

Assessing the Influence of Computer-Assisted Legal Research: A Study of California Supreme Court Opinions*

Paul Hellyer**

Mr. Hellyer reviews the literature regarding CALR and identifies several hypotheses regarding quantitative differences in the results of print-based research and CALR. He then analyzes California Supreme Court opinions to determine CALR's effect on the quantity, recency, and types of legal authority cited by the court. The data fail to support the commentators' hypotheses.

¶1 The growing popularity of computer-assisted legal research (CALR) has generated debate among law librarians and other legal professionals on how it is influencing legal research and the law. Some commentators claim that CALR makes legal research more efficient and thorough than ever before, while others go further and argue that it reshapes the law itself by releasing attorneys and courts from the rigid organization of print sources. Other commentators, however, claim that CALR is no more effective than traditional methods of legal research and that its effects on legal thinking are exaggerated.

¶2 In this article, I will briefly review the development of CALR, discuss some of the commentary about CALR, and present my efforts to test some of the commentators' hypotheses regarding the possible effects of CALR. I analyzed a random sample of California Supreme Court opinions published between 1944 and 2003 and attempted to identify changes in the quantity, recency, and types of legal authority cited by the court. Although some trends are apparent in the court's citations to legal authority, there is no persuasive evidence that the trends are caused by CALR. The data I collected cast doubt on claims that CALR is reshaping the law.

The Development of CALR and Reaction in the Legal Community

¶3 CALR debuted in the mid-1960s, but the first CALR systems were primitive by today's standards and not widely available.¹ The CALR revolution did not begin

* © Paul Hellyer, 2005. This is a revised version of a winning entry in the student division of the 2004 AALL/LexisNexis Call for Papers Competition.

** Student, San Jose State University, School of Library and Information Science.

1. In 1963, the United States Air Force developed what would eventually be called FLITE, the first database of case law in machine-readable form. Initially, FLITE was available only to U.S. government lawyers and was used mostly in the military sector. Lynn Foster & Bruce Kennedy, *The Evolution of Research: Technological Developments in Legal Research*, 2 J. APP. PRAC. & PROCESS 275, 279 (2000); John T. Soma & Andrea R. Stern, *A Survey of Computerized Information for Lawyers: LEXIS, JURIS,*

in earnest until the introduction of Lexis (now LexisNexis) and Westlaw in the 1970s. Lexis, introduced in 1973, was the first commercial, full-text, electronic database of case law² and was aggressively marketed to attorneys and judges.³ West Publishing Co. (West) launched Westlaw in 1975 to compete with Lexis, but for many years Westlaw was widely regarded as an inferior product.⁴

¶4 The initial Lexis and Westlaw databases were much more limited than the databases we know today. Lexis initially featured only Ohio and New York codes and cases, the *United States Code*, and some federal case law; it was not until 1980 that Lexis offered case law for all fifty states.⁵ The original Lexis was hampered not only by a limited database, but also by costs that could be outrageously high. A search for the phrase **trial by jury** might have cost as much as \$5000 in the 1970s.⁶ The original Westlaw was even more impractical. Unlike the full-text Lexis system, Westlaw initially featured only headnotes and key numbers, and was plagued by unreliable software and a faulty communication network.⁷

¶5 But both Lexis and Westlaw improved rapidly. Full-text searching became available on Westlaw in 1979,⁸ and by the early 1980s, Westlaw had largely overcome its software and hardware deficiencies.⁹ By the early 1980s, both Lexis and Westlaw featured a wide variety of legal authorities. As of 1982, the Lexis database included opinions of the U.S. Supreme Court from 1925, the U.S. Courts of Appeals from 1945, U.S. District Courts from 1960, and U.S. Court of Claims from 1977; Westlaw offered a similar database of federal case law, although its dates of coverage were slightly different. For California materials, both Lexis and Westlaw featured California Supreme Court opinions from 1945; for California appellate reports, Lexis went back to 1955 and Westlaw to 1967.¹⁰ By the mid-1980s, both systems offered a considerable selection of international legal authorities.¹¹ Today, both LexisNexis and Westlaw include the vast major-

WESTLAW, and FLITE, 33 DEF. L.J. 181, 191 (1984). In the civil sector, the first case law database appeared in 1964, when the Ohio Research Service operated a project in New York in which a main-frame computer was used to store and retrieve case citations for attorneys. LEXISNEXIS, THE LEXISNEXIS TIMELINE, at http://www.lexisnexis.com/anniversary/30th_timeline_fulltxt.pdf (last visited Jan. 5, 2005) [hereinafter LEXISNEXIS TIMELINE]. In 1965, Professor John Harty of the University of Pittsburgh created a full-text database of some U.S. Supreme Court and Pennsylvania state cases. William G. Harrington, *A Brief History of Computer-Assisted Legal Research*, 77 LAW LIBR. J. 543, 544 (1985).

