Improving Wikipedia's Credibility: References and Citations in a Sample of History Articles

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This study evaluates how well the authors of Wikipedia history articles adhere to the site's policy of assuring verifiability through citations. It does so by examining the references and citations of a subset of country histories. The findings paint a dismal picture. Not only are many claims not verified through citations, those that are suffer from the choice of references used. Many of these are from only a few US government Websites or news media and few are to academic journal material. Given these results, one response would be to declare Wikipedia unsuitable for serious reference work. But another option emerges when we jettison technological determinism and look at Wikipedia as a product of a wider social context. Key to this context is a world in which information is bottled up as commodities requiring payment for access. Equally important is the problematic assumption that texts are undifferentiated bearers of knowledge. Those involved in instructional programs can draw attention to the social nature of texts to counter these assumptions and by so doing create an awareness for a new generation of Wikipedians and Wikipedia users of the need to evaluate texts (and hence citations) in light of the social context of their production and use.

Introduction

Wikipedia from very early in its history has had as one of its core policies governing article construction the requirement that "material challenged or likely to be challenged, and all quotations, must be attributed to a reliable, published source" (Wikipedia, 2009a). In other words, claims and quotations in Wikipedia need citations to support them. But the act of citing is a complex activity that is not intuitive. Instead it is hedged with discursive conventions that vary between disciplinary communities and which need to be learned over time. Wikipedia attempts to provide guidance for its writers, for example, by defining reliable and questionable sources (Wikipedia, 2009b). However, is this enough to ensure good referencing practice? From an analysis of the references and citations found in a subset of Wikipedia's history articles, this study answers that it is not. Not only are citations not used to verify all claims, those references that are used are primarily from a few United States government Websites and online media news. The findings, in fact, are dismal. But rather than dismiss Wikipedia from further consideration, this article argues that we need to pay more attention to the social context that creates the conditions for these references to be generally accepted among the Wikipedian community and by extension the many users of Wikipedia: the general commodification of much useful information on the Internet and a view of texts as undifferentiated bearers of knowledge. Once these problems are recognized, certain approaches to information literacy can be used to cultivate a new generation of Wikipedians and Wikipedia users better attuned to the complexities of reference practice and hence capable of rectifying the current lack of credibility that the online encyclopedia has among many people.

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Review of the Literature

The ability to easily edit Wikipedia articles and instantaneously see the results reflected on the site are key features behind Wikipedia's popularity and growth. Together they give people a sense of immediate gratification that encourages them to help the online encyclopedia develop (Bryant, Forte, & Bruckman, 2005; Wagner & Prasarnphanich, 2007). But not everyone is happy with Wikipedia. Many argue that it is a system open to abuse, including the deliberate or inadvertent insertion of inaccurate information. Three incidents in particular, widely reported in the press, help to illustrate the drawbacks of Wikipedia as a reliable information source. In 2005 a Wikipedia article wrongly linked journalist and former Robert Kennedy staff member, John Seigenthaler Sr., to the assassinations of Robert Kennedy and John F. Kennedy (Seigenthaler, 2005). A year later, it was discovered that more than 1,000 Wikipedia articles had been altered by US congressional staffers to remove negative comments about

Massachusetts congressman Marty Meehan and other US politicians (Mehegan, 2006). And in 2007, a senior contributor to Wikipedia, Ryan Jordan, was found to have used a fraudulent identity in order to persuade others to accept his views in debates over article content and site policy (Lih, 2009). While these stories generated a great deal of mainstream media interest, other writers have also been critical of Wikipedia. Jaron Lanier (2006) argues that Wikipedia is an example of the current propensity (which he deplores) of attributing too much power to the process of collective thinking at the expense of the knowledge held by individuals. For Lanier, people who assume that the collective process involved in producing Wikipedia will automatically sort out errors are engaged in fallacious thinking, as it is not certain whether such collective efforts do progressively become better over time. Andrew Orlowski (2005) has also been a severe critic of Wikipedia over the years, arguing that the technology that makes Wikipedia possible is no substitute for expert editors, and that without this expertise problems of accuracy and poor writing will remain unresolved. In a broader discussion of Web 2.0 technologies, Nicholas Carr (2005) criticizes the notion of collective intelligence that is supposedly embodied in Wikipedia as a sham and self-delusion on the part of its supporters, noting that most of the online encyclopedia is of "slipshod quality." For Carr, Wikipedia and the Web 2.0 phenomenon, of which it is a part, continues the millennial thinking characteristic of the early Internet days. Criticism of Wikipedia has also been raised in the academic world. Gary Gorman, for example, argues that Wikipedia is an "unethical resource unworthy of our respect" (Gorman, 2007, p. 274). And the entire history department of Vermont's Middlebury College has officially banned the use of Wikipedia in student papers, noting on its syllabi that "whereas Wikipedia is extraordinarily convenient and, for some general purposes, extremely useful, it nonetheless suffers inevitably from inaccuracies deriving in large measure from its unique manner of compilation" (Read, 2007).

