

**THE STRUCTURE AND EVOLUTION OF THE ACADEMIC
DISCIPLINE OF LAW IN THE UNITED STATES:
GENERATION AND VALIDATION OF COURSE-SUBJECT CO-
OCCURRENCE (CSCO) MAPS**

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Peter A. Hook

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This dissertation proposes, exemplifies, and validates the usage of course-subject co-occurrence (CSCO) data to generate topic maps of an academic discipline. CSCO is defined as course-subjects taught in the same academic year by the same teacher. This work is premised on the assumption that in the aggregate and for reasons of efficiency, faculty members teach course-subjects that are topically similar to one another. To exemplify and validate CSCO, more than 112,000 CSCO events were extracted from the annual directories of the American Association of Law Schools covering nearly eighty years of law school teaching in the United States. The CSCO events are used to extract and visualize the structure and evolution of law for the years 1931-32, 1972-73, and 2010-11—roughly, forty year intervals. Different normalization, ordination (layout), and clustering algorithms are compared and the best algorithm of each type is used to generate the final map. Validation studies demonstrate that CSCO produces topic maps that are consistent with expert opinion and four other indicators of the topical similarity of law school course-subjects. Resulting maps of the educational domain of law are useful as a reference system for additional thematic overlay of information about law school education in the United States. This research is the first to use CSCO to produce visualizations of a domain. It is the first to use an expanded, multi-part gold-standard to evaluate the validity of domain maps and the intermediate steps in their creation. Last but not least, this research contributes a metric analysis and visualizations of the evolution of law school course-subjects over nearly eighty years.

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1. Introduction

He should consider his course as a general map of the law, making out the shape of the country, its connections and boundaries, its greater divisions and principal cities: it is not his business to describe minutely the subordinate limits, or to fix the longitude and latitude of every inconsiderable hamlet. His attention should be engaged . . . in tracing out the originals and as it were the elements of the law (Blackstone, 1783, p. 35).

In the statement above, Blackstone describes the role of the legal commentator as making the law more comprehensible by figuratively mapping the field. However, the structure of the academic discipline of law in the United States has never been empirically determined and literally mapped in two dimensions. While the course-subject structure of legal academia in the United States has been described in essays (Kennedy, 1983) and other writings on the history of law school education (Stevens, 1983), it has never been revealed through the exploration of large datasets and determined through replicable, empirical means. The main purpose of this dissertation is to ascertain the similarity of legal course-subjects in terms of their topical relatedness and to rigorously and in a replicable manner, best distribute those course-subjects in a two-dimensional mapping so that they may be quickly perceived by the viewer using the **distance-similarity metaphor**¹ (Montello et al., 2003). Once created, domain maps provide **cognitive scaffolding** for learning (Greenfield, 1984; Wood et al., 1976). These big-picture, global perspectives have the potential to allow a novice to more quickly become familiar with the domain and experts to contextualize their teaching and research in a broader perspective. Additionally, domain maps of legal course-subjects allow for numerous thematic overlays that facilitate insight about legal education in the United States. The dataset that makes this possible also permits an empirical and longitudinal exploration of course-subject offerings in law schools in the United States.

¹ Terms appearing in bold-face type are defined in the glossary (Section 9). Terms included in the glossary only appear in bold-face type the first time they occur in the text. The definitions in the glossary best explain the meaning of the terms as used herein and do not exhaustively convey all the various meanings of the terms as used in the English language.

1.1 Course-Subject Co-Occurrence (CSCO) Defined and a Brief Introduction to the Dataset

This research relies, in part, on a large dataset created by the author and his fellow investigators in a grant from the Law School Admission Council (LSAC), *see* **Section 3.1.1**. Specifically, this research uses networks of course-subject co-occurrence events from 1931 through 2011. **Course-subject co-occurrence (CSCO)**, coined herein, is defined as the same professor teaching multiple, different course-subjects over some period of time. In this instance, the period of time is one academic year as captured in the annual directories of the American Association of Law Schools (AALS). Furthermore, courses with differing individual course names are controlled through a proscribed subject vocabulary supplied by the AALS. In other words, courses with similar content, but with differing titles, are harmonized through a common course-subject listing. This is why the data is described as *course-subject* co-occurrence. Thus, the main unit of analysis is the teaching of different course-subjects (not individually named courses). In 2010-11, there were 104 academic course-subjects.

