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HEAVILY CITED ARTICLES IN LAW

WILLIAM M. LANDES* AND RICHARD A. POSNER**

We are enthusiasts for studies of citations, scholarly citations as well as judicial, as a mode of legal scholarship. We believe that such studies can yield insights into both legal process and academic law and that they can also be useful tools for evaluating legal scholars (for purposes of promotions and prizes), judges, and even entire courts.¹

We therefore welcome Shapiro's latest study of heavily cited law articles² and offer a few observations about the study itself and then a few observations based on the data in it.

I.

We have four concerns with Shapiro's methodology.³ The first is the ranking of individual articles rather than scholars; the second is the failure to take account of differences among articles in their age or the time since publication; the third is the exclusion of books; and the fourth is the exclusion of articles more than half the citations to which appear in nonlegal journals. Taking these problems in reverse order, we point out that as a result of the last exclusion, Gary Becker's famous article on the economics of criminal punishment⁴ is not included in Shapiro's list of the one hundred most-cited law review articles in

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1. See the following joint articles: *Legal Precedent: A Theoretical and Empirical Analysis*, 19 J.L. & ECON. 249 (1976); *Legal Change, Judicial Behavior, and the Diversity Jurisdiction*, 9 J. LEGAL STUD. 367 (1980); *The Influence of Economics on Law: A Quantitative Study*, 36 J.L. & ECON. 385 (1993); see also William M. Landes et al., *Judicial Reputation: A Citation Analysis of Federal Courts of Appeals Judges*, J. LEGAL STUD. (forthcoming 1996); RICHARD A. POSNER, CARDOZO: A STUDY IN REPUTATION 74-91 (1990); POSNER, AGING AND OLD AGE 181-92 (1995); POSNER, THE FEDERAL COURTS: CHALLENGE AND REFORM ch. 7 (2d ed. forthcoming 1996); Posner, *The Hand Biography and the Question of Judicial Greatness*, 104 YALE L.J. 511, 534-40 (1994).

2. Fred R. Shapiro, *The Most-Cited Law Review Articles Revisited*, 71 CHI.-KENT L. REV. 751 (1996).

3. We illustrate these problems with reference to Shapiro's list of the top 100 articles of all time, rather than his list of the top 10 articles in each year from 1982 to 1991, although our criticisms apply to the second list as well. The top 100 list (as we call it) actually includes 103 articles because four are tied at the bottom.

4. Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169 (1968).

history, although, were it not for the exclusion, its 285 law review (including "law and" journal) citations would place it 45th in the list. Shapiro's procedure thus penalizes an article for having *too many* citations. Had Becker's article been less influential outside law and as a result had received fewer citations to nonlegal than to legal journals, it would have made Shapiro's top one hundred. He might reply that he is interested only in articles the primary impact of which is on legal scholarship. But the impact of an article on legal scholarship is not diminished by its impact on other fields. In any event, if all that Shapiro is interested in is the impact of an article on legal scholarship, why does he count, in making up his rankings, *all* citations to eligible articles? Why not count only citations in law journals?

The exclusion of books from Shapiro's rankings disregards, as he recognizes, substitutability between books and articles. On the one hand, when a book incorporates materials previously published in article form, the author depreciates his own articles by publishing the book. An example is Steven Shavell's book *Economic Analysis of Accident Law*, published in 1987. None of Shavell's influential articles on torts appears in Shapiro's top one hundred because, we conjecture, since 1987 scholars have cited Shavell's book (177 times) rather than the articles, which the book superseded. On the other hand, when a book is new from the ground up, the author almost certainly took time away from writing articles to write it. Academic books and academic articles are directed to the same audience, and so they are substitutes in demand as well as in supply. It is no more difficult to compile a list of the most-cited books in law than a list of the most-cited articles. We offer a few examples: Calabresi's *The Cost of Accidents* has been cited 864 times; Tribe's *American Constitutional Law*, 2,917 times; Dworkin's *Taking Rights Seriously*, 1,714 times and *Law's Empire*, 699 times; Ely's *Democracy and Distrust*, 1,516 times; and MacKinnon's *Feminism Unmodified*, 513 times. The inclusion of citations to books would yield a different picture of influential scholarship from that sketched by Shapiro's articles. Dworkin, for example, one of the most influential legal academics of the last half century, does not appear at all on Shapiro's lists.

