metzger’s interest in their survey data is to ascertain perceptions of web-based information credibility by querying the frequency of the verification strategies they list. Their logic is that the frequency of verification behaviors on the part of participants is
inversely proportional to the degree to which they perceive the information to be credible; verification is prompted by the perception that information may not be credible, and by extension, not verifying web-based information with much frequency means perceptions of that information are that it is credible. The present study, on the other hand, looks to this survey to determine if web users of a different background verify web-based information with more frequency. This interest is built out the project’s larger goal of generating descriptive accounts of web use that potentially offer prescriptive value, and to determine if any demographic characteristics influence how web users carry out these behaviors; if so, it would stand to reason that individuals with these characteristics would make ideal participants for future studies of web use interested in generating accounts that are both descriptive and prescriptive.

Third, the typical internet user of 2006 may be of a different demographic, and may do a better job of verifying web-based information than the one studied by Flanigan and Metzger seven years ago. Then again, seven years may not be enough time for web users’ reading practices to adjust and adapt to the demands of what Flanigan and Metzger recognize as a delivery technology with problems concerning information verity particular to it, even though web use has become increasingly common in recent years (Pew Research Center, 1999).

The six year gap between this study and Flanigan and Metzger’s is important to remember since web use has become more widespread and web users’ habits may have changed. These considerations are important because the web has become integrated in mainstream practices such as news, entertainment, and information retrieval, where six years ago the web was used by possibly a more marginal part of the population and had
not yet been integrated by mainstream media. Two points need to be made in response to this six-year gap in web use and its integration into everyday communication.

One is that web users in 2006 may be no better at verifying web-based information than they were six years ago; and if they have improved, their approach to this problem may still be inadequate. While changes have certainly been made in the web, and more people use it for a number of purposes, these factors alone are insufficient to support the idea the web users verify information more rigorously than when they were studied by Flanigan and Metzger. Increased familiarity with the web does not equate to improved rhetorical sensibility when using it. That the web has been integrated by mainstream media also does not support the assertion that the web provides users with information more credible than it was six years ago because it is a myth that just because some media are mainstream and well-established they are therefore credible. In fact, it is troublesome to consider that as mainstream media have established web sites and adapted electronic formats over the last six years, there have been numerous reports, some of which were discussed in chapter one, that the credibility of mainstream media is suspect. Thus alliance with mainstream media of itself does not make the web a more credible information source. Finally, situations when web users need to verify information often involve topics and information sources that are complex and difficult to make credibility judgments about regardless of the medium, users’ familiarity with that medium, or the extent to which such a medium has become widespread in its use and integrated with previously established and commonly used media.

The second point is that the results of this study do not seek to provide grounds for an argument that today’s web users are better or worse at verifying information than
web users from 2000. Rather the results generated by this study are offered in support of
claims concerning what type of individual, and under what circumstances, generates
tables of web use worthy of being studied and to some degree followed.

Results

The first results pertinent to the survey study are the mean responses and standard
deviation for the first nine questions about web users’ frequency of verification strategies.
Table 4.1 below lists mean responses in the left column, and provides the mean responses
to the same verification strategies from Flanigan and Metzger’s survey listed in the right
column. While survey results show participants verify web-based information slightly
more frequently than the participants of Flanigan and Metzger’s survey, T-tests showed
that there was no statistical significance to the differences. There were, however, two
correlations between survey results and demographic characteristics of survey
participants that turned out to be statistically significant.

Correlations and Influence of Demographics on Verification Frequencies. The
degree to which participants use the web for professional and personal reasons was
identified as statistically significant for a number of verification behaviors. Regularity of
web use for professional reasons turned out to be significant for all but the seventh listed
behavior while regularity of web use for personal reasons turned out to be significant for
all but the fourth, fifth, and sixth listed behaviors. Furthermore, regularity of web use for
professional reasons was statistically significant at the \( p \leq 0.01 \) level for all but the first,
second, and seventh behaviors; regularity of web use for personal reasons was
statistically significant at the \( p \leq 0.01 \) level for all behaviors for which it turned out to be
significant except for the eighth behavior. These high degrees of significance are
compelling for considering the legitimacy of self-reports from survey participants and
correlations between demographic characteristics and frequency of verification
behaviors, because they indicate that it is highly unlikely that these correlations are
coincidental and the result of fabricated self-reporting on the part of the participants for
the current study.

In other words, covariate analysis shows that it is unlikely the correlations
between the demographic characteristic of being someone who uses the web for
professional or personal reasons either regularly or frequently and the frequency with
which such individuals verify web-based information are random. One can infer, then,
that individuals who do use the web regularly or frequently for personal and professional
reasons verify web-based information with greater frequency than those who do not.
This information is valuable for future research designed to identify examples of web use
useful for others to follow, since it helps pinpoint the types of individuals who do a better
than average job of verifying web-based information.

Interestingly, the one behavior for which regularity of web use for professional
reasons did not turn out to be significant—finding out if there is an official “stamp of
approval” or recommendation from someone you know—was highly significant at the
p<.01 level for regularity of web use for personal reasons. Perhaps an explanation could
be that web users are more likely to be in contact with someone they know, such as
family members or friends, when using the web for personal reasons rather than
professional ones, where job priorities and authority figures would discourage
interactions with companions for socializing. Another possible explanation is that web
users may explore a wider array of content when using the web for personal reasons than
when doing so for professional ones, where the array of content may be more streamlined with the knowledge and expertise the web user brings to web use as a professional in a particular field. In other words, web use for professional reasons may involve a scope information that includes less range of information with which one is unfamiliar than web use for personal reasons and thus prompts less of a need to consult with another outside source to validate the information’s credibility. Another possibility is that the pressure to meet deadlines for professionals may curtail the extent to which they take advantage of such a strategy. Frequency with which one seeks an outside validation would seem to be inversely proportional to the extent to which that web user encounters unfamiliar information as far as topic or source is concerned. Reviewing these correlations after increasing the number of participants would seem a fruitful direction for pursuing these possibilities.

Another statistically significant demographic characteristic for frequency of verification behaviors is age. Age turned out to be significant at the p<.05 level for the behaviors of finding out “whether or not the views represented are opinion or facts” (.189) and “the author’s qualifications or credentials” (.160).

These correlations between age and frequency of verification behaviors suggest that the self-reporting may be somewhat accurate and reliable, given that their statistical significance shows the results are likely to be more than coincidence or random, and that the correlations likely are dependable for making sound inferences, at least initially, about the influence of demographic backgrounds on how web users verify web-based information. This finding supports the second hypothesis, that the demographic
characteristics queried on the survey are influential in how individuals verify web-based information.

Participants 69-75. Results relevant to the third hypothesis, that those technical writers with verified professional backgrounds would verify web-based information more frequently than the participants of this study as a whole, were inconclusive. Table 4.3 below shows the comparison of responses of participants 69-75 to the cumulative results of the survey participants minus participants 69-75.

As Table 4.3 shows, technically speaking, participants 69-75 self-report verifying web-based information more frequently on five out of the nine strategies itemized by the survey. Again, however, the differences did not turn out to be statistically significant.

Rank Order Comparisons

What may be more interesting, though, is the difference in order of most frequent verification strategies used by participants 69-75 as opposed to the other participants as a whole. While Tau’s tests on rank orders comparisons between these two groups equaled .722, which is not statistically significant, comparisons of specific strategies in relation to the priority the two groups report giving to them merit attention.

Whereas the cumulative results show that, consistent with Flanigan and Metzger’s results, the first listed strategy is the one most frequently used by participants, the second listed strategy is most frequently used by participants 69-75, while the eighth-ranked strategy from Flanigan and Metzger’s results was the fourth most frequent one used by participants 69-75, in contrast to being the sixth most frequent one used by the participants as a whole.
This contrast in order of frequency of verification behaviors by participants 69-75 in comparison to the other participants as a whole and Flanigan and Metzger’s participants is particularly striking because of the possibility that those professionally associated with technical writing organizations may put a greater emphasis on the endorsement of other organizations when it comes to verifying web-based information. Also noteworthy are the nearly identical results from participants 69-75 and the other survey participants as a whole concerning the frequency of use of the third, seventh, and ninth listed behaviors (see Table 4.3). The third listed strategy ranked second for participants as a whole and third for participants 69-75, while the seventh listed strategy ranked ninth for both groups and the ninth listed strategy ranked eighth for both groups. Further comparisons of participants 69-75 and participants as a whole would be necessary to see if the similarities and differences in frequency of verification behaviors used by the two groups would be similar to the ones generated by the results discussed here.

Perhaps the most interesting comparison of rank order results is the range of frequency for the eighth-listed strategy—finding out “whether or not contact information for that person or organization is posted on the site”—as reported by participants 69-75, the other participants as a whole, and Flanigan and Metzger’s participants. This strategy had the greatest range of frequency in rank order comparisons, ranging from as low as eighth of out of nine strategies as reported by Flanigan and Metzger’s participants up to the fourth most frequently used strategy by participants 69-75. Such a jump—four places out of nine total strategies—may well be attributable to the statistically significant correlation between all mean survey responses except for the first, second, and seventh-
listed strategies and regular to frequent use of the web for professional reasons (See Table 4.1).

The eighth-listed strategy becomes even more compelling considering that it is the only behavior for which regular or frequent use of the web for personal reasons was not statistically significant. So while this strategy ranked fourth in terms of frequency for participants 69-75, it was the only strategy the frequency of which is not statistically correlated with use of the web for personal reasons.

Perhaps it may even be protocol for certain technical writers who belong to certain regional technical writer organizations to consider contact information from persons or organizations affiliated with web sites. Another possibility is that those who write professionally may feel more empowered to contact web sites’ authors or organizations since they consider themselves peers or equals of these other writers than those who only use the web for personal reasons. Follow-up interviews with participants 69-75 as well as others with verified technical writing backgrounds are methods for exploring these possibilities.

Verb choice and participant response. The question of which verification behaviors participants report using most frequently is relevant to a point discussed earlier concerning the possible influence of word choice on how survey participants interpret and in turn respond to the survey in light of rank order comparisons of survey results. Flanigan and Metzger interpreted that the verification strategies Web users report using most were due to the comparative ease with which those strategies could be completed in comparison to those strategies survey participants reported using with less frequency. As an extension of this logic, a comparison of the frequency of verification strategies used
by participants of this study to Flanigan and Metzger’s participants might yield insight
concerning the extent to which variance in the verb choice in the itemized strategies in
Flanigan and Metzger’s survey may have influenced survey results.

Participants in both studies reported consistently relative frequency of verification
strategies for the first four listed strategies. Such a result suggests that while eliminating
the verb from the itemized verification strategies listed on the survey was a wise and
cautious move, ease of verification strategy, rather than verb choice used to describe it,
accounts for the relative frequency with which survey participants report using the
itemized verification strategies, since only a significant difference in relative frequency of
verification strategies used between the two participant groups, especially differences
pertaining to those strategies most frequently used according to Flanigan and Metzger’s
results, would be reasonable cause to consider verb choice was a primary factor in how
participants responded to either of the two survey studies being compared. While there
were differences in the rankings of most to least frequent verification strategies used by
the two groups of survey participants, these differences do not show up until the fifth-
ranked strategy.

Discussion. In this section, I will first return to the hypotheses put forth at the
beginning of this chapter, then consider the implications of the results in terms of how
they refine my approach to the research question at the core of this project.

H1: This hypothesis was not supported. While my survey participants reported
verifying web-based information slightly more frequently than Flanigan and Metzger’s
participants, T-tests showed the differences were not statistically significant. This poses
problems for the assumption that a particular demographic can serve as a reliable focus
for study to observe web users who verify information more frequently than the “typical Internet user” studied by Flanigan and Metzger.

H2: This hypothesis was supported. Covariate analysis did show that some demographic characteristics are statistically significant in terms of how frequently web users with these characteristics used certain strategies to verify information. Covariate analysis also shows that age, frequency of web use for professional reasons, and frequency of web use for personal reasons are statistically significant for influencing the frequency with which web users enact a combination of certain strategies for verifying information.

H3: This hypothesis was partially supported. More accurately, results suggest that those with verified technical writing backgrounds verify web-based information differently, rather than more frequently, than those who do not have such backgrounds. While T-tests and Tau’s tests showed that there is no statistical significance between the results of participants 69-75 and the rest of the participants of my study, rank order comparisons between the results from participants 69-75 and Flanigan and Metzger’s participants reveal differences worth pondering. Particularly interesting is the significant jump in rank order of how frequently those with verified technical writing backgrounds find out if there contact information for the author or organization is posted on a web site.

I argue these survey results prompt a refined understanding of what Flanigan and Metzger sought to learn about perception of web credibility. The strategies that people use to verify web-based information are more revealing of how this process occurs than the frequency with which they do so. Web users, after all, do not really verify “web-based information”; they verify specific bits of content situated within a particular
moments of web use focused on a particular topic. The frequency, then, with which web users verify information is context dependent in terms of what information they are looking at and whether or not it becomes apparent to them this information needs to be verified. As the writer of this dissertation, I can think of countless instances when I reviewed considerable amounts of web-based information without verifying any of it—not because the general value of verifying information is unimportant to me but because in those particular contexts of use there was no need to verify the particular information I am reviewing.

To study how web users verify information effectively would then be a matter of determining how they do so, e.g., what strategies do they use, rather than how often they do so absent awareness of the contexts and problems with information credibility that prompt such verification in the first place. These observations point toward an assumption behind Flanigan and Metzger’s study that is worth noting—that the generally suspect credibility of the web—what they posit may be “the least critical medium” in terms of gate-keeping factors in place to ensure information mediated through it is credible, means web users ought verify information with a proportionately high degree of frequency.

