
An Evaluation of the Application of a Computerized Citation-Checking System in the Federal Courts

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OF A COMPUTERIZED CITATION-CHECKING SYSTEM
IN THE FEDERAL COURTS

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I. INTRODUCTION

When citing cases as authority in a judicial opinion, the writer bears responsibility to ensure that cases are correctly cited and that they are still valid law. Due to the large numbers of cases and attendant pressures in the federal courts, however, high levels of accuracy and speed may be a problem in cite checking. This report describes the evaluation of a computerized system for checking the accuracy of case citations and determining their histories.

To check a citation using this system, the user types the citation on a communicating typewriter, which transmits it to the vendor's data base.¹ This data base, consisting of citations to all federal cases, is searched for the matching citation. When the matching citation is found, the user receives the following information on the entry typewriter:

1. Title of the case by names of adversaries

1. Other types of terminals, including a cathode ray tube, can be used. Since a permanent record of the cite is usually desired, however, some type of printing terminal should be available.

2. Year of decision.
3. Jurisdiction (state or federal).
4. Volume number, reporter name, and page number of the first page of the opinion in the publication designated as the official reporter of the jurisdiction.
5. Volume number, reporter name, and page number of the first page of the opinion in parallel references (e.g., United States Supreme Court Reports (Lawyers' Edition), American Law Reports, etc.).
6. A statement of what happened to the case on appeal (history) and references to where the appeal decision has been reported (in chronological sequence following the parallel reference).
7. A statement of what happened in some later and different cases that affect the case being cited, and references to where the later case is reported (within parentheses and chronological sequence following parallel references), e.g., "disagreed with," "conflict between circuits," etc.

Concerning item 7, note that this system does not provide subsequent cases that directly affect the original case, unless such cases overrule the original case. Subsequent cases that criticize, follow, explain, or distinguish the original case are not noted.

Some examples of the system's product are shown below. The citation to the case is usually typed in. Each of the examples below respond to the citation entered at the typewriter terminal:

1. Typical cites with minimum history

Type 323 f2d 936

Receive: United States v Nagelberg (1963, CA2 NY)
 323 F2d 936, vacated 377 US 266,
 12 L Ed 2d 290, 84 S Ct 252

Type: 325 f2d 576

Receive: Brotherhood of R. & S. S. Clerks, etc. v
 United Air Lines, Inc. (1963, CA6 Ohio)
 325 F2d 576, cert gr 377 US 903,
 2 L Ed 2d 75, 84 S Ct 63 and cert
 dismd 379 US 26, 3 L Ed 2d 173,
 85 S Ct] 83

Type: 278 f2d 6

Receive: International Typographical Union v NLRB
 (1960) 278 F2d 6, affd in part and revd
 in part 365 US 705, 6 L Ed 2d 36, 8
 S Ct 855, reh den 366 US 763, 6 L Ed
 2d 853, 8 S Ct 670

2. Multiple cases on one page

Type: 324 f2d 879

Receive: 2 CASES APPEAR ON PAGE ASKED FOR:
 1-Bowden v United States (1963) 17 App
 DC 324 F2d 879, cert den 377 US
 954, 12 L Ed 2d 498, 84 S Ct 1632

2-Smith v United States (1963) [17 App
 DC], 324 F2d 879, cert den 377 US
 954, 12 L Ed 2d 498, 84 S Ct 1632 reh
 den 379 US 873, 13 L Ed 2d 80, 85
 S Ct 2

3. Case no longer good, or questionable or dis-
approved of

Type: 19 US 99

Receive: The Harrisburg (1886) 19 US 199, 30
 L Ed 358, 7 S Ct 40 (ovrld Morangne v
 States Marine Lines, Inc. 398 US 375,
 26 L Ed 2d 339, 90 S Ct 2 1772)

Type: 276 f2d 739

Receive: Federal Trade Com. v Dilger (1970, CA7 Ill)
 276 F2d 739, cert den 364 US 882,
 5 L Ed 2d 94, 8 S Ct 7 and
 (disapproved St. Regis Paper Co. v
 United States 368 US 208, 7 L Ed
 2d 240, 82 S Ct 289, reh den 368
 US 972, 7 L Ed 2d 40, 82 S Ct 437
 and motion denied 369 US 809 7 L Ed
 and motion denied 369 US 809, 7 L
 Ed 2d 6, 82 S Ct 686)