A difficulty in ranking articles meaningfully is that the number of citations an article receives depends not just on its influence but also on its age. Other things the same, the longer the period of time since

an article's publication, the more citations it will accrue.⁵ Thus, two articles could be equally influential in the sense of having an equal number of lifetime citations yet the older article would have more total citations at the present time. Comparing articles of different vintages is comparing apples and oranges. Later we take a stab at correcting for differences in age by presenting projections of lifetime citations for articles on Shapiro's list of the ten most-cited articles in each year from 1982 through 1991.

The most questionable feature of Shapiro's method may be the ordering of *articles* rather than of *authors*. (It is related to his exclusion of books.) Ranking articles is not well-suited to the central purpose of analyzing citations to scholarly work, which is to construct a meaningful (not definitive) quantitative measure of a scholar's influence or reputation. Someone who wrote two articles each of which had been cited two hundred times would not appear on Shapiro's lists, even though he would almost certainly be a more considerable scholar than one who had written a single article in his entire career which had been cited two hundred and fifty times and therefore ranked 64th on the list.

Consider in this regard what happens when citations to an author's articles in Shapiro's top one hundred list are aggregated. Henry Hart has four articles in the list. None ranks higher than twenty five. Yet, when aggregated, the four articles yield 1,247 citations, which moves Hart into second place if authors rather than articles are ranked. Wechsler has two articles in the top one hundred, but falls to third place when the aggregative method is used, with 1,210 citations. Michelman, Calabresi, and Ely move to fourth, fifth, and sixth place respectively while Gunther falls to seventh. Charles Reich, an example of the scholar who produces a single influential article in his lifetime, falls from fourth to thirteenth place. Shapiro's method fails to measure even average quality, because it contains no information about other articles written by the scholars on his lists.

Related to the last point is the fact that the average article in Shapiro's list is 54 pages long but the range is from 11 to 177 pages. One expects that, other things being equal, a longer article, like a book or a longer versus a shorter judicial opinion, will be cited more frequently. Often an author has a choice whether to incorporate several points into a large article or make each one the subject of a separ-

5. This does not apply to articles written before 1956, the first year of the *Social Science Citation Index (SSCI)*, since Shapiro's count of citations is drawn from the *SSCI*.

rate, short article. The choice has very little significance in terms of the author's scholarly quality or influence, yet it will affect both the likelihood that an article will make Shapiro's list and the ordering of articles on the list. It is surprising, therefore, that there is no significant correlation between page length and citations in Shapiro's two lists. For the top one hundred of all time the correlation coefficient is $-.04$ and for the top articles from 1982 through 1991 it is $-.09$, though neither coefficient is statistically significant. This does not mean, however, that *overall* the correlation between page length and citations is nonpositive for legal articles. Shapiro's lists include only heavily cited articles, rather than a random sample of articles. Longer articles may be more likely to make these lists, but there need not be any positive correlation between the length of the articles and the number of them.

Only the first criticism that we have made touches Shapiro's article if his only goal was to identify the most influential law review articles in history. Anyone familiar with legal scholarship will recognize a number of articles on Shapiro's list of the one hundred most-cited articles as articles that have profoundly influenced legal scholarship. The question is the utility of such a list for legal scholarship itself. What can we infer from it about legal scholarship? Perhaps little, because of the methodological problems that we have noted.

None of our criticisms, we emphasize, are criticisms of citations analysis, or of citations as a proxy for quality, influence, or reputation. Our criticisms are of specific methodological choices made by Shapiro, rather than of the fundamental methodology of citations analysis.

II.

Enough criticism; let us try to be constructive. We may be able to learn something about legal scholarship by considering the probability that a given article will rank in the top one hundred. This depends, of course, on the number of law articles that have ever been published. The number is not known with precision but is clearly so large that the probability that an article will achieve such a ranking is exceedingly small. Using Westlaw's *Legal Resource Index*, we are able to estimate the number of law-related articles (we exclude book reviews, transcripts, editorials, case notes, and obituaries but include student-written notes and comments, which are a large fraction of all scholarly works in law reviews) published in United States law reviews and law journals (and other journals containing law-related articles) from 1980