This assumption values determining the frequency of verification instead of identifying web users’ context-situated strategies for doing so because it conflates the macro-level web credibility problem with micro-level episodes of web use. What we need to know is when and under what circumstances do people identify the need to verify web-based information, so that we can, in turn, determine if web users do so when the need arises, and secondly, if and when web users decide the need has arisen, how do they
so, how effective are their methods, and what similarities and patterns we can see among those web users who—at least in certain instances—keenly identify when web-based information needs to be verified. In logic, Flanigan and Metzger’s study suffers from the fallacy of division—the assumption that an attribute of the whole is an attribute of a part of the whole; since the web generally is not a credible medium, so the thinking goes, any particular bit of information on it is not likely to be credible. The best web users, then, are those who verify information with a high degree of frequency; hence Flanigan and Metzger’s comment that their results are “alarming” because, in their view, the frequency with which their participants do so is inadequate for a medium that as a whole they deem plausibly less credible than other prominent information media. But absent specific contexts of web use, awareness of who is using the web, for what reasons, what kind of information they are looking at, the frequency with which web users verify information cannot alone stand as a marker of how well individuals do so; what would we say about a web user who habitually verified information that even the biggest skeptic would concede doesn’t need to be verified? Before frequency of verification even becomes an issue, first the need must arise for the information to be verified, and again, the vast array of information on the web cannot be monolithically grouped under a designated level of credibility because of the medium through which it has been accessed. Once this need to verify web-based information arises, a crucial question then becomes, does a given web user recognize this need and follow through with effective strategies for meeting it? In situ study of web use would thus seem to be a necessary method for making such determinations. These considerations, I might add, alleviate concern over questions of how the web compares to other media in terms of credibility, the extent to which it has
become integrated by mainstream media, which, as disclosed in chapter one, some claim have become less credible, and how the web as an entrenched media in 2007 compares to the web Flanigan and Metzger’s participants were using in 2000. These points are really mute. Web users do not read “the web” anymore than they read “newspapers” or watch “television.” They access and review specific bits of content, and it is the perceived credibility of these specific bits of content—i.e., particular web sites and specific claims made on these sites—not the medium in general, that cue researchers as to whether or not a given web user is doing an adequate job of recognizing the need to verify web-based information and doing so effectively.

Since survey results and rank order comparisons reveal that different strategies are used with greater frequency by individuals with different backgrounds, learning about what kinds of information are recognized as requiring verification, and the strategies web users employ for doing so, would seem a promising and necessary direction for gaining knowledge about how individuals verify web-based information in real time.

One important outcome of the survey study is that it affirms a link between the reasons and motives for using the web and the extent to which web users verify information. Experience using the web for professional reasons likely has habituated many of the survey participants to use the web for more serious reasons than entertainment and made them aware of what is at stake when individuals or organizations present claims and purport facts online for the sake of achieving credibility with an audience. The age of a web user also makes some sense as a statistically significant causal variable for increased frequency of verifying web-based information; the older a person is, the more likely that individual is to have encountered other individuals and
organizations who are not trustworthy, and the more likely they are to have some familiarity with situations, events, and issues that are complex and not easily or quickly understood. Thus, those individuals who are familiar with how untrustworthy human beings can be and how complex certain types of information are would make better participants for studying how the process of verifying web-based information than individuals who are absent such insights.

Consideration of web users’ reasons and motives builds on Flanigan and Metzger’s survey results because these reasons and motives contextualize web use in specific ways and offer potential explanatory value for understanding why some people in some situations verify web-based information while others don’t. While such conditions may reflect personality dispositions that range from people who look at the web as a serious tool for learning and communicating to others who see it as an entertainment toy, they are critical for the purposes of this study. The reasons and motives for web use are helpful for sharpening a focus on the kinds of individuals and particular episodes of web use—with close focus on what kind of information is being reviewed and for what reasons—to study through think-aloud protocol analysis.

Think-aloud protocol analysis can capture these context-specific motives central to the time and place in which verifying web-based information takes place. Such a methodological consideration is also consistent with the constructivist approach to verifying web-based information established as a method of study for this project: web use is not absolute or static; all web use is performed for specific reasons at a certain time and place and involves thinking about certain types of information under certain circumstances, e.g. reviewing medical information to resolve a dispute during a leisurely
conversation versus attempting to seek life-saving treatment for a loved one. The reasons and motives a particular individual has for verifying web-based information can vary considerably day to day or even hour to hour. Thus, types of information being reviewed, reasons and motives for doing so, and the particular time and place in which web use occurs are equally pivotal factors in selecting think-aloud protocol participants as age and professional work experience with the web. With that in mind, web users who demonstrate intense focus on medical information, standards for organic labeling, and controversial political information respectively, became the chosen participants for the think-aloud protocol study. They are the focus of the next chapter.
Table 4.1: Survey instrument for studying the frequency with which participants take certain steps to verify web-based information.

S U RV EY:

Verifying Web-based Information: A Close Look at Professionals Online

Please respond to the following survey questions based on a scale of one to five where 1=“never,” 2=“rarely,” 3=“occasionally,” 4=“often,” 5=“all the time.”

When reviewing information via the World Wide Web, how often do you find out . . .

- If the information is current?
- If the information is comprehensive?
- Whether or not the views represented are opinions or facts?
- If other sources validate the information?
- The author’s goals/objectives for posting information online?
- Who the author of the web site is?
- If there is an official ‘stamp of approval’ or recommendation from someone you know?
- Whether or not the contact information for that person or organization is posted on the site?
- The author’s qualifications or credentials?

Please now provide the following information.

Name:

Date of birth:*

Professional organization:

Number of years as a professional communicator/technical writer:

How often do you use the Web as part of your professional work?**

occasionally_____ regularly_____ frequently_____

How often do you use the Web for personal reasons?**

Occasionally_____ regularly_____ frequently_____

Highest level of education
High school______  undergraduate______   graduate___

Table 4.1 (continued):
Do you have a background in English or the Liberal Arts?
   Yes______   No_______

What is your approximate income?
$15,000-$30,000_______  $30,000-$60,000_______  $60,000-$100,000_______
$100,000-$250,000______  $250,000 or more_______

On behalf of myself, Kent State University, and the Literacy, Rhetoric, and Social Practice program, thank you.

*Age turned out to be a statistically significant demographic variable at the p<.05 level for the behaviors of finding out “whether or not the views represented are opinions or facts” and “the author’s qualifications or credentials.”

**Frequency of web use for professional reasons turned out to be statistically significant at the p<.01 level for all but the first, second, and seventh-listed behaviors.

***Frequency of web use for personal reasons turned out to be statistically significant at the p<.01 level for all behaviors but the eighth-listed behavior.
Table 4.2: Mean responses and standard deviations

<table>
<thead>
<tr>
<th>Verification strategy</th>
<th>Means</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the information is current?</td>
<td>3.59</td>
<td>1.006</td>
</tr>
<tr>
<td>If the information is comprehensive?</td>
<td>3.44</td>
<td>.941</td>
</tr>
<tr>
<td>Whether or not the views represented are opinions or facts?</td>
<td>3.44</td>
<td>1.065</td>
</tr>
<tr>
<td>If other sources validate the information?</td>
<td>3.30</td>
<td>.996</td>
</tr>
<tr>
<td>The author’s goals/objectives for posting information online?</td>
<td>2.935</td>
<td>1.1208</td>
</tr>
<tr>
<td>Who the author of the Web site is?</td>
<td>3.13</td>
<td>1.228</td>
</tr>
<tr>
<td>If there is an official ‘stamp of approval’ or recommendation from someone you know?</td>
<td>2.46</td>
<td>.921</td>
</tr>
<tr>
<td>Whether or not the contact information for that person or organization is posted on the site?</td>
<td>3.14</td>
<td>1.065</td>
</tr>
<tr>
<td>The author’s qualifications or credentials?</td>
<td>2.85</td>
<td>1.132</td>
</tr>
<tr>
<td>Verification strategy</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----</td>
<td>------</td>
</tr>
<tr>
<td>Is the information is current?</td>
<td>163</td>
<td>3.60</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>3.57</td>
</tr>
<tr>
<td>V2</td>
<td>163</td>
<td>3.42</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>3.86</td>
</tr>
<tr>
<td>V3</td>
<td>161</td>
<td>3.43</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>3.57</td>
</tr>
<tr>
<td>V4</td>
<td>163</td>
<td>3.30</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>3.29</td>
</tr>
<tr>
<td>V5</td>
<td>163</td>
<td>2.92</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>3.286</td>
</tr>
<tr>
<td>V6</td>
<td>162</td>
<td>3.15</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>2.71</td>
</tr>
<tr>
<td>V7</td>
<td>161</td>
<td>2.46</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>2.43</td>
</tr>
<tr>
<td>V8</td>
<td>163</td>
<td>3.12</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>3.43</td>
</tr>
<tr>
<td>V9</td>
<td>162</td>
<td>2.86</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>2.57</td>
</tr>
</tbody>
</table>
A micro-level study of web users’ *in situ* verification of web-based information

In the previous chapter, survey data and analysis provided grounds for affirming the hypothesis that certain characteristics—namely age and work experience with the web— influence the frequency with which individuals use certain strategies to verify web-based information. These data also show individuals with verified technical writing backgrounds give greater priority to certain strategies and less to others than the other survey participants as a whole and Flanigan and Metzger’s survey participants. These results refined the research question “how do web users verify web-based information in real time?” because they indicate attention to the kinds of strategies that individuals use to verify web-based information, and the online content that prompts these strategies, are more pertinent and fruitful points of investigation than how frequently they verify web-based information.

In this chapter, I seek to learn more about how, when, and why individuals verify web-based information through a series of think-aloud protocol studies of three professional adults. The data generated by these studies provide a necessary basis for identifying descriptive accounts of web use that offer potential prescriptive value. As I
reveal these data, I follow up discussion of results with arguments that explain why these descriptive accounts of web use illustrate the prescriptive approaches outlined by one or more of the three theoretical approaches I discussed in chapter one: Bruce’s dialectical reading, Burbles’ ethical approach to web use, and Haas and Wearden’s common ground approach. I then proceed to examine the cumulative results of these think-aloud protocol studies by way of an argument that there are consistent patterns in the way these individuals explore web-based information that makes their approaches worthy of prescriptive value. As I explained in the introduction, initial collections of descriptive approaches to web use that are prescriptive are insufficient for generating models of web use, but they are a necessary step toward learning more about how individuals perceive and evaluate web-based information in real time under real-life circumstances. These data also provide something surveys cannot: descriptions of the process web users undergo when reviewing web-based information, and identifying what strategies they use as web use is in progress, which in turn provide a close look at how verification fits into this process—both important contributions to the study of web use.

**Participants and procedure:** Think-aloud protocol sessions were conducted with three adult professionals—named here “Susan,” “Bo,” and “Oliver”—ranging in age from their early thirties to early forties. These sessions took place in the home or work environments where the participants regularly use the web. Sessions lasted between one and two hours. Participants were instructed not to address me personally but to voice out loud comments about the web-based information they were reading. Each participant reviewed web-based information that was relevant to their concerns at that specific time, which is an important *in situ* variable with regard to how web users read the web: they do
so for different reasons at different times, and the particular information they examine, and their reasons for finding it credible or not credible, are sometimes influenced by events at that particular moment in their life. Thus, each think-aloud protocol session attempts to model a process of web use that unfolds as it does at least partially because of the context (i.e. time and events) that comprise the context of web use under study.

Theoretical grounding for participant selection

There is some theoretical basis to expect that the think-aloud protocol participants would provide examples of web use that offer prescriptive value because of their age and professional backgrounds. Haas and Flower (1988) compared the reading practices of average undergraduates to those of graduate students and professionals. Their study is based on the assumption that many of the problems individuals encounter in their development as readers are directly related to difficulties the readers have in recognizing the need to construct a rhetorical framework for making sense of a text. Successful reading, according to these authors, requires not merely extracting content from texts but also making rhetorically-based judgments about motives of the author, and how an author’s work fits into a larger collection of texts, all of which are rhetorical considerations that reflect some of Flanigan and Metzger’s verification strategies. Such rhetorical understanding of what it means to read texts would seem to be an important component of verifying web-based information. The results of Haas and Flower’s study show that more experienced readers demonstrate a keener awareness of the rhetorical context of the texts they read. Haas and Flower claim that a text is not understood only in terms of content and information but in terms of rhetorical awareness of how it fits into a larger scheme of intentions, motives, and a larger realm of discourse.
Later, Haas (1994) extended her work on rhetorical reading to a longitudinal study of an undergraduate biology major’s development as a reader during her four years of university study. She found that this student moved from a view of texts as “autonomous,” whereby reading meant absorbing and relaying content, to constructing what Haas calls a “rhetorical frame” around texts—a view of texts as situated within the motives of the author and the background and expectations of the author’s audience, variables that shape how texts are written and interpreted.

Together these studies provide theoretical grounds for hypothesizing that experienced readers familiar with professional environments are more likely to engage in reading practices that encompass the considerations of author’s motive, and context of production necessary to verify information than readers confined to a simple “fact-checking” approach. Based on this research, we can expect there would be at least some distinction between the online reading practices of adult professionals with extensive web experience and younger web users or others who are unfamiliar with the web.

The rationale for a think-aloud protocol methodology in order to enhance our understanding of how certain individuals verify web-based information, explained initially in chapter two, is that this approach yields data coded through analysis that eventually reveal patterns of how individuals perform certain tasks. Because it is an *in situ*, constructivist approach to how participants perform tasks, think-aloud protocol analysis provides an opportunity to follow closely how individuals think when they examine and verify web-based information, thus ensuring the greatest possibility that *in situ* variables are revealed in the research process.
Unit of analysis

As with other think-aloud protocols, the unit of analysis for each session was the T-unit, a subject-verb pair in which the subject may be implied. Two main stages of analysis ensued once the sessions were transcribed. The first stage involved distinguishing non-analyzable utterances from analyzable ones. Non-analyzable utterances consisted of reading, narration, and housekeeping.

After recursive analysis of all think-aloud sessions, a coding system was established for the analyzable utterances. This coding system, based in a grounded theory approach to research (Glasier and Strauss, 1987) was established and adjusted in accordance with types of analyzable utterances that came from each successive session. In the end, four categories of analyzable utterances were determined to accommodate the T-units not excluded by the first stage of analysis: 1) statements of interest/identification of relevance, 2) analysis, 3) negative judgment, and 4) positive judgment, which fell into two types: positive or negative.

