Law Libraries in Hyperspace: A Citation Analysis of World Wide Web Sites

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Mr. Vreeland suggests the use of citation analysis as an appropriate objective standard for measuring and evaluating law library Web sites.

The Web site has become almost as common a fixture as the reference desk or the study carrel in many of today’s law libraries. Virtually every academic law library in the United States has a home page, and the Web continues to grow in importance as a resource for legal researchers. However, there is surprisingly little data on the content, structure, or complexity of these pages. Individual law librarians and professional organizations have made occasional attempts to coordinate Web development efforts, to unilaterally dictate peremptory design standards, or point out common mistakes, but these efforts are rarely supported by empirical evidence or serious research. Earlier studies have assessed collections of computer software and the size of law library computer...
support staffs, but large studies of library Internet resources have rarely been undertaken. “Metrics are needed from a variety of perspectives ranging from system to user, from content to services, from local to highly distributed, from single use to use across a ‘session,’ and so on.”

¶2 The profession’s “voracious appetite for usage data” remains unsatisfied because there are no clear “standards for quantitative measurement of electronic multi-media works or objects. . . . Libraries are creating navigational or finding aids by data-mining activities that establish electronic links to and among digital and print resources, but it is difficult to measure this activity or the effectiveness of these investments.” Until such standards are devised, law library webmasters will find it difficult to determine how their home pages compare to those of other law libraries, and individuals seeking legal information on the Internet will have no objective means of deciding where best to begin. The goal of this article is to formulate an objective standard for the measurement and evaluation of law library Web sites.

Quantitative Analysis of Web Sites

¶3 Web sites are commonly measured in terms of the “hits” registered in a server’s log files, but such numbers are inherently problematic. A visit to one Web page may produce many log entries, as each graphic on the page will require a separate request to the server. Slightly more reliable is the “page view,” which records server contacts only at the document level, ignoring the included graphics. However, page views provide no information about how many different people have used a site, or whether they viewed the page by choice or by chance.

¶4 Ratings services are currently attempting to evaluate Web audiences in a manner comparable to the Nielsen system of counting television viewers, so that a more efficient pricing system for Web-based advertisements can be created.
They have proposed fairly sophisticated measures such as *reach*, meaning “[t]he percent of Web-active individuals that visited a site once in [a] given month. . . . For example, if a site has a 2% reach that means that 2% of Web-active individuals visited that site. . . .”16 Such measures are arrived at by analyzing the logs of proxy servers17 which are transmitted to the ratings service via FTP18 on a regular basis.19 While these measures do produce accurate counts of traffic, they view the Internet with “standards more suited to TV or radio.”20 This mass-market paradigm undervalues law libraries and other “well-focused sites that collect specific groups of users with shared interests.”21

¶5 In addition to the individual limitations already described, all the aforementioned methods share a common weakness. Broad-based analysis using such methods would probably require libraries to engage in widespread sharing of Web server access logs. While at least one such study has been conducted (among science and engineering libraries),22 casual dissemination of server logs should be avoided as a possible violation of state law,23 professional ethics,24 and “responsible net citizenship.”25

Usability, Information Architecture, and Other Obsolete Notions

¶6 Interface design is one of the few aspects of library Web sites that has been studied in detail.26 One sign of the field’s popularity is that guidelines for use in evaluating site design are abundant.27 In fact, they are too abundant; so many exist

17. A proxy server is “[a]n intermediate server that attempts to fulfill client requests from data stored in memory before passing requests on to an actual server.” *Official Internet Dictionary, supra* note 12, at 130–31.
21. *Id.*
23. Most states have laws that forbid libraries from sharing records that reveal the identity of patrons. See, e.g., N.C. GEN. STAT. § 125-19(a) (1991).
24. No professional organization has specifically addressed the issue of access to server logs, but the need to protect records which might reveal the information-seeking preferences of patrons is well established. See, e.g., Am. Library Ass’n, *Policy on Confidentiality of Library Records* (visited Sept. 14, 1999) <http://www.ala.org/alaorg/oltn/pol_conf.html>.
that contradictions between them are not uncommon. A review of the literature reveals the following rules:

1. Scrolling is bad, except when it is not.  
2. Users do not like to click on multiple links. Or perhaps they do.  
3. Animation is good. No, it isn’t.

Such contradictions are not surprising given the highly subjective nature of many of the rules. Even more rigorous studies of usability are hampered by changes in user preferences over time. Sites that are well received today may be despised tomorrow as increasingly large portions of the previously unconnected populace begin to use the Internet.