to 1994.⁶ That number is 212,924, and there is an upward trend, from 11,623 articles in 1980 to 15,211 in 1994. A regression of the form $\log A = b_0 + b_1t + u$ for the time period (t) 1980 to 1994 explained 66% of the variance in the natural logarithm of articles (A) and yielded a positive and highly significant annual growth rate of 1.67%. Next we projected backwards to 1956 to estimate the number of articles published annually between 1955 and 1980.⁷ Using this method and excluding 74,859 articles published in the years 1990 to 1994 (because five years is typically not long enough for even a heavily cited legal article to accumulate two hundred or more citations), we estimate that the total number of law-related articles published from 1956 through 1989 and thus eligible for top one hundred billing equals 385,320. This translates into a probability of making the top one hundred list of slightly more than one in four thousand. The probability would be higher, but still very small, if student-written work were excluded, as it should be since it is not included in Shapiro's lists. Considering the vast number of citations contained in almost 400,000 articles (not to mention non-law-review articles that cite legal articles), it is surprising that so few articles manage to accrete 204 citations (the cutoff number in the top one hundred list). The implication is that law is a relatively decentralized and competitive field of scholarship, as distinct from one dominated by a handful of scholars to whom the rest defer.

III.

So far we have been focusing on Shapiro's first list, the list of the all-time one hundred most-cited articles. He has a second list, which is confined to articles published between 1982 and 1991, and a striking difference between the two lists is the declining influence of doctrinal articles and the increasing influence of "law and" articles suggested by the second list. Table 1 below shows that doctrinal articles comprise nearly 60% of the articles in the all-time top one hundred list but only 26% of the one hundred most-cited recent articles. Table 1 also shows that the most cited recent articles are increasingly drawn from law and political theory, critical legal studies, critical race theory, and feminist jurisprudence, but not from law and economics, which is at about the same level in both lists.⁸ In our own citation analysis of legal scholarship, we also found a decline in doctrinal and an increase in "law and"

6. The *Legal Resource Index* begins with articles indexed after December 1979.

7. Recall that Shapiro did not count citations before 1956.

8. Only a few "law and other social sciences" articles make either list, so we do not discuss that field.

scholarship.⁹ Like Shapiro, we found no growth in the influence of doctrinal scholarship and significant increases in the influence of feminist theory, critical legal studies, and law and political theory. But unlike him we found no decline in the impact of law and economics. During both the entire period covered by our study, 1976-1990, and the period just since 1983, we found that citations to law and economics scholars grew more rapidly than citations to scholars in other "law and" fields. We have no explanation for this discrepancy. But we believe that our results are more reliable because we did not arbitrarily truncate our sample at a subset (the one hundred most-cited) of a subset (articles more than 50% of the citations to which appear in law journals) of a subset (articles as distinct from articles plus books).

TABLE 1

| Type | <i>Distribution of Articles By Type</i> | |
|------------------------|---|-------------|
| | Top 100 | Most Recent |
| Doctrinal | .60 | .26 |
| Law & Economics | .17 | .16 |
| Law & Political Theory | .08 | .19 |
| Law & Social Sciences | .04 | .01 |
| Critical Legal Studies | .09 | .26 |
| Feminist Theory | .02 | .13 |

As noted earlier, the number of citations an article receives depends, in part, on its age. The typical article on the top one hundred list was written in 1967 (the median article in 1971), compared to 1986 for the most recent list, and has therefore had more time to accumulate citations. Not surprisingly, the average number of citations to an article on the former list is considerably greater than to one on the latter list—335 versus 140. Yet an article on the second list with 140 citations may ultimately turn out to be more influential than one on the first list with 335 citations. We can use regression analysis to correct for differences in age among articles on both lists, thus allowing for meaningful comparisons of articles of different vintages. Concretely, we estimate how many articles on the most recent list are likely to accumulate at least 204 citations in their lifetime.¹⁰ Like in-

9. See *The Influence of Economics on Law: A Quantitative Study*, *supra* note 1, at 399-400.

10. The "lifetime" of an article is not a well-defined concept, since intellectual property does not "die." Most writers on citations, therefore, prefer to use half lives (the period over which a work is likely to accrue one half its total citations) as a measure of longevity. This refinement is not important to our analysis. But it is important to bear in mind that the lifetime citations to articles on the top-100-of-all-time list will increase with the passage of time and

tellectual and other human (or for that matter physical) capital in general, the typical article will depreciate with age. A ten-year-old article is less likely to be cited today than a nine-year-old article, and so forth. Total citations to an article will increase as the time from publication lengthens, but will do so at a decreasing rate as a consequence of depreciation.