2. Foster & Kennedy, *supra* note 1, at 279.

3. Dennis Farney, *LexisNexis' 1st Competitor Was the Great Unknown*, at http://www.lexisnexis.com/anniversary/features_2.asp (last visited Jan. 5, 2005).

4. Harrington, *supra* note 1, at 553–54; Linda Roach & Margot Storch, *WESTLAW's Come a Long Way Since 1975*, LEGAL TIMES, July 2, 1984, at 14.

5. LEXISNEXIS TIMELINE, *supra* note 1.

6. Farney, *supra* note 3.

7. Harrington, *supra* note 1, at 553–54.

8. Soma & Stern, *supra* note 1, at 184.

9. Harrington, *supra* note 1, at 554; Roach & Storch, *supra* note 4.

10. Allan J. Onove, *A Comparison of the LEXIS and WESTLAW Databases*, LEGAL ECON., Mar.-Apr. 1983, at 27, 34.

11. Soma & Stern, *supra* note 1, at 185.

ity of published U.S. case law, including virtually all published opinions of California and federal courts.¹²

¶6 As LexisNexis and Westlaw improved, their popularity grew exponentially. By 1990, LexisNexis was processing 100,000 online searches in one day; by 1998, that number grew to 600,000.¹³ By 2000, LexisNexis had 11,400 databases and 2.1 million subscribers worldwide and was adding 8.7 million documents every week.¹⁴ By 1994, nearly all major law firms in the United States had access to Lexis and Westlaw.¹⁵ As “free”¹⁶ LexisNexis and Westlaw passwords became widely available to law students in the 1990s, law students came to rely on the systems as their primary means of legal research.¹⁷

¶7 Of course, the online commercial database is not the only form of CALR. In the 1980s, CD-ROM disks appeared with case law and other legal authorities; in the 1990s, the World Wide Web became another medium for legal publishing.¹⁸ While these media do not offer the same breadth of legal material as the commercial online databases, they do have the advantage of being less expensive (or even free, in the case of some Web sites). Free Web sites are now becoming increasingly popular as a means of legal research.¹⁹

¶8 From the beginning, CALR sparked considerable controversy in the legal community. When it first debuted, some commentators dismissed it as a useless experiment, while others embraced it as a solution to the increasing amount of case law. Law librarians who had invested their careers in the print system tended to greet CALR with skepticism, if not hostility. One account notes that “[m]any law librarians were appalled to learn that the new concept of computer-assisted legal research would operate free of their dearly beloved, elaborate structure of indexes and digests. Some of them were intemperate in their scorn.”²⁰ But if law librarians were intemperate in their scorn, a new generation of attorneys were intemperate in their enthusiasm for CALR. One law student comment from 1972 offered this rosy vision of CALR:

No major materials are overlooked in the computerized system, which means the research is complete. Cases no longer would be decided because one counsel found an authority overlooked by his opponent, or because the defense lawyer failed to find the exception that would have freed his client. Cases truly would be decided on their merits.²¹

12. For a full list of available materials, see the online source lists provided by LexisNexis (<http://web.nexis.com/sources>) and Westlaw (<http://directory.westlaw.com>).

13. LEXISNEXIS TIMELINE, *supra* note 1.

14. Foster & Kennedy, *supra* note 1, at 281.

15. June Stewart, *CALR's Role in the Legal Research Process*, LEGAL REF. SERVICES Q., 1996, no. 3-4, at 103, 104.

16. The passwords seem free to students although in fact law schools do pay fees to both LexisNexis and Westlaw to provide students with access to these CALR systems.

17. *Id.*

18. Foster & Kennedy, *supra* note 1, at 281-82.

19. See generally Kate Marquess, *Caught in the Web: Survey Reveals Increasing Use of Internet in Law Practices, but Lawyers Are Making Transition Slowly*, A.B.A. J., Dec. 2000, at 76.