If a professor teaches two different course-subjects in a given year, those course-subjects are connected by a single link when the two mode network (professors and course-subjects) is collapsed to a single mode network (just course-subjects). If a professor teaches three different course-subjects in a given year, this results in the creation of three course-subject links. Four different course-subjects taught in a given year results in the creation of six course-subject links, and so forth, *see* **Figure 1**. Additionally, when two professors teach the same two course-subjects, this results in an edge weight between those course-subjects of two when the network is collapsed from a two mode network to a single mode network, *see* **Figure 2**. In 2010-11, 536 faculty members taught both Criminal Law and Criminal Procedure—the highest amount of pairwise co-occurrence between any of the 104 course-subjects. At the other end of the spectrum, 1,467 of the 5,356 possible course-subject pairs ($((104 \times 104) - 104) / 2$) were not taught by any of the same faculty members.

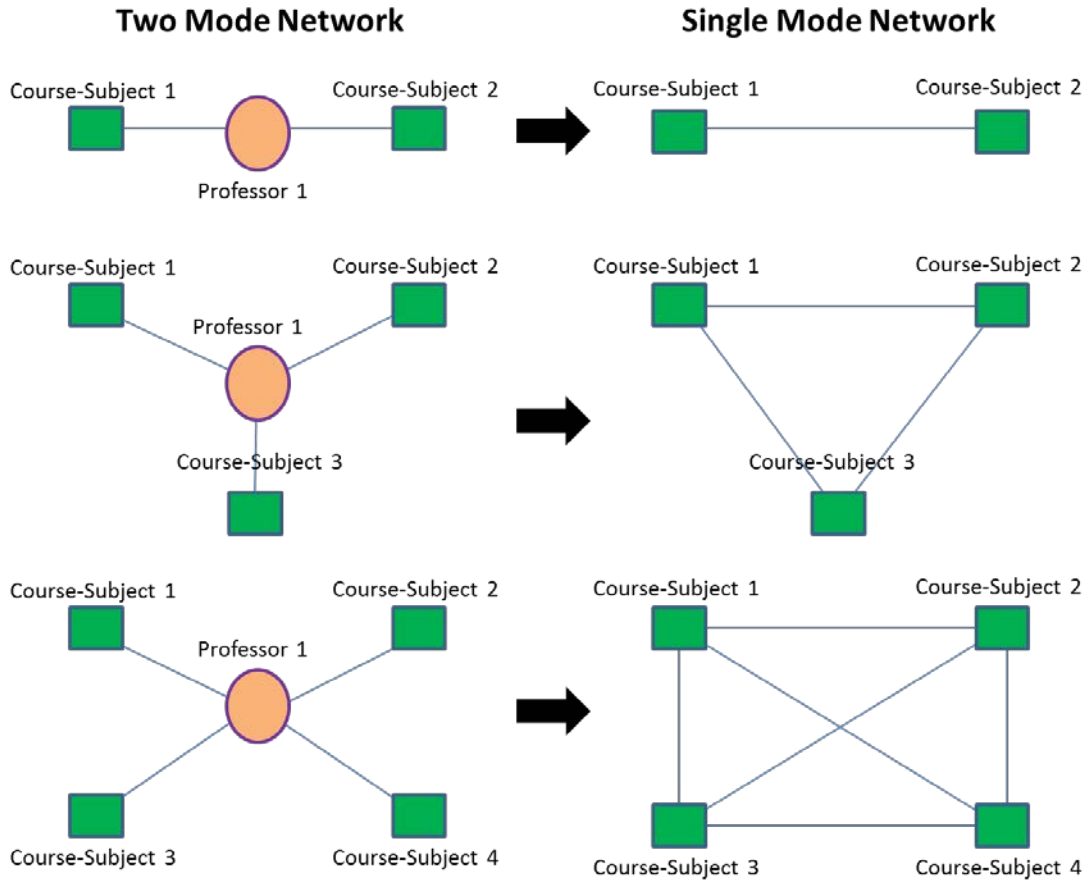


Figure 1: Course-Subject Co-Occurrence Networks (CSCO)

