A Longitudinal Metric Analysis of Course-subjects to Reveal the Evolution of a Discipline: Changes in the Teaching Frequency and Ratio of Courses in Law Schools in the United States over 80 years

Peter A. Hook*

School of Library and Information Science, Wayne State University, Detroit, MI 48202, USA

ABSTRACT

This article is a longitudinal, metric analysis of law school course-subjects in the United States. Its data source is the lists of "teachers by subject" contained in the annual directories of the American Association of Law Schools for a total of 57,915 data points. The number of faculty teaching the various course-subjects is compared for three time periods: (1) 1931–1932, (2) 1972–1973, and (3) 2010–2011. The course-subjects are a controlled vocabulary. In addition, the mergence and divergence of course-subjects are noted based on the timing of changes, "includes" statements, and "see also" references. This allows meaningful comparisons across time to reveal which course-subjects and groups of related course-subjects are rising and falling in importance in the legal academy in the United States. Topics such as International Law, Constitutional Law, and Legal Research and Writing have gained the most in terms of the percentage number of teachers teaching these topics. Topics such as Estate Planning, Commercial Law, and Business Associations have lost the most in terms of the percentage number of teachers teaching these topics. In addition, the course-subjects with the highest and lowest average of the length of time they have been taught are reported for each period.

Keywords: Course-Subjects, Data mining, Informetrics, Law, Metrics, Topic analysis.

INTRODUCTION

The American Association of Law Schools (AALS)[1] is the main learned society for legal academics in the United States. At present, there are close to 200 law schools accredited by the American Bar Association (ABA) and most are members of the AALS [Table 1]. Since 1931–1932, the AALS has published an annual directory of its membership that includes a "List of Law Teachers by Subject."[2,3] The course-subjects included in these lists are a controlled vocabulary. Faculty members teaching courses with varying titles and descriptions are listed in the most relevant course-subject category. Together, the course-subjects comprise the unofficial "canon" of topics taught in law schools in the United States. In addition, faculty members teaching each course-subject are binned as to how long they have been teaching that particular course-subject (1) 1–5 years, (2) 6–10 years, and (3) over 10 years. This rich infrastructure allows for insightful

*Address for correspondence:
E-mail: peter.hook@wayne.edu.

Table 1: Law schools by year and category

Date	Number of schools included in the AALS directories (with lists of law teachers by school)				Number of ABA-accredited schools (still in existence in 2010) that were accredited at that time (source: ABA and LSAC, 2010)[13]
	Total	US	Canada	Other	
1923–1924 (first year of ABA accreditation)	58	56	1	1	40
1930–1931 (AALS, 1930)[5]	68	66	1	1	73
1940–1941 (AALS, 1940)[6]	91	90	0	1	101
1950–1951 (AALS, 1950)[7]	107	105	0	2	117
1960–1961 (AALS, 1960)[8]	131	130	0	1	130
1970–1971 (AALS, 1970)[9]	147	145	0	2	147
1980–1981 (AALS, 1981)[10]	192	168	21	3	168
1989–1990 (AALS, 1989)[11]	197	172	22	3	173
2010–2011 (AALS, 2013)[12]	198	196	0	2	198

AALS: American Association of Law Schools, ABA: American Bar Association, LSAC: Law School Admission Council.

metric analysis that includes the rise and fall of various course-subjects in terms of their overall percentage of the course-subjects being taught, average length of time the course-subjects have been taught by their faculty members, mergence and divergence of course-subjects, and meaningful comparisons across 80 years. In another paper, the author has used a similar dataset involving course-subject co-occurrence (CSCO) (when two course-subjects are taught in the same academic year by the same teacher) to visualize and map the domain of law in the United States.[4]

Related Work

There has been a long history of doing metric analysis to gain insights into a domain.[14,15] Most similar to this work, there have also been studies that analyze course catalogs for trends in academic disciplines such as change and development in the overall subject matter, first appearances of particular subjects, and the end of particular subjects. For instance, Perlman and McCann examined 400 college catalogs to do an analysis of course offerings in undergraduate psychology curriculums.[16] Comparing their contemporary findings with earlier studies allowed the authors to identify new pedagogical approaches, clinical advances, other trends, and the changes in the discipline's "constituencies" over time (e.g., the balance between such

things as vocational/nonvocational or applied/nonapplied courses). Similarly, as part of his survey of doctoral education in Library and Information Science, Bobinski looked at the academic catalogs of 21 doctoral programs and analyzed his program requirements and course listings.[17] Most recently, close to a million academic course, syllabi are now available for analysis through the *Open Syllabus Project*, the *Syllabus Explorer* (Open Syllabus Project).[18] Initial metric analysis of this content has been to identify the articles and books most often assigned in various fields.[19] Presumably, however, this resource can be mined to analyze subject content in academic courses and eventually might be used for longitudinal subject evolution studies such as the one contained in this article.