20. Harrington, *supra* note 1, at 546.

21. J. Roger Hamilton, Comment, *Computer-Assisted Legal Research*, 51 OR. L. REV. 665, 676 (1972).

¶9 Today no one would dispute that CALR is an important and permanent part of legal research, but commentators continue to debate CALR's influence on legal research, people, and legal institutions. They still disagree on whether CALR is a panacea or a mixed blessing, and whether its effects on the legal community are underestimated or exaggerated.

¶10 Robert C. Berring,²² Ethan Katsh,²³ and Carol Bast and Ransford Pyle,²⁴ among others, argue that CALR is bringing about profound changes in the legal community. Katsh writes that "[t]he shift from print to electronic information technologies provides the law with a new environment, one that is less fixed, less structured, less stable and, consequently, more versatile and volatile."²⁵

¶11 A comparison of West's key number system (which organizes case law by subject) and full-text, Boolean searching illustrates the difference between the old, rigid print system and the new, versatile CALR. The key number system has a "rigid conservatism" that rarely allows for new topics, making it particularly awkward for attorneys working in rapidly developing areas of law.²⁶ Furthermore, the summaries that appear in digests organized under the key number system may misstate, take out of context, or overlook points of law important to a researcher.²⁷ But "[w]ith computers, researchers can formulate their own word searches rather than rely entirely on the predetermined indexing of a digest. The researcher can use full-text retrieval to locate significant unusual terms and crucial information that may have been omitted from the print index."²⁸ Another commentator adds that

Computers are very good at indexing, much more proficient at locating particular bits of information than human beings are. But they are poor classifiers. . . . Therefore automated research tools do not combine classification and indexing as print tools do, but operate entirely in terms of indexing. . . . Because indexing identifies particulars in isolation, research with automated tools promotes a view of the subject matter as a depthless congeries of facts and doctrines rather than the hierarchically organized system that presents itself in research with print sources.²⁹

¶12 Of course, not everyone agrees that a less structured environment is better. One commentator asserts that CALR is "part of a disturbing trend toward obtaining or accumulating mountains of information without any real connection to it."³⁰

22. Robert C. Berring, *Collapse of the Structure of the Legal Research Universe: The Imperative of Digital Information*, 69 WASH. L. REV. 9 (1994).

23. Ethan Katsh, *Law in a Digital World: Computer Networks and Cyberspace*, 38 VILL. L. REV. 403 (1993).

24. Carol M. Bast & Ransford C. Pyle, *Legal Research in the Computer Age: A Paradigm Shift?* 93 LAW LIBR. J. 285, 2001 LAW LIBR. J. 13.

25. Katsh, *supra* note 23, at 406.

26. F. Allan Hanson, *From Key Numbers to Keywords: How Automation Has Transformed the Law*, 94 LAW LIBR. J. 563, 568-69, 2002 LAW LIBR. J. 36, ¶ 16.

27. Bast & Pyle, *supra* note 24, at 290, ¶ 18.

28. *Id.* at 285, ¶ 2.

29. Hanson, *supra* note 26, at 574-75, ¶ 33.

30. Richard Haigh, *What Shall I Wear to the Computer Revolution? Some Thoughts on Electronic Researching in Law*, 89 LAW LIBR. J. 245, 249 (1997).

Furthermore, the feelings of freedom and empowerment engendered by CALR may lead to overconfidence. In a well-known study of the effectiveness of full-text searching, a group of researchers with expertise in both the subject matter of the search and in full-text searching techniques believed that they were retrieving an average of more than 75% of all documents relevant to their queries, when in fact they were retrieving an average of only 20%. In some searches, the recall of relevant documents was as low as 2.8%.³¹ As illustrated by this study, one of the most serious drawbacks of full-text searching is that it requires the researcher to guess the terms used in the relevant documents. Those guesses may be wildly inaccurate—even when the researcher is considered an expert.