Methodology and rationale

As the introduction explains, think-aloud protocol analysis is a method of study designed to generate a detail-intensive description of how humans think about a task as they are performing it. Because the descriptions that follow have been gathered to provide a prescriptive account for Web users, the more details the descriptions offer, the more valuable they become, because such descriptions offer the greatest potential to address the difficulties encountered by a variety of web users in a variety of contexts. Because this project is theoretically grounded in the idea credibility assessments are “transaction-intrinsic” (Delia) and that constructivist models of meaning-making need to
be generative (Witte), the rationale for a think-aloud protocol methodology is that it will produce optimally generative and adaptable prescriptive accounts of web use, thus achieving my project’s goal: detail-intensive descriptions of web use performed in real time, situated in a particular time and place.

“Jack”: The pilot study

Jack is a private practice attorney in his early 40s who uses the web daily in his professional work. Jack’s think-aloud protocol session took place at both his work studio in his home and at his law library in his downtown law office. During his think-aloud protocol, Jack reviewed web-based information on his client’s corporation in order to see if it matched the documents he has in his law office. The session lasted 45 minutes.

Discussion of Jack’s protocol

One problem with the data set from Jack’s protocol is that the information he reviews in many ways is already so familiar to him that verification is neither difficult nor of great concern. As Jack intimated in a post-session interview he voluntarily gave, the information for him was “self-authenticating” and his main concern was to make sure the online government online of his client’s corporation matched up with documents in his law library. Nonetheless, the pilot study did help achieve a clearer understanding of the way different adult professionals think about what it means to verify web-based information.

For some web users, certain information in a particular context is self-authenticating. For these individuals, verification appears to be neither relevant nor a priority. Such a discovery, while perhaps banal at first glance, does reveal something important—these documents are self-authenticating for this particular web user because
of his professional background and experience, not because of self-evident attributes of
the web sites he is examining themselves. Another experienced web user without a legal
background and legal professional experience might not discern such web sites as self-
authenticating, and might not be able to distinguish these sites from imitations. For such
individuals, verification does become relevant; the impetus for authenticating the
Kentucky Secretary of State’s website, discussed in chapter two, would seem to be to
provide a means of verification for such individuals.

Further, although Jack recognizes the sites as self-authenticating, how those sites
fit into the practice of his professional life, that is, how they are put to use by him and for
him, is another matter. While use of these web sites may appear routine for Jack, their
relevance to the legal profession and its protocol only come from the “common ground,”
to use Haas and Weardon’s term, Jack has with the practice of law, the textual artifacts
common to that practice, and the people and places with whom he has regularly
interacted—clients, clerks, judges, and so forth. His knowledge of the law and
experience as a practitioner shape his understanding of the web sites he uses, and their
meaning for him is situated in the specific case on which he is working during the
protocol (Witte, 1992), not in the texts themselves or their seemingly “self-
authenticating” attributes. Such observations reinforce Eco’s (1976) point that it is not the
sign but the “sign-function” of a text that conveys the meaning or meanings it may be
assigned.

Two main goals were achieved through this analysis: a) the generation of an
initial coding system, later merged and refined into the one used for analysis of Susan,
Bo, and Oliver’s protocols, and b) a keener idea of which individuals and contexts in
which they verify web-based information are best studied for this project’s purposes. Following Jack’s protocol, criteria for participants came to include the stipulation that individuals would not be examining web sites routine to their professional practice but rather those they sought out for specific reasons. Further, these reasons needed to derive from the initiative and interest of the web user rather than workplace procedure; the distinction had been made between web users’ procedural and constructivist knowledge, the focus now being on the latter. The following three protocols were arranged under such criteria. In the sections that follow, I provide background information, results, and discussions pertaining to each of these three think-aloud protocols, and then examine them cumulatively.

*The Coding System*

The final revision of the coding system took place in June 2005 after the last transcription of think-aloud protocol was done. According to a research memo dated 22 June 2005, the coding system had been condensed from the initial nine categories generated from the pilot study to seven: identifications of interest or relevance, expectation, affirmation of expectation, negation of expectation, appraisal, negative judgment, and positive judgment.

While not as unwieldy as the initial coding system, this system needed further revision, because one approach to grounded theory methodology is to review data and see if existing categories can be merged or grouped. Upon further examination of the data, it became clear that the categories of expectation, affirmation of expectation, negation of expectation, and appraisal could be grouped together under the category of analysis because of their similarity in terms of being utterances that express an advance in thought
about a particular area of focus. After this grouping, the final coding system of four categories was in place.

Identifications of interest or relevance: These utterances express initial identifications of focus on a certain topic of information. They are often explicit utterances that contain the words “interesting,” “interest,” or “relevant.” Occasionally they are expressed by a term such as “Wow”, which indicates the web user’s focus has been grabbed by a particular area of content.

Analysis: These are comments that express thinking about web-based information that go beyond initial identifications of interest or relevance but stop short of judgment. They regularly are expressed in the form of questions.

Negative judgment: These utterances contain explicit comments of “bad” or obvious synonyms, such as “dud” or “wrong impression.” Occasionally they take the form of defiance or insult, e.g. “where to stick their genetically modified organisms.”

Positive judgment: These utterances contain explicit comments of “good” or obvious synonyms, such as “jackpot,” “best source,” “clearest source,” “trust,” or “I agree.”

Table 5.1: Coding scheme for think-aloud protocol analysis and examples

<table>
<thead>
<tr>
<th>Identifications of interest and relevance</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Wow”</td>
<td>“Might be a little more reputable”</td>
</tr>
<tr>
<td>“A bell goes off in my head”</td>
<td>“He’s not cured”</td>
</tr>
<tr>
<td>“Take me off the beaten path”</td>
<td>“A lot to look at here”</td>
</tr>
<tr>
<td>“What is this all about?”</td>
<td>“They don’t tell you why”</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative judgment</td>
<td></td>
</tr>
<tr>
<td>“Kind of an out-dated article”</td>
<td>“I agree”</td>
</tr>
<tr>
<td>“Unacceptable to me”</td>
<td>“Jackpot”</td>
</tr>
<tr>
<td>“Dud”</td>
<td>“Satire being the best source”</td>
</tr>
<tr>
<td>“Very selective about its information”</td>
<td>“It’s a good site”</td>
</tr>
<tr>
<td>“Is totally false”</td>
<td>“It’s very in-depth”</td>
</tr>
</tbody>
</table>
Think-aloud protocol data sets: Susan, Bo, and Oliver

“Susan”

Susan is a married woman in her early forties with a professional background in nursing exploring Web-based information on sarcoma, a somewhat rare type of cancer for which specialized treatment options can be difficult to find. Susan is examining this information to find the best treatment available for her husband, who has been diagnosed with the disease.

The think-aloud protocol with Susan took place in the late summer morning in the work room of her home. After explaining the procedure to her, recording began and continued without direction or interruption from me until she finished her review and evaluation of Web-based information on sarcoma. At the end of her review and evaluation of the information, she voluntary told a brief story about a friend of hers who had an encounter with sarcoma and received unreliable medical advice on treatment. Her account of this event has been included as data but analyzed separately from her think-aloud protocol. Susan’s think-aloud protocol lasted two hours.

Narrative description of Susan’s think-aloud protocol

Susan begins by announcing she is looking for information on treatment for sarcoma. She makes preliminary review of sites with which she is familiar. One of the first sites she reviews is endorsed by the National Cancer Institute which she comments is “a good sign.” She then proceeds to find some links to other sites she says are “interesting.” Not long into her protocol, Susan encounters a site called “sarcoma.com” which she evaluates as a “dud.” Two points become salient here. One is that Susan already knows sarcoma “is a very virulent cancer” yet the author of the site claims that
for just $29.95 one can be cured of it. The second is that Susan objects to the unfortunate reality that this author has “a great web address” that is “on top of sponsored links.” Susan deems this situation to be “unfair” and claims the author is a “quack”, both because he claims sarcoma can be cured for such a low price even all other treatments cost in the thousands of dollars, and the fact the author claims himself to be cured even though he reports that he still “has a little bit of cancer,” which she knows means he is not cured.

She then turns her attention to a “Dr. Mackey” whom she finds to have “a good site.” Her continued review of his site leads her to conclude “further investigation is warranted.” But as she continues her research, she encounters some problems. One is that she finds contradictory statements from seemingly credible sites about whether or not a medicine called adryomyson is compatible with chemotherapy; one site says it is, another says it isn’t. Another problem she encounters is that “you really have to be a doctor” to understand a lot of the information she reviews. On top of that, some of the information she reads leads her to reconsider the treatment her husband is currently receiving. She wonders if “we should rethink” their current course of treatment.

These doubts are reinforced when she realizes that because of the complexity of sarcoma, many of the results of treatment studies are “so randomized” because there are “many different kinds” of sarcoma, thus leading to wonder if some of the information she has studied closely “really can be useful information to me.” As she looks at more sites, she feels they are “just confusing me more.” She does come across a medication previously unfamiliar to her called “epirubicin,” but she realizes the results of this medication are not that promising because “a scant cancer cell can escape.” Again, the complexity of sarcoma becomes pertinent because Susan must discern if this medication
is designated for treating soft-tissue sarcoma or synovial sarcoma, which are two types of the disease requiring different approaches. After a while, she continues to “keep seeing the same information over and over”, and, after finding some other sites that are “interesting to me,” one of which presents a “pretty new study,” she concludes her session.

After her protocol, Susan voluntarily gives a narrative account of a friend of hers who used the web to research cancer treatment. Despite doing thorough research online, as well as talking to many doctors, this person’s cancer was misdiagnosed because its advanced stage and severity went unnoticed until the symptoms became irreversible. Because of this experience, Susan explains she is skeptical of all the information she gets regardless of the source, and also why she is so rigorous in her questioning of doctor’s who purport to be expert in sarcoma treatment. “You never know,” she says, “they might be using the computer too!”

This last remark points to what Burbule’s calls one of the paradoxes of the web: because it is such a vast network of information, it actually becomes self-referential in that numerous sites come from the same small cluster of original sources, and so many people depend on the web for information, that even experts like doctors find themselves reverting to the same information source as individuals like Susan who are seeking specialists for treatment.

One should not overlook Susan’s sustained focus: she spends the entire protocol on the topic of sarcoma treatment. She makes an announcement at the beginning that she is looking for information on this topic, and she follows through on that objective. She also makes comments about how some sites will “take me off the beaten path.” She also
realizes when a certain trail of information is not useful for her purposes, as when she declares being done “wasting” time on a certain site. These behaviors indicate that she brings certain expectations to her reading, and realizes when certain sites are diverting her away from the needs and priorities that remain her focus during the protocol session.

Because Susan comments on online sarcoma treatment information primarily in terms of analysis, I argue she is actively constructing the credibility of web site authors in real time as she reviews these sources. Her reading and comments about these sources are focused and strategic, meaning she does not make credibility assessments based on pre-existing assumptions, spontaneous reactions to “new” information, or rigid credibility judgments without first thinking about and examining the claims that the authors present. Since the sources of web-based information on sarcoma treatment are mixed with both “very medical” sources and “quacks,” she understands that it is her responsibility, not that of the media, technology, or information to which she has access, to construct the ethos of the authors whom she encounters. Thus, the credibility of these web-based authors is neither self-evident nor pre-determined by them alone; it is constructed by the web user during her “transaction-intrinsic” interaction with these authors’ mediated written content.

Results from Susan’s protocol

Susan’s think-aloud protocol generated 119 analyzable T-units (See Table 5.1). Data show that Susan’s thoughts primarily consisted of analysis, which comprise 46% of analyzable utterances. The second most frequent utterances were those coded as identifications of interest and relevance, at 26.5%, followed by utterances of negative
judgment, 19.5%, and those coded as positive judgment, 8%. Table 5.2 below provides a sample of T-units from Susan’s protocol.

Table 5.2: Sample of words or phrases from Susan’s think-aloud protocol categorized within the study’s coding system and percentages of each type of utterance

T=119

<table>
<thead>
<tr>
<th>Analysis (46%)</th>
<th>Interest/Relevance (26.5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Guy is basically saying”</td>
<td>“Check out Dr. Mackey”</td>
</tr>
<tr>
<td>“Considering himself cured”</td>
<td>“See adryomyson here”</td>
</tr>
<tr>
<td>“Will just jump”</td>
<td>“I’m seeing this”</td>
</tr>
<tr>
<td>“A great web address”</td>
<td>“This is interesting enough”</td>
</tr>
<tr>
<td>“Seeing a lot of the same sites”</td>
<td>“I’m not interested”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Negative judgment (19.5%)</th>
<th>Positive judgment (8%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Dud”</td>
<td>“Good”</td>
</tr>
<tr>
<td>“Quack”</td>
<td>“Jackpot”</td>
</tr>
<tr>
<td>“Unfair”</td>
<td>“Very medical”</td>
</tr>
<tr>
<td>“Bad”</td>
<td>“Seems up and up”</td>
</tr>
<tr>
<td>“Upsetting”</td>
<td></td>
</tr>
<tr>
<td>“Confusing”</td>
<td></td>
</tr>
</tbody>
</table>

Utterances of analysis and negative judgment often came in clusters, whereas utterances of interest/relevance and positive judgment occurred in isolation, although there were three clusters of three consecutive utterances of interest/relevance, but only one instance where there were two consecutive utterances of positive judgment (see Table 5.7).

The data generated from Susan’s protocol provide grounds for claiming that her review of online medical information offers prescriptive value. That her most frequent thoughts are those of analysis demonstrates that she has an engaged focus on specific areas of content. She neither rushes to judgment, thereby dismissing a particular course of thought, nor does she interrupt the attention she is paying to certain items of
information from specific web sites by constantly, abruptly finding something else of interest and relevance that re-directs her thoughts and attention.

Susan’s utterances of analysis also show awareness of the limitations of her own knowledge as well as the limitations of her information source, a wise sensibility for any user of any media. Her comment, “you really have to be a doctor to understand this” conveys that she realizes the Web alone cannot provide her with the information she needs; part of her challenge concerns her background, and the ways in which it differs from a doctor’s.

Susan has attempted to make up for deficiencies in her medical background through the numerous visits to hospitals and conversations with patients and doctors she discussed in her post-protocol interview. These interactions prove to be an asset to her when it comes to evaluating web-based information on sarcoma, as well as what she hears from doctors. Her visits with patients and doctors also serve as an example of common ground in operation; they are acts of adapting one’s background to compensate for what information sources alone cannot help them figure out.