This work builds upon and contributes to the numerous metric studies that utilize large datasets to analyze topics or subjects in a domain. However, very few do so longitudinally (diachronically) over large periods of time using large datasets (Sugimoto *et al.*, 2011, p. 186[20] asserting that most topic studies of the field of library and information science are "synchronic, rather than diachronic"). Harter and Hooten used bibliographic data to study 391 articles in three different time slices of the *Journal of the American Society for Information Science* from 1972 to 1990.[21] Sugimoto and McCain used tri-occurrence bibliographic analysis to map three time slices of information retrieval research from 1980 to 2004 (2010).[22] Larivière *et al.* used bibliographic data to analyze 110 years of the field of library and information science and identified major shifts occurring in 1960 and 1990.[23] Other work includes Järvelin and Vakkari, 1990; Milojevic *et al.*, 2011; and Sugimoto *et al.*, 2009.[24-26]

In addition to works that rely on existing metadata, there are longitudinal studies of domains that use algorithmic techniques to identify topics and then analyze the changes in frequency over time of those same topics. Smeaton *et al.* used information retrieval and clustering techniques to evaluate 25 years of SIGIR conference papers.[27] Sugimoto *et al.* used latent Dirichlet allocation (LDA) to identify the topics of 3121 dissertations in the field of library and information science from 1930 to 2009 and noted changes over time.[20] Song *et al.* used algorithmic techniques to cluster and analyze the evolution of topics in thirty-three bioinformatics conferences from 2000 to 2011, divided into four distinct time periods.[28] Yan used LDA to analyze topics in over 50,000 publications in library and information science from 1955 to 2013.[29] In addition, there have also been numerous visualization studies of domains that necessarily rely on metric analysis

for input. Several of these are related to academic disciplines and courses.[30-32]

Furthermore, there have also been studies or claims that use the AALS course-subjects. Garvin used the AALS "List of Teachers by Subject" data to bolster his assertion that commercial law is "a dying field, and one with few signs of revival" (2007, p. 403).[33] Garvin compared the number of commercial law professors with those in criminal law ("a stable field") and intellectual property ("a booming field") over a 40-year timespan (1965–1966 to 2005–2006). Commercial law saw a marked decline relative to those two other fields. Garvin also lamented the comparative aging of commercial law noting that "[y]oung scholars tend to be more productive than their seniors" and "[a]n aging field will tend to produce less scholarship and thus figure less in the minds of prospective law teachers."[33] Allen used the counts of faculty members teaching environmental law, law and medicine, and legal process to show that survey data reporting the number of law schools conducting jurimetrics ("the scientific investigation of legal problems") might be low (1975).[34] Laycock used AALS subjects data to help tell the story about how the course remedies evolved (2008).[35] In addition, Stadler made assertions about which legal subjects were waning in interest and which were on the rise (2006).[36] Stadler hand coded 58 years of the *Harvard Law Review* (1946–2003) by correlating article content with law school course-subjects. She also coded if the article was written by a student (usually called a "note" or "comment") or by a nonstudent law professor or other legal professional. Using normalized values and a metric that captured the incidence of the number of student-written articles on a particular topic exceeding nonstudent-written articles, Stadler made judgments as to which subjects were popular and which were not. She couched her recommendations in the language of stock market analysis by making her recommendations for lawyers wishing to become law professors in terms of strong buys, weak buys, weak sells, and strong sells.

Data and Methods

This work was conducted pursuant to a grant from the Law School Admissions Council — *The Production, Content and Consumption of Legal Scholarship: A Longitudinal Analysis.* As a small part of the analysis, a student worker keyed into a database all course-subjects, together with their "includes statements" and "see also references," from each list of "Teachers by Subject" from 1931–1932 to 2011–2012. This resulted in 45 unique permutations of the law school course-subject canon over this period

(in some years, there were no changes. Also, for some years, there were no lists of "Teachers by Subject" in the AALS annual directories). Student workers also inputted into a relational database which faculty members taught which course-subjects for the academic years (1) 1931–1932 and (2) 1972–1973. Since the beginning of the work on the grant, the AALS annual directories were scanned and made available as PDF's on the subscription legal database platform, *Hein Online*. The author used optical character recognition of these scanned images to harvest the data for 2010–2011. These later efforts indicate that all of the data could have been gathered algorithmically rather than by hand.

Tracking Course-Subjects and Course-Subject Groupings over Time

The author was able to glean how the course-subjects changed over time. This included when course-subjects either merged or diverged from a common parent. This work was assisted by the scope notes ("includes statements") that frequently accompanied a course-subject. For instance, "International Transactions includes Common Market, Foreign Patents, International Policies, International Taxation, and Regional Organizations."[37] Furthermore, the author was aided by cross-references and "see also" statements contained in some of the course-subjects: "Suretyship (See also Securities)"[38] and "Financial Institutions (Cross-referenced under Regulated Industries)."[39] In addition, the timing of the appearance and disappearance of specific course-subjects was also used to determine which course-subjects continued others after a name change. In some instances, these decisions were assisted by looking at the continuity of named individuals from one course-subject grouping to another. Appendix 1 shows how the course-subjects are nested and evolved for years 1931–1932, 1972–1973, and 2010–2011. Schematic charts created with *Microsoft Visio* were used to visualize the mergence and divergence of two particularly troublesome groupings of course-subjects, Estate Planning, and Civil Procedure [Figures 1 and 2]. Most importantly, knowing how course-subjects relate to each other over time allows for meaningful metric comparisons across the eighty years of the dataset.