¶13 In view of CALR's limitations, some commentators view CALR as a supplement to, rather than a replacement of, traditional print sources.³² Nonetheless, there are others who assert that CALR will supplant traditional print sources. "Given [the computer's] capacities for storage, organization, and retrieval, the future of legal research is inevitably linked to the computer."³³ "Print reporters, digests, and citators are doomed."³⁴

¶14 Regardless of whether CALR is a supplement to or a replacement of print sources, there is no doubt that CALR is changing the way legal research is done. But do changes in the way we conduct legal research change the law itself? Why might this be so? Because "the law, or at least the law as legal scholars commonly conceive it, is built around its source materials."³⁵

¶15 Consider Katsh's explanation of the relationship between the structure of legal information and the development of law:

Law is a process in which, using a variety of media, information is moved continuously from place to place. Citizens provide lawyers with information. Lawyers prepare documents and file them in courts and other agencies. Judges write opinions that are communicated to the profession and the public. Lawyers researching legal problems consult books, electronic sources and other lawyers. The mass media distributes information about law to citizens. Citizens communicate with other citizens about law. Groups obtain and distribute information about law to members. All of this communication touches what law is and how it works. Indeed, these and other instances of communication constitute a considerable part of the process of law.³⁶

¶16 Katsh concludes that by changing the way the law is communicated, CALR will change people and institutions:

The view that computers can satisfy needs more cheaply and efficiently and yet not change the people or institutions that use the technology is not very realistic. An individual

31. David C. Blair & M.E. Maron, *An Evaluation of Retrieval Effectiveness for a Full Text Document Retrieval System*, 28 COMM. ASS'N FOR COMPUTING MACHINERY 289 (1985).

32. Stewart, *supra* note 15, at 118–19.

33. Bast & Pyle, *supra* note 24, at 285, ¶ 2.

34. Foster & Kennedy, *supra* note 1, at 298.

35. Berring, *supra* note 22, at 10.

36. Katsh, *supra* note 23, at 418.

user's needs may be satisfied in a more economical manner, but, as information begins to be used in new ways, computer based communication will also cause important changes in institutions. . . . The key reason for this is not that new forms of access to information allow users to do things more quickly or more conveniently, but that they do them differently than before. Speed and convenience may be the attraction for new computer users and the justification for purchasing hardware and software, but most users at some point find themselves using information differently, possessing information that they would not have had previously, asking questions they might not have asked previously and working with people they might not have had contact with before.³⁷

¶17 Hanson echoes Katsh: “[I]t is not true that the computer simply enables lawyers to do what they have done all along, only faster and more easily. Automated research instills a distinctive kind of understanding of the subject matter, different from that associated with research using print tools.”³⁸

¶18 More than ten years have now passed since Katsh wrote the article quoted above; during that time, CALR has continued its explosive growth. How is CALR proving to be different from traditional print-based methods of legal research? Are the commentators exaggerating the differences between CALR and print-based research? Is CALR merely changing the way legal professionals conduct research, or are its effects more profound?

CALR vs. Print-Based Research: A Difference in Results?

¶19 If CALR is changing people and institutions, it must be delivering different results than print-based research. What is this difference, if any?

¶20 The commentary on CALR can be synthesized into the following hypotheses regarding quantitative differences between CALR and print-based research: (i) CALR is more efficient than print-based research and therefore retrieves a greater amount of case law in a given amount of time; (ii) CALR provides better access to multijurisdictional case law because it can support a larger database and execute searches in multiple databases simultaneously, and thus researchers using CALR tend to cite to a greater variety of jurisdictions; (iii) CALR avoids the delay between the creation of case law and its incorporation into print sources, and therefore CALR's results tend to be more recent than the results of print-based research; (iv) CALR offers access to materials that are not available in print format and thus leads to the increased citation of “unpublished” authorities; and (v) CALR increases the citation of authoritative secondary sources, while reducing the citation of finding tools.

More Case Law

¶21 Most commentators assert that CALR retrieves case law more quickly than print-based research.³⁹ “Studies have consistently demonstrated that computer-

37. *Id.* at 442–43.

38. Hanson, *supra* note 26, at 574, ¶ 29.

39. *E.g.*, Foster & Kennedy, *supra* note 1, at 282; Hanson, *supra* note 26, at 575, ¶ 34.

assisted legal research (CALR) locates more pertinent cases faster than manual research methods.”⁴⁰ One judge in Colorado found that his research staff, when using CALR, took only fifteen minutes to complete a research assignment that took an average of 1.4 hours to complete when using print sources.⁴¹

¶22 But several years later, another commentator claimed that “[r]esearch suggests that computer-based research is no faster, better, or simpler than paper-based research.”⁴² Perhaps the wisest assessment is that CALR is more efficient than print-based research for some searches, and less efficient for other searches.⁴³ If this is true, then CALR, when used appropriately, should increase the efficiency of legal research.

¶23 Faster retrieval of case law could have at least two results: more citations to case law or citations to better case law. Of the two, only the first can be measured entirely in quantitative terms, but the second can be measured quantitatively with respect to recency.