The few studies that have been conducted on the accuracy of Wikipedia as a whole, however, paint a different story from these anecdotal assessments. One of the earliest was conducted by the science journal *Nature* in 2005. It sent articles on 50 scientific topics from Wikipedia and *Encyclopedia Britannica* to a group of subject experts. Forty-two usable reviews were returned. Eight errors were described as serious, but these were equally divided between the two encyclopedias. Many smaller errors were also enumerated (162 for Wikipedia, 123 for Britannica). Overall, the study notes the error ratio was 4:3 in Britannica's favor, not an overwhelming lead. In 2007, the magazine *Stern* published the results of its comparison of the German Wikipedia against the famous *Brockhaus* encyclopedia. Using a sample of 50 articles on a wide variety of subjects, experts judged each in terms of correctness, completeness, topicality, and comprehensibility. Scores were calculated on a scale from one to five, with one being the highest. Using this system, Wikipedia achieved an average score of 1.7 and Brockhaus 2.7. In only six of the articles did Brockhaus score better than its online rival. Finally, Thomas Chesney (2006) conducted a study to evaluate the credibility of Wikipedia. He divided a group of researchers into two. One group was given articles in their field of expertise. The other was randomly assigned articles. Each group was asked to rate the credibility of the article, author, Wikipedia, and how "cynical" the reviewer was of Internet information in general. Chesney found no significant differences between the groups when it came to the assessment of the writer's and Wikipedia's credibility. But there was a significant difference between groups in assessing the credibility of the article, with the experts judging them more credible than the nonexperts.

While these broad-based surveys are generally favorable to Wikipedia, studies focusing only on history articles provide mixed evidence concerning its accuracy. Rosenzweig (2006) conducted a small study of 25 historical US biographies in Wikipedia, Encarta, and American National Biography (ANB) Online. He concluded that "Wikipedia is surprisingly accurate in reporting names, dates, and events in US history" (p. 128). Only four factual errors were located, as compared to three in Encarta and one in ANB. He concludes that "Wikipedia ... roughly matches Encarta in accuracy" (p. 129). On the other hand, Rector (2008) compared ANB and the *Dictionary of American History* (DAH) with Wikipedia and *Encyclopedia Britannica* using a sample of nine American history articles. In this case, Wikipedia fared the worst of the four, scoring an 80% accuracy rate compared to 96% for Britannica and a combined accuracy rate of 95% for ANB and DAH. Of interest, however, is that when unverified claims (those which did not have a citation) are removed from the calculations, the figures grow closer together. Wikipedia then has an 88% accuracy rate, Britannica 96.5%, and the combined ANB and DAH 97.5%.

Despite the generally positive conclusions of most studies of its accuracy, Wikipedia has taken criticism against it seriously. We have already described its new policy of requiring senior editors to approve changes to articles on living people, but the German version goes even further to include all articles under this arrangement (Cohen, 2009a,b). Wikipedians have also banded together in groups to go through articles to make sure that the verifiability policy is being applied and to share resources that could be used for citations (Wikipedia, 2009c).