Interface design is becoming less relevant, despite the recent enthusiasm that law librarians have shown for it. As innovative, customized services become available, many design decisions will be delegated to the end user.

Citation Analysis and the World Wide Web

Citation analysis is a familiar technique in both law and information science. The use of citators to locate references to cases, statutes, and other legal materials is an essential part of the practice of law. Citation analysis has been used to assess the influence and visibility of legal publications, and libraries have used it in

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32. See User Interface Engineering, supra note 30.
33. See Nielsen, supra note 28.
making collection development decisions. The same methods used to compare the footnotes in print documents can be used to analyze the links in Web pages. Indeed, citation analysis should be even more relevant in the Internet context, because hyperlinks are an essential part of the Internet, providing the high degree of interconnection that makes the World Wide Web a genuine Web despite its enormous size. “Electronic information is not revised in stages or in editions, as occurs with printed works, but continuously changes. Hypertext provides the links to such information, and in an electronic environment, the links may be worth more than the information itself.”

¶10 Recent studies in information science have revealed that the hyperlinks found on a Web page reveal more about the content of a Web page than the rest of the page’s text. Google, a new entry in the crowded search engine market, has made a name for itself by implementing a search algorithm based on hyperlinks.

¶11 Hyperlinks also differ from print citations in that they are much more likely to be followed. Footnotes and endnotes tell the reader where he can find an item by expending time and effort, but hyperlinks provide instantaneous and seamless access to the cited information.

¶12 The Internet’s growth rate is too great for any one institution to maintain a comprehensive list of links. Even Yahoo!, a well-funded site that exists only to make links, continues to fall behind. Therefore, it would be eminently sensible for each law library to construct individualized pages in which “[a] small core of predictable links to the major resources exists, but the majority of them are individualized, showing critical thought and evaluation. . .”

39. See Marcy Neth, Citation Analysis and the Web, Art Documentation, Spring 1998, at 29.
40. The “diameter” of the Web, or average distance between any two randomly chosen Web pages, is nineteen links. This figure will only increase to twenty-one links if the Web increases 1,000 percent in size. See Réka Albert et al., Diameter of the World-Wide Web, Nature, Sept. 9, 1999, at 130, 130.
44. See Adrienne Mand, Unlaunched Site Making Digerati Google-Eyed, Mediaweek, July 12, 1999, at 34.
46. Users may even follow hypertext links too often, thereby losing their way and becoming disoriented. See Vreeland & Dempsey, supra note 2, at 482.
49. See Anne Callery & Deb Tracy-Proulx, Yahoo! Cataloging the Web, J. Internet Cataloging, no. 1, 1997, at 57, 61.
50. Neth, supra note 39, at 32.
One would expect law library pages to have many links in common, just as ABA-accredited libraries have the same core collections. In addition, some webmasters may choose to copy the links from other law library or legal research sites. However, each site must offer some unique links in order to justify its existence. Information is most useful if it is both relevant and novel. There may be some value in reducing network congestion by making the same links accessible on multiple servers, but this could be achieved by simply mirroring the best sites. Collections of Internet links should comply with the same guidelines as print bibliographies:

The bibliography should fill a significant need in order to justify its compilation.

The subject should fit into the general scheme of available bibliographical resources without unnecessary duplication. If similar bibliographies exist, they should be reviewed, and the unique contribution of this new one should be stated explicitly.

Methodology

Two online directories of law libraries and an online list of all ABA-accredited law schools were used as starting points to locate all of the Web sites for this study. Of the 182 ABA-accredited institutions, 156 had home pages with at least one external link, eighteen had no external links, and eight had no home page. During the beginning of the fall 1999 semester, a shareware program was used to collect the external links. The list of external links, for example, would be well over 1,000 pages in length if produced in hard copy. However, the list of links and other materials are available online at Robert C. Vreeland's Web Site Research: Supporting Materials (last modified July 5, 1999) <http://library.law.unc.edu/staff/rcv/research/>.

Nonaccredited institutions were excluded simply because the list of accredited law schools was more than long enough to provide a sufficient data set.