More Multijurisdictional Citations

¶24 Hanson identifies the following claim: “[O]ne effect of the ease of finding cases with automated techniques is that high courts consult persuasive authority from other jurisdictions more than they used to.”⁴⁴ Thus, a “computer system might lead to more uniform interpretation and application of laws from state to state because of easy reference to the activity in other states.”⁴⁵

¶25 Furthermore, thanks to LexisNexis and Westlaw, international materials are increasingly available.⁴⁶ One commentator predicts, not without dismay, that

The dizzying number of legal resources available to online users will change what a legal researcher is now supposed to do. It will no longer be sufficient to search just the home jurisdiction; a researcher will be expected to cover all fields, to check reported and unreported decisions from as many different databases as possible.⁴⁷

¶26 Will CALR cause attorneys and courts to cite to more authorities outside their jurisdiction? Or is the greater availability of multijurisdictional materials unimportant to attorneys and courts because of the preference for binding as opposed to merely persuasive authority?

Improved Recency

¶27 Many commentators, including Bast and Pyle, point out that CALR can be used to find cases too recent to have been included in print sources.⁴⁸ And if CALR also

40. Donald P. Smith, Jr., *Sharpening the Tools of Justice; Courts Need Computerized Research*, LEGAL TIMES, Sept. 17, 1990, at S33.

41. *Id.*

42. Haigh, *supra* note 30, at 249.

43. Stewart, *supra* note 15, at 105.

44. Hanson, *supra* note 26, at 586, ¶ 60.

45. Hamilton, *supra* note 20, at 677.

46. Berring, *supra* note 22, at 29.

47. Haigh, *supra* note 30, at 256.

48. Bast & Pyle, *supra* note 24, at 285, ¶ 2; *see also* Stewart, *supra* note 15, at 119–20; Hamilton, *supra* note 20, at 676–77; Smith, *supra* note 40.

gives the researcher a greater number of cases from which to choose, the researcher may choose to forgo citations to older cases in favor of more recent authority. Given the preference that attorneys and courts have for more recent case law,⁴⁹ one would expect them to take advantage of CALR's potential for greater recency.

¶28 Another reason why CALR might lead to the citation of more recent cases is that, until recent years, the CALR databases tended to exclude older case law;⁵⁰ even now, older case law tends to be relegated to separate databases.⁵¹

More Citations to "Unpublished" Authorities

¶29 Commentators have asserted that one of CALR's main advantages is the ability to acquire information previously inaccessible.⁵² There is certainly no question that CALR offers access to materials not published in print format, but are the courts citing these "unpublished" authorities?

Changes in Citations to Secondary Authority

¶30 Hanson points out that CALR improves access to secondary authorities. "Now Westlaw and LexisNexis allow retrieval and global keyword searching of the full text of articles in hundreds of law journals as well as the major encyclopedias, treatises, the *Restatements*, and other secondary sources."⁵³ At least one commentator has suggested that this will lead to an increase in the use of secondary authorities.⁵⁴

¶31 But one might just as easily hypothesize that the use of secondary authorities, often employed as a means of locating primary authorities,⁵⁵ will decline along with that of digests, because users can now locate primary authority with CALR. Bast and Pyle suggest that researchers using CALR tend to bypass secondary authorities.⁵⁶

¶32 Perhaps the most reasonable expectation is that secondary sources that are considered authoritative and influential (e.g., *Prosser on Torts*) will be cited more frequently, while secondary sources that are more likely to be viewed as finding tools (e.g., *American Law Reports*) will be cited less frequently.

A Study of California Supreme Court Opinions

¶33 In view of the foregoing discussion of CALR, one might hypothesize that CALR is changing the way court opinions are written. Judges, of course, consult

49. For instance, as shown by table 3, the California Supreme Court (at least since 1944) has consistently cited a disproportionate number of recent cases.

50. Onove, *supra* note 10.

51. See sources cited *supra* note 12.

52. Foster & Kennedy, *supra* note 1, at 282; Smith, *supra* note 40.

53. Hanson, *supra* note 26, at 584–85, ¶ 57.

54. Berring, *supra* note 22, at 29.

55. Hanson, *supra* note 26, at 569, ¶ 17.

56. See Bast & Pyle, *supra* note 24, at 297–98, ¶¶ 43–48.

legal precedent when making their decisions and cite to legal authorities in support of their holdings. The attorneys who appear before the courts present case law and other legal authorities for the courts' consideration. Now that the courts and attorneys have access to CALR, one might hypothesize that, due to CALR, courts are: (i) citing more cases in their opinions; (ii) citing more cases from outside their jurisdiction; (iii) citing more recent cases; (iv) citing authorities available only in electronic format; and (v) citing more secondary sources that are authoritative and fewer that are used as finding tools.