Although the policy of verifiability as a solution to problems of accuracy in Wikipedia is given some support by Rector's study, one wonders if it is enough to really convince the online encyclopedia's skeptics. The studies that have been reviewed here suggest Wikipedia's errors of accuracy are in fact broadly comparable to other reference sources, yet these do not seem to have settled the debate. Wikipedia is suffering from a wider problem of credibility that includes issues of accuracy, but also issues of what a good reference tool is supposed to be like in terms of characteristics such as writing style and extent to which topics of a popular nature are included. These particular issues are difficult to deal with due to the inherent nature of Wikipedia (its multiple authorship and broad appeal), but it is possible for the conventions

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of disciplinary communities to be more closely adhered to in terms of the secondary sources employed: the use of key authors and journals or publishers in the field as well as the use of peer-reviewed material more generally, for example. Doing so might just be what is required to raise Wikipedia's profile as a reference source. From this point of view, then, Wikipedia's verifiability policy is important not only to deal with issues of factual inaccuracy, but to establish the articles as bona fide members of disciplinary communities. By examining the references and citations of a subset of Wikipedia's history articles this article aims to assess in a preliminary way the current capability of the sources used to handle this additional burden of evidence.

History on Wikipedia was chosen as a subject for three reasons. First, as we have described in the literature review, it has already been the subject of a number of studies. Second, it is an important subject taught in most schools, as well as of growing interest to many around the world. This makes it a likely target for many users of Wikipedia. Spoerri (2007), for example, found that articles in the combined category of politics and history received more visits than even science or computer-related topics. And finally, because of history's interpretative nature, the selection of citations and references is of great importance in creating creditable narrative accounts (Jordanova, 2000).

Method

Wikipedia maintains a special page of links to its 249 country history articles. Fifty of these articles were randomly chosen from the 23 November 2008 version of this page. This accounts for ~20% of the total links. For each country history article, the version dated 21 November 2008 or the latest version preceding that date was selected for study. The following data were collected for each article: total number of references, total citations, the number of citations per hundred words, the numbers of statements/claims with citations given to support them, the number of Internet-based citations, whether the Internet citations were found on paid or free sites, the number of times each reference was used, the format of the non-Internet references (for example, book or journal), the language of the references, and whether the Internet citations could still be accessed at the time of research. For comparison purposes, the total number of references and citations, number of citations per hundred words, and the number of statements/claims with citations was also collected from all issues of the *Journal of World History* (JWH) published between 2004 and 2008. The JWH focuses on historical analysis from a global perspective. It is peer-reviewed and has been published quarterly by the World History Association since 1990. Its usefulness here is that, unlike many history journals, it does not focus on only one country or region of the world, much like the sample of Wikipedia history articles that was chosen for the study. Of course, the aim of a scholarly journal and an encyclopedia are different in nature, making direct comparison difficult. But the use of such a journal provides a "gold standard" of sorts. While it would be unrealistic to expect the encyclopedia article to mimic this standard to a high degree, that same standard serves as an ideal.

Findings

The 50 Wikipedia articles sampled for the study contained a total of 480 references that were cited 508 times. In contrast, the 18 articles from the JWH contained 1,351 references, cited 1,877 times. This represents 2.8 times more references and 3.6 times more citations than Wikipedia. Given the different article lengths, we also examined the number of citations per hundred words. For the JWH this ratio amounts to one citation per hundred words. Wikipedia, in contrast, has only roughly 1/3 of a citation per hundred words (.3/100).

To get some idea of how thoroughly Wikipedia's verifiability policy is complied with, the number of statements or claims made in each of the articles was calculated as well as how many of these had a citation to support them. Unfortunately, two of the Wikipedia articles had to be dropped from this part of the analysis because significant parts of the text were found to have been plagiarized from the source used for the citation. The remaining 48 articles contained 6,107 statements, but only 297 (4.86%) of these had a citation. The statements made in the JWH were also examined in a similar manner. In this case, they contained 3,397 statements, of which 833 or 24.52% had a citation attached.

The references from Wikipedia and the JWH were analyzed to determine if they were Internet-based or non-Internet-based. Contributors to Wikipedia primarily used Internet-based references, while contributors to the JWH primarily used non-Internet-based references. Out of the 480 references used in the articles from Wikipedia, 299 were Internet-based, while 181 were not. In contrast, out of the 1,351 references used in the articles from the JWH, 16 were Internet-based, while 1,335 were not. Sixty-two percent of the references used in Wikipedia were Internet-based, while only 1.2% of the references used in the JWH were Internet-based. Of the references to Internet-based sources found in the Wikipedia articles, the vast majority (95%) came from free sites, that is, sites that did not charge viewers directly.