A simple regression specification that captures this process is

$$\ln C_i = b_0 + b_1 T_i + b_2 T_i^2 + u_i \quad (1)$$

where $\ln C_i$ denotes the natural logarithm of total citations to the i th article, T_i equals 1994 minus the year in which the article was published, and u_i is a random error term.¹¹ We predict that $b_1 > 0$ and $b_2 < 0$, which together express the fact that citations increase over time but at a declining rate.¹²

We estimated equation (1) for articles on Shapiro's second list (so T_i ranges from 3 for an article published in 1991 to 12 for an article published in 1972):

$$\ln C_i = 3.164 + .365T_i - .017T_i^2 \quad R^2 = .56 \quad (2)$$

(14.21) (5.62) (3.90)

Both b_1 and b_2 have the expected signs and are statistically significant (t-statistics are in parentheses). These coefficients enable us to predict the number of citations an article published n years ago will accumulate in its lifetime where n is between 3 and 12.¹³ The projected lifetime citations to the 103 articles on the list range from 95 to 351, while the number of citations to date to these articles ranges from 45 to 327. Of the 103 articles, 14 already have accumulated 204 or more citations, and we estimate that 16 of the remaining 89 articles will also reach that level. In sum, about 30% of the articles on the most recent list should accumulate 204 or more citations.¹⁴ The 16 articles that we

hence that the minimum number of citations necessary to qualify an article for the top 100 will increase over time beyond 204.

11. For a more complete discussion of the relation between the regression specification and the human capital model, see our article, *The Influence of Economics on Law: A Quantitative Study*, *supra* note 1, at 395-98.

12. An obvious problem with this simple quadratic specification is that eventually total citations will (contrary to reality) decline as time increases, because the negative coefficient on T will dominate the positive coefficient on T . In equation (2) this point occurs after 11 years.

13. To calculate lifetime citations per article we estimated the ratio of predicted citations after 11 years to total citations for an article written n (< 11) years ago. For each year from 1984 to 1991 we estimated a separate ratio and assumed that the ratio was one for articles written in 1982 and 1983. We then multiplied the appropriate ratio by an article's actual citations to estimate its lifetime citations. This is clearly a rough method of estimations because citations will tend to increase (though slowly) beyond 11 years.

14. The list is attached as Appendix 1.

predict will accumulate 204 citations could be added to the list of the "all time" top one hundred, enabling a comparison between articles of different vintages.

IV.

Last we consider the interesting issue of the relation between age and creativity. An extensive literature documents the large variance in peak ages of creativity or productivity in different fields of endeavor. The highlights of that literature are summarized in Table 2. In general, the more rapidly a field of scholarship changes and the more it involves the manipulation of abstract symbols (as illustrated by mathematics), the lower the age peak, while the more slowly a field changes and the more it involves judgment, experience, and accumulated knowledge, the higher the age peak.

TABLE 2

| Profession | Peak Age of Productivity | | |
|--------------------|--|---|---|
| | Age Decade with Highest Percentage of Total Output ¹⁵ | Nonlinear Estimations (Chronological Age) ¹⁶ | Creative Half-life (Career Age) ¹⁷ |
| <i>Scholarship</i> | 60s | — | — |
| Historians | 60s | 58.5 | 39.7 |
| Philosophers | 60s | 60.1 | 30.1 |
| Scholars | 40s & 50s | 51.4 | 24.8 |
| <i>Sciences</i> | 40s | — | — |
| Biologists | 40s | 43.9 | 21.0 |
| Botanists | 40s, 50s, & 60s | 53.5 | 26.7 |
| Chemists | 40s | 40.4 | 16.5 |
| Geologists | 50s | 54.8 | 28.9 |
| Inventors | 60s | 109.8 ¹⁸ | 86.6 |
| Mathematicians | 30s & 40s | 46.5 | 21.7 |
| <i>Arts</i> | 40s | — | — |
| Architects | 40s | 38.4 | 13.6 |
| Chamber Musicians | 30s | 35.7 | 43.3 |
| Dramatists | 40s | 36.5 | 12.2 |
| Librettists | 40s | 39.4 | 14.4 |
| Novelists | 50s | 47.1 | 20.4 |
| Opera Composer | 40s | 36.3 | 12.0 |
| Poets | 40s | 40.1 | 15.4 |