“Bo”

Bo is a manager of a local organic foods store in a small Midwestern town. He is quite active in the local community: he serves as curator for a local art gallery, participates in a downtown peace organization, coordinates and promotes a series of outdoor movie events during the summer, and resides as a member of the local arts council. He is also a musician who plays with local bands. On the afternoon of his think-aloud protocol, he is investigating reports that a brand of milk labeled as “organic,” a brand the organic foods store has in stock, may not really be organic milk.
The think-aloud protocol session with Bo took place at the work studio of his apartment, located above the art gallery where he works, on an early weekday afternoon. Bo reviewed information about standards for organic food cultivation and labeling for forty-five minutes before going downstairs to open the gallery.

Narrative description of Bo’s protocol

Bo is motivated to research online reports about organic standards in order to check out claims a brand of milk that labels itself as organic does not really meet these standards. As is the case with Susan, much of his motivation has to do with concern for the well-being of others; as manager of a local organic foods store, many people depend on him to make sure they the organic food they want either out of preference, medical need, or doctrine. He is also looking out for the local organic farmers from whom he buys products wholesale, since these people will obviously lose business if companies succeed in fraudulently representing and selling their products to customers who want to buy organic.

Bo begins by commenting on sites he has found to be “relevant to the organic industry” as a way of pinpointing the sites he needs to examine. As he finds sites and information he thinks will help him resolve his uncertainty about organic standards, he says he will “make a mental note” of what he has just read, indicating that he is focusing his reading of information around his objective to learn more about organic standards.

He then comes across a site that mentions an organization known as “Monsanto” that catches his attention, prompting him to comment, “A bell goes off in my head.” Since Bo already has familiarity with this organization he takes time to review what is being reported about it. He is surprised by what he reads, as evidenced by the comments,
“Wow,” and “that surprises me.” The surprise, as it turns out, is not a pleasant one, however, since Monsanto has been able to advertise its products as organic even though Bo’s knowledge of the organization causes him to disagree with such a practice. Bo’s disdain for Monsanto and its organic labeling becomes evident in his comments, “My hair curls,” and that he would like to tell them “where to stick their genetically-modified organisms.” This last comment indicates that Bo’s awareness of Monsanto’s practice of genetically modifying the organisms that go into their products lead him to the position that such a practice ought to disqualify them from organic labeling even though in reality it does not. Thus, Bo’s familiarity with what he considers legitimate organic farming and food production, and his knowledge of an organization like Monsanto, influence how he interprets and judges the credibility of the sources he examines.

Bo proceeds to “find out more” about Monsanto’s practices and legal arguments made to the Department of Agriculture that claim Monsanto’s practices are legitimately organic. But Bo does not agree with these definitions of organic labeling, commenting that they are “unacceptable to me.” He then reads a counter-argument against Monsanto’s organic labeling which he finds agreeable, announcing, “I agree with that.”

At this point, Bo decides that he needs to “check on the organic standards” themselves to gain more insight about how the standards are actually articulated and interpreted by various food companies and regulatory agencies. The first thing he realizes as he sets out to do so is that there is “a lot to look at here.” This comment reflects on one of Burbules’ “paradoxes of the web” wherein the vast amount of information available online works against the extensive time needed to review and analyze it. Bo realizes that some of this information is “not exactly what I was looking
for,” a comment that indicates Bo is maintaining focus on certain topic of inquiry as he sifts through all of this information.

Ultimately, Bo’s quest to get the information that needs on organic standards has to wait for another day. The content he examines does not answer his questions, as he finds that the sites he examines “look truly bizarre,” or contain “too many ads.” He does find a ruling on organic standards that prompts him to say “I agree.” But the next link he examines leads him to say, “I’m not so sure about that one.” The next link is also a disappointment, as Bo sees it “as kind of an out-dated article.”

Bo’s final strategy is an interesting one. Rather than just continue to peruse more sites and links, he emails the state’s Department of Agriculture in hopes of getting a response that will address his specific concerns instead of just hoping that some information will come along that will answer his questions directly. Before he logs off to open up a local art gallery next door to his apartment, he makes one last comment as he sends his email, “getting a reply will help me understand.”

This comment would seem to suggest that Bo is reading the web dialectically, as Bruce explains it, because his reading is geared toward gaining a greater understanding of the topic he researches, rather than just to accessing information or rendering judgments about it. In sending an email requesting elaboration on organic standards, Bo is asking questions in order to gain knowledge. He realizes that access to information alone cannot fully address his concerns, so he actively engages other sources in hopes of learning what the current status of organic standards is and how that applies to the decisions he makes in terms of the products he will offer at the local natural foods store.
Results from Bo’s think-aloud protocol

Bo’s think-aloud protocol generated a total of 39 analyzable T-units (see Table 5.3). All but two of his analyzable thoughts were evenly distributed across statements of interest or relevance (32%), analysis (32%), and negative judgment (29%). Two of the remaining 39 analyzable T-units (5%) were coded as positive judgment. Table 5.3 below provides a sampling of coded analyzable T-units from Bo’s think-aloud protocol.

Table 5.3: Sample of coded analyzable T-units from Bo’s think-aloud protocol

<table>
<thead>
<tr>
<th>T=39</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interest/Relevance (32%)</strong></td>
</tr>
<tr>
<td>“I think they’re relevant”</td>
</tr>
<tr>
<td>“Relevant to the organic industry”</td>
</tr>
<tr>
<td>“Make a mental note of that”</td>
</tr>
<tr>
<td>“A bell goes off in my head.”</td>
</tr>
<tr>
<td>“What they have to say about the standards”</td>
</tr>
</tbody>
</table>

| **Negative judgment (29%)** | **Positive judgment (5%)** |
| “Boo” | “I agree” |
| “Where to stick their genetically modified organisms” | “I believe that” |

Seven consecutive statements of interest or relevance begin Bo’s think-aloud protocol. From that point, statements of this category occur in one other cluster of two consecutive statements, and once following and preceding statements of other types. Statements of analysis and negative judgment came once in a four-consecutive cluster; otherwise statements of these categories only one at a time, with the exception of one two-consecutive cluster of statements of negative judgment. Interestingly, analyzable utterances 12 through 15 include all four categories of coded analyzable utterances: interest and relevance (12), analysis (13), negative judgment (14), and positive judgment (15).
Bo’s approach is to go directly to the information on standards for organic farming and labeling that are his primary interest and with which he is already familiar. This approach on Bo’s part would also explain why his protocol begins with seven consecutive statements of interest or relevance; he wants first to identify the websites and web-based information that are in his mind useful for his purposes. Susan’s approach, by contrast, seems to be to analyze relevant information as she finds it; once her analysis is done she proceeds to seek out other web-based information of interest and relevance for her.

“Oliver”

Oliver is a musician, artist, and construction worker who regularly spends many hours a day on the web, reviewing information, forwarding sites to friends, chatting online, and posting information himself. For Oliver, verifying web-based information is more of a general hobby than an act situated in a particular context, as it is with Susan’s and Bo’s respective protocols. Oliver considers himself a political activist, and as such someone with a duty to purvey the Web for misleading or deceitful information, and to advise other web users of online information he feels should not be trusted or believed.

Oliver’s think-aloud protocol took place mid-morning on a Wednesday in his computer and mixing-board studio. The session lasted two hours.

*Narrative description of Oliver’s think-aloud*

Oliver is a web guru with an elaborate computer set up that allows him to use one mouse and cursor between two different monitors set side by side at this home work station. He needs these two monitors because of the numerous programs he has set up in
his system, many of which are music programs he uses to record and mix original CDs digitally.

Oliver begins by announcing that he likes to check out the online version of the New York Times, because he “tends to trust a newspaper.” Right away, he finds something of interest, asking, “What’s this all about?” The story turns out to report a plan to increase funding and troops for the Iraq war. It doesn’t take long for Oliver to decide that “this is just so fucked up,” and that this story isn’t worth pursuing “too much further.”

He then finds a site that he describes as “odd” and “weird” that claims the U.S. government has been maintaining concentration camps from WWII. But Oliver comments that “they don’t tell you why” this is being done, which leads him to say “you gotta wonder” how reliable the source is, especially since he observes, “I don’t know what the source is.” As he attempts to look at the links from this site to see if he can verify the information, he verbalizes that he is getting “a whole lot of exactly the same small amount of information.” For him, this story turns out to be nothing more than a “far out conspiracy theory” because it leaves too many questions unanswered, like “Why are some of them staffed?” and “Why are we maintaining a concentration camp from WWII?”

The next series of sites Oliver examines, however, meets his expectations. They “cut straight” as he puts it. The sites catch his eye because they deal with “global warming” and he finds the claims being made are “one of those ‘duh’ moments,” meaning that they are obvious and couldn’t be ignored. “Only a zealot for right-wingers could ignore it,” as Oliver puts it. Out of curiosity, Oliver goes to some sites that
denounce the claims purported in the previous site he examined. This site argues that the increasing amount of auto emissions poses no danger to the environment nor does it perpetuate global warming. Oliver finds that this source is “very selective about its information” and that it “really doesn’t answer” the questions he has about its legitimacy. He further discredits this site because it buries information about fuel efficiency which Oliver thinks “would be kinda up there” in terms of the priority and attention it would be given by such an article.

This same site draws Oliver’s attention to another story he finds amusing and completely unbelievable. According to this source, the FCC is going to ban all religious promotion and expression on radio and television, and the site calls on the faithful to rally against this “liberal” organization. Oliver finds this story to be “totally false” and “untrue and bizarre” and finds it incredible that this story has actually been circulating “since 1975!” which for him makes it even more ridiculous that people would believe it. He finds this story to be a “false thing” purported by “morons” who are “helping to spread hatred and mistrust” and that their stories are nothing but “lies” and “myths.”

Oliver then turns his attention to one of his favorite sites, which is the online version of The Onion, a satirical source that mocks contemporary newspapers and politics. Interestingly, Oliver sees satire as an information source, rather than just entertainment. He comments that “satire is the best source” and “clearest source of information.”

The next site he visits, also anti-establishment, fails to meet his credibility standards because it is “just so far out” and “reports something about astrology as fact.” These comments by Oliver indicate his interpretation of information credibility is not
rigidly determined by ideology, since he finds sites that are both right-wing and left-wing, according to his judgment, to be not credible.

Another problem with this site is that it “didn’t actually have a link” so that “there’s no way to check it” even though “it sounds interesting.” The attempts Oliver makes to gain more information about this site turn out to be fruitless, as he comments, “all this shit’s just tangents.” This observation reflects an awareness of another of Burbules’ (2003) paradoxes of the web, that information just sends web users looking for more information, which in turn leads to the need for even more information, to the point that it becomes difficult, if not impossible, to maintain coherent connections in one’s mind between all the different sites and sources one is examining.

The last topic of information Oliver examines has to do with conspiracy theories about the September 11 terrorist attacks on the World Trade Center and Pentagon. Oliver has seen these claims before as he mutters, “here we go again.” One site he examines is based purported on contradictions in a GOP report on the attacks. While Oliver doesn’t “have any trouble believing that one” he realizes a big problem with verifying such a claim is “to actually read the GOP report” or even “actually finding the GOP report,” which would be quite difficult and time consuming. Oliver seems to understand that issues of credibility go beyond information, because, despite the myth that the web makes information easily accessible, what it really does instead is overload readers with information that ultimately can only be verified by getting yet even more information. Consequently, some of this information, like the GOP report on the September 11 attacks, is anything but easy to get one’s hands on, and even if one could get it, would take a considerable amount of time to read and in turn assess it in terms of credibility.
Ultimately, as he continues to review the site, he finds it “suspect” and fill of “statements I cannot confirm.” For him, the matter appears to come to a question of whom to believe. He asks, “Do you believe NORAD?” Or, “do you believe the people who say that” NORAD’s side of the story is not credible.

**Results from Oliver’s think-aloud protocol**

Oliver’s think-aloud protocol generated a total of 84 analyzable T-units. Like Susan’s protocol, the majority of Oliver’s analyzable T-units are statements of analysis (47%), followed by identical numbers of statements of interest or relevance and negative judgment (23% each), and most sparsely, statements of positive judgment (7%). While statements of interest or relevance were greater in number than those of negative judgment for Susan (26.5% compared to 19.5%), the pattern of analyzable statements for Oliver’s protocol is similar to Susan’s, with analysis and positive judgment at opposite poles of frequency of coded analyzable utterances. Positive judgment was the type of analyzable utterance least frequently thought out-loud in Bo’s protocol as well. Table 4.4 below provides a sample of Oliver’s analyzable T-units.

**Table 5.4: Sample of coded analyzable utterances from Oliver’s think-aloud protocol**

T=84

<table>
<thead>
<tr>
<th>Analysis (47%)</th>
<th>Interest/Relevance (23%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Which one do you believe?”</td>
<td>“There’s some interesting information”</td>
</tr>
<tr>
<td>“They don’t tell you why”</td>
<td>“Sounds interesting”</td>
</tr>
<tr>
<td>“Statements that I can’t confirm”</td>
<td>“Here’s something”</td>
</tr>
<tr>
<td>“You’d think it would be on the first page”</td>
<td>“What is this all about?”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Negative judgment (23%):</th>
<th>Positive judgment (7%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>“This is just so fucked up”</td>
<td>“Satire being the best source”</td>
</tr>
<tr>
<td>“Pretty crappy site”</td>
<td>“clearest source of information”</td>
</tr>
<tr>
<td>“Far-out conspiracy theory”</td>
<td>“just cuts straight”</td>
</tr>
<tr>
<td>“is totally false”</td>
<td>“tend to trust a newspaper”</td>
</tr>
<tr>
<td>“Morons”</td>
<td></td>
</tr>
</tbody>
</table>
Statements of analysis occurred in two clusters of six consecutive statements, one cluster of five consecutive statements, and three clusters of four consecutive statements. There were also four clusters of two consecutive statements of analysis. Statements of interest or relevance occurred in one cluster of three consecutive statements and four clusters of two consecutive statements. There was one cluster of six consecutive statements of negative judgment in addition to two clusters of two other consecutive negative judgment statements. Statements of positive judgment occurred in one cluster of three consecutive statements and one cluster of two consecutive statements (see Table 5.6).