The format of the print references used in Wikipedia was examined. Table 1 shows the results of this exercise.

TABLE 1. Non-Internet-based reference formats.

Format	Number	Percentage of print-based references	Percentage of total references
Books	167	92.3	34.9
Academic journal articles	4	2.2	0.8
Popular magazine articles	3	1.7	0.6
Government publications	2	1.1	0.4
TV documentaries	2	1.1	0.4
Others	3	1.7	0.6
Total	181		

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TABLE 2. Internet-based reference types.

Format	Total number of references	Percentage of Internet-based references	Percentage of total references
News media	57	19.1	11.9
Internet reference	57	19.1	11.9
Government (US)	47	15.7	9.8
Government (other)	35	11.1	7.3
NGOs	31	10.4	6.5
Personal	21	7	4.4
University/school	18	6	3.6
Traditional reference	11	3.7	2.3
Commercial	6	2	1.3
Academic journals & publishers	6	2	1.3
Others	10	3.3	2.1
Total	299		

Books were the most frequently used format, with 167 books accounting for 92.3% of the total print references and 34.9% of the total references (print and Internet-based) found in the sample articles. Books and academic journal articles are key secondary sources for historians (Dalton & Charnigo, 2004) so this high number provides initial cause for some optimism. However, if we look at the references used in citations as opposed to those just added as external resources, the influence of books dwindles remarkably. Only 50 of the books used (30%) are actually cited in the body of the articles. And although academic journal articles are the second most prevalent reference format, at only 2.7% of non-Internet references, their total numbers are minuscule.

The online references were classified according to what kind of organization created them, with the results appearing in Table 2. For some of the references classification was difficult; these cases have been labeled "other." A distinction was made between the creators of traditional reference and online reference works. Traditional reference works are those that have migrated from print to digital formats, for example, *Encyclopedia Britannica*. Only 11 fall into this category. On the other hand, the Internet has seen the development of a number of new kinds of reference works. These are referred to here as online reference sites. As well as ranging in quality, they differ in the centrality of profit to their operation. Some, such as Wikipedia, are nonprofit, while others hope to attract advertising. Along with news media, online reference comprises the most frequently used category of site. Following these two are government sites. Among the least-used sites are traditional reference and academic journals/publishers.

If we examine the top 10 ranked sites in terms of references (Table 3), we find a great dependence on Websites of US government organizations, namely, the Department of State and the CIA (CIA Factbook). Also important is the Library of Congress (Country Studies). Of the top five sites, in fact, three belong to the US government. Media in the top 10 sites are all located in either the US (CNN, Time) or UK (BBC, Guardian). Two traditional reference sites are on the list: the Catholic Encyclopedia and the 11th edition Encyclopedia Britannica (which is in the public domain). An online reference site, History of Nations, takes second position, with 17 separate references while another four number among the top 10.

TABLE 3. Most frequently used references (Internet-based).

Ranking	Site	Number of references	Type
1	US Department of State	19	Government (US)
2	History of Nations	17	Online reference
3	Library of Congress	11	Government (US)
3	BBC	11	News media
4	CIA Factbook	10	Government (US)
5	Catholic Encyclopedia	7	Traditional reference
5	Eurodocs	7	University/school
6	United Nations	6	Government (other)
7	Google News	5	News media
7	Rulers.org	5	Online reference
8	Wikipedia Commons	4	Online reference
9	Time Magazine	3	News media
9	Human Rights Watch	3	NGO
10	CNN	2	News media
10	Oxfam	2	NGO
10	European University (Virtual Library)	2	University/school
10	Encyclopedia Britannica 11th edition	2	Traditional reference
10	World Statesman	2	Online reference
10	Guardian	2	News media
10	Yahoo News	2	News media

In terms of the language of the Internet reference sources, the overwhelming majority are written in English (91% of the total). The other languages used were Spanish, Portuguese, and German. When all sources (Internet and print) are included the percentage jumps to 8.1%. Wikipedia does have a policy of encouraging references to be in the same language as the Wikipedia version the article is included under (for example, German references would be encouraged in the German Wikipedia). Nevertheless, the fact that a vast majority of the references are in English even in articles clearly international in nature is somewhat surprising.