¶34 To test these hypotheses, I analyzed 180 opinions of the California Supreme Court dating from 1944 to 2003. I randomly chose three cases (excluding only per curiam cases) for each year and analyzed only the majority opinions. I counted each case cited in an opinion only once, regardless of how many times it was cited in the opinion.⁵⁷ I did not count citations to prior opinions in the same case, nor did I count citations appearing in quotes from other cases. I counted a total of 4444 citations to case law and certain secondary authorities.

¶35 I grouped the opinions into four time periods of fifteen years each: 1944–58, 1959–73, 1974–88, and 1989–2003. The first two time periods represent the period prior to the widespread use of CALR. By comparing the first and second time periods, one can see whether trends were already changing before the use of CALR. The latter two time periods represent the period during which CALR was popularized and fully developed.

¶36 While the data show some significant changes in the court's citations to legal authority, there is no clear indication that these changes result from CALR.

¶37 As shown by table 1, the number of case law citations per opinion increases sharply over time. At first glance, one might be tempted to argue that the increase is due to CALR. However, the increase in the length of the court's opinions is even greater than the increase in case citations. The average word count of an opinion in the 1989–2003 period is nearly 440% greater than the average word count in the 1944–58 period,⁵⁸ whereas the number of case citations increases by only about 290%. Thus, the number of cases cited per 10,000 words falls by about one-third. It appears from this that the increase in word count is driving the increase in case citations, and not vice versa.

¶38 Furthermore, as shown by the comparison between the 1944–58 period and the 1959–73 period, the increase in court citations to case law began before the CALR era. Accordingly, it appears that CALR is not causing the increase in citations to case law, and that the more likely causes are improvements in word processing, the increasing complexity of the cases decided by the court, or both.

57. Otherwise, the data might suggest that an opinion that cited to a single case twenty times was citing a large number of authorities.

58. Word count was determined using Microsoft Word 2000. The word count measures only the text of the majority opinion, not including headnotes or summaries.

Table 1

*Length and Number of Case Citations in California
Supreme Court Opinions, 1944–2003*

Time Period	Avg. No. Words in Opinion	Avg. No. of Cases Cited per Opinion	Avg. No. of Cases Cited per 10,000 Words
1944–58	2368	13	55
1959–73	3849	19	49
1974–88	6135	22	36
1989–2003	10,421	38	36

Table 2

Case Citations by Jurisdiction in California Supreme Court Opinions, 1944–2003

Time Period	Jurisdiction of Case Citations			
	California	Federal	Other States	Other Countries
1944–58	83%	6%	11%	0%
1959–73	80%	15%	5%	0%
1974–88	76%	19%	6%	0%
1989–2003	78%	18%	5%	0%

¶39 As shown by table 2, the power of search engines to quickly conduct national or international searches of case law has not led the court to discuss the law of other states or other countries more frequently.⁵⁹ The court's citations to federal cases increase as a percentage of all cases cited, but from my review of the court's opinions, this trend appears to be due to an increase in federal legislation affecting California and to an increase in the court's discussion of constitutional law. More significantly, the court's citations to cases from other states drop as a percentage of all cases cited. In the first period, 11% of the case citations are for cases from other states. In the most recent period, only 5% are for cases from other states.⁶⁰ Citations to cases from outside the United States are statistically insignificant in all four time periods.

¶40 As shown by table 3, there is no clear trend with respect to the recency of the court's case citations. I divided the recency of the citations into three categories: zero to two years old, three to ten years old, and eleven or more years

59. The percentages have been rounded off and thus may not add up to 100%.

60. The results reported here regarding the California Supreme Court's citations to non-California state courts relative to California courts are consistent with the results reported in John Henry Merryman, *Toward a Theory of Citations: An Empirical Study of the Citation Practice of the California Supreme Court in 1950, 1960, and 1970*, 50 S. CAL. L. REV. 381, 389–91 (1977). However, the results here are significantly lower than the results reported in Hanson, *supra* note 26, at 586, ¶ 60.