Since nearly all (38 out of 40) of Oliver’s statements of analysis come in clusters, and since six of those ten clusters consist of four or more consecutive statements, one can consider Oliver’s reading of web-based information to be focused; he appears engaged in prolonged, thoughtful evaluation of what he reads. Asking questions, assessing how the content matches up with his expectations, making inquiries through multiple sources in an effort to “confirm” various statements—all of these approaches indicate that Oliver makes sensible attempts to discern the credibility of online information. His reference to trusting newspapers would also suggest that he does not rely on the web alone for information and so is not vulnerable to one of Burbules’ paradoxes of the web: finding oneself in an endless self-referential information source.

*Primary claims*

Before I proceed to a more detailed discussion of protocol results, I will present three primary claims about what these participants offer in terms of learning about how web users verify information in real time. There are three primary claims: 1) participants
recognize the need to verify web-based information and proceed to do so, 2) they are aware of the difficulties of the task and the limitations of the web as an information source, and 3) descriptive accounts of protocols offer prescriptive value.

Participants recognize the need to verify web-based information and proceed to do so. While perhaps obvious, it should not be overlooked that the subject matter examined by all three participants is rather complex and requires them to examine information closely and think analytically about its credibility. Sarcoma, for example, is such a rare type of cancer that, as Susan realizes, specialized treatment is hard to find, let alone make sense of. Her comment that “This is upsetting” points to the frustration she experiences as the range of information she is trying to absorb leads her to both confusion and consideration that the current course of treatment for her husband may not be the best approach. One important thing to realize here is that it is the complexity and difficulty of the subject matter, not the credibility of the web as an information medium, which makes verification necessary. Only the site “sarcoma.com” would seem to be a symptom of the credibility problem Flanigan and Metzger cite in their research. Susan’s reaction to this site—that it is “very upsetting” because the author has such a good address which she feels he is “abusing”—reflects her anger at a media system that allows someone as unscrupulous to her as this site’s author to get an address that sounds legitimate. In this case, verification is rather quick and self-assured. But it is precisely her knowledge of how complex sarcoma is and how difficult it is to pin down reliable treatments for an illness that is rare and has only recently received specialized attention that leads her to see through this site’s fraudulent claims promising cheap and guaranteed results as though she were looking for a food processor. The fact that she gets angry at the site’s
author, rather than just laughing at the absurdity of his claims, shows that she understands
how much is at stake, not just for her but for doctors and patients grappling with this
illness. As a result, high stakes as well as the complexity of subject matter prompt
Susan’s awareness of the need to verify the information that she reviews.

But besides the bogus claims from sarcoma.com, the rest of the information
requires verification not because of a medium that gives legitimate-sounding addresses to
quacks but because the information is difficult to comprehend and knowledge about
sarcoma treatment is still limited. Susan’s comment, “You really have to be a doctor to
understand this” reveals the kind of intensively specialized background one needs just to
make sense of some of the information on sarcoma treatment. Susan also realizes that
doctors themselves may not really know any more than she does. She emphasizes in a
post-protocol, voluntarily-given narrative that “you have to ask the tough questions”
because the doctor “might be looking at the computer too!” Being aware of the difficulty
of the subject matter, and the range of options of treatment advised by doctors at an
exploratory stage of research and treatment, Susan spends most of her protocol
investigating and analyzing different web sites, and only in the case of “sarcoma.com”
does she make a fairly quick credibility judgment. Her comments indicate that she is
aware of the need to verify the web-based information she reviews, and she spends most
of her time doing so rather than making quick and frequent judgments as though the
credibility of this information were transparent and easy to determine.

The same can be said for Bo and Oliver, both of whom realize that the subject
matter they are reviewing requires verification because it is in many ways complicated
and does not lend itself to low-maintenance credibility assessments.
Like Susan, Bo’s online research takes into consideration the well-being of other people. Because honest organic labeling is a health issue for many of his customers, fraudulent sources like Monsanto draw his disdain as expressed by the comment that he wants to tell them “where to stick their genetically-modified organisms” just as Susan has no reservations about admonishing sarcoma.com. Web use for Bo and Susan in these episodes is not fun and games. Bo’s prior knowledge of organic standards and Monsanto’s practices prompt this reaction.

Bo’s comment that “there’s a lot to look at here” indicates that he realizes a lot of time and energy will be required to discern and verify exactly what the organic standards are. His awareness of the scope of information reveals that verification is necessary to gain a credible perception of what qualifies as organic and whether or not the brand in question really meets those standards. His predisposition against Monsanto notwithstanding, most of the information he reviews sends him looking for more and does not prompt him to render a credibility judgment. Ultimately, a lot of the information that he finds is inadequate for his needs. Comments about sites being “bizarre” or “outdated” indicate that he is aware of the difficulty of getting the information he needs to resolve his concerns.

While Oliver examines a broader range of topics than Susan or Bo, and while he does so apparently more out of self-interest than concern for others, his comments, like theirs, shows that he has an appreciation for the need to verify web-based information and a sense of when to do so. For example, he searches for an explanation for why the U.S government would be maintaining concentration camps from WWII. The claim for
him is not credible just on face value. When he finds neither an explanation nor a source for this information, he dismisses the claim as a “far-out conspiracy theory.”

While his review of a site on global warming leads to an uncomplicated credibility judgment, what he calls a “duh” moment, two interesting things happen as his protocol continues. One is his awareness of the failure of others to verify web-based information when he comes across the site that alleges the FCC will ban religious promotion and expression from America’s airwaves. He finds it unbelievable that so many believe this claim and find the site credible. The fact that the article is dated back to 1975 for him is a giveaway for anyone who would bother to verify this information.

Oliver’s attention to the need to verify web-based information is also revealed by his comment that “there’s no way to check” a site that he nonetheless finds “interesting.” These verbalizations indicate that even though Oliver may be inclined to find this site credible, his inability to verify it stops him short of doing so. For him, just because a site is interesting or compelling is not enough if there is no way of “checking” the information, a fundamental verification strategy. As with Bo and Susan, Oliver’s contemplation of sites that dispute the credibility of the GOP report on the September 11 terrorist attacks lead him to realize that he can’t really verify these claims because it is impractical to access or read the actual GOP report. His questions about whom to believe suggest that he sees the matter as one of speculation, rather verification. Thus Oliver’s comments about the inability of others to verify information about an alleged FCC ban on religious discourse, and his own unsuccessful attempts to verify other claims and information sources, show that he understands this information needs to be verified.
Participants are aware of the difficulties of the task and limitations of the web as an information source. Specific comments from each participant reveal that they understand how difficult it is to verify the information they are examining. Susan verbalizes, “You really have to be a doctor to understand” a lot of the information on sarcoma she is reviewing. This comment would imply that she realizes the web alone cannot clear up matters for her. Her awareness that seemingly reliable sources contradict one another in terms of whether or not certain medications are compatible with chemotherapy, in addition to the fact that she knows some doctors don’t really know any more about sarcoma treatment than she does, would indicate she understands there are no simple answers to this matter, regardless of the technology at her disposal or her facility with it.

Bo’s comment about how “there is a lot to look at here” suggest that he also understands that verifying web-based information is no easy task. In addition to the volume of information he realizes he needs to review, a number of sites he looks at are inadequate for his purposes. Thus he is faced with “a lot” of information relevant to his interests, much of which turns out not to be helpful.

While Bo gets information not helpful to him, Oliver realizes that he simply cannot get the information he needs. Oliver’s comments about actually needing access to and time to read the GOP report on the September 11 terrorists attacks in order to verify the claims made in that report suggest he understands how difficult it really is to verify claims that sites are making about the report, even if for him the claims sound within the realm of possibility. Implicit in these comments is Oliver’s awareness that the web alone,
despite all it can do, cannot provide him with access to the actual report; and even if he had it, as he also comments, it would be quite difficult to read.

Cumulatively, these comments indicate participants recognize web-based information needs to be verified, and realize the task is a difficult one, which in turn indicates that they understand that access to web information alone will not solve their problems, since it is the task itself, rather than the information technology mediating it, that is causing them so much difficulty. Because the technology really isn’t the problem, I suggest that these participants realize its limitations. In other words, Susan’s troubles with finding the best treatment for husband don’t result from an inadequate search engine or a slow computer; rather, there is only so much the technology can do for her. The same can be said for Bo and certainly for Oliver, whose technological set-up is quite advanced and sophisticated. Despite his dual-monitor configuration, Oliver still runs into difficulties verifying some of the information he reviews, and some of his verbalizations reveal that he is aware of these difficulties.

In each case, the solution for the participants is to go beyond the web to resolve their verification difficulties: Susan speaks of visiting doctors, patients, and hospitals; Bo writes an email to the Department of Agriculture for a response that will specifically address his questions about organic standards; and Oliver realizes he needs something that the web cannot provide him—the GOP report—in order to make effective progress in verifying claims important to him.

Descriptive accounts of protocols offer prescriptive value. The first two claims are the basis for the argument that the descriptive accounts of web use in real time generated by all three protocols offer prescriptive value. This prescriptive value comes
from the fact that participants verify information that needs to be verified, and are aware
of the difficulties of the task and the limitations of the web as an information technology.
If verifying web-based information were not a difficult task, or if it were only a matter of
access to the best technology and technical knowledge of how to use it, then questions of
web credibility would not persist.

The value of the data I have presented here is that it demonstrates participants
confronting a difficult task in a thoughtful and intelligent manner. Here is where the
prescriptive value of their protocols lies. Certainly scholars and educators would not
want students or the public to assume that matters of credibility are simple and
conveniently handled by plugging into state-of-the-art web technology. Such an
assumption would seem likely to hinder web users’ capacity to do two important things
that I suggest Susan, Bo, and Oliver do: examine web-based information by way of
strategies that address the challenges it poses, and recognize in the end they can’t always
make ultimate judgments about its veracity. Even if web users recognize the need to
verify information, absent an appreciation for how difficult this task can be, odds are they
will not do so in a thorough and intensive way as think-aloud protocol participants do.
As a result, I suggest that one characteristic researchers and educators can identify as an
indicator of when web users’ approaches to verifying web-based information are worthy
of being studied and to some degree followed by others is when they express an
awareness of the difficulty of the task they have undertaken—not just in terms of the task
in general but also in terms of the particular problems they run into as they review
specific topics of web-based information.
To sum up, participants’ protocols offer prescriptive value because they understand that their task is a difficult one, and the specific strategies they undertake, e.g. asking thoughtful questions and seeking out other information sources, verbalizing about the absence or inadequacy of information, and appearing to understand how difficult it is to comprehend some of the information they review. By contrast, episodes of web use in which the information being examined is not complex, or during which web users failed to recognize how complex it is and therefore how difficult it is to verify, would serve as examples of web use that fail to offer prescriptive value to researchers, educators, and other web users interested in learning how to deal with this problem effectively.

Susan’s, Bo’s and Oliver’s protocols: Examples of common ground, dialectical reading, and ethical approaches to web use at work

In this section, I will discuss in greater detail about how participants’ protocols offer prescriptive value by making specific connections between protocol results and the three primary prescriptive approaches to web credibility—theoretical perspectives from Haas and Wearden, Bruce, and Burblues—discussed in chapter one.

Susan’s discovery that web-based information from apparently reliable sources can be contradictory exemplifies one of Burbules’ paradoxes of the web—that it can be self-contradictory and self-referential, sending users into loops where the only way to verify web-based information is to seek out more web-based information, a dilemma she ponders when evaluating equally reputable sources that say that synovial sarcoma is and is not chemo-resistant. This dilemma reveals another of Burbules’ paradoxes of the web: because it is so massive and accessible to so many people, it can diminish access to multiple sources for finding and verifying information, since many non-web-based
sources seem to be getting their information from the web as well, and there may be no
definitive source on the subject. As Susan explains about some of the doctors she has
talked with, “they are looking at the computer too!” (see Table 5.7). In such a case, the
doctor is using the same information source as the non-expert, leaving the non-expert
with nowhere to turn to verify that information source.

Because the stakes are so high in medical practice when individuals seek
information on life-threatening diseases such as sarcoma, and because of Susan’s
thoughtful, attentive approach to web-based information on sarcoma, as well as the
“common ground” she has with her subject matter, Susan’s think-aloud protocol offers
prescriptive, educational value for those interested both in web use and the capacity of
the human mind and the information technology at its disposal to grapple with serious,
complicated matters, in which even experts contradict one another, and seek out other
sources.

The fact that Susan’s utterances of negative judgment significantly outweigh
utterances of positive judgment indicates that she is aware of how complicated
information on sarcoma treatment is. Thus she recognizes how difficult it is to reach a
definite judgment on what the most credible sources are what the best treatment for her
husband would be. I would argue, again, that it is the complexity of this subject matter,
and Susan’s awareness of this complexity, as opposed to the skepticism Flanigan and
Metzger argue is appropriate for a medium they deem may be the least credible of
commonplace mass media, that accounts for the small percentage of utterances of
negative judgment.
Like Susan, Bo demonstrates passion for his interest in organic farming standards. There is no question that this issue is important for him as medical treatment for sarcoma is important for Susan. Both voice outspoken criticisms of those whom they find untrustworthy. Another reason to consider Bo’s protocol similar to Susan’s is the common ground he has with his subject matter. As manager of the local organic foods store, he is responsible for supplying a whole town with food that has been labeled and certified as organic. He is closely familiar with organic farming standards and with many local farmers who practice organic farming and adhere to such standards. He is also familiar with hundreds of local shoppers who, either out of preference, principal, or medical need, demand food that is produced according to organic standards. As a result, he has a comprehensive understanding of organic farming and the implications of fraudulent organic labeling on products at the local foods store. He also has a professional obligation to sell products reliably labeled as organic. His close ties with both organic farmers and customers—some of whom own local bakeries or restaurants—indicate that his understanding of issues related to organic farming standards is not compartmentalized, shallow, or overly reliant on online sources. The fact that his protocol ends with Bo composing a letter to the Secretary of Agriculture seeking clarification on organic standards demonstrates an aggressive approach similar to Susan’s tactic of asking doctors tough questions and not being afraid to address their ignorance or incompetence. Such aggressiveness also seems consistent with a person such as Bo who is so active in his local community and economy. To this end, researchers might consider how such characteristics of involvement may correspond to approaches to web use.
Finally, Bo is also familiar with a variety of business, agricultural, and governmental organizations and the web-based information they post concerning organic standards. Because he already has common ground with the practice of organic farming, he has an idea of what he is looking before he reviews web-based information on that topic, helping him to identify the relevance, timeliness, and trustworthiness of the information he reviews. That he ends his review of information by requesting more information that will “help me understand” (see Table 5.8) shows that his reading of web-based information on organic standards is generative, in-depth, and aimed mainly at greater understanding rather than rushing to judgment or accessing information without focus, two pitfalls Susan also avoids. Because his comments appear to be oriented around gaining a greater understanding of the topic that he researches, I would argue that his protocol serves as an example of dialectical reading of the web.