The hyperlinks leading to the Internet references were verified by clicking on them and determining if they actually delivered the user to the correct page. Out of the 299 links used in the Wikipedia articles, 256 passed this test while 42 did not (14.1%). This was less than the percentage of inactive links found in the Russell and Kane study (2008) of the *Journal of American History* and *American Historical Review*, which found 18% of the citations to Internet-based references to be inactive.

Discussion

The Problem

The findings present overall a rather dismal view of history citations on Wikipedia. To begin with, the ratio of citations to number of statements is much smaller for Wikipedia than the JWH (4.86% versus 24.52%). Even accounting for the

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smaller number of statements in Wikipedia, this ratio is less than stellar and suggests that Wikipedia is not living up to its own policy goals. The study found that Wikipedia editors rely heavily on Internet sources for those references and citations they do use. Lowe's (2003) study of the *American Historical Review* found only one Internet-based citation. Of course, Lowe was using samples of historical writing from a time when history on the Web was in its infancy. However, the issues of JWH examined for this study range from 2004 to 2008 and also illustrate a very low usage of Internet material. The dependency of Wikipedia editors on the Internet is striking when compared with these articles, as is the fact that the vast majority do not involve online popular or academic journals.

If we consider that a staggering 94.97% of the online references used are free, we can perceive another dimension to this issue—the commodification of information. By this term we refer to the social and political forces that increasingly view Information and Communication Technology (ICT) as a means to produce information for sale in the market. The economic value of information is emphasized in such a context rather than its political or social worth. Although not a new phenomenon, digital technology has increased the extent to which information has become a commodity. Academic journal articles are a key example, as digital technology allows for the micro-management of subscriber rights to a far greater extent than print-based technologies.

While the popular image of the Internet is of a giant storehouse or library of instantly accessible information, the reality is that much of this is available only in subscription databases. In defiance of the slogan "information wants to be free" and the economic classification of information as a non-rivalrous good, much effort and resources have been put into locking information up and giving the key only to paying customers. The incongruity and in fact betrayal of the great promise of the Internet to make information far more widely available has been challenged over the course of the last few years by the open access movement (Willinsky & Mendis, 2007; Krishnamurthy, 2008). Unfortunately, this movement is still in its infancy, and hence those without institutional access to commercial databases are at a severe disadvantage when it comes to finding good references. The problem of history, especially non-Western history, is compounded by the lack of sites such as the Online Encyclopedia of Philosophy, which is both open access in nature and apparently widely known to the editors of Wikipedia's philosophy articles (Willinsky, 2008).

Further problems arise when we turn to examine the organization responsible for those sites chosen to be references. Stories from news media account for a full 19% of the total references. This proportion is far too high given that newspapers are seen to embody "the first draft of history" and encyclopedias are ideally a compendium of what is commonly accepted as the verified knowledge of disciplinary communities (Anderson, 2002). Newspapers reporting on recent events and subject to the constraints of deadlines and multiple stories that tend to preclude much reflection or even review cannot produce this kind of knowledge and are generally unsuitable as references for an encyclopedia.

Also problematic is the reliance of Wikipedia editors on government Websites. With 15.7% of the references to US government Websites and another 11.1% to the Websites of other governments, this is a heavy dependence. Of course, the heritage arm or public archives of many governments tend to have informative, if selective, Websites, but when we look closer at the ones used by the editors of the articles examined in this study, it is striking that 40% are to the US Department of State and another 20% to the CIA *World Fact Book*.

One could make an argument against dependency on government sources, simply on the grounds that the nature of the institutions producing these documents makes it difficult for certain points of view to be included. Being part of the US government, the CIA *World Fact Book*, for example, is unlikely to include a reading of Guatemalan history that stresses the role of US intervention as an explanation for that country's long and brutal civil war. Good historical writing, on the other hand, brings to the fore the multiple perspectives on a subject and, if necessary for the text's argument, dismisses one or more for logical reasons (Howell & Prevenier, 2001; Jordanova, 2000).