The subject matter of law changes rapidly, but conventional legal scholarship relies much more heavily on judgment and memory than on anything that much resembles mathematical skills; and judging is a famously geriatric profession. So one might expect the peak age of legal scholars to be high—yet to be lower in the interdisciplinary fields of legal studies, especially law and economics (a field that, obviously, draws very heavily on economics, which is an increasingly mathema-

15. Wayne Dennis, *Creative Productivity Between the Ages of 20 and 80 Years*, J. GERONTOLOGY 1, 2 (table 1) (1966). Dennis points out two limitations of the data: subjects within the various professions "are not uniform with regard to their degree of eminence," and "the limits of productivity employed for the different groups are also unequal." *Id.* at 3.

16. Dean Keith Simonton, *Age and Creative Productivity: Nonlinear Estimation of an Information-Processing Model*, 29 INT'L J. AGING & HUMAN DEV. 23, 29 (table 1) (1989) (nonlinear estimates for 16 longitudinal times series, using data found in Dennis, *supra* note 15).

17. *Id.* At N="career age," half the initial creative potential of an individual will have been consumed.

18. This odd result is the artifact of a time series in which the age curve is monotonically increasing throughout the age range of the sample. *Id.* at 30.

tized field), and therefore to be falling as legal scholarship shifts toward the interdisciplinary.¹⁹

As shown in Table 3, the average age of the 109 authors (including coauthors) in Shapiro's top one hundred list when they wrote the article listed was 42.7 for the sample as a whole. This suggests that law is about midway between very low peak-age fields such as mathematics and very high ones such as history and philosophy.

19. A shift documented—using citation analysis, of course—in our article on the influence of economics on law, *supra* note 1, at 416-24. It is also shown *infra* in Table 3, drawn from Shapiro's study.

TABLE 3

| <u>Age Distribution of Authors²⁰</u> | | |
|---|----------------|------------------------|
| | <i>Top 100</i> | <i>Recent Articles</i> |
| <u>Total</u> | | |
| <i>age</i> | 42.7 | 38.2 |
| <i>std. deviation</i> | 12.0 | 6.6 |
| <i>range</i> | 27-89 | 26-60 |
| <i>number</i> | 109 | 109 |
| <u>Doctrinal</u> | | |
| <i>age</i> | 45.3 | 38.2 |
| <i>std. deviation</i> | 13.2 | 7.8 |
| <i>range</i> | 28-89 | 27-60 |
| <i>number</i> | 65 | 28 |
| <u>Law & Econ.</u> | | |
| <i>age</i> | 36.3 | 38.2 |
| <i>std. deviation</i> | 6.1 | 5.6 |
| <i>range</i> | 27-50 | 30-48 |
| <i>number</i> | 19 | 17 |
| <u>Law & Political Theory</u> | | |
| <i>age</i> | 45.2 | 39.2 |
| <i>std. deviation</i> | 15.0 | 5.5 |
| <i>range</i> | 28-76 | 29-50 |
| <i>number</i> | 9 | 21 |
| <u>Law & Social Sciences</u> | | |
| <i>age</i> | 40.0 | 52 |
| <i>std. deviation</i> | 9.4 | |
| <i>range</i> | 32-52 | |
| <i>number</i> | 4 | 1 |
| <u>Critical Legal Studies</u> | | |
| <i>age</i> | 37.7 | 38.2 |
| <i>std. deviation</i> | 3.3 | 7.5 |
| <i>range</i> | 33-44 | 26-52 |
| <i>number</i> | 10 | 28 |
| <u>Feminist Theory</u> | | |
| <i>age</i> | 37.5 | 35.8 |
| <i>std. deviation</i> | .7 | 3.7 |
| <i>range</i> | 37-38 | 30-45 |
| <i>number</i> | 2 | 14 |

20. In this table, "range" denotes the minimum and maximum ages of authors for the type of scholarship in question and "number" denotes the number of authors, including coauthors. The subject matter breakdowns are the same as we used in our article on the influence of economics of law. See *supra* note 1.