One distinguishing feature of Oliver’s protocol compared to Bo’s and Susan’s is that he reviews a much broader range of topics. This dimension of Oliver’s reading makes it more difficult to consider how “common ground” figures into his characteristics as a web user. But this feature highlights the value of generating descriptive accounts for comparison to prescriptive approaches; the descriptive account of Oliver’s protocol renders a reading of web-based information on subject matter for which achieving “common ground” according to the theoretical model is not realistically possible, thus revealing the limitations of “common ground” as a prescriptive approach, yet at the same time rendering thought processes that offer prescriptive value. How can Oliver gain access to high security government areas where WWII concentration camps are allegedly being maintained? How could he just set up an appointment with a member of the
military, CIA, or Department of Defense to get a first-hand account of what is going on? This conundrum becomes all the more disconcerting when considering the need to assess the credibility about other important matters when common ground does not seem to be a realistic option. How can one achieve common ground in matters of international security? How can any web user, no matter how experienced, gain access to foreign, secret locations where uranium is allegedly being enriched, or to any potentially remote or hostile ground where credibility is an issue? This point also applies to domains of knowledge that are not governed by consensus. These questions serve to pinpoint the limitations of the “common ground” approach for this particular context of web use.

In Oliver’s case, another prescriptive model seems to be at work: Bruce’s dialectical reading. Oliver’s views of the web are neither dogmatic nor exegetical; his extensive web use and sophisticated technology does not come at the expense of realizing its limitations and the questionable credibility of its information. Even though he has a state-of-the-art set-up, with the latest downloading technology, connected to an even larger digital music and stereo set-up, his reading of the web hardly regards web use as a matter of merely finding information and operating the technology required to do so.

Instead, Oliver reads the web as a method of inquiry: 25% (10 of 85) of his statements of analysis are questions. Framing his reading of the web in terms of questions indicates his motive is to gain understanding rather than render judgment or simply float through information he assumes to be credible. Oliver’s thought about “satire being the best source” of information reflects his awareness of the web’s rhetorical dimension, and reinforces the observations of scholars like Myers (1996) that
individuals’ capacity to make fun of events or texts no matter what their presenters’ intention are active rhetorical factors in meaning-making and mass-mediated discourse.

One can argue that Oliver’s protocol offers prescriptive value because it accounts for a prevalent type of web use—namely, that of the web-based information guru, who, for a variety of intellectual and idiosyncratic motives, voluntarily devotes hours of time to examining and questioning the credibility of information circulating on the web. Not all web users look at web-based information in the highly specific way Susan and Bo do in their protocols. Descriptive accounts of web use offer potential prescriptive value only in-so-far as they account for episodes of web use that are representative of real-life, real-time events where people verify web-based information.

Cumulatively, descriptive accounts that may offer prescriptive value need to be as comprehensive as possible, or their value is limited because such accounts are rarely operational. Oliver’s protocol is representative of web users who deliberately seek out information on a variety of topics, many of which are political in nature and concern matters for which no common ground can realistically be achieved. His protocol thus compliments Susan’s and Bo’s protocols and thus makes the range of data presented here broader and potentially more valuable to researchers, who need real-time descriptive accounts that demonstrate a variety of approaches to handling different types of web credibility problems. The protocol data generated from this study comprise descriptive accounts of different web users examining web-based information that vary according to topic and range of content. These web users have different motives for using the web and different time windows in which they can do so. This point affirms the value of identifying transaction-intrinsic, in situ variables that illustrate how specific contexts of
web use differ. The variation in the descriptive accounts rendered by this study make their potential prescriptive value greater than if they were less distinct and more cumulatively homogeneous. This point reinforces Shultz’ (1996) argument that traditional views of literacy fail to recognize that individuals are not identical in their backgrounds or needs. Such a statement can be taken as a claim about readers’ general characteristics as well as the differences in specific contexts in which they read. Even though they are all professionals, Susan, Bo, and Oliver have different career backgrounds and knowledge, and different needs motivate their interest in the particular web-based information that they examine as their protocols unfold.

What these web users have in common, however, is what makes their protocols potentially prescriptive: their readings of web-based information are thoughtful, focused, and explicitly concerned with credibility by way of verification, rather than the reputation of information sources or affiliations with political or religious organizations. Each web user seems to understand that issues of web credibility are more complex than simply choosing sides or aligning with sources associated with certain groups. The difficult question, “How can one really know if a certain claim is true” appears to drive all three: Susan grapples with contradictory information from equally reputable sources; Bo realizes the nuances and complexities of what it means for food items to be legitimately labeled as organic; and Oliver ponders claims that he realizes are quite difficult to verify no matter who is purporting them.

As a result, each protocol matches up to some discernible extent with one or more of the prescriptive approaches that serve as a theoretical basis for this study: common ground, dialectical reading, and ethical approaches to web use. Bo and Susan exemplify
the “common ground” approach to credibility issues pertinent to them through connection to people and places relevant to their concerns. Oliver practices “dialectical reading” by asking questions about the information he examines in an effort to build on his understanding of what he reads. Bo does the same thing with his inquiry about organic standards, and his request to the Department of Agriculture for more information to clarify what distinguishes organic produce from other produce.

Oliver and Susan both show awareness of Burble’s “paradoxes of the web” through utterances about the limitations of both the web as an information source and the unrealistic expectation that humans can always get the information they really need. Oliver points out how some web-based information is “just tangents” (line 65), “redundant” (line 16), “incoherent” (line 73), and “hopelessly incomplete” (lines 69, 70). Collectively, these drawbacks that Oliver recognizes highlight the limitations of an information source that is often represented in popular media as infinite, and an easily accessible cure-all for any human dilemma. He acknowledges not having enough information to support credibility judgments about some information when he points out how one has to have access to and the time to read lengthy government reports to verify some of what he reads. These thoughts are similar to Susan’s comments about how one needs to be a doctor to understand some of the information she reviews, how reputable sites contradict one another—both examples of incoherence—and how even doctors themselves are relying on web-based information for diagnosis and treatment decisions, an example of the web as self-referential information source. In both cases, a highly-specialized background that includes access to exclusive, lengthy, and opaque texts proves to impede a reliable credibility judgment about some of the information that
Oliver and Susan examine. It may also be noteworthy that in both instances, Oliver and
Susan recognized they were not in position to render a credibility judgment and did not
go on to do so.

Bo and Oliver also demonstrate another practice that Burbles recommends in
order to confront the paradoxes of the web: confronting complex issues by making
judgments based on the values of communities they trust and find familiar. Oliver
dismisses certain web sites posting from organizations that he identifies as “spreading
hatred and mistrust.” This choice by Oliver reflects his value system which does not
endorse such behavior. Bo has close ties to the local organic farming community. His
understanding of how complicated organic standards really are and the deceitful
practices, as he sees them, of companies that want to appeal to the organic foods market
without honestly complying with organic standards orient his perspective as he reviews
information about what qualifies as organic food and why some companies may be
misrepresenting themselves to those who place a high value on producing food
organically.

The protocols of Oliver, Susan, and Bo also offer prescriptive value because each
participant refrain from exegetical or agnostic views Bruce discusses. Oliver’s trust of
newspapers and skepticism of some web-based information implies that he does not see
the web as a superior information source; at the same, he does find some information
credible, and obviously wouldn’t spend so much time online if he thought the web were
evil and totally deceitful. Susan’s and Bo’s common ground with their areas of interest
show that other information sources—namely, people—are just as if not more important
than the web to their efforts to gain credible information on the topics that concern them.
And though Oliver’s statement about how the web can be a series of “tangents,” his avid interest in the web, and willingness to distinguish reliable or promising web links from those that are random or incoherent, reveal that he does not feel the web as a whole is merely tangential.

*Analysis as the primary T-unit from Susan’s, Bo’s and Oliver’s think-aloud protocols*

In the final sections of this chapter, I wish to discuss the cumulative results from all three think-aloud protocols specifically in terms of the distribution of coded T-units, as well as clusters of utterances of the same type. In so doing, I wish to make an argument that cumulatively these think-aloud protocols offer prescriptive value for verifying web-based information, not only because of how they match up with the theoretical models discussed above, but because verifying web-based information primarily by way of analysis is a prescriptive approach to web use. Before I demonstrate the cumulative results of the three protocols, I will explain my argument for why analysis is the best mode for verifying web-based information.

The vast amount of information on any given topic to which the web provides access, as Burbles explains, presents a paradox to web users: this huge quantity of information actually works against the amount of time necessary to review it and make sound credibility assessments. A web user who spends most of the time analyzing web-based information has the best chance of both recognizing the difficulty in making credibility judgments when so much information is available and in turn take the time to absorb and review this information before rendering a credibility judgment. To illustrate this point, I will offer brief elaborations of why verifying web-based information
primarily in terms of identifications of interest or relevance, negative judgment, or positive judgment are problematic approaches.

A web user who spends most of the time identifying areas of interest or relevance is likely someone who is using the web without a primary purpose in mind, such as reviewing a specific topic of information. While it may appear obvious, one should not overlook the fact that Susan, Bo, and Oliver use the web for specific purposes; they know, before they sit down at the computer, that certain topics are of interest to them, and they attempt to explore those topics as fully as possible in order to verify online information about them. This approach is different from someone who sits down to “surf” the web, who is more interested in just spending time with the technology, and seeing what is out there, than using the web with a pre-determined set of priorities and concerns in mind.

Another problem with a web user who identifies areas of interest or relevance more so than analyzes topics of interest is that such a web user may be overwhelmed by the vast quantity of information at hand and not know how to review it systematically, making decisions about which sources merit in-depth review and which ones are not relevant to the web user’s focus. Inability to maintain focus on a certain topic would seem to diminish a web user’s chances of verifying information on that topic effectively. A similar problem to that of being overwhelmed is the problem of being distracted. A web user may sit down with a clear-cut purpose in mind, but the avalanche of information that web user encounters could cause the user to lose focus. Recent events in the news, pop-ups, and unexpected topics of information could combine to put the web user in a mode of constantly identifying news areas of interest or relevance. While such an
approach to the web might be entertaining to the web user, it is a distraction to verifying information. To verify web-based information, the area of interest or relevance must remain somewhat stable, thus affording the web user optimum time to focus on a certain topic of interest before moving on to the next area of interest or relevance.

Approaches that primarily center on judgment are also less ideal than those that center on analysis. For a web user to look at web-based information primarily in terms of either negative or positive judgment would in effect be to engage in either exegetical or dogmatic reading of the web. Such a web user would assume that being able to access information is all that is really necessary for getting information that is credible and dependable, or, by contrast, assume that since the web is “evil” nothing on it could be trusted. In either case, when it comes to credibility judgments that are outcomes of verification—the positive and negative judgments verbalized by think-aloud protocol participants, for example—the greater the frequency of judgment, the less time is spent verifying the information. Given Flanigan and Metzger’s concerns that the web is the least credible of all mainstream media and the complexity of the subject matter reviewed by think-aloud protocol participants, one would be particularly concerned about web users who frequently render positive credibility judgments when reviewing online information. Those who go to the other extreme, regardless of what one thinks of the web as a credible information source, would still not be doing the best job possible of verifying information on the web; they would be rushing to a credibility judgment, and just like those who might find anything they can access to be credible, would not be spending optimum time assessing that information before rendering a judgment.
Cumulative results: Analysis as a prescriptive approach to web use

As the cumulative results outlined in Table 5.4 show, analysis is the most frequently verbalized T-unit type, while the T-unit type least frequently uttered is positive judgment. I argue this result indicates the think-aloud protocols generated by this study offer prescriptive value, because the best web users when it comes to information verification are those who do the most extensive analysis and review of information before finding it credible. This comment is not intended to frame the web as a deceitful medium. Rather, it should draw attention to an important aspect of verifying web-based information: such a task is only important in the first place because the credibility of web-based information in certain circumstances is difficult to ascertain, and, despite the credible sources and information on the web, it should be clear, based on the discussion of problems with web use in chapter one, that much web-based information lacks credibility, and many web users lack the skills and awareness to deal with this problem adequately.

A positive credibility judgment, by extension of this logic, would be the least frequent utterance from a web user who recognizes the challenges of verifying web-based information. Such web users would first identify an area of interest and relevance, analyze it as extensively as possible, and decide a negative judgment was uncalled for, before a positive judgment would be reached. In other words, the best web users when it comes to verifying information are “hard sells,” as it were.

Table 5.5 displays the total number of T-units outlined by each think-aloud protocol participant. Cumulatively, one can see that T-units of analysis are by far the most frequently uttered comment about web-based information. Forty-one percent, or
105 out of 234 of all analyzable utterances, were coded as analysis. Conversely, the least frequent analyzable utterances were T-units of positive judgment, 17 out of 234, or seven percent. These results affirm the conclusion that these web users assess web-based information primarily in terms of analysis, and least often in terms of positive judgment. Because it makes sense to argue that the more one analyzes web-based information, the more thoroughly one is verifying it, these cumulative results underscore the potential prescriptive value of these protocols.