Of course, Wikipedia's authors may balance the use of the *Fact Book* with other sources in order to give alternative perspectives, or the information they seek may be something more standardized, such as the GDP/capita of a particular country. However, even if this was the case, there is another reason for not becoming dependent on government sources (or any other source for that matter). This is the perception such dependency is likely to have in the eyes of the expert reader. Wineburg (1991a) reminds us that one of the most common behaviors of professional historians when confronted with a new text is to look at the citation itself; what he refers to as the sourcing heuristic. Application of this heuristic establishes a framework for reading the rest of the text as it helps establish context. In the case of Wikipedia articles, it is likely that professional historians will examine the references and citations of the article at an early stage of their reading and, if confronted with a dependency on a few sources, are liable to call into question the capability or competence of the authors. Are the authors just choosing the most easily available source? This might be construed as a warning that other short-cuts may have been taken in the course of the article's preparation. Is it a sign that the authors are unfamiliar with the available body of resource materials? This might signal to the reader that the authors do not really have the competence to write the article to begin with. Or is it a sign that the authors lack sensitivity to the local historical context? A dependency on US government sources for countries currently hostile to the US, for example, might suggest unwillingness on the part of the authors to see things from the other side.

What Can Be Done?

One could stop here and declare Wikipedia unfit for use. But this would be to deny the site's potential to emancipate

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knowledge and even knowledge production. Commenting on just this conundrum, Willinsky (2008) writes "it strikes me as shortsighted to view a massive social phenomenon of this scale solely in terms of the resulting encyclopedia's accuracy. That so many people are working together out of an interest in helping other people learn, whether about Walmart or Wittgenstein, should be assessed on a number of grounds" (p. 1270). Certainly this is what Rosenzweig (2006) asks professional historians to consider, arguing that while "professional historians have things to learn not only from the open and democratic distribution model of Wikipedia but also from its open and democratic production model" (p. 137) they also have "a responsibility to make better information sources available online" (p. 138) and "if Wikipedia is becoming the family encyclopedia for the twenty-first century, historians probably have a professional obligation to make it as good as possible" (p. 140). Similarly, the past president of the Canadian Historical Association writes that: "In a context in which history is increasingly commodity and spectacle, it becomes necessary for academic historians to generate a dialogue with the public about the uses and abuses of history. This is not always a pleasant conversation, but it is one of the obligations of scholars in a democratic society" (Conrad, 2007). Wikipedia would appear to be an excellent place to begin such a dialogue.

If we take the advice of these authors instead of disparaging Wikipedia, we should be probing its weaknesses to find ways to improve it. And if historians have a special responsibility to improve history writing on Wikipedia, there is also room for librarians as well, and not just in the field of history, but other subjects too. Often there is a tendency to look at Wikipedia as something black or white, to treat it in a technologically determinist way, rather than a product of a particular social and historical context. We have already pointed out that the commodification of much scholarly information presents at least a potential obstacle for many Wikipedia editors. But even if this problem were addressed by, say, an expansion of the open access movement or a better-funded public library system capable of subscribing to the more esoteric databases coupled with technical improvements to make the interface between Internet search engines and these databases more transparent to users, an even larger problem would remain, the general view among even many educated people that the meaning of a text lies solely within itself.

Perhaps the key disseminating device of such a view, at least in the educational setting, is the textbook. Crismore (1984), writing in the early 1980s, argued that for most students and educators a textbook "should be a book of facts to be memorized" with the goal of the writer "to repeat the facts, not to explain them or their significance for the reader." For the reader the goal was "to receive the fact passively . . . not to understand the facts or the writer's attitude towards them and not to use the facts to build a larger picture or to think critically about what the writer said or did" (p. 281). Crismore defined the resultant genre "textbookese." This notion of a particular way of reading and writing was later used by Wineburg (1991) to explain the different reading strategies employed by professional historians and students. For the former, "the literal text is only the shell of the text comprehended by historians. Texts come not to convey information, to tell stories, or even to set the record straight. Instead they are slippery, cagey, and protean, and reflect the uncertainty and disingenuity of the real world. Texts emerge as 'speech acts', social interactions set down on paper that can be understood only by trying to reconstruct the social context in which they occurred. The comprehension of text reaches beyond words and phrases to embrace intention, motive, purpose, and plan—the same set of concepts we use to decipher human action" (p. 500). On the other hand, the students, all of whom were among the top of their class and interested in history, while able to comprehend the same reading, did not read the subtext. They did not look for the author's intentions, the polemic and rhetoric deployed in the text, nor did they seek to contextualize the writing.