But in trying to evaluate the significance of these figures one runs up against the problems with Shapiro's method that we discussed at the outset. Not only is a lot of information missing about the actual citations-weighted output of the scholars on his list, but the exclusion of books imparts a systematic downward bias to the age of the authors. Particularly in law, a field in which most scholars do not have doctoral degrees, a scholar writes articles before he writes books. Until one has written a number of articles one is unlikely to have either sufficient reputation to interest a book publisher or sufficient writing experience to be able to write a publishable book. Also, many books in law, as in other fields, are based on invited lectures, and the invitations are tendered to established scholars rather than to novices. No one who was interested in the age profile of creativity or productivity, in a field in which books were a major vehicle for the publication of scholarship, would exclude books in calculating citation-weighted scholarly output.

Let us set our misgivings to one side, however, and look more closely at Table 3. The table reveals a lower peak age for "law and" fields than for doctrinal scholarship, and this is what we would expect. It is true that some of these fields, such as critical legal studies and feminist jurisprudence, are not mathematized and so are not *intrinsically* early-peak fields. But any *new* field, regardless of its analytic character, is apt to be disproportionately populated by the young; and these are new fields (newer than law and economics, for example). Both the economic theory of human capital and the psychologists' distinction between "fluid" and "crystallized" intelligence predict that new fields will be more attractive to young than to old because the cost (broadly conceived) of retooling for a new field is likely to be very high for older people.²¹ Moreover, the returns from investing are likely to be lower because there are fewer periods over which they can be earned. Finally, in any field in which experience counts, the young will be at a disadvantage in competing with the old, so it makes sense for the young to look for different fields, fields unexplored by their elders, to work in.

We can gain further insight into the age profiles of different types of legal scholarship by comparing the standard deviations (or ranges) of authors' ages in the different fields. The standard deviation of the age of authors of doctrinal articles is 13.2 years, meaning that roughly two-thirds of the authors were between thirty three and fifty when

21. See POSNER, AGING AND OLD AGE, *supra* note 1, esp. 66-95.

they wrote their top one hundred article. So wide a range suggests that legal doctrinal scholarship is not one of those fields in which creativity is highly correlated with age. It can be done well by old and young alike, which is consistent with the curious combination of (old) judges and (young) law clerks in the judiciary. We also find that the age distribution of authors of law-and-political-theory articles is similar to that of doctrinal articles, suggesting that this field too is neither new nor technical. The standard deviations of the ages of the law and economics and critical legal studies authors are much smaller (6.1 and 3.3 years). Both law and economics and critical legal studies were relatively new fields when the typical article in the top one hundred was published. (The average publication date independent of field is 1967, but for law and economics and critical legal studies articles it is 1973 and 1981, respectively.) One is not surprised to find either field dominated by young scholars, and hence the range of ages would be expected to be narrow. The significant mathematical component in economic creativity is another reason to expect a low average age of authors of law and economics articles—and also a reason to predict that as the other “law and” fields (which are not mathematical) mature, the ratio of the average age of authors of top-ranked articles in those fields will rise relative to the average age of authors of top-ranked law and economics articles.

Table 3 also includes data from Shapiro’s second list, the top-ranking articles in recent years. Notice the sharp drop in the age and standard deviation of both doctrinal and law-and-political-theory scholars. The mean ages and standard deviations (in parentheses) fall from 45.3 to 38.2 (13.2 to 7.8) for the former and from 45.2 to 39.2 (15.0 to 5.5) for the latter. (There is little change in peak age in the other fields.) One possible explanation is that these fields are becoming more interdisciplinary, and, specifically, are drawing more on economics and related mathematized fields such as public choice and game theory; another and consistent possibility is that law faculty is being recruited at younger ages. No longer are faculty expected to have “apprenticed” at law firms after graduation from law school. Coming into teaching either younger or with more scholarly training (for example, graduate training in another field, often culminating in a Ph.D.), modern law faculty are likely to begin writing at an earlier age even if what they do is classified as doctrinal scholarship. In sum, Shapiro’s study provides some evidence that the peak age of scholarly productivity in law is inverse to interdisciplinarity, as theory predicts.

APPENDIX

The table below lists the predicted "lifetime" citations for all articles on Shapiro's list of the most-cited law review articles of recent years. For each article, we note the year of publication, its rank in that year, its actual number of citations and its predicted number of total ("lifetime") citations. The predictions are derived from equation (2) in the text.