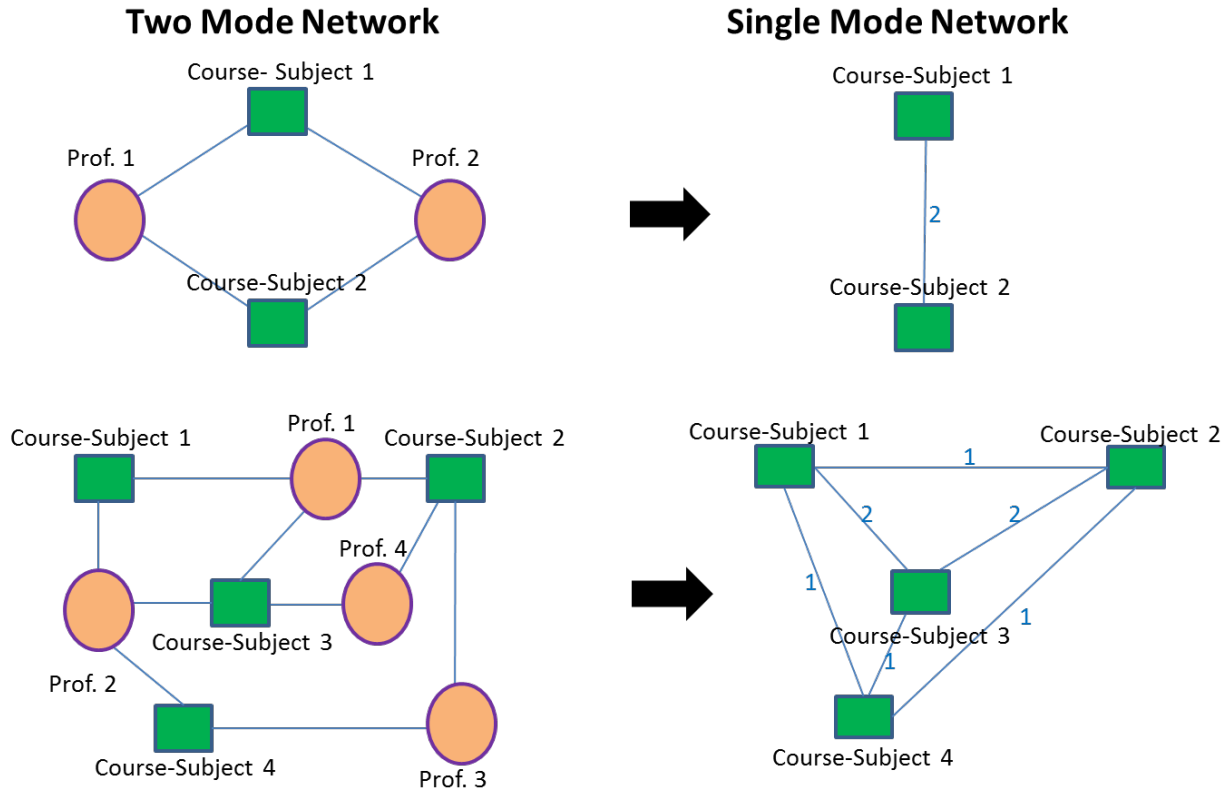


Figure 2: Course-Subject Co-Occurrence Networks (CSCO), Different Edge Weights

The explanatory power of CSCO networks is premised on the assumption that in the aggregate, and for reasons of efficiency, faculty members specialize and focus their energy teaching courses that are topically similar to other courses they teach. The use of CSCO networks to make structural claims about a domain is supported by the numerous uses of co-occurrence data that have been used to create domain maps, *see Section 2*. Utilizing a relational database, this work harvested and organized data about courses taught and the school affiliation of the faculty members that taught them, from the annual directories of the AALS. **Spatialization** techniques have been used to create domain maps for three different academic years of CSCO networks: 1931-32, 1972-73, and 2010-11—roughly forty year intervals.