Type: 450 f2d 97

Receive: Morning Telegraph v Powers (CA2, NY,
 1971) 450 F2d 97, cert den 405 US
 945, 21 L Ed 2d 23, 92 S Ct 1170, (and
 disagreed with Granny Goose Foods Inc.
 v Brotherhood of Teamsters & Auto
 Truck Drivers (US), 39 L Ed 2d 435,
 94 S Ct 1113)

4. Wrong citation to page

Type: 352 US 5

Receive: NO CASE STARTS ON THE PAGE GIVEN.
 PAGE REQUESTED IS WITHIN DECISION OF
 Mesarosh v United States (1956) 352 US 1, 1
 L Ed 2d 1, 77 S Ct 1

These illustrations indicate that the system is very simple to use. No legal knowledge is necessarily involved. Minimal typing skills, but no formal legal or paralegal training, are needed to operate the system. The system is also very quick to use: the information that is returned is usually displayed in less than ten seconds. There is no need to manually leaf through the pages of many volumes to verify a large number of cites.

The computerized citation-checking system may offer a solution to the cite-checking problem. Furthermore, since its use does not require legal training, it may reduce the work load of law clerks who now do the cite checking: the task could be performed by less highly paid and skilled personnel without a loss of accuracy and thoroughness.

This system has never been evaluated in a field setting. In 1974, the staff of the Federal Judicial Center began an evaluation to determine the system's utility to federal courts. The evaluation was to determine whether this system improved citation accuracy and whether it reduced the amount of time needed to check citations. Furthermore, these factors were to be considered in the context of cost-effectiveness; that is, whether the value of the time saved offsets the cost of the system.

To execute this evaluation, a communicating typewriter terminal was installed in the United States Courthouse in the District of Columbia in 1974. The terminal was connected by telephone to the computer of the computerized citation-checking system's vendor. The courthouse terminal was originally located in the

offices of the Temporary Emergency Court of Appeals. During summer, 1975, the terminal was moved to the library. To check the reliability of the District of Columbia data, another evaluation site was established in the Appellate Courthouse in San Francisco in fall, 1976.

Several types of data were collected. Usage data for January, 1975 to January, 1977 was obtained from the District of Columbia terminal. Users of the system were surveyed in summer, 1975 and again in late spring, 1976. In summer, 1976, a researcher was hired to check the accuracy of the computerized system as well as the accuracy of citations in published opinions. Finally, users were asked to complete a usage report form each time they operated the terminal. The evaluation was to begin when the system was installed in 1974. It was not until the system was moved to the District of Columbia circuit court library, however, that usage levels and interest in the system were high enough to develop reliable, systematic evaluation data.

The cost of the system is divided into five parts:

1. Subscription to the system is \$150 per month.
2. Usage charges are approximately twenty-five cents per minute.

3. The cost of the communicating typewriters that are being used at the two evaluation sites is approximately \$255 per month. (These typewriters are used for citation checking only a few hours per month, however.² The rest of the time they are available for other uses. The Ninth Circuit makes considerable use of the typewriter for other purposes.)

4. It is not possible to estimate accurately telephone charges to the vendor's computer. It appears, however, that the average Federal Telecommunications System long distance line cost, on a per call basis, could be ten cents per minute or less, based on the average distance from the federal courts to the computer where the citations are stored.

5. A fixed, one-time cost of \$300 for equipment to link the terminal to the computer via telephone lines.

Assuming 500 citations are checked per month, the average cost to check a citation is approximately fifty-two cents.

2. For purposes of this estimate, it is assumed that the automatic typewriter is used about 25 percent of the time for citation checking. Only 25 percent of its cost was allocated to the cost of citation checking.

II. THE ACCURACY OF CITE-CHECKING SYSTEMS

Comparative Analysis

An important aspect of this evaluation was an independent check of the accuracy of published citations. Table 1 shows a summary of that research. From this table, several findings are apparent. First, the least accurate source of the citation is the published opinion. It is not known whether these inaccuracies originate in the publishing process or in the drafting of the opinion in the courthouse. Second, the computerized system makes fewer errors³ than the manual system, although the difference between the number of errors made by each system is not great. Third, a first glance at table 1 indicates the manual system produces fewer incomplete histories⁴. But the manual system lists

3. An "error" in this context could be, for instance, a wrong page number, a missing page number, a misspelling of a name, a wrong date, a statement that a case was treated differently than it actually was (stating it was reversed when in fact it was remanded), parties reversed, case overruled subsequently and overruling not mentioned, and listing different cases as same.