Deduplication

Unfortunately, there were widespread redundancies in the list of teachers by subjects that impacted the count information and had to be deduplicated by hand. Teachers were frequently listed several times under the same time bin (1–5 years, 6–10 years, and over 10 years) and
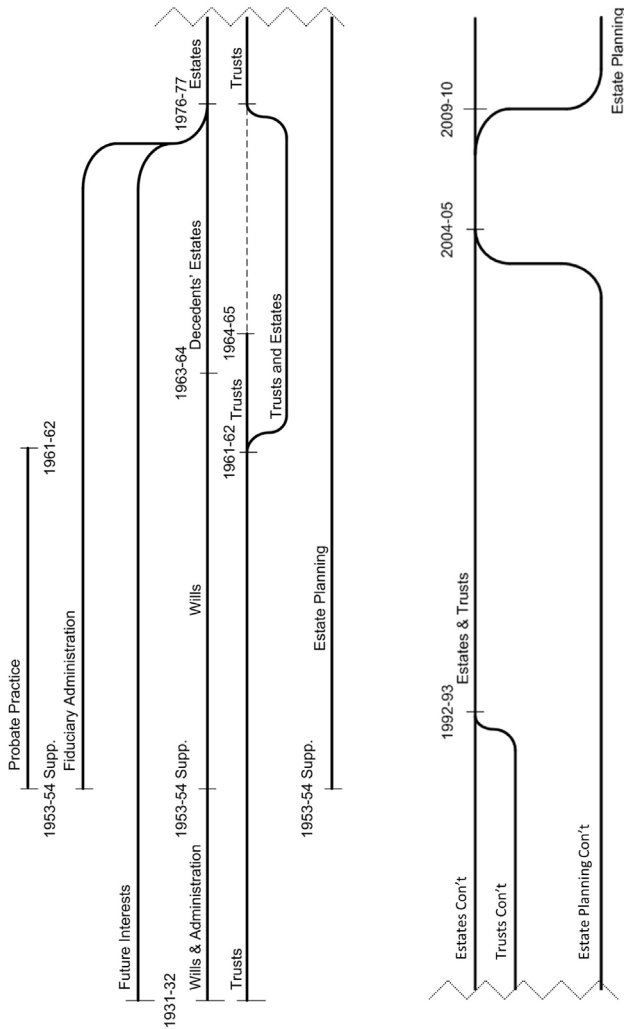
Figure 1: Mergence and divergence of estate planning course-subjects

frequently in more than one-time bin. For the academic year 2010–11, there was a duplication rate of 8.3%. Worse, some course-subjects had a much higher duplication rate. The highest was 26% for the course-subject, Intellectual Property. The duplicates were removed so that a faculty member appeared only once under each course-subject and in the highest time bin in which his or her name appears. The clean totals are shown in Table 2.

RESULTS AND DISCUSSION

Figures 1 and 2 reveal an interesting story of the evolution of the legal course-subject canon. Judging by the number of course-subjects in the canon, early law school education in the United States was much more concerned about the means to hold and convey assets (estate planning)
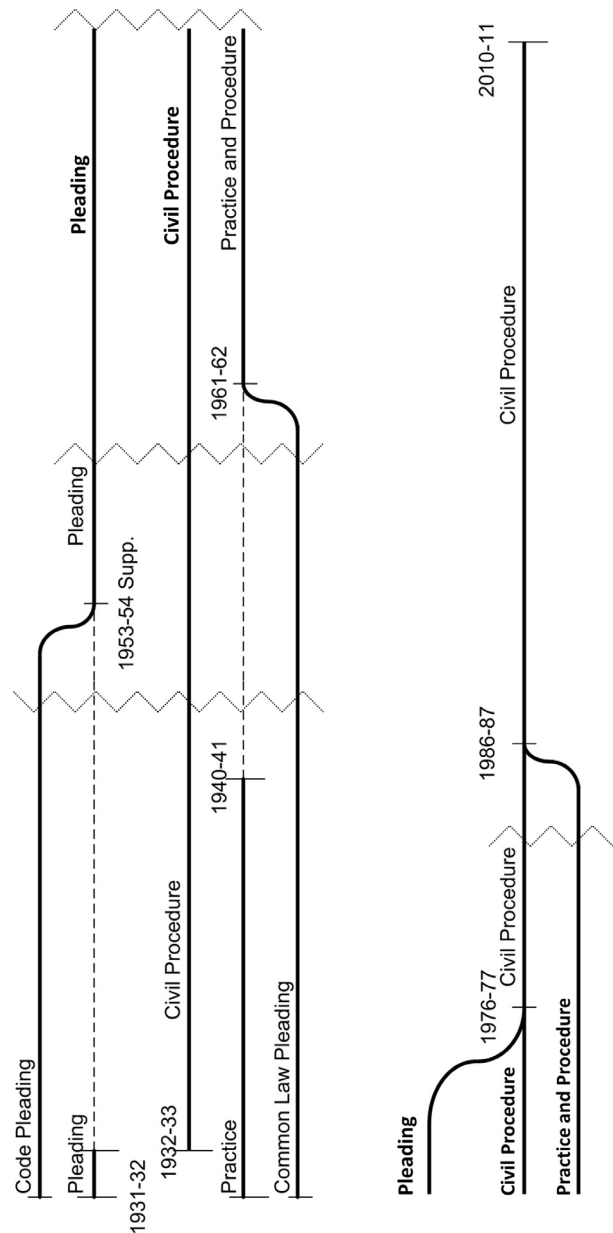
Figure 2: Mergence and divergence of procedural course-subjects

than it is today. Similarly, early law school education involved many more and presumably more complex forms of pleading (the procedural rules and language used in the process of filing and advancing lawsuits) than used today. However, most importantly, knowing how course-subjects relate to each other over time allows for meaningful metric comparisons across the eighty years of the dataset.