The eight law libraries for which no Web site could be found were Hawaii, the Judge Advocate General’s School, Inter-American, Mercer, Pontifical Catholic of Puerto Rico, University of Puerto Rico, Southern, and St. Mary’s.
called HTTrack\textsuperscript{61} was used to download almost all of the Web sites in their entirety. A few of the Web sites could not be downloaded, either because the sites are database-driven\textsuperscript{62} or because of commands in their robots.txt files. Those sites were downloaded by hand. It was necessary to download the sites for local analysis because search engines cannot be trusted to give an accurate representation of a Web site’s entire contents,\textsuperscript{64} and because it was desirable to have “frozen” copies of the sites so that data would not change once the study was under way.

\section{After the sites were downloaded, a list of hyperlinks was extracted from each site using a shareware utility called Web Address Extractor.\textsuperscript{65} This process produced 156 text files, each consisting of a list of URLs.\textsuperscript{66} Each list was edited to remove all links to the site’s own domain.\textsuperscript{67} For example, all links in the unc.edu domain were removed from the University of North Carolina Law Library’s list of links. Although self-citations are considered “real” citations when they appear in print,\textsuperscript{68} on the Internet they are likely to be “organizational links” which provide navigation information,\textsuperscript{69} or politically mandated links to the parent institution.\textsuperscript{70} Together, the 156 sites contained 71,851 external links.\textsuperscript{71}

\section{The collections of links from each site were compared and the sites were ranked according to luminosity.\textsuperscript{72} These results are presented in figure 1.}

\begin{footnotesize}
\begin{enumerate}
\item A database-driven site creates pages dynamically in response to user queries. Therefore, it does not contain static files of the sort that most indexing software is intended to analyze. See Ying Zhang, \textit{Setting Up Database-Driven Web Sites} (visited Sept. 9, 1999) <http://www.devshed.com/Server_Side/Administration/Database/>.
\item A robots.txt file is a plain text document that limits the files on a Web server to which indexing software can gain access. See Martijn Koster, \textit{A Standard for Robot Exclusion} (last modified May 14, 1999) <http://info.webcrawler.com/mak/projects/robots/norobots.html>.
\item A URL is a “Universal Resource Locator. The addressing system used in the World Wide Web and other Internet resources. The URL contains information about the method of access, the server to be accessed, and the path of any file to be accessed.” \textit{OFFICIAL INTERNET DICTIONARY}, supra note 12, at 166.
\item A domain is “a part of a naming hierarchy. Syntactically, an Internet domain name consists of a sequence of names (labels) separated by periods (dots), e.g., ‘tundra.mpk.ca.us.’” \textit{Id.} at 45.
\item See Chu, supra note 43, at 362 (explaining the distinction between organizational and content-based links).
\item This figure excludes duplicate links within sites but includes duplicates among sites. If one library has several links to the same URL, that URL is only counted once for that library, but if many libraries link to the same URL, then that URL is counted once for each of those libraries.
\item In this context, luminosity is a measure of how many other URLs a site points to, or the extent to which it “casts navigational light off-site.” Tim Bray, \textit{Measuring the Web}, \textit{FIFTH INT’L WORLD WIDE WEB CONF. PROC. 9} (1996) (last modified June 17, 1996) <http://www5conf.inria.fr/fich.html/html/papers/P9/Overview.html>.
\end{enumerate}
\end{footnotesize}
After assessing the luminosity of the sites, it seemed logical to measure their visibility\(^73\) by using Alta Vista\(^74\) to count the number of links to each site. Figure 2 reveals the results of this exercise. In order to determine if there is a relationship between visibility and luminosity, the values from figures 1 and 2 were plotted on a scatter diagram. This diagram is presented in figure 3.

Many of the 71,851 external URLs extracted from the law library pages were found to be duplicates, as many URLs were linked to by many different sites. The most visible of these URLs are presented in figure 4.

Figure 4 illustrates that many URLs exist on the same host. There are 15,484 separate hosts\(^75\) in the list of 71,851 URLs. The most visible hosts are listed in figure 5.