Table 5.5: Total number of analyzable T-units

<table>
<thead>
<tr>
<th>T-unit type</th>
<th>“Susan”</th>
<th>“Bo”</th>
<th>“Oliver”</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest/Relevance</td>
<td>31</td>
<td>10</td>
<td>19</td>
<td>60</td>
</tr>
<tr>
<td>Analysis</td>
<td>55</td>
<td>10</td>
<td>40</td>
<td>105</td>
</tr>
<tr>
<td>Positive judgment</td>
<td>9</td>
<td>2</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>Negative judgment</td>
<td>24</td>
<td>9</td>
<td>19</td>
<td>52</td>
</tr>
<tr>
<td>Totals</td>
<td>119</td>
<td>31</td>
<td>84</td>
<td>234</td>
</tr>
</tbody>
</table>

234 total analyzable, coded T-units

Table 4.5 outlines the total number of T-units for each category of the think-aloud protocol coding system according to the respective think-aloud participants. The column on the far left, titled “T-unit type” outlines the four categories of analyzable utterances that comprise the coding system. The middle columns—“Susan,” “Bo,” and “Oliver”—indicate the total number of T-units of a certain type for that participant. In other words, the row extending from the T-unit type “Interest/Relevance” indicates that Susan uttered thirty-one T-units of Interest/Relevance, Bo ten, and Oliver nineteen. The column on the far right then indicates the total number of T-units of that type; there were a total of sixty T-units of Interest/Relevance among all three protocols. The “Totals” row at the bottom of Table 4.5 indicates the total number of T-units for each respective think-aloud
participant. Thus, Susan’s protocol consisted of one-hundred nineteen analyzable utterances, Bo’s consisted of thirty-one analyzable utterances, and Oliver’s consisted of eighty-four analyzable utterances. There were a total of two-hundred and thirty-four analyzable T-units from the three think-aloud protocols. This total is generated by adding up the total number of T-units from each participant—the total on the bottom row—and the total number of T-units of a certain type—the totals of the numbers in the far right column.

Another way to support the claim that these think-aloud protocols offer prescriptive value is to identify the number of clusters of utterances of analysis from the participants. A cluster is any series of two or more analyzable utterances of the same type. As Table 5.6 below demonstrates, utterances of analysis occur with the greatest frequency and in the highest numbers of any T-unit type—that is, there are more clusters of analysis than clusters of any other type of utterance, and there are more consecutive utterances of analysis than any other type of utterance.

This observation indicates that not only do the participants think primarily in terms of analysis, they sustain their focus on analysis for greater lengths of time than they do in terms of identifications of interest or relevance, or either positive or negative judgment. Such a cumulative result supports the claim that these protocols offer prescriptive value because it reinforces the sustained focus and concentration on particular areas of interest I argue are vital to thorough verification of web-based information. Table 5.6 below shows the number of clusters of consecutive utterances of the same type.
Table 5.6: T-unit clusters from cumulative think-aloud protocol results

<table>
<thead>
<tr>
<th>T-unit type</th>
<th>Number of consecutive T-units of the same type</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Interest/Relevance</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Analysis</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Positive judgment</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Negative judgment</td>
<td>6</td>
<td>---</td>
</tr>
<tr>
<td>Totals</td>
<td>27</td>
<td>9</td>
</tr>
</tbody>
</table>

As one can see, clusters of analysis occurred more frequently than clusters of any of the three other types of analyzable utterances, and occurred more frequently in the greatest consecutive number of utterances of the same type—seven clusters of five or more consecutive utterances.

These cumulative results demonstrate that analysis was the most frequently uttered analyzable T-unit by the participants. Forty-two percent (105 out of 234) of all analyzable T-units were coded as utterances of analysis. Utterances of interest/relevance comprised 26% of the total analyzable, coded T-units, followed by utterances of negative judgment at 22%. Utterances of positive judgment came least frequently, making up only 7% of the total analyzable, coded T-units.

Utterances of analysis also came in the greatest number of clusters, 44% (23 out of 52), and occurred most frequently in the highest consecutive number of utterances of the same type, 70% (7 out of 10) of clusters of 5+ consecutive utterances. These cumulative results show that think-aloud participants were analyzing web-based information the majority of time they were thinking out loud about it. The exceptionally frequent number of clusters of analysis that came in 5+ consecutive utterances—7 out of 23 clusters of analysis consisted of 5+ consecutive utterances—also shows that they
sustained their analysis in a focused manner. Analysis was sustained by these web users longer than any of the other three types of T-units, since only three clusters of 5+ consecutive utterances of different types of T-units occurred cumulatively. This result, along with results from the individual protocols, is grounds for affirming that individually and cumulatively these protocols offer some degree of prescriptive value to researchers interested in the question of how web users verify web-based information in real time.

In the next and final chapter, think-aloud protocol results reveal an important in situ variable for understanding how participants verified web-based information: comments that reflect information recall while web use was still in progress. I go on to explain that identification of information recall in think-aloud protocol analysis affirms the benefits of the constructivist approach to web use that I have applied to this project.
<table>
<thead>
<tr>
<th>Number</th>
<th>Transcript</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>I would think</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>2)</td>
<td>The fact (verb phrase implied, e.g. “is interesting/relevant”)</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>3)</td>
<td>See what</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>4)</td>
<td>A good sign</td>
<td>Positive judgment</td>
</tr>
<tr>
<td>5)</td>
<td>This is interesting</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>6)</td>
<td>I’m really interested in</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>7)</td>
<td>Take me off the beaten track</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>8)</td>
<td>I do notice</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>9)</td>
<td>It’s a good site</td>
<td>Positive judgment</td>
</tr>
<tr>
<td>10)</td>
<td>This is a dud</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>11)</td>
<td>Might be a little more reputable</td>
<td>Analysis</td>
</tr>
<tr>
<td>12)</td>
<td>Such a quack</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>13)</td>
<td>It is a very virulent cancer</td>
<td>Analysis</td>
</tr>
<tr>
<td>14)</td>
<td>Guy is basically saying</td>
<td>Analysis</td>
</tr>
<tr>
<td>15)</td>
<td>In about the middle here</td>
<td>Analysis</td>
</tr>
<tr>
<td>16)</td>
<td>Considering himself cured</td>
<td>Analysis</td>
</tr>
<tr>
<td>17)</td>
<td>He’s not cured</td>
<td>Analysis</td>
</tr>
<tr>
<td>18)</td>
<td>Still has a little bit of cancer</td>
<td>Analysis</td>
</tr>
<tr>
<td>19)</td>
<td>He has a lot of nerve</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>20)</td>
<td>Will just jump</td>
<td>Analysis</td>
</tr>
<tr>
<td>21)</td>
<td>Give him a real piece of my mind</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>22)</td>
<td>It’s unfair</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>23)</td>
<td>On the top of sponsored links</td>
<td>Analysis</td>
</tr>
<tr>
<td>24)</td>
<td>A great web address</td>
<td>Analysis</td>
</tr>
<tr>
<td>25)</td>
<td>He’s abusing it</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>26)</td>
<td>Really bothers me</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>27)</td>
<td>Need to say something</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>28)</td>
<td>The wrong impression</td>
<td>Negative judgment</td>
</tr>
</tbody>
</table>
29) Wasting on this  
30) It’s unfortunate  
31) It’s not a great thing  
32) That’s enough of him  
33) Check out Dr. Mackey  
34) A good site  
35) Further investigation . . . is warranted  
36) This is interesting  
37) I wonder  
38) A little too broad  
39) Don’t need that  
40) The real deal  
41) It’s very in-depth  
42) Is very interesting  
43) These are very interesting  
44) Pretty important looking people  
45) A little much for right now  
46) Seeing a lot of the same sites  
47) A jackpot here  
48) I wonder  
49) Haven’t figured out yet  
50) Saying one thing  
51) Seemed pretty up and up  
52) That it wasn’t  
53) See adryomyson here  
54) Seen it before  
55) Doesn’t say which kind of sarcoma  
56) Do you believe  
57) Or that we’re lucky  
58) I don’t know  
59) I’m seeing this

Negative judgment  
Negative judgment  
Negative judgment  
Negative judgment  
Interest/Relevance  
Positive judgment  
Interest/Relevance  
Interest/Relevance  
Interest/Relevance  
Interest/Relevance  
Interest/Relevance  
Analysis  
Interest/Relevance  
Interest/Relevance  
Analysis  
Negative judgment  
Analysis  
Positive judgment  
Analysis  
Interest/Relevance  
Analysis  
Analysis  
Analysis  
Analysis  
Interest/Relevance
60) I wonder where
61) This is interesting enough
62) That’s a very good one
63) This is very medical
64) Really have to be a doctor
65) Very upsetting
66) Find a more user-friendly article
67) I’m seeing the same agents
68) Is comforting
69) Keep coming back
70) I read somewhere
71) I wonder if
72) It’s interesting here
73) From the National Cancer Institute
74) Makes me a little upset
75) I wonder if
76) We should rethink
77) Is all over the place
78) Really hard to know
79) So randomized
80) Many different kinds
81) Really can be useful information to me?
82) Just confusing me more
83) A lot of the same agents
84) That’s not good
85) Nothing
86) I’m not interested
87) Here’s one
88) I’ve not heard of epirubicin
89) Doesn’t mean cure
90) That’s interesting because
91) That’s an interesting statement
92) Might be something
93) A scant cancer cell can escape
94) A new one to me
95) I’m interested in
96) Means in-the-margins
97) Have to think about that
98) Would definitely mean
99) Can’t really look at that
100) A bunch of soft tissue sarcomas
101) Not synovial
102) I don’t know
103) Do they mean?
104) Actually confusing
105) Not going to help
106) A good site
107) I wonder if
108) That could be an option
109) Good place to search
110) Only include certain types
111) Something I keep seeing
112) Keep that in the back of my mind
113) Doesn’t include synovial sarcoma patients
114) Interesting
115) Pretty new study
116) Interesting to me
117) It’s interesting
118) It’s not here
119) I’m wondering
Excerpts from post-protocol voluntarily-given interview:

- I know as someone who’s dealt with it.
- They can’t say if he did any more research on the Internet if that would have caused him to make a different decision. It’s really hard to know.
- Sarcoma pathology is an art itself; it’s not something a normal pathologist sees.
- What is annoying is this guy in particular—he has an HMO, which is the worst place to be as a rare cancer, and his doctor would not send him out to go to a doctor at the clinic.
- . . . you have to be very discriminating and ask the tough questions: how many cases they see of your type of cancer that are present in the same spot?, and ask those questions to see if they know how to handle you, because a lot of doctors—and there are wonderful doctors out there—but some have very big egos that they would never let you know they don’t know what the heck they’re doing. And that they’re looking at the computer too!
<table>
<thead>
<tr>
<th>Number</th>
<th>Transcript</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I think they’re relevant</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>2</td>
<td>Relevant to the organic industry</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>3</td>
<td>Make a mental note of that</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>4</td>
<td>A bell goes off in my head</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>5</td>
<td>Wow</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>6</td>
<td>A surprise</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>7</td>
<td>That interests me</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>8</td>
<td>My hair curls</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>9</td>
<td>Where to stick their genetically-modified organisms</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>10</td>
<td>To read a little bit more</td>
<td>Analysis</td>
</tr>
<tr>
<td>11</td>
<td>That sounds funny</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>12</td>
<td>To read that later</td>
<td>Interest/Relevance</td>
</tr>
<tr>
<td>13</td>
<td>Find out more</td>
<td>Analysis</td>
</tr>
<tr>
<td>14</td>
<td>Unacceptable to me</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>15</td>
<td>I believe that</td>
<td>Positive judgment</td>
</tr>
<tr>
<td>16</td>
<td>Check on the organic standards</td>
<td>Analysis</td>
</tr>
<tr>
<td>17</td>
<td>A lot to look at there</td>
<td>Analysis</td>
</tr>
<tr>
<td>18</td>
<td>Not exactly what I was looking for</td>
<td>Analysis</td>
</tr>
<tr>
<td>19</td>
<td>Looks truly bizarre</td>
<td>Analysis</td>
</tr>
<tr>
<td>20</td>
<td>Too many ads</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>21</td>
<td>I agree</td>
<td>Positive judgment</td>
</tr>
<tr>
<td>22</td>
<td>I’m not so sure about that one</td>
<td>Analysis</td>
</tr>
<tr>
<td>23</td>
<td>As kind of an out-dated article</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>24</td>
<td>What they have to say about the standards</td>
<td>Analysis</td>
</tr>
<tr>
<td>25</td>
<td>Boo.</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>26</td>
<td>I disagree.</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>27</td>
<td>Ha-ha.</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>28</td>
<td>Whatever.</td>
<td>Negative judgment</td>
</tr>
<tr>
<td>29</td>
<td>Is something I’d like to do</td>
<td>Analysis</td>
</tr>
<tr>
<td>30</td>
<td>I was wondering</td>
<td>Interest/Relevance</td>
</tr>
</tbody>
</table>
31. Getting a reply will help me understand Analysis
<table>
<thead>
<tr>
<th></th>
<th>“Oliver’s” coded analyzable T-units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What is this all about?</td>
</tr>
<tr>
<td>2</td>
<td>Let’s find out</td>
</tr>
<tr>
<td>3</td>
<td>This is just so fucked up</td>
</tr>
<tr>
<td>4</td>
<td>This means</td>
</tr>
<tr>
<td>5</td>
<td>Wouldn’t pursue this too much further</td>
</tr>
<tr>
<td>6</td>
<td>I’ll keep in the back of my mind</td>
</tr>
<tr>
<td>7</td>
<td>Tend to trust a newspaper</td>
</tr>
<tr>
<td>8</td>
<td>It’s an odd one</td>
</tr>
<tr>
<td>9</td>
<td>This is a weird one</td>
</tr>
<tr>
<td>10</td>
<td>What is it for?</td>
</tr>
<tr>
<td>11</td>
<td>They don’t tell you why</td>
</tr>
<tr>
<td>12</td>
<td>Which is a pretty crappy site</td>
</tr>
<tr>
<td>13</td>
<td>This shit is scary</td>
</tr>
<tr>
<td>14</td>
<td>You gotta wonder</td>
</tr>
<tr>
<td>15</td>
<td>I don’t know what this source is</td>
</tr>
<tr>
<td>16</td>
<td>Exactly the same small amount of information</td>
</tr>
<tr>
<td>17</td>
<td>Wow</td>
</tr>
<tr>
<td>18</td>
<td>Far-out conspiracy theory</td>
</tr>
<tr>
<td>19</td>
<td>Are not just explained</td>
</tr>
<tr>
<td>20</td>
<td>Why are these camps there?</td>
</tr>
<tr>
<td>21</td>
<td>Why are some of them staffed?</td>
</tr>
<tr>
<td>22</td>
<td>Maintaining a concentration camp from WWII?</td>
</tr>
</tbody>
</table>
23) I don’t think so
Negative judgment