Most Gains in Percentage of the Overall Canon

The dataset allows for an evaluation of the changes in percentage of the overall course-subject canon from

1931–1932 to 2010–2011. This is true for either individual course-subjects or groupings of course-subjects. A ranking of the five greatest increases in the overall percentages is informative as to changes in the allocation of teaching resources in the American law schools during the 80 years of the dataset [Table 3]. The greatest percentage increase is in faculty teaching courses related to International Law. This is most likely due to the increase in globalization that has occurred in the interim and the rise of the Immigration and Human Rights as areas of concern in law school education. Constitutional Law is also much more prominent in 2010–2011 than it was in 1931–1932. This is most likely attributable to the rise in individual constitutional rights in the United States that has occurred over this same period. Legal Research and Writing has become a much more established part of the law school curriculum. In the past, some schools did not have legal research and writing faculty. Instead, third-year students taught the first year students these skills. The various criminal and tax course-subjects have also increased as to their overall percentage of how many faculty are teaching them.

Table 2: Relevant counts for thee academic years

Academic year	Number of course-subjects	Number of faculty/course-subject affiliations	Number of course-subject co-occurrences (same faculty member teaching two different course-subjects)
1931–1932	58	2674	5869
1972–1973	86	19,025	44,364
2010–2011	104	36,216	61,856

Most Losses in Percentage of Overall Canon

Because percentages of the overall total are being evaluated, the gains discussed above must come at the expense of some course-subjects or course-subject groupings. A ranking of the five greatest decreases in the overall percentage of course-subjects taught is informative as to changes in the allocation of teaching resources in the American law schools from 1931–1932 to 2010–2011 [Table 4]. In the past, the American law schools were far more concerned about how one inherits property (estate planning). This topic has greatly diminished in importance in terms of the number of faculty members who at present teach it. At least one scholar has noted that commercial law was "a dying field and one with few signs of revival."[33] This is empirically supported by the metric analysis. Contemporary law schools, to teach new course-subjects such as Environmental Law, Sports Law, National Security Law, and Entertainment Law, must necessarily diminish the amount of resources devoted to teaching other parts of the canon that previously enjoyed a high percentage of the amount of teachers teaching particular course-subjects. This includes business organization courses (ranked 3rd in overall losses). Similarly, equity and property have also diminished in terms of the overall percentage of what faculty members are teaching.

Average Length Courses Have Been Taught

Metric analysis may also be applied to the length of time faculty members have been teaching a particular course-subject. This is made possible because the AALS directories

Table 3: Most gains in percentage of overall canon 1931–1932 to 2010–2011

Course-subjects 1931–1932	Total faculty	Percentage of total (total=1.00)	Course-subjects 2010–2011	Total faculty	Percentage of total (total=1.00)	Change in percentage of total (total=1.00)	Rank
International law	32	0.012	International business transactions Immigration law Human rights International law International organizations	2088	0.058	0.046	1
Constitutional law	89	0.033	Constitutional law Civil rights Employment discrimination	2617	0.072	0.039	2
Legal bibliography and research	45	0.017	Legal drafting; and legal research and writing	1744	0.048	0.031	3
Criminal law administration Criminal law and procedure	111	0.042	Criminal justice Criminal law Criminal procedure Juvenile law	2558	0.071	0.029	4
Taxation	36	0.013	Taxation, corporate Taxation, state and local Estate and gift tax Taxation federal Tax policy	1149	0.032	0.019	5

bin the faculty teaching the various course-subjects by the amount of years they have been teaching (1) 1–5 years, (2) 6–10 years, and (3) over 10 years. This allows scientometricians to know which courses are comparatively aged and not attracting new faculty. This may be accomplished by averaging the length of time one has been teaching a subject based on the following formula: ([1 × amount in category 1 [teaching 1–5 years]) + (2 × amount in category 2 [teaching 6–10 years]) + (3 × amount in category 3 [teaching over 10 years]))/overall amount of faculty teaching that particular course-subject. Table 5 displays the five most aged course-subjects for each of the time periods. Each of these course-subjects would most likely trigger a similar admonition that Garvin applied to Commercial Law: "[y]oung scholars tend to be more productive than their seniors" and "[a]n aging field will tend to produce less scholarship and thus figure less in the minds of prospective law teachers."[33] Similarly, Stadler would likely classify each of these course-subjects as "strong sells."[36]

Table 6 displays the five youngest course-subjects for each of the time periods. For years 1972–1973 and 2010–2011, these course-subjects are most recently introduced and have not allowed faculty members to accrue many years of teaching experience in those particular course-subjects.

Included in Table 6 is a parenthetical which is the academic year the course-subject was first added to the canon of the list of law teachers by subject (the parentheticals are not included for the year 1931–1932 which is the year that the controlled course-subject taxonomy was first used). One noticeable exception to the trend of most of the "youngest" course-subjects being relatively new is Military Law. Introduced in the academic year 1941–1942 at the onset of the combat involvement of the United States in World War II, Military Law was subsequently refreshed with new teachers in the years preceding 2010–2011. Presumably, this is a result of the military endeavors of the United States following the terrorist attack of September 11, 2001, and a resultant increase in interest in Military Law at law schools in the United States.