**Discussion of Figure 1**

The total luminosity of law library Web sites is listed in figure 1. The number of external links ranges from 1 to 8,769.\(^76\) Washburn University Law Library, the most luminous site, appears to be following a “two power standard” like that of the Royal Navy during the nineteenth century\(^77\)—its collection of links is larger than the second and third largest collections combined.\(^78\) In part this is accomplished by creating “deep links”\(^79\) to remote sites in order to provide direct access to specific resources.\(^80\) For example, Washburn has sixteen links to resources at FindLaw.\(^81\)

From figure 1, it is apparent that 20 percent of the sites account for almost 80 percent of all the links.\(^82\) The “Trueswell distribution,” which appears repeatedly in information and library science, would appear to have some application to

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73. Visibility measures “the number of other sites that have pointers to” a site. *Id.*
75. Note that the 15,484 hosts are not 15,484 separate servers. For example, findlaw.com and www.findlaw.com are two separate host names, but they refer to the same physical server.
76. Sites with no external links and libraries without home pages are not represented in figure 1.
77. *See* Memorandum probably from Reginald McKenna to Prime Minister Asquith (May 1909), in *BRITISH NAVAL DOCUMENTS 1204–1960*, at 754 (John B. Hattendorf et al. eds., 1993).
82. This figure was arrived at by adding the total links for the thirty-one (20 percent of the 182 ABA-accredited law libraries) most luminous sites. Together these sites have 53,887 links, or 74.9 percent of the 71,851 links contained on all law library Web sites.
<table>
<thead>
<tr>
<th>Institution</th>
<th>Luminosity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washburn</td>
<td>8769</td>
</tr>
<tr>
<td>Emory</td>
<td>4426</td>
</tr>
<tr>
<td>Georgetown</td>
<td>4179</td>
</tr>
<tr>
<td>Texas</td>
<td>3060</td>
</tr>
<tr>
<td>Regent</td>
<td>2521</td>
</tr>
<tr>
<td>Chicago</td>
<td>2517</td>
</tr>
<tr>
<td>Cornell</td>
<td>1956</td>
</tr>
<tr>
<td>Southern California</td>
<td>1910</td>
</tr>
<tr>
<td>Notre Dame</td>
<td>1852</td>
</tr>
<tr>
<td>Nebraska</td>
<td>1522</td>
</tr>
<tr>
<td>Montana</td>
<td>1456</td>
</tr>
<tr>
<td>Florida State</td>
<td>1303</td>
</tr>
<tr>
<td>Gonzaga</td>
<td>1291</td>
</tr>
<tr>
<td>New England</td>
<td>1178</td>
</tr>
<tr>
<td>Colorado</td>
<td>1176</td>
</tr>
<tr>
<td>Nova</td>
<td>1169</td>
</tr>
<tr>
<td>NYU</td>
<td>1119</td>
</tr>
<tr>
<td>Seattle</td>
<td>1086</td>
</tr>
<tr>
<td>Penn</td>
<td>970</td>
</tr>
<tr>
<td>Louisiana State</td>
<td>920</td>
</tr>
<tr>
<td>Virginia</td>
<td>892</td>
</tr>
<tr>
<td>Wake Forest</td>
<td>888</td>
</tr>
<tr>
<td>Yale</td>
<td>819</td>
</tr>
<tr>
<td>South Carolina</td>
<td>814</td>
</tr>
<tr>
<td>Kansas</td>
<td>771</td>
</tr>
<tr>
<td>American</td>
<td>736</td>
</tr>
<tr>
<td>Rutgers-Camden</td>
<td>715</td>
</tr>
<tr>
<td>Minnesota</td>
<td>705</td>
</tr>
<tr>
<td>Stetson</td>
<td>634</td>
</tr>
<tr>
<td>Cleveland State</td>
<td>585</td>
</tr>
<tr>
<td>Southern Methodist</td>
<td>552</td>
</tr>
<tr>
<td>Drake</td>
<td>533</td>
</tr>
<tr>
<td>Albany</td>
<td>503</td>
</tr>
<tr>
<td>Indiana at Indianapolis</td>
<td>495</td>
</tr>
<tr>
<td>Arizona State</td>
<td>492</td>
</tr>
<tr>
<td>Dayton</td>
<td>492</td>
</tr>
<tr>
<td>Villanova</td>
<td>491</td>
</tr>
<tr>
<td>Vanderbilt</td>
<td>464</td>
</tr>
<tr>
<td>North Carolina</td>
<td>457</td>
</tr>
<tr>
<td>Lewis and Clark</td>
<td>435</td>
</tr>
<tr>
<td>South Texas</td>
<td>409</td>
</tr>
<tr>
<td>Harvard</td>
<td>401</td>
</tr>
<tr>
<td>William Mitchell</td>
<td>399</td>
</tr>
<tr>
<td>Mississippi</td>
<td>392</td>
</tr>
<tr>
<td>Arkansas</td>
<td>377</td>
</tr>
<tr>
<td>Denver</td>
<td>343</td>
</tr>
<tr>
<td>Washington</td>
<td>304</td>
</tr>
<tr>
<td>Hamline</td>
<td>300</td>
</tr>
<tr>
<td>Duke</td>
<td>299</td>
</tr>
<tr>
<td>State Univ. of NY</td>
<td>297</td>
</tr>
<tr>
<td>Kentucky</td>
<td>294</td>
</tr>
<tr>
<td>City Univ. of NY</td>
<td>289</td>
</tr>
</tbody>
</table>