4. Incomplete histories include no later appeal, no later motion listed, no history if case was vacated or remanded, and no reference to further action by the same court.

TABLE 1
COMPARISON OF CITATION ACCURACY

<u>Court</u>	<u>No. of Opinions</u>	<u>No. of cites</u>	<u>No. of times all 3 sources agree</u>	<u>Opinion</u>		<u>Computerized system</u>		<u>Manual system</u>	
				<u>Error</u>	<u>Incomplete history</u>	<u>Error</u>	<u>Incomplete history</u>	<u>Error</u>	<u>Incomplete history</u>
D.C. Appellate	10	163	116	13	35	2	17	2	5
D.C. District	8	98	69	4	18	1	4	3	12
2nd Circuit	6	49	31	4	11	1	4	1	2
9th Circuit	6	55	42	4	8	0	1	0	0

Note: Items not counted as errors on this table:

1. Opinions missing A.L.R. or Ohio Op. cites.
2. Shepard's missing Ohio Op. cites.
3. Opinions with incomplete histories if subsequent history was after or close to time opinion was issued.
4. Opinions with incomplete citations (no D.C. cite or only U.S. cite for Supreme Court cases).
5. Shepard's not showing D.C. cites (true for all D.C. cases) or showing only U.S. cite on cert. den. or reh. den.
6. Shepard's showing "same" no matter if it was cert. den., reh. den., on remand, etc.
7. Computerized system not showing as disapproved cases that were shown to be questioned by Shepard's.

most subsequent history as "same case" rather than as reh. den. or vac. and rem. (or whatever actually happened); thus, we conclude the manual system is in fact less accurate than the opinion or the computerized system on subsequent histories.

This comparative data was supported by the vendor's own analysis. Again, the published opinion was the least accurate source of the citation, and the computerized system was more accurate than the manual system.⁵

The final section of this report contains a discussion of whether the errors and incomplete histories

5. The detailed analysis by the vendor showed that in one opinion, there were four errors in twelve cites: two wrong official page numbers, one wrong history, and one missing history. The manual and computerized systems produced all twelve cites correctly. In three other opinions, the published opinion, the computerized system, and the manual system agreed on only thirty-eight of sixty-four citations. For the other twenty-six citations, the results were as follows: three cases did not yet appear in the manual cite-checking system's data base, but did appear in the computerized system's; in five cases there were errors in the opinion but no errors in either of the cite-checking data bases; and in eighteen cases, citations were correct in the computerized system's data base but different in the data base of the manual system. Some of those differences were: the manual system did not give official United States references in three cases; in one case, a dissenting opinion reference was given, but the computerized system did not pick it up; and in eight cases, the manual system listed case history as "same case," but the computerized system provided something more specific, such as cert. den. or on remand.

are important enough to warrant adoption of the computerized system as a remedy.

Usage Report Results

Two questions in the usage report concern the accuracy of the citations checked (primarily in opinions) and those in the computerized system's data base. The questions were:

1. Did you find any errors in your cites that were caught by the (computerized system)?
Yes ___ No ___ If yes, how many? ___ Please describe the errors found.

2. Did you find any error in the (computerized system) that showed up from your version of the cites? Yes ___ No ___ If yes, how many? ___ Please describe the errors found.

Of 1,442 cites checked for the 125 usage reports analyzed, the computerized system showed 106 differences from the cites being checked. These included eight instances in eight different opinions where the case cited was no longer good law because it was overruled, vacated, or reversed. In fifty-one instances the subsequent history was left out or was incorrect, and in thirty-one cases there were actual errors such as wrong pages or misspellings. There was no description of sixteen of the errors. One might consider the error rate in preparing opinions to be 100/1,442, or

approximately 7 percent. In the 1,442 cites checked on the computerized system, the system had four missing cert. denials, one wrong page number, and one misspelling. (This error rate is considerably below that found by the researcher doing the comparative tests discussed in the preceding section.) Thus, the computerized system produced only two actual errors in 1,442 cites checked by law clerks. In the comparative analysis, there were four errors in 365 cites checked.

Again, the question arises whether these error rates are significant enough to require an additional check of opinion citation by a computerized system. There is little doubt that the computerized system will increase citation accuracy, however.