The dataset used in this research is unique and is not commonplace in academia. However, metric insights such as the ones contained in this paper might inspire more learned societies to keep directory information similar to the AALS. Furthermore, it is now possible to scrape such content off of institutional websites. As the studies in the related work section show, scholars use the insights gained from these kinds of studies. This work exemplifies one way that such studies may be accomplished.

Table 4: Most losses in percentage of overall canon 1931–1932 to 2010–2011

Course-subjects 1931–1932	Total faculty	Percentage of total (total=1.00)	Course-subjects 2010–2011	Total faculty	Percentage of total (total=1.00)	Change in percentage of total (total=1.00)	Rank
Wills and administration Future interests Trusts	210	0.079	Estate planning Estates and trusts	633	0.017	−0.062	1
Sales Credit transactions Suretyship Mortgages	213	0.080	Commercial law Real estate transactions	884	0.024	−0.056	2
Agency Partnership Business organization Private corporations Corporation finance	249	0.093	Agency and partnership Business associations Corporate finance	1441	0.040	−0.053	3
Equity Equity pleading and practice	124	0.046	Equity	51	0.001	−0.045	4
Personal property Real property	199	0.074	Property	1123	0.031	−0.043	5

Table 5: Five most aged course-subjects

1931–1932 course-subjects	Average length of time being taught	1972–1973 course-subjects	Average length of time being taught	2010–2011 course-subjects	Average length of time being taught
Mining law	2.571	Future Interests	2.042	Taxation, federal	2.325
Water rights	2.429	Pleading	1.900	Payment systems	2.274
Patent law	2.000	Librarian	1.891	Admiralty	2.271
Pleading	2.000	Oil and gas	1.862	Estate and gift tax	2.228
Constitutional law	1.876	Practice and procedure	1.737	Creditors' and debtors' rights	2.206

Table 6: Youngest course-subject

1931–1932 course-subjects	Average length of time being taught	1972–1973 course-subjects	Average length of time being taught	2010–2011 course-subjects	Average length of time being taught
Air law	1.00	Women and the law (1972–1973)	1.000	Forensic medicine (2005–2006)	1.000
Business organization	1.00	Environmental law (1970–1971)	1.022	National security law (2009–2010)	1.277
Corporation finance	1.00	Clinical teaching (1971–1972)	1.026	Judicial administration (1938–1939)	1.300
Office practice	1.091	Law and poverty (1966–1967)	1.046	Military law (1941–1942)	1.361
Industrial relations	1.167	Education, legal problems of (1972–1973)	1.050	Energy law (2005–2006)	1.382

CONCLUSIONS AND FUTURE WORK

This work is typical of the meta-pursuit which is information science. In other words, it "conduct[s] research and develop[s] theory around the documentary products of other disciplines and activities" and uses the "recorded information" that is a product of the "human agency" of a particular field.[40] In this case, the recorded information is the annual directories of law teachers of the AALS. Metric analysis and a rich culture of data reporting in the legal academy of the United States combine to tell an informative empirical history of legal education. The data reveal which courses are "hot" and which courses are "cold." As with the topic analysis based on articles published in the *Harvard Law Review,* but on a far more limited scale,[36] aspiring faculty may wish to consult this article to inform their decisions as to what to teach upon entering the legal academy.

As noted in the literature review, there have been very few empirical studies that systematically analyze the evolution of a field. This work contributes to scientometrics by identifying a rich data source for metric analysis of the domain of law in the United States. Furthermore, it exemplifies how the "includes" statements and "see also" notes of a controlled vocabulary or thesaurus may be used to trace the creation, discontinuation, mergence, and divergence of topics to make accurate, large-scale comparisons over time. Admittedly, the dataset used herein is relatively novel. Few disciplines systematically record which faculty members teach which courses year after year. However, a similar analysis can be applied to any literature that has been indexed with assigned topics over time from a thesaurus. For instance, the author would like to do a similar longitudinal (diachronic) study analyzing changes in subject frequency in legal periodicals as contained in the *Index to Legal Periodicals and Books.* In future and in addition to updating the metric analysis contained in this article, the author would like to analyze the differences in faculty allocations to the various course-subjects at schools from both highest tier (top 25%) and lowest tier (bottom 25%)

of law schools according to the *US News and World Reports* rankings of law schools. Differences are expected because the most prestigious schools have larger budgets and a greater ability to allow their faculty to specialize and teach course-subjects of their choice. Finally, the author would like to publish mobility studies of law faculty as they migrate between schools and the resultant network of law schools the frequently exchange faculty.

Financial Support and Sponsorship

Conflicts of Interest

There are no conflicts of interest.