**Figure 1.** Law Library Web Sites Ranked by Luminosity
Web sites as well as print materials. Previous studies have shown that it is not uncommon for Web sites to conform to bibliometric laws.

The tacit premise of figure 1, that better sites have more links, is consistent with the general assumption that recall is more important than precision in conducting legal research. Reviews of case citators typically discuss which services find more cases, and many law review writers attempt to pack as many footnotes as possible into their articles.

Discussion of Figure 2

These numbers are frankly the least reliable of any in this study, given that the Alta Vista search engine only indexes about 15.5 percent of the publicly accessible Internet and does not always index sites very thoroughly. However, Alta Vista is probably the most reliable of any search engine for tasks of this nature. Indexing of library Web sites is complicated by the rapidity with which URLs change. In cases where an out-of-date URL could be found for a site, the links to that URL were added to the site’s total. Therefore, representation of sites in figure 2 is somewhat dependent on the author’s ability to locate alternative URLs.

Visibility is an increasingly important measure of a site’s influence. “[E]ach link [is] an implicit endorsement of the location to which it points. . . . [I]n aggregate—that is, when a large enough number is considered—Web links do confer authority.” As the Internet grows and more unreliable sites appear, the collective approbation inherent in high visibility could prove useful in identifying superior sites.
Washburn 6237  Vermont 36  Arizona 12  
Emory 3718  Albany 33  Capital 12  
Georgetown 1978  Pepperdine 33  Marquette 12  
Southern California 1514  Willamette 33  Missouri-Kansas City 12  
Texas at Austin 811  Columbia 32  Northern Kentucky 12  
Pennsylvania 507  George Mason 32  Nova Southeastern 12  
Gonzaga 381  South Dakota 32  Texas Southern 12  
Cornell 372  Connecticut 31  Yeshiva 12  
Harvard 372  Pittsburgh 31  Dayton 11  
Pace 356  Richmond 30  Drake 11  
Regent 315  Loyola Marymount 29  McGeorge 11  
Cleveland State 257  Arkansas-Little Rock 28  Mississippi 11  
Chicago 243  Oregon 27  Seattle 11  
Houston 239  Villanova 27  Depaul 10  
Maryland 204  California Western 26  Miami 10  
Denver 172  Kentucky 26  Touro 10  
Florida State 168  Southwestern 26  Franklin Pierce Law Ctr. 9  
Southern Illinois 164  St. Louis 26  Ohio Northern 8  
Illinois 155  Oklahoma 24  Washington and Lee 8  
Stanford 152  Utah 24  Alabama 7  
Wake Forest 151  Vanderbilt 24  Baylor 7  
Rutgers-Camden 148  Wyoming 24  Boston University 7  
Rutgers-Newark 136  Southern Methodist 23  Duquesne 6  
Colorado 130  Missouri-Columbia 22  Loyola-Chicago 6  
Washington 128  Tennessee 22  St. Thomas 6  
John Marshall 119  Yale 22  Valparaiso 6  
Chicago-Kent 108  Cincinnati 21  North Carolina Central 5  
Kansas 94  Indiana-Indianapolis 21  Quinnipiac 5  
California-Hastings 91  Northern Illinois 21  Boston College 4  
Nebraska 87  Baltimore 20  Brigham Young 4  
Iowa 82  Notre Dame 20  Detroit 4  
California-Berkeley 80  Stetson 20  San Diego 4  
Lewis and Clark 78  Georgia State 19  Toledo 4  
State Univ. of NY 77  Louisville 19  Chapman 3  
Howard 76  Pennsylvania State 19  Golden Gate 3  
Case Western Reserve 75  American 18  Mississippi College 3  
California-Davis 73  City Univ. of NY 18  Samford 3  
Brooklyn 67  Hamline 18  Detroit Mercy 2  
New England 67  Northeastern 18  New York Law School 2  
South Carolina 64  Idaho 17  Ohio State 2  
UCLA 53  Santa Clara 17  Temple 2  
New York University 52  Washington (St. Louis) 17  Texas Tech 2  
North Carolina 52  Arizona State 16  West Virginia 2  
Akron 48  North Dakota 16  Western State 2  
San Francisco 48  Oklahoma City 16  Wisconsin 2  
Campbell 47  Tulane 16  District of Columbia 1  
Duke 45  Tulsa 16  Loyola-New Orleans 1  
Georgia 45  Wayne State 16  Texas Wesleyan 1  
Michigan 45  Creighton 15  Western New England 1  
Syracuse 45  Indiana 15  William and Mary 1  
Widener 44  William Mitchell 15  Fordham 0  
Florida 43  Arkansas-Fayetteville 14  Hofstra 0  
George Washington 43  Catholic 14  Maine 0  
Minnesota 40  Memphis 14  New Mexico 0  
South Texas 39  Virginia 14  Roger Williams 0  
Suffolk 39  Louisiana State 13  Thomas M. Cooley 0  
Montana 38  Seton Hall 13  Thomas Jefferson 0  
Northwestern 36  St. Johns 13  Whittier 0  