Table 3

*Recency of California Cases Cited in California Supreme Court Opinions,
1944–2003*

Time Period	0–2 Years Old	3–10 Years Old	11 or More Years Old
1944–58	11%	28%	61%
1959–73	21%	36%	43%
1974–88	14%	41%	45%
1989–2003	17%	42%	42%

old.⁶¹ One might expect that the court is now citing to more recent cases through the use of CALR, yet the court was more likely to cite to cases in the 0–2 years category during the 1959–73 period than in the 1989–2003 period. However, it is also true that the court’s citations to cases more than eleven years old reach a low point in the most recent period. The data regarding recency of case citations are inconclusive.⁶²

¶41 Some commentators have suggested that CALR would lead to the citations of legal authorities available only in electronic format,⁶³ but in this random sample of 180 opinions, there were *no* electronic database citations for legal authorities.

¶42 Finally, I looked for new patterns in the court’s citations to secondary authorities. I found that overall, the court’s citations to secondary authorities relative to case law citations decrease over time. However, the pattern of citations varies greatly depending on the specific secondary authority. I counted citations to legal treatises,⁶⁴ law reviews, the *Restatement of Law*, *American Law Reports* (A.L.R.), *Corpus Juris Secundum* (C.J.S.), *American Jurisprudence* (Am. Jur.), and *California Jurisprudence* (Cal. Jur.).

¶43 As shown by table 4, the average number of treatise citations per opinion increases over time.⁶⁵ But more significantly, the treatise citations relative to word count and relative to case citations steadily decline over the first three periods

61. Recency was determined by comparing the year (not the month or exact date) of the opinion and of the case cited. For instance, if an opinion dated Mar. 1947 cites a case dated Jan. 1945, the citation is included in the 0–2 category even though it was slightly more than two years old when it was cited.

62. Merryman, *supra* note 60, at 389–91, reported similar results with respect to recency of citations in California Supreme Court opinions. He found that in 1950, 55% of citations to California cases were more than 10 years old; in 1960, 57% were more than 10 years old; and in 1970, 39% were more than 10 years old.

63. Foster & Kennedy, *supra* note 1, at 282; Smith, *supra* note 40.

64. Examples of treatises counted in this study are WILLIAM L. PROSSER, HANDBOOK OF THE LAW OF TORTS (1941 and subsequent editions) (*Prosser on Torts*) and BERNARD E. WITKIN, SUMMARY OF CALIFORNIA LAW (various eds.). Treatises and manuals without a named author were not counted, nor were treatises on nonlegal matters.

65. Each treatise was counted only once per opinion, but if different editions were cited, each edition was counted separately.

Table 4

*Citations to Treatises and Law Reviews in California Supreme Court Opinions,
1944–2003*

Time Period	Avg. No. Cited per Opinion		Avg. No. Cited per 10,000 Words		Avg. No. Cited per 100 Case Citations	
	Treatises	Law Rev.	Treatises	Law Rev.	Treatises	Law Rev.
1944–58	0.49	0.24	2.07	1.01	3.77	1.85
1959–73	0.56	0.53	1.45	1.38	2.95	2.79
1974–88	0.56	0.71	0.91	1.16	2.55	3.23
1989–2003	1.00	0.64	0.96	0.61	2.63	1.68

(1944–88), then rebound slightly in the fourth period (1989–2003). Is this decline due to CALR's suppression of print sources? Once again, pre-CALR trends suggest otherwise: treatise citations relative to case citations declined more sharply after the first period (1944–58) than after any other period.

¶44 The pattern of citations to law reviews is even less clear. Relative to case citations, law review citations reached a high point in the 1974–88 period, then fell by nearly 50% in the final period (1989–2003).

¶45 As shown by tables 5 and 6, citations to the *Restatement*, *A.L.R.*, *C.J.S.*, *Am. Jur.*, and *Cal. Jur.* all decline sharply over time.⁶⁶ This is true whether measured by the average number of citations per opinion or by citations relative to word count or relative to case citations. Citations to the *Restatement* decline by 80% relative to case citations, while *Am. Jur.* and *Cal. Jur.* combined decline by a stunning 98%, all but disappearing from California Supreme Court opinions. But any correlation between CALR and this decline in citations is doubtful, in view of the fact that the declines begin before the CALR era. Furthermore, there is little support for the argument that CALR increases the citation of authoritative secondary sources, while reducing the citation of mere finding tools. *A.L.R.*, *Am. Jur.*, and *Cal. Jur.*, which might be thought of as finding tools, did fare worse than the more authoritative *Restatement*, treatises, and law reviews, but again, this trend began before the introduction of CALR.