REFERENCES

1. AALS. The Association of American Law Schools; 2015. Available from: http://www.aals.org/. [Last retrieved on 2015 Aug 04].
2. AALS. Directory of Teachers in Member Schools: 1931. Saint Paul, Minnesota: West Publishing Co.; 1931.
3. AALS. The AALS Directory of Law Teachers 2011-2012. Washington, D.C.: AALS; 2011.
4. Hook PA. Using course-subject co-occurrence (CSCO) to reveal the structure of an academic discipline: A framework to evaluate different inputs of a domain map. J Assoc Inf Sci Technol. [In Press].
5. AALS. Directory of Teachers in Member Schools: 1930. Saint Paul, Minnesota: West Publishing Co.; 1930.
6. AALS. Directory of Teachers in Member Schools: 1940-1941. Saint Paul, Minnesota: West Publishing Co.; 1940.
7. AALS. Directory of Teachers in Member Schools: 1950-1951. Saint Paul, Minnesota: West Publishing Co.; 1950.
8. AALS. Directory of Law Teachers in American Bar Association Approved Law Schools: 1961. Saint Paul, Minnesota: West Publishing Co.; 1960.
9. AALS. Directory of Law Teachers: 1970. Saint Paul, Minnesota: West Publishing Co.; 1970.
10. AALS. Directory of Law Teachers: 1980-81. Saint Paul, Minnesota: West Publishing Co.; 1981.
11. AALS. The AALS Directory of Law Teachers: 1989-90. Saint Paul, Minnesota: West Publishing Company; 1989.

12. AALS. The Association of American Law Schools; 2013. Available from: http://www.aals.org/. [Last retrieved on 2013 Sep 09].
13. ABA, LSAC. ABA-LSAC Official Guide to ABA-Approved Law Schools. 2011th ed. Newtown, Pennsylvania: LSAC; 2010.
14. Cronin B, Sugimoto CR, editors. Scholarly Metrics Under the Microscope: From Citation Analysis to Academic Auditing. Medford, New Jersey: Information Today, Inc.; 2015.
15. Milojević S, Leydesdorff L. Information metrics (iMetrics): A research specialty with a socio-cognitive identity? Scientometrics. 2013;95:141-57.
16. Perlman B, McCann LI. The most frequently listed courses in the undergraduate psychology curriculum. Teach Psychol. 1999;26:177-82.
17. Bobinski GS. Doctoral programs in library and information science in the United States and Canada. Libr Trends. 1986;34:697-714.
18. Open Syllabus Project. Open Syllabus Project: Opening the Curricular Black Box. Available from: http://www.opensyllabus project.org/. [Last retrieved on 2016 Jan 27].
19. Karaganis J, McClure D. What a Million Syllabuses Can Teach Us. New York Times; 22 January, 2016. Available from: http://www.nytimes.com/2016/01/24/opinion/sunday/what-a-million-syllabuses-can-teach-us.html.
20. Sugimoto CR, Li D, Russell TG, Finlay SC, Ding Y. Shifting sands of disciplinary development: Analyzing North American library and information science dissertations using latent Dirichlet allocation. J Am Soc Inf Sci Technol. 2011;62:185-2011.
21. Harter SP, Hooten PA. Information science and scientists: JASIS, 1972-1990. J Am Soc Inf Sci. 1992;43:583-93.
22. Sugimoto CR, McCain KW. Visualizing changes over time: A history of information retrieval through the lens of descriptor tri-occurrence mapping. J Inf Sci. 2010;36:481-93.
23. Larivière V, Sugimoto CR, Cronin B. A bibliometric chronicling of library and information science's first hundred years. J Am Soc Inf Sci Technol. 2012;63:997-1016.
24. Järvelin K, Vakkari P. Content analysis of research articles in library and information science. Libr Inf Sci Res. 1990;12:395-421.
25. Milojevic S, Sugimoto CR, Yan E, Ding Y. The cognitive structure of library and information science: Analysis of article title words. J Am Soc Inf Sci Technol. 2011;62:1933-53.
26. Sugimoto CR, Russell TG, Grant S. Library and information science doctoral education: The landscape from 1930-2007. J Educ Libr Inf Sci. 2009;50:190-202.
27. Smeaton AF, Keogh G, Gurrin C, McDonald K, Sødring T. Analysis of papers from twenty-five years of SIGIR conferences: What have we been doing for the last quarter of a century? ACM SIGIR Forum. 2003;37:49-53.
28. Song M, Heo GE, Kim SY. Analyzing topic evolution in bioinformatics: Investigation of dynamics of the field with conference data in DBLP. Scientometrics. 2014;101:397-428.
29. Yan E. Research dynamics, impact, and dissemination: A topic-level analysis. J Assoc Inf Sci Technol. 2015;66:2357-72.
30. Biglan A. Characteristics of subject matter in different academic areas. J Appl Psychol. 1973;57:195-203.
31. White HD, Calhoun K. Mapping a curriculum by computer. J Am Soc Inf Sci. 1984;35:82-9.
32. White HD, Nolt C. Remapping a curriculum by computer: Change over time. J Educ Libr Inf Sci. 1987;28:123-35.
33. Garvin LT. The strange death of academic commercial law. Ohio State Law J. 2007;68:403-33.
34. Allen LE. Preface. Jurimetrics J. 1975;72:72-3.
35. Laycock D. How remedies became a field: A history. Rev Litig. 2008;27:161-267.
36. Stadler SK. The bulls and bears of law teaching. Washington Lee Law Rev. 2006;63:25-77.
37. AALS. Directory of Law Teachers in American Bar Association Approved Law Schools: 1964. Saint Paul, Minnesota: West Publishing Co.; 1963.
38. AALS. Directory of Teachers in Member Schools: 1935. Saint Paul, Minnesota: West Publishing Co.; 1935.
39. AALS. The AALS Directory of Law Teachers: 2004-2005. Saint Paul, Minnesota: Thomson West; 2004.
40. Bates MJ. The invisible substrate of information science. J Am Soc Inf Sci 1999;50:1043-50.