**Figure 2.** Law Library Visibility (According to AltaVista)
Discussion of Figure 3

¶25 Figures 3a and 3b show the relationship between each law library’s visibility and luminosity. Figure 3b excludes library sites with very high values so as to present a more detailed picture of the average site. Overall there seems to be no clear correlation between visibility and luminosity. There is a large cluster of sites that are highly luminous but not very visible. In other words, there is no guarantee that large numbers of links alone will increase a site’s public profile. Sites that offer primary legal sources94 or value-added services95 are likely to be linked to regardless of their luminosity. There are also a host of external variables, unrelated to site content and not considered in this study, which could affect a site’s visibility. Among these would be the age of the site, the prestige of the sponsoring institution, and the extent of the efforts by those maintaining the site to get it indexed by major search engines.

Discussion of Figure 4

¶26 Figure 4 shows the URLs that were linked at least twenty times from law library sites, ranked in order of visibility. The links reveal an interesting mixture of conventional sources that all law libraries should have on the shelves, such as the United States Code, and other materials that are more difficult to locate in print, such as international documents. Linking to materials that have no analogue in the print collection may often be a difficult step for librarians to make, since many organizers of electronic information tend to view online resources as a mere extension of the print library rather than an entirely new medium.96

Discussion of Figure 5

¶27 Figure 5 displays all Web servers that were linked at least fifty times from law library Web sites. Many of these host names appeared in figure 4, but some, such as 193.135.156.15 (a United Nations human rights information server), are new. This server is listed among the most visible hosts, but not the most visible URLs, because most of the links to it are “deep links” pointing to specific documents on the server.97 No one document on the server was linked to often enough to appear in figure 4, but the cumulative number of links to the host name was very high.

94. See generally David Rampe, Your Own Law Library (No Shelves Required), N.Y. TIMES, May 12, 1997, at D1.
96. See Katsh, supra note 42, at 69–79.
97. See supra notes 79–80 and accompanying text.
Figure 3a. Visibility v. Luminosity

Figure 3b. Visibility v. Luminosity (Magnified)
An analysis of the numbers in this table reveals that they also follow a Trueswell distribution.98

¶28 A few of the highest-ranking host names in figure 5 belong to law libraries.99 High visibility in this “relevant market”100 may be more significant than the general visibility depicted in figure 2, since presumably a link from one law library to another constitutes the endorsement of an informed peer.

Summary of Results

¶29 The presence of the 80/20 distribution for library site luminosity, while interesting as a bibliometric phenomenon, is something of a disappointment. It indicates that a small portion of sites are providing most of the labor and thought for the entire community. One author, finding similarly small percentages of highly useful sites, concluded that half of the servers in his subject area “designed, financed, constructed and maintained in all parts of the world could be safely switched off, not only without any loss to anyone, but actually to the great benefit of all serious Net users.”101 Perhaps many of the less impressive pages exist only because of “the ‘gold rush’ mentality, which encourages a sense of false urgency. There appears to be a widespread belief that a presence on the Web (even a poor one) is better than having no presence at all.”102 However, having a Web site that no one uses is functionally equivalent to having no site at all.