III. THE TIMESAVING ASPECTS OF COMPUTERIZED CITATION CHECKING

Several different methods were used to ascertain whether computerized citation checking was faster than the manual system, and if so, how much. Each method indicated that the computerized system was considerably faster than manual checking.

First, a researcher was hired to check the speed and accuracy of the computerized system. In preparing the data in table 1, she checked more than 1,442 citations. It took her ten hours and forty-five minutes with the manual system, two hours and twenty-six minutes with the computerized system. The computerized system was four times faster.

A second method was the survey of users in the District of Columbia courts in August, 1975 and again in May, 1976. Since there were new law clerks around September, 1975, two different sets of users answered the surveys. Since the computerized terminal had been moved from a remote office into the library in August, 1975 (after the first survey), more law clerks and court

staff had used the system when the second survey was made. In both surveys, all those answering the questions about the computerized system agreed that it was much faster than manual cite checking. The estimates of how much faster it was, however, varied from 60 percent to ten times faster, and from somewhat faster to immensely faster. Also, users estimated they saved approximately one and a half hours per week by using the computerized system.

A third type of data on time savings came from the daily usage reports. This data showed that the average project done on the computerized system involved checking eleven cites; users estimated they saved approximately thirty minutes, or 2.7 minutes per cite. This estimate is similar to that made by the researcher described above. She saved, on the average, about 2.1 minutes per cite by using the computerized system.

IV. USAGE LEVELS

The data from the District of Columbia circuit and district courts shows that, over time, the staffs of more and more judges are using the computerized citation-checking system.⁶ At the appellate level, from July, 1975 to December, 1975, an average of five different judges' staffs used the system each month. During the same period in 1976, the average was more than six different staffs per month. Furthermore, in the 1975 six-month period, the staffs of only seven judges used the system at one time or another. In the corresponding period in 1976, the staffs of all nine appellate judges used it at one time or another.

During the six-month period in 1975, 1,598 cites were checked. During the comparable period in 1976, 2,164 cites were checked on the computerized system, a 35 percent increase. This increase is not a reflection of increased output of the court, but rather of increased use of the computerized system. Among the staffs of the

6. This is so even considering that moving the terminal into the library increased usage levels.

district court judges in the District of Columbia, a similar rise in usage is apparent. The number of cites district court judges' staffs checked with the computerized system during July to December rose 66 percent, from 297 in 1975 to 493 in 1976.

A great deal of usage data has been generated by the Ninth Circuit. Due to two different problems, however--only two judges are resident at the site and usage reports filled out by staff attorneys did not indicate which judge's opinions were being checked--it is difficult to interpret the usage data comparatively. At most, one can say only that there appears to be a higher level of usage in the Ninth Circuit than in the District of Columbia Circuit (when the different in number of potential on-site users is taken into account).

V. SUMMARY AND CONCLUSIONS

The data to this point clearly show the computerized citation-checking system is much faster to use and generally more accurate than the manual system. In the field, the computerized system proved to be two to ten times faster than manual cite verification. Furthermore, the computerized system contains more detail on subsequent case histories and is usually more current than the manual system.

These findings about accuracy and speed do not necessarily mean the computerized system ought to be adopted. Further questions still must be answered. One is whether the system is cost-effective. To answer this question, several assumptions must be made. Although the data is not extensive enough to estimate how much time is spent each month checking cites for appellate judges, or how many cites are checked, some cost estimates can still be made. The data show that it takes about half a minute to check a cite on the computerized system. The estimated cost, as noted in section one, is approximately fifty-seven cents per

cite. Based on data generated by our researchers, manual cite checking takes approximately two and a half minutes per cite. Let us assume, then, that using the computerized system saves two minutes per cite. Let us also assume that the average law clerk for a federal judge gets paid eight dollars per hour (for a 40-hour week, this amounts to approximately \$15,000 per year). Thus, if two minutes of the clerk's time are saved, approximately twenty-six cents worth of time is saved. It costs fifty-seven cents to check the cite, however; more than the value of the time saved. Thus, in one sense, the computerized system is not cost-effective: the value of the users' saved time does not equal the cost of the system to do the same job.