¶46 Unfortunately, the court's citations to some of these secondary authorities, particularly in more recent years, are so infrequent that the statistical validity of the results shown in tables 4, 5, and 6 is questionable, but there can be little doubt that, overall, citations to secondary authorities relative to case citations decline

66. Each section of the *Restatement*, *C.J.S.*, *Cal. Jur.*, and *Am. Jur.* cited in an opinion was counted separately if the court treated it separately. Groups of sections cited together for the same point were counted only once. Each *A.L.R.* annotation was counted only once per opinion, but if different annotations were cited, each annotation was counted separately. *A.L.R.* citations are frequently added by the editor (in brackets); these citations by the editor were not counted.

Table 5

Citations to the Restatement and A.L.R. in California Supreme Court Opinions, 1944–2003

Time Period	Avg. No. Cited per Opinion		Avg. No. Cited per 10,000 Words		Avg. No. Cited per 100 Case Citations	
	Restate.	A.L.R.	Restate.	A.L.R.	Restate.	A.L.R.
1944–58	0.16	0.22	0.68	0.93	1.23	1.69
1959–73	0.13	0.27	0.34	0.70	0.68	1.42
1974–88	0.07	0.07	0.11	0.11	0.32	0.32
1989–2003	0.09	0.09	0.09	0.09	0.24	0.24

Table 6

Citations to C.J.S., Am. Jur., and Cal. Jur. in California Supreme Court Opinions, 1944–2003

Time Period	Avg. No. Cited per Opinion		Avg. No. Cited per 10,000 Words		Avg. No. Cited per 100 Case Citations	
	C.J.S.	Am. Jur. & Cal. Jur.	C.J.S.	Am. Jur. & Cal. Jur.	C.J.S.	Am. Jur. & Cal. Jur.
1944–58	0.11	0.38	0.46	1.60	0.85	2.92
1959–73	0.09	0.20	0.23	0.52	0.47	1.05
1974–88	0.02	0.09	0.03	0.15	0.09	0.41
1989–2003	0.04	0.02	0.04	0.02	0.11	0.05

over time.⁶⁷ It is also clear that the court's preference for citing primary authority is strong in all time periods.

¶47 Of course, it should be noted that the court's citations to secondary authorities do not necessarily reflect the court's use of secondary authorities. It is possible that the court is consulting secondary authorities more frequently than ever, but is choosing to cite them less frequently.

Conclusion

¶48 Some of the commentary on CALR suggests that, as a result of CALR, courts are: (i) citing more cases in their opinions, (ii) citing more cases from outside their jurisdiction, (iii) citing more recent cases, (iv) citing authorities available only in electronic format, and (v) citing more secondary sources that are authoritative and

67. Merryman, *supra* note 60, at 389–91, also reported a decline in citations to secondary authorities from 1950 to 1970. But some of his data for specific secondary authorities vary from the numbers reported here.

fewer that are used as finding tools. But the data presented in this paper fail to support any of these hypotheses.

¶49 Assuming that the data presented in this article are valid, several different conclusions emerge. One is that CALR's effects on courts cannot be measured by an analysis of citations in court opinions. If this is true, what is the appropriate measurement? Questionnaires sent to judges and law clerks are one possibility, but they present certain drawbacks, not the least of which is the typically low response rate for questionnaires.⁶⁸

¶50 Another possible conclusion is that CALR is not affecting courts in the same way it is affecting other parts of the legal profession.⁶⁹ If this conclusion is correct, it weakens the position of those commentators who assert that CALR is reshaping the law. Yet another possible conclusion is that some commentators have exaggerated the effects of CALR and that CALR is not fundamentally changing the results of legal research or affecting legal reasoning (or that it has not done so *yet*).

68. Furthermore, the subjects who would respond are likely to be the ones most interested in CALR, and thus the results would be skewed in favor of the supposedly profound effects of CALR. Also, one cannot send questionnaires back in time, and thus it is not possible to gain a broad historical perspective with questionnaires.

69. It might be desirable to study the opinions of another state with a smaller population, a smaller judicial budget, and a less-developed body of case law than California. CALR may have a more pronounced effect in such an environment.