In addition to the novelty of the of the CSCO approach, the intellectual contribution of this dissertation rests with the simultaneous use of several different sources of topical similarity for legal

course-subjects to validate the domain maps and to assess the intermediate steps in their creation. While also including the traditional approach of soliciting expert opinion via a card-sort of the 104, 2010-11 controlled AALS course-subjects, four other sources of topical similarity were used: (1) the syndetic structure (cross-references) contained in the AALS directories (AALS, 1931, 2011); (2) the mergence and divergence of AALS course subjects over time; (3) Jackson and Gee categories of law school courses (1975); and (4) topic categories of the *Current Index to Legal Periodicals* (CILP) (Gallagher Law Library—University of Washington, 2011). The dataset and its subsequent analysis also revealed how the canon of law school course-subjects changed over time.

1.2 Research Goals, Questions, and Core Contributions

The intention of this research may be broken into three parts: research goals, research questions, and core contributions.

1.2.1 Research Goals

The goal of this research was to produce the best two-dimensional spatial representation of the topical relatedness of law school course-subjects in the United States and to reveal the evolution of law school course subjects over time. Once created, the maps were used to overlay thematic information about law school education in the United States in order to efficiently convey information about the course-subjects. These goals are reflected in the following research questions.

1.2.2 Research Questions

- **Research Question 1:** Do faculty members, on the whole, specialize and focus their energy teaching courses that are topically similar to other courses they teach? This is the threshold question which is also the assumed premise underlying the use of CSCO to create valid domain maps of academic course-subjects. *See Section 4.1.1.*

- **Research Question 2:** Can course-subject co-occurrence (CSCO) be used to produce topic maps that are consistent with expert opinion and other indicators of the topical similarity of law school course-subjects? *See Section 4.2.4.*
- **Research Question 3:** When using CSCO network data to compare normalization algorithms (association strength, cosine, and no normalization) and spatial ordination and layout techniques (Proxscal MDS, VOSviewer, and spring-force algorithms), which combination of algorithms, tools, and techniques is best at portraying the overall structure of law school course-subjects as compared to an extrinsic ‘gold-standard’ of similar course-subject pairs? *See Figure 3* for a schematic representation of the map making treatments. *See Sections 4.1.6, 4.1.7, and 4.2.4.*
- **Research Question 4:** How well does cluster analysis of course-subject co-occurrence data capture the higher level groupings of law school course subjects compared with the subject groupings created by experts? *See Section 4.3.*
- **Research Question 5:** How have law school course-subjects changed over time? *See Section 5.1*
- **Research Question 6:** What do thematic overlays reveal about the relative amount certain course-subjects are taught, which course-subjects are taught as a seminar, and other metric evaluations of the law school canon? This question addresses the utility of overlays applied to CSCO network produced domain maps. *See Section 6.*