TABLE 4

| | Author | Year | Rank | Cites | Predicted Citations |
|----|-----------------|------|------|-------|---------------------|
| 1 | Matsuda, M. | 1989 | 1 | 193 | 351 |
| 2 | Lawrence, C. | 1987 | 1 | 253 | 330 |
| 3 | Michelman, F. | 1986 | 1 | 282 | 327 |
| 4 | Unger, R. | 1983 | 1 | 327 | 327 |
| 5 | Sunstein, C. | 1985 | 1 | 301 | 322 |
| 6 | Harris, A. | 1990 | 1 | 142 | 320 |
| 7 | Sunstein, C. | 1988 | 1 | 208 | 315 |
| 8 | Minow, M. | 1987 | 2 | 238 | 310 |
| 9 | Amar, A. | 1991 | 1 | 106 | 307 |
| 10 | Michelman, F. | 1988 | 2 | 200 | 303 |
| 11 | Crenshaw, K. | 1988 | 3 | 195 | 295 |
| 12 | Cover, R. | 1983 | 2 | 291 | 291 |
| 13 | Bartlett, K. | 1990 | 2 | 129 | 291 |
| 14 | Tushnet, M. | 1983 | 3 | 268 | 268 |
| 15 | Sunstein, C. | 1989 | 2 | 145 | 264 |
| 16 | Fiss, O. | 1982 | 1 | 253 | 257 |
| 17 | West, R. | 1988 | 4 | 166 | 251 |
| 18 | Galanter, M. | 1983 | 4 | 249 | 249 |
| 19 | Ackerman, B. | 1984 | 1 | 243 | 247 |
| 20 | Eskridge, W. | 1990 | 3 | 107 | 241 |
| 21 | Lawrence, C. | 1990 | 4 | 105 | 237 |
| 22 | Radin, M. | 1987 | 3 | 179 | 233 |
| 23 | Olsen, F. | 1983 | 5 | 224 | 224 |
| 24 | Delgado, R. | 1989 | 3 | 123 | 224 |
| 25 | Macey, J. | 1986 | 2 | 192 | 223 |
| 26 | Scalia, A. | 1989 | 4 | 117 | 213 |
| 27 | Eskridge, W. | 1990 | 5 | 94 | 212 |
| 28 | Priest, G. | 1984 | 2 | 204 | 207 |
| 29 | Singer, J. | 1984 | 3 | 203 | 206 |
| 30 | MacKinnon, C. | 1983 | 6 | 205 | 205 |
| 31 | Fiss, O. | 1984 | 4 | 198 | 201 |
| 32 | Sunstein, C. | 1987 | 4 | 151 | 197 |
| 33 | Easterbrook, F. | 1982 | 2 | 193 | 196 |
| 34 | Easterbrook, F. | 1984 | 5 | 191 | 194 |
| 35 | MacKinnon, C. | 1982 | 3 | 186 | 189 |
| 36 | Weiler, P. | 1983 | 7 | 189 | 189 |
| 37 | Sherry, S. | 1986 | 3 | 162 | 188 |
| 38 | Matsuda, M. | 1987 | 5 | 143 | 186 |
| 39 | Williams, P. | 1987 | 5 | 143 | 186 |
| 40 | Eskridge, W. | 1987 | 7 | 141 | 184 |