Appendix 1: Mergence and divergence of law school course-subjects and counts of total faculty members for three academic years

1931–1932 course-subject ID	1931–1932 course-subject	Total faculty	Percentage of total (1.00=total)	1972–1973 course-subject ID	1972–1973 course-subject	Total faculty	Percentage of total (1.00=total)	2010–2011 course-subject ID	2010–2011 course-subjects	Total faculty	Percentage of total (1.00=total)
1	Administrative law	42	0.016	285	Administrative law	458	0.024	415	Administrative law	681	0.019
2	Admiralty	19	0.007	171	Admiralty	120	0.006	171	Admiralty	70	0.002
								315	Agricultural law	26	0.001
				173	Arbitration	78	0.004	408	Alternative dispute resolution	573	0.016
				236	Antitrust	217	0.011	416	Antitrust	306	0.008
				208	Atomic energy	12	0.001				
4	Air law	3	0.001	206	Air law	33	0.002	364	Aviation and space law	19	0.001
3	Agency	75	0.028	3	Agency	282	0.015	314	Agency and partnership	38	0.001
41	Partnership	63	0.024								
7	Business organization	10	0.004	209	Business organizations	237	0.012	419	Business associations	1087	0.030
47	Private corporations	92	0.034	177	Corporations	410	0.022				
15	Corporation finance	9	0.003	267	Corporation finance	221	0.012	372	Corporate finance	316	0.009
				61	Civil procedure	464	0.024	366	Civil procedure	1359	0.038
8	Code pleading	48	0.018								
470	Pleading	12	0.004	44	Pleading	80	0.004				
45	Practice	86	0.032	200	Practice and procedure	171	0.009				
9	Common law pleading	60	0.022								
				297	Clinical teaching	192	0.010	368	Clinical teaching	1350	0.037
				193	Legal clinics	142	0.007				
				237	Commercial law	333	0.018	320	Commercial law	659	0.018
52	Sales	86	0.032	52	Sales	152	0.008				
16	Credit transactions	17	0.006	287	Credit transactions	279	0.015				
53	Suretyship	54	0.020								
37	Mortgages	56	0.021					358	Real estate transactions	225	0.006
6	Bills and notes	92	0.034	257	Negotiable Instruments	187	0.010				
				103	Community property	69	0.004	103	Community property	72	0.002
								360	Native American law	131	0.004
10	Comparative law	10	0.004	265	Comparative law	243	0.013	370	Comparative law	676	0.019
51	Roman law	13	0.005	51	Roman law	20	0.001				
11	Conflict of laws	87	0.033	11	Conflict of laws	389	0.020	11	Conflict of laws	383	0.011
12	Constitutional law	89	0.033	176	Constitutional law	699	0.037	422	Constitutional law	1630	0.045
								420	Civil rights	558	0.015
								375	Employment discrimination	429	0.012
								423	Consumer law	126	0.003
13	Contracts	99	0.037	13	Contracts	587	0.031	13	Contracts	1275	0.035

Appendix 1: Contd...

1931–1932 course-subject ID	1931–1932 course-subject	Total faculty	Percentage of total (1.00=total)	1972–1973 course-subject ID	1972–1973 course-subject	Total faculty	Percentage of total (1.00=total)	2010–2011 course-subject ID	2010–2011 course-subjects	Total faculty	Percentage of total (1.00=total)
5	Bankruptcy	48	0.018	286	Creditors' rights	235	0.012	424	Creditors' and Debtors' rights	306	0.008
17	Criminal law administration	8	0.003	288	Criminal law	622	0.033	373	Criminal justice	393	0.011
18	Criminal law and procedure	103	0.039	269	Criminal procedure	490	0.026	87	Criminal law	1026	0.028
								88	Criminal procedure	887	0.024
								441	Juvenile law	252	0.007
								425	Critical legal studies	19	0.001
								426	Critical race theory	83	0.002
								634	Disability law	49	0.001
				302	Education, legal problems of	20	0.001	374	Education law	187	0.005
								467	Energy law	34	0.001
								403	Entertainment law	90	0.002
21	Equity	104	0.039	289	Environmental law	181	0.010	429	Environmental law	513	0.014
22	Equity pleading and practice	20	0.007	240	Equity	261	0.014	430	Equity	51	0.001
				120	Estate planning	214	0.011	120	Estate planning	38	0.001
59	Wills and administration	75	0.028	181	Decedents' estates	248	0.013	432	Estates and trusts	595	0.016
				121	Fiduciary administration	51	0.003				
25	Future interests	46	0.017	25	Future interests	189	0.010				
57	Trusts	89	0.033	140	Trusts and estates	371	0.020				
23	Evidence	88	0.033	184	Evidence	435	0.023	23	Evidence	840	0.023
20	Domestic relations	75	0.028	182	Domestic relations	372	0.020	433	Family law	589	0.016
24	Federal Jurisdiction and Procedure	30	0.011	241	Federal jurisdiction	325	0.017	378	Federal courts	649	0.018
								434	Feminist legal theory	56	0.002
26	Industrial relations	6	0.002	270	Government contracts	56	0.003	150	Government contracts	23	0.001
27	Insurance	58	0.022	271	Insurance	211	0.011	438	Insurance law	134	0.004
42	Patent law	8	0.003	258	Patents, copyrights, trademarks	126	0.007	380	Intellectual property	590	0.016
				284	International transactions	211	0.011	439	International business transactions	575	0.016
28	International law	32	0.012	283	International law	315	0.017	379	Immigration law	203	0.006
								437	Human rights	268	0.007
								440	International law	887	0.024

Appendix 1: Contd...