Applications of This Research

¶30 Currently, information of this nature is of use primarily to library webmasters. However, these research methods could increase in importance if, as some have suggested, the ABA elects to pay more attention to electronic services in its evaluations of law libraries.103 Although ABA accreditation standards now recognize

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98. The 3,096 most visible servers are linked to 55,034 times, meaning that 20 percent of the servers account for 76.6 percent of the links.

99. This is one of many instances where the distinction between law library and law school sites becomes blurred. Often when a law library shares space on a law school server, it is difficult to determine whether resources “belong” to the law school or the library. Of course, the question is probably unimportant to anyone except researchers undertaking studies like this one.

100. See Austin, supra note 87, at 829, 836 n.58 (1993) (explaining the relevance of the antitrust relevant market concept to citation analysis).


103. See Gail M. Daly, Law Library Evaluation Standards: How Will We Evaluate the Virtual Library?, 45 J. LEGAL EDUC. 61, 72–73 (1995) (arguing for an increased emphasis on digital collections in the ABA accreditation process).
thomas.loc.gov 93  www.access.gpo.gov/
www.findlaw.com 89  su_docs/aces/aces002.htm 38
law.house.gov 78  www.lrl.com/
www.un.org 72  www.spl.org/govpubs/
www.law.cornell.edu 68  municode.html 36
www.yahoo.com/ 64  law.house.gov/89.htm 36
www.abanet.org 63  www.law.cornell.edu/citation/
www.access.gpo.gov/  su_docs/aces/aces140.html 61  www.law.cornell.edu/citation/table.html 36
www.law.cornell.edu/ 58  www.courttv.com/ 35
uscode 56  www.westlaw.com/ 35
www.house.gov 56  lawlib.wuacc.edu/washlaw/
www.tufts.edu/fletcher/ 55  uslaw/statelaw.html 35
multilaterals.html 55
www.excite.com/ 54  www.ll.georgetown.edu/
www.wld.com/ 51  Fed-Ct/cadc.html 34
www.lycos.com/ 50  www.os.org/ 34
www.senate.gov 48  www.switchboard.com/ 34
www.access.gpo.gov 47  www.fedworld.gov/supcourt/index.htm 33
www.hotbot.com/ 46
law.house.gov/usc.htm 45  www.infoseek.com/ 33
www.lib.uchicago.edu/~llou/lawlists/info.html 43  www.law.cornell.edu/citation/citation.table.html 33
www.law.emory.edu/ 6circuit 43  www.state.gov/
www.senate.gov 42  www.whitehouse.gov 33
www.law.cornell.edu/supct 42  www.wto.org/ 32
www.access.gpo.gov 42  www.census.gov/ 32
www.hotbot.com/ 42  www.wusa.gov 32
law.library.wustl.edu/ 41  www.courttv.com/ 31
~lou/lawlists/info.html 41  www.switchboard.com/ 31
www.law.emory.edu/ 41  www.westlaw.com/ 31
FEDCTS 41  www.wulaw.wustl.edu/ 31
www.aallnet.org/ 41  8th.cir/
ca03.html 41
www.law.emory.edu/ 1circuit 41
www.martindale.com/ 40  www.access.gpo.gov/su_docs/aces/aces002.htm 31
www.access.gpo.gov/ 40  su_docs/adpos/suppos400.html 31
www.access.gpo.gov/ 40  www.law.emory.edu/fedcircuit 31
www.law.cornell.edu/icj 40  www.law.emory.edu/LAW/refdesk/toc.html 31
altavista.digital.com/ 39  www.law.indiana.edu/law/v-lib/lawindex.html 30
www.sec.gov/ 39
lawlib.wuacc.edu/washlaw.html 39  www.law.cornell.edu/rules/frcp/overview.htm 30
casenote/supreme.html 39
www.uscourts.gov/ 38  www.law.emory.edu/10circuit 30
europa.eu.int/ 38

Figure 4. Most Visible External URLs (URLs Linked at Least Thirty Times Shown)
Figure 5. External Hostnames Ranked by Visibility
electronic resources as part of a library collection,104 no particular provision has been made for the evaluation of Internet resources, except in the context of distance learning.105 Traditional ABA measures have dealt with the size of library collections,106 but on the Internet, the marginal cost of increasing “collection” size is very close to zero,107 so substantial differences in the extent of Web site coverage will not be reflected in traditional economic data. The citation analysis methods proposed in this article provide a more effective tool for evaluating the quality of Web sites.

Figure 5. External Hostnames Ranked by Visibility (continued)