24) That kind of just speaks volumes
Analysis

25) Here’s a good one
Affirmative judgment

26) That just cuts straight
Affirmative judgment

27) Let’s say global warming
Interest/relevance

28) That’s one of those ‘da’ moments
Analysis

29) Only a zealot for the right-wingers could ignore it
Analysis

30) That should be interesting
Interest/Relevance

31) A lot of lip service
Negative judgment

32) Very selective about its information
Negative judgment

33) According to the people who wrote the report
Analysis

34) Now, why?
Analysis

35) They don’t tell you why
Analysis

36) Still doesn’t really answer
Analysis

37) You’d think it would be on the first page
Analysis

38) Wow
Interest/Relevance

39) Wow
Interest/Relevance

40) That fuel efficiency would be kinda up there
Analysis

41) Is totally false
Negative judgment

42) It’s untrue and bizarre
Negative judgment

43) Oh!
Interest/relevance

44) since 1975
Interest/relevance

45) This is a false thing
Negative judgment
46) Morons  
47) Is helping to spread hatred and mistrust  
48) Don’t trust these things  
49) They’re lies  
50) They’re a myth  
51) These are kind of weird  
52) Here’s something  
53) It just popped up  
54) Is just ridiculous  
55) Satire being the best source  
56) The clearest source of information  
57) He was a pretty smart guy  
58) Take these with a grain of salt  
59) This is just so far out  
60) Reports something about astrology as fact  
61) They didn’t actually have it for a link  
62) There’s no way to check it  
63) It’s a dot.org  
64) That sounds interesting  
65) All this shit’s tangents  
66) How in the world?  
67) This bizarre page  
68) Here we go again
68) I don’t have any trouble believing that one. Affirmative judgment

69) That to actually read the GOP report. Analysis

70) The problem is actually finding the GOP report. Analysis

71) Not getting anything that agrees. Analysis

72) Still not finding anything. Analysis

73) Is just so confusing. Negative judgment

74) What is it that they’re—? Analysis

75) Should immediately be suspect. Negative judgment

76) Statements that I can’t confirm. Analysis

77) Pretty much dismiss the whole article. Negative judgment

78) There’s some interesting information. Interest/Relevance

79) I just can’t give any credence to this. Negative judgment

80) I’m not sure what ‘dot’ means. Analysis

81) Which one do you believe? Analysis

82) Do you believe NORAD? Analysis

83) Do you believe the people who say that— Analysis

84) Now the picture, of course, is tiny Analysis

85) Has always driven me crazy Analysis
In this final chapter, I discuss how data from the three think-aloud protocols reveal an important in situ variable that influences how participants verified web-based information: information recall. I will explore the extent to which some comments from participants reveal remembering prior information as their review of online content is in progress.

*The influence of writing on memory*

Before I discuss data from these protocols, I would like to review briefly some seminal arguments about writing and memory by way of discussion of two opposing views: one that argues writing hinders memory, and one that argues writing strengthens it. Plato’s *Phaedrus* construes writing as something not to be trusted because, like a painting, it cannot answer back or elaborate when questioned by an interlocutor. Not only can writing not be trusted, but neither can those who use it as a resource, for writing will essentially weaken one’s memory, since one can refer to a written record and dispense with reliance on memorization and recall. Goody (1977) argues that writing, specifically in the form of lists, formulas, and tables, aids memory because by creating a written record designed to facilitate recall, people’s memories are freed up to remember
other things. In other words, written records increase the memory capacity of the individual, since the memory is longer burdened by having to remember things that writing preserves in certain kinds of texts that exist solely to help individuals not forget things worthy of remembering.

These two perspectives not only provide a set of oppositional views on the effects of writing on memory, they also implicitly underscore the value of a constructivist methodology for studying how individuals verify web-based information. Both Plato and Goody argue that the effect of writing on memory derives from the attributes of writing, be it a coercive or cultivating one. The data generated from a think-aloud protocol methodology designed to capture *in situ* variables reveals that participants’ information recall as they review web-based information, rather than the attributes of writing itself, plays an important role in how they verify that information. This insight is important for understanding the advantages of a constructivist approach to credibility as applied to the think-aloud protocol study: the influences of media and information in written form cannot be understood only in terms of the attributes of the media, e.g. the web as an information technology, or information in written form; these influences instead have to be understood within actual contexts of use, and these contexts of use involve the capacity of web users to remember information as they verify it, and to have an awareness of the relevance of what they remember as they continue to examine more information.

Some of the T-units generated from think-aloud protocol analysis, I argue, express Susan and Oliver’s memory of information they have already examined and comments about the relevance of this recall as it pertains to the continuing process of
examining further information. Comments from Susan such as, “Something I keep seeing,” and “Keep coming back,” indicate that her reading of web-based information on sarcoma is recursive and not just linear. This recursive reading on sarcoma treatments demonstrates that she remembers earlier information as she continues to encounter and process other information. As she continues her reading, she makes other comments like “Seeing a lot of the same sites” and “I’m seeing the same agents.” These comments express a memory of earlier information that has relevance for the information she currently examines. These comments also reflect the importance of in situ variables in verifying web-based information because information recall is something that happens in real time while web use is in progress.

Attention to these particular T-units is important for at least two reasons: Susan’s awareness that she is seeing some of the same information over and over may serve as a signal that her research on a certain topic has become saturated, that is, there is no new information on that particular topic, indicating that particular direction of focus has been exhausted. Comments reflecting memory also indicate participants’ understanding of giving certain information priority as well as their recognition that certain sequences of information are nonsensical and thus not credible.

For example, Bo’s comment, “Go back and find out more” indicate that he recalled a portion of information which has become relevant to him later as his reading continues. Susan comments at one point that the information she is reviewing is “so randomized,” an observation that one could not make without recalling prior information as the current information is being reviewed, since the comment of the information being “randomized” indicates that for her the current information she examines has no
discernibly logical connection to what she has examined previously. Oliver makes a similar observation when he comments that the information he is reviewing is “tangents.” Like the observation that information is “randomized,” the comment that information is “tangents” would imply that Oliver is able to remember information he has recently examined as he reviews further information and in turn realizes that, for him at least, there is no clear connection or progression from earlier information to what he proceeds to encounter. Oliver also makes a comment similar to Susan’s comments about seeing the same information repeatedly when he says, “whole lot of the same small amount of information over and over.”

Such a comment again underscores the role of memory in verifying web-based information. The capacity for these web users to recall previous information and to consider how it relates to the information they proceed to review would seem at times to play a key role in how they evaluate that information. Again, participants’ information recall occurs while web use is in progress; comments that reflect information recall constitute in situ data without which an understanding of how individuals verify web-based information would be incomplete and missing an important factor in how this process occurs.

In Oliver’s case, the observation that getting “the same small amount of information over and over” reveals his assessment that none of the sources he continues to examine contributes to his understanding of the topic that is his focus. The comment that it is a “small” amount of information he sees repeatedly suggests he realizes that cumulatively the sources he has reviewed are not giving him enough information, and instead repeating the information “over and over,” which disappoints his expectations.
One could make the same inference of his later comment, “Here we go again”; the information he reviews as he makes this comment merely repeats what he has already reviewed. In any case, comments such as this one capture the important role that memory plays at certain moments in real time web use when participants verify information. Recall of prior information seems valuable for discerning whether or not proceeding information complements, affirms, contradicts, or just repeats what the web user has already reviewed. Assessments of this sort appear to at times be valuable to think-aloud participants for verifying web-based information.

*Information recall and the use of computer-mediated texts*

The capacity to remember information as one processes computer-mediated texts has been studied by Haas (1996). She presents the construct ‘text sense’ as a term that explains the ability to remember earlier parts of a text as one continues to read that text. Her empirical study of text sense involved having participants read a text in either print or digital form to see if one’s text sense is diminished by reading on screen.

One of the motivations for Haas’ study is that at the time she conducted her research, computer technology did not yet display text as neatly and legibly as it does now. Her research on text sense is important to this study, however, because web users of 2007 face a different technological conundrum, one that Burbules identifies: massive amounts of information that are now easily accessible to much of the world’s population that has now integrated web use into everyday life. While it may not as difficult to read on-screen texts as it was ten years ago, being able to manage such an enormous amount of information is a daunting challenge for web users, and one that cannot be dealt with
adequately if one cannot remember what one has read online as one continues to read more web-based information.

Because web users make connections among and between multiple texts as they review web-based information, I argue that Susan, Bo, and Oliver—particularly Susan and Oliver, who looked at more information and generated more T-units than Bo—demonstrate intertext sense, a hypothesis I propose explains the ability of web users to recall prior information as they continue to review more information from other sites and web-based texts. Intertext sense is an integration of Haas’ text sense with Witte’s (1992) intertext, the construct he uses to explain how individuals make links among and between texts as they make meaning of those texts.

Intertext sense would appear to play a pivotal role in the process and study of verifying web-based information for three reasons. One is that it underscores the importance of a constructivist approach to the study of web use. Information recall happens in real time; it is not something that can be captured or understood through reports, surveys, or other methodologies that do not study web use in real time. Intertext sense is indispensable for web users in so far as maintaining some memory of what one has read as one continues to read web-based information. This variable sheds important light on how individuals verify web-based information, and, I would argue, cannot fully be understood or recognized without studying web use in real time.

Two, intertext sense would seem to be essential to the kind of analysis Susan, Bo, and Oliver perform, since one cannot maintain an extended focus on a certain topic of information without being able to remember what topic has been directing their attention to web-based information in the first place. Without memory of one’s prior reading,
there can be no focus on a particular area of interest. As I have argued, the best web
users are the ones who verify web-based information primarily in terms of analysis, since
the most thorough analysis logically yields the most reliable information verification.
Intertext sense, I propose, is vital to the capacity of web users to analyze web-based
information by way of realizing when various sites contradict one another, or numerous
sites only offer small quantities of information that web users such as Oliver deem
insufficient for rendering a credibility judgment.

Third, intertext sense would seem to be a necessary trait for web users to manage
and organize in their own minds the huge amount of information they have at their
disposal. Without intertext sense, web users could not remember whether or not they had
read the same information before, reviewed different sites that contradict one another—
an encounter Susan experiences—or have any idea how much information they were
examining and whether or not there was any relevance or logical connections within this
information. Maintaining a sustained focus on a particular topic of web-based
information is essential to creating boundaries around the massive amount of information
that one confronts when using the web. This sustained focus, and the analysis that it
enables, cannot happen, I argue, without intertext sense, without being able to remember
the relevance of information from prior texts as one reviews information from subsequent
texts. In other words, analysis depends on intertext sense. And since I argue those who
verify web-based information the best are those who do so primarily in terms of analysis,
rather than identifications of interest or relevance or judgment, the greater one’s intertext
sense, the more likely they will be alert to contradictions or repetitions of information
from the many online texts they will review because of their ability to recall prior
information while their verification of web-based information is in progress. Such observations and insights about how various texts compare is essential to the kind of thorough analysis Susan, Bo, and Oliver do prior to rendering judgment, judgment that is more reliable than that which derives from infrequent analysis, short-term focus on an area of interest, and obliviousness to how multiple texts compare in terms of range and similarity of the information they provide.

I present, then, the hypothesis of intertext sense for future studies of how individuals verify web-based information in real time. While this study has not been designed to test for intertext sense, future think-aloud protocol studies can code T-units according to those verbalizations that express some kind of information recall. Depending on the percentage of such T-units, researchers could begin to determine what role intertext sense plays in the verification of web-based information, in conjunction with other factors to which I have given attention here: complexity of subject matter, awareness of the need to verify information, strategies for doing so, and so forth.

Another potential value of testing for intertext sense in future think-aloud protocols is that, if affirmed as an operational construct in the process of verifying web-based information, intertext sense would be a skill or attribute of web users that is transferable from one episode of web use to the next. Such a finding could shed light on how particular attributes of web users themselves, rather than the topic and complexity of information, or credibility of the information medium, influence how they verify information.
Conclusion

The aim of the studies presented and discussed here has been to contribute to the study of verifying web-based information by generating detailed descriptions of web use in real time. Since the web users selected for these studies are adult professionals, the hope has been that these descriptive accounts will offer some prescriptive value. I have argued that such prescriptive value exists in the data generated from the think-aloud protocols for two main reasons: participants exemplified some combination of prescriptive approaches formulated by Bruce, Burbules, and Haas and Wearden, and they commented most frequently in terms of analysis, providing grounds that their assessments of web-based information are more reliable and accurate than those who analyze less than they change focus of interest or render judgment.

Thus, the most beneficial results of this study strongly suggest that one reliable way of identifying individuals who do an exceptionally thoughtful job of verifying web-based information are those who comment primarily in terms of analysis, that is, asking questions, making connections between different web sources and the claims attributed to those sources, and being observant about contradictions, questionable integrity of information sources, claims that do not make sense or appear biased and unsupported, encountering the same information repeatedly from different sites, and making a conscious effort to seek out other sources before rendering a credibility judgment. I hypothesize that this observant quality of how different web sites compare in terms of the information they provide can be explained by intertext sense, an attribute that enables web users to recall the relevance of prior texts as they proceed with their examination of web-based information.
This study, then, has yielded a pattern of how web users comment about web-based information that can serve as a guide for future studies of web use. The results generated by think-aloud protocol analysis provides grounds for recommending that future studies consider the frequency with which web users comment on the verification of web-based information in terms of analysis. Such a focus should be valuable to those interested in the assessment of how individuals verify web-based information, either in academic settings or elsewhere. Since data show that verifying web-based information involves information recall while web use is in progress, I also recommend that future studies consider the benefits of a constructivist approach to the study of web use, so that in situ variables such as intertext sense—if affirmed as an operational construct—can be integrated and examined in order to learn more about how web use takes place in real time.
Bibliography


Friedman, R. (Ed.) (1998). The life millennium: The 100 most important events and people of the past 1,000 years. New York: Life books.


Poniewozik, J. (2007, April 30). Nightmare 2.0: Tragedy hits the wired campus, showing technology’s power and limits, *Newsweek,* 46-47.


What you should know about online law. (September, 2003) [Online pamphlet]. Retrieved from [www.ohiobar.org](http://www.ohiobar.org) on October 27, 2005.