1931–1932 course-subject ID	1931–1932 course-subject	Total faculty	Percentage of total (1.00=total)	1972–1973 course-subject ID	1972–1973 course-subject	Total faculty	Percentage of total (1.00=total)	2010–2011 course-subject ID	2010–2011 course-subjects	Total faculty	Percentage of total (1.00=total)
29	Introduction to law	9	0.003	245	Introduction to law	174	0.009	29	Introduction to law	65	0.002
				81	Judicial administration	28	0.001	81	Judicial administration	10	0.000
30	Jurisprudence	19	0.007	274	Jurisprudence	329	0.017	445	Law and literature	160	0.004
								382	Jurisprudence	724	0.020
31	Labor law	9	0.003	247	Labor law	311	0.016	428	Employee benefit plans	63	0.002
								442	Labor law	308	0.009
				290	Land use	237	0.012	443	Land use planning	287	0.008
				116	Accounting	130	0.007	444	Law and accounting	84	0.002
								396	Law and economics	276	0.008
				249	Law and medicine	209	0.011	436	Health care law	278	0.008
								418	Bioethics	110	0.003
								468	Forensic medicine	1	0.000
								446	Law and medicine	225	0.006
								447	Law and psychiatry	110	0.003
								448	Law and religion	111	0.003
				276	Law and computers	26	0.001	393	Computers and the law	228	0.006
				191	Law and science	36	0.002	449	Law and science	141	0.004
				251	Law and society	163	0.009	337	Law and social science	312	0.009
39	Office practice	11	0.004	197	Office practice	42	0.002	450	Law office management	104	0.003
				293	Librarian	92	0.005				
34	Legal history	13	0.005	194	Legal history	153	0.008	34	Legal history	463	0.013
				158	Legal method	156	0.008	109	Legal method	126	0.003
				126	Legal process	163	0.009				
35	Legislation	11	0.004	254	Legislation	209	0.011	35	Legislation	361	0.010
32	Legal bibliography and research	45	0.017	292	Legal research and writing	456	0.024	451	Legal drafting	143	0.004
								386	Legal research and writing	1601	0.044
				291	Legal bibliography	134	0.007				
38	Municipal corporations	52	0.019	278	Local government	275	0.014	452	Local government	197	0.005
				96	Military law	67	0.004	96	Military law	61	0.002
								635	National security law	94	0.003
36	Mining law	7	0.003	294	Natural resources	67	0.004	453	Natural resources	193	0.005
								454	Ocean resources	13	0.000

Appendix 1: Contd...

1931–1932 course-subject ID	1931–1932 course-subject	Total faculty	Percentage of total (1.00=total)	1972–1973 course-subject ID	1972–1973 course-subject	Total faculty	Percentage of total (1.00=total)	2010–2011 course-subject ID	2010–2011 course-subjects	Total faculty	Percentage of total (1.00=total)
58	Water rights	7	0.003	58	Water rights	84	0.004	58	Water rights	96	0.003
40	Oil and gas	7	0.003	295	Oil and gas	65	0.003	455	Oil and gas	36	0.001
								456	Payment systems	234	0.006
				250	Law and poverty	195	0.010	389	Poverty law	44	0.001
33	Legal ethics	31	0.012	252	Legal profession	326	0.017	457	Professional responsibility	1074	0.030
43	Personal property	82	0.031	198	Personal property	255	0.013	458	Property	1123	0.031
50	Real property	117	0.044	259	Real property	611	0.032				
48	Public utilities	77	0.029	305	Regulated industrial and other activities	110	0.006	435	Financial institutions	101	0.003
								421	Communications law	127	0.004
								459	Regulated industries	185	0.005
				132	Remedies	156	0.008	460	Remedies	371	0.010
19	Damages	43	0.016	19	Damages	77	0.004				
49	Quasi-contract	43	0.016	202	Restitution	97	0.005				
				296	Securities regulation	163	0.009	134	Securities regulation	338	0.009
								404	Sports law	110	0.003
								462	Taxation, corporate	188	0.005
54	Taxation	36	0.013	138	Taxation, state and local	90	0.005	463	Taxation, state and local	62	0.002
				234	Taxation, federal	526	0.028	431	Estate and gift tax	171	0.005
								469	Taxation, federal	619	0.017
								461	Tax policy	109	0.003
55	Torts	99	0.037	261	Torts	631	0.033	55	Torts	1227	0.034
								347	Products liability	167	0.005
56	Trade regulation	15	0.006	262	Trade regulation	294	0.015	464	Trade regulation	54	0.001
46	Practice court	29	0.011	279	Practice court	207	0.011	465	Trial advocacy	736	0.020
				280	Trial and appellate practice	379	0.020				
								417	Appellate practice	180	0.005
				135	Social legislation	112	0.006	427	Elder law	73	0.002
								466	Welfare law	156	0.004
				308	Women and the law	29	0.002	308	Women and the law	271	0.007
				169	Workmen's compensation	59	0.003	359	Workers' compensation	34	0.001