| | Author | Year | Rank | Cites | Predicted Citations |
|----|-----------------|------|------|-------|---------------------|
| 41 | Gordon, R. | 1984 | 6 | 179 | 182 |
| 42 | Western, P. | 1982 | 4 | 178 | 181 |
| 43 | Peller, G. | 1985 | 2 | 168 | 180 |
| 44 | Williams, J. | 1989 | 5 | 98 | 178 |
| 45 | Easterbrook, F. | 1983 | 8 | 177 | 177 |
| 46 | Powell, H. | 1985 | 3 | 162 | 173 |
| 47 | Kennedy, D. | 1982 | 5 | 170 | 173 |
| 48 | Ayres, I. | 1989 | 6 | 95 | 173 |
| 49 | Amar, A. | 1987 | 8 | 130 | 170 |
| 50 | Crenshaw, K. | 1989 | 7 | 93 | 169 |
| 51 | Kennedy, R. | 1989 | 7 | 93 | 169 |
| 52 | Sunstein, C. | 1987 | 9 | 129 | 168 |
| 53 | Stewart, R. | 1982 | 6 | 165 | 168 |
| 54 | Rosenberg, D. | 1984 | 7 | 163 | 166 |
| 55 | Sunstein, C. | 1984 | 7 | 163 | 166 |
| 56 | Farber, D. | 1987 | 10 | 127 | 166 |
| 57 | Frug, G. | 1984 | 9 | 162 | 165 |
| 58 | Gilson, R. | 1984 | 10 | 161 | 164 |
| 59 | Ackerman, B. | 1985 | 4 | 152 | 162 |
| 60 | Matsuda, M. | 1991 | 2 | 56 | 162 |
| 61 | Roberts, D. | 1991 | 2 | 56 | 162 |
| 62 | Shavell, S. | 1982 | 7 | 158 | 161 |
| 63 | MacKinnon, C. | 1991 | 4 | 55 | 159 |
| 64 | Roe, M. | 1991 | 4 | 55 | 159 |
| 65 | Resnik, J. | 1982 | 8 | 156 | 159 |
| 66 | Chayes, A. | 1982 | 9 | 152 | 155 |
| 67 | Rubinfeld, J. | 1989 | 9 | 84 | 153 |
| 68 | Delgado, R. | 1990 | 6 | 67 | 151 |
| 69 | Sullivan, K. | 1989 | 10 | 82 | 149 |
| 70 | McConnell, M. | 1990 | 7 | 66 | 149 |
| 71 | Abrams, K. | 1991 | 6 | 51 | 148 |
| 72 | Coffee, J. | 1991 | 6 | 51 | 148 |
| 73 | Schauer, F. | 1988 | 5 | 97 | 147 |
| 74 | Schultz, V. | 1990 | 8 | 65 | 147 |
| 75 | Dalton, C. | 1985 | 5 | 137 | 146 |
| 76 | Cover, R. | 1986 | 4 | 125 | 145 |
| 77 | Radin, M. | 1990 | 9 | 64 | 144 |
| 78 | Sunstein, C. | 1986 | 5 | 124 | 144 |
| 79 | Delgado, R. | 1991 | 8 | 49 | 142 |
| 80 | Gilson, R. | 1991 | 8 | 49 | 142 |
| 81 | Easterbrook, F. | 1983 | 9 | 139 | 139 |
| 82 | Schneider, E. | 1986 | 6 | 119 | 138 |
| 83 | Peller, G. | 1990 | 10 | 61 | 138 |
| 84 | Delgado, R. | 1982 | 10 | 134 | 136 |
| 85 | Easterbrook, F. | 1982 | 10 | 134 | 136 |
| 86 | Radin, M. | 1982 | 10 | 134 | 136 |
| 87 | Guinier, L. | 1991 | 10 | 45 | 130 |
| 88 | Schlag, P. | 1991 | 10 | 45 | 130 |
| 89 | Stick, J. | 1986 | 7 | 111 | 129 |
| 90 | Aleinikoff, T. | 1988 | 6 | 82 | 124 |
| 91 | Finley, L. | 1986 | 8 | 106 | 123 |
| 92 | Posner, R. | 1983 | 10 | 122 | 122 |
| 93 | Boyle, J. | 1985 | 6 | 112 | 120 |
| 94 | Weinrib, E. | 1988 | 7 | 79 | 120 |

| | Author | Year | Rank | Cites | Predicted Citations |
|-----|--------------|------|------|-------|---------------------|
| 95 | Coffee, J. | 1986 | 9 | 102 | 118 |
| 96 | Fineman, M. | 1988 | 8 | 78 | 118 |
| 97 | Schwartz, A. | 1988 | 9 | 73 | 111 |
| 98 | Amar, A. | 1985 | 7 | 101 | 108 |
| 99 | Singer, J. | 1988 | 10 | 66 | 100 |
| 100 | Coffee, J. | 1986 | 10 | 86 | 100 |
| 101 | Moore, M. | 1985 | 8 | 92 | 98 |
| 102 | Schauer, F. | 1985 | 9 | 89 | 95 |
| 103 | Sugarman, S. | 1985 | 9 | 89 | 95 |