To explain his findings, Wineburg (1991) argued that professors and students possessed different textual epistemologies. The students considered texts as information sources only. For them "reading history was not a process of puzzling about author's intentions or situating texts in a social world but of gathering information, with texts serving as beacons of information" (p. 510). Like Crismore, Wineburg ultimately points the finger at the standardized nature of school texts, which, he argues, obliterates disciplinary differences, replacing them with an approach that views knowledge as "detached from experience . . . is certain and comes shorn of hedge and qualification" (p. 514).

Wineburg (1991) and Crismore's (1984) insights may be usefully applied to our findings concerning Wikipedia. If they are correct, most people come away from school with a severely limited view of history and of the nature of knowledge production in general. Employing reading strategies found successful at school they will treat all texts as textbooks, bearers of informational nuggets that require no further explanation or contextualization. For them, the intricacies of sourcing—the use of citations to build allies, disparage enemies, show allegiance, and in general create the persuasive force needed to win over the reader—go unnoticed in their reading and by extension their writing as well. For them, one text is as good as another since texts by their very nature are purveyors of knowledge—a view that their own discursive experience at school has confirmed after many years of education. Context can safely be ignored.

Challenging such a limited view of how to read texts can be part of the mission of librarians and other related information workers, but to do so requires that they reject a positivist view of the world that sees knowledge as universal and monolithic and which delegates to the learner the task of finding the "real" facts and applying them to whatever problem they are currently confronting. Truth, from this perspective, "is constructed as certain, objective, and good" (p. 44), according to Kapitzke (2003b), who goes on to note a number of misconceptions behind this approach. Here, the most important is the notion of language as "a transparent conduit for the transmission of meaning" (p. 45). Kapitzke

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(2003b) argues that the failure to recognize that language is not a simple mechanism that allows meaning or information to pass from one individual to another, but an elaborate product of human beings working in communities, is responsible for the neglect of "sociocultural, historical, and ideological processes of knowledge construction" (p. 46) within much of the information literacy agenda and their replacement with a generic, skills-based approach in many cases (Sundin, 2008; Tuominen, Savolainen, & Talja, 2005). In many ways, this is the same problem that confronted Wineburg's students, albeit in perhaps a more acute form, and which led them to treat texts as unproblematic and undifferentiated bearers of knowledge, rather than artifacts produced by and for particular communities in a particular time and place.

To a certain extent a process of reevaluation of the aims and purposes of information literacy has already begun. The Australian and New Zealand Information Literacy Framework, for example, specifically locates information literacy in a disciplinary setting with one of its goals for students being to understand "that information and knowledge in any discipline is in part a social construction and is subject to change as a result of ongoing dialogue and research" (Bundy, 2004, p. 21). This acknowledgement is welcome, as it creates an opening for the construction of more complex models of knowledge production that stress its community-based nature. As well as supporting an enriched vision of information literacy, such an approach would give powerful tools of understanding and insight to those evaluating Wikipedia's articles as well as those interested in contributing to them, and it would be a positive response to the problem of accuracy and verifiability of Wikipedia that would help preserve its extraordinary democratic potential for knowledge construction.

Conclusion

This study set out to ascertain how well the authors of Wikipedia history articles adhered to the site's policy of assuring verifiability through citations. We did so by examining the references and citations of a subset of country histories. The findings paint a dismal picture. Not only are many claims not verified through citations, those that are suffer from the choice of references used. Many of these are from US government Websites or news media and few are to academic journal material. Most are in English. Given these results, one response would be to declare Wikipedia flatly unsuitable for serious reference work. But another option emerges when we jettison technological determinism and look at Wikipedia as a product of a wider social context. Key to this context is a world in which information is bottled up as commodities requiring payment for access. Equally important is the problematic assumption that texts are undifferentiated bearers of knowledge, an assumption that as Crismore (1984) and Wineburg (1991) reveal is heavily embedded in our education system. Information workers involved in instructional programs can draw attention to the social nature of texts to counter this assumption and by so doing create an awareness for a new generation of Wikipedians and Wikipedia users, among others, of the need to evaluate texts (and hence citations) in light of the social context of their production and use.

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