The vendor of the computerized system has said that instead of subscribing to eleven terminals, one each for the eleven circuits, perhaps only six entry points would be needed for the eleven circuits. This is because of the relatively few hours per month the system is needed. Also, as one moves across the country, the time zone changes, so working hours change relative to

the location of the vendor's computer.⁷ This might reduce the cost of checking a citation to about thirty-five cents. Furthermore, with increased skill and volume (reducing the amount of time to check a cite via the computer), the cost of checking a citation might drop to thirty or even twenty-six cents. Still, even with these additional assumptions and the smaller number of entry points into the vendor's computer, it is unlikely that the cost of checking a citation by computer would be less than the value of the time saved.

Another way of looking at the cost aspect of the system is to analyze its total cost to the federal courts. On a monthly basis, these costs would be:

1. Subscription to system	\$150.00
2. Rental of communicating typewriter	255.00
3. Monthly usage charge	130.00
4. Federal Telecommunications Service (FTS) Phone Line	<u>100.00</u>
TOTAL	\$635.00

7. With each court having six possible entry points, and each court using a connection to the computer for less than an hour per working day, it seems unlikely that any court would have to wait for a connection. A device could be installed, however, to notify the court when a line is available if someone at the court found all five lines to the computer busy.

Most circuits should be able to use FTS lines (with an acoustic coupler to tie the typewriter to the vendor's computer by phone line), thus minimizing telephone charges. The telephone charges would probably average about \$100 per month for all circuits. Also, there would be a one-time charge of \$300 per circuit for a coupler. Thus, for the first year of operation, the total cost would be about \$86,800. The succeeding years, when the cost of the coupler no longer figures in the calculation, would require \$83,200 per year.

The communicating typewriter would be used only a small percentage of the time for citation checking; a court could use it for other purposes, as is done in the Ninth Circuit. Of the \$33,200 yearly cost for communicating typewriters, perhaps 25 percent could be allocated to citation checking and 75 percent to other court use. This would reduce the cost of the system to approximately \$61,000 the first year and \$58,000 in the succeeding years. Also, as noted above, the vendor has indicated that the federal courts would not need eleven subscriptions; perhaps six subscriptions are enough. This would reduce the overall cost by another \$9,000 per year. Assuming 25 percent usage of the automatic

typewriters, this reduction brings the first-year cost down to approximately \$52,000 per year and the succeeding years' cost to \$49,000 per year. Finally, if the communicating typewriter cost were removed altogether, the cost would drop to \$40,000 per year after the first year.

Despite the fact that the system is not cost-effective, it still may be worth having in the federal courts. Perhaps the value to the courts of having more accurate citations and saving cite-checking time more than offsets the cost of the system.

The system's value can be examined in two parts. First, there is great value in finding cases cited that have been overruled or disagreed with, or in some other way have become less precedential. In the test of the system, this occurred in eight of 1,442 citations. This is a rather small percentage--0.6 percent. This number of overruled cases, taken on a per opinion basis, however, is 8 out of 125, or once in every 15 opinions. The question must be asked whether this level of potential error will justify having the system. We would argue that it does justify it. All potential sources of opinion error should be removed, if possible.

The second part of the examination is whether finding misspellings, wrong dates, and incomplete histories in citations, using the computerized system, justifies the system's adoption. The argument for adoption on this ground is somewhat weaker, but it remains valid. The integrity of citations is an essential part of the integrity of opinions: threats to the integrity of opinions should be removed wherever they are found.

Another way to look at the issue is to argue that the system is worthwhile in terms of both context and content. The content argument is that the system does improve accuracy and save time. The context argument is that using the system signifies that the federal courts are willing to do what is necessary to provide the most accurate and up-to-date citations that can be presently had. This willingness would be seen as a reflection of the intention to maintain as high a quality as possible in federal court opinions.

Despite the system's relatively low cost and its contribution to improving the quality of federal court opinions and to saving cite-checking time, we are not, at this time, recommending that federal courts adopt it.

Although we have set out the arguments supporting the system, the facts still are that the errors found by the system are relatively few and relatively costly to find. (One estimate is that the cost of uncovering an overruled case is nearly \$100, and the cost of finding a misspelled word or omission in subsequent history is \$20.) Furthermore, the system is not cost-effective. At this time, we recommend that the question of whether to adopt the system be brought before the appropriate policy-making body of the federal courts. This body may decide that increased accuracy of citations is worth the cost of the system, and opt for its adoption. In order to be prepared for the possibility that the system will be adopted, we recommend the Administrative Office of the United States Courts include funds for it in the fiscal 1979 budget request.

END