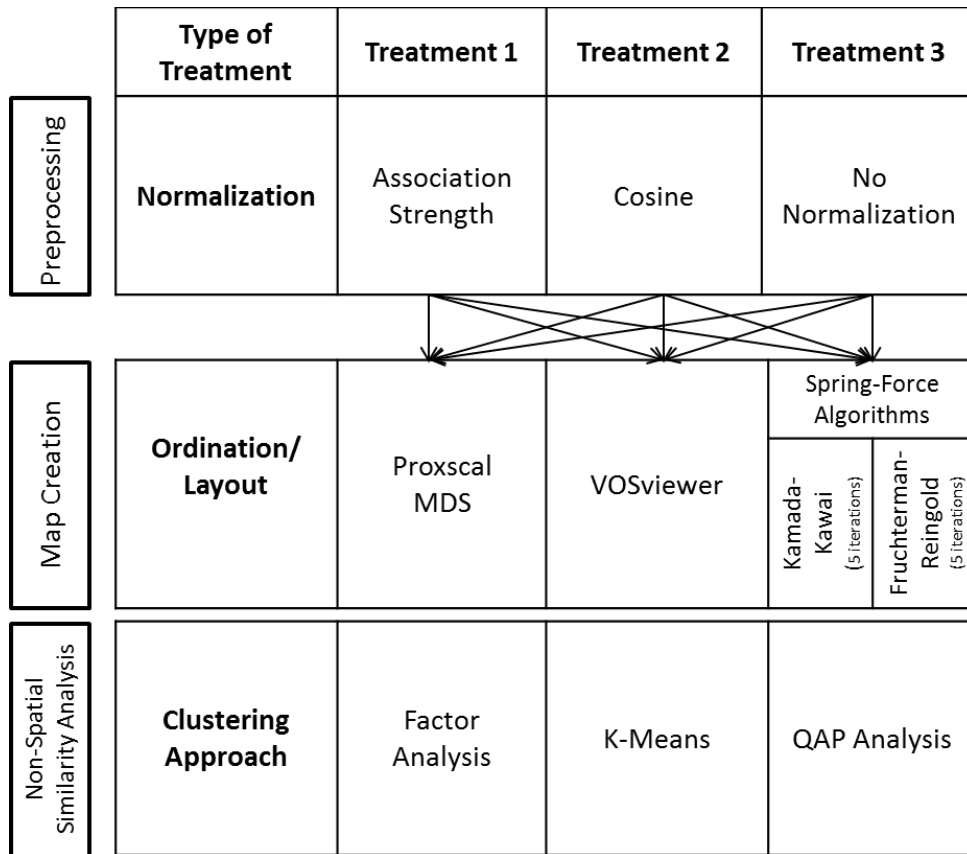


Figure 3: Different Treatments Applied to the Map Making Steps

1.2.3 Core Contributions

This research provides a number of core and original contributions. It introduces the use of course-subject co-occurrence to do analysis, scientometrics, and visualizations of a domain. Additionally, this work introduces an expanded, broader, multi-part gold-standard to evaluate the validity of domain maps. Perhaps the most significant contribution of this work is the analytic framework to compare multiple different algorithms, tools, and techniques at each stage of domain map production. The research demonstrates how multiple different treatments can be compared with each other at each stage of domain map construction and how their cumulative effects may be compared across stages. This work provides additional evidence as to which is the best normalization and ordination techniques amongst those commonly used in domain map production. Also, this work provides empirical proof that in the law

school domain, more often than not, faculty members teach courses that are topically similar. Finally, once articles have been published from the research, the dataset will be made freely available to other researchers to replicate and expand upon the findings or to be used as a sample dataset to explore networks.

1.3 Situating the Work in Information Science

While interdisciplinary in nature, this dissertation is thoroughly grounded in the paradigms, foci, and methods of **information science**. “Information science is the study of the gathering, organizing, storing, retrieving, and dissemination of information” (Bates, 1999, p. 1044; Borko, 1968; Rubin, 1998). Information science has been characterized as a **meta-discipline** (Bates, 1999). In other words, it “conduct[s] research and develop[s] theory around the documentary products of other disciplines and activities” (Bates, 1999, p. 1043). This dissertation research is a quintessential meta-pursuit—using tools and techniques from the fields of data mining, information visualization, and domain mapping to derive new understanding of another field from existing data. In this instance, the other field is law.

Additionally, like most endeavors in information science, this dissertation has utilized the “recorded information” that is a product of the “human agency” of a particular field (Bates, 1999, p. 1048). In this case, the recorded information is the annual directories of law teachers of the AALS. These detailed, yearly accounts of biographical information about law faculty members list the institutional affiliation of each faculty member and more importantly, what subjects they taught. Representing information is also at the heart of information science (Bates, 1999, p. 1045) and was also the aim of this research. The domain maps produced from the CSCO networks provide users a quick, visual means to assess the structure of the academic domain of law. In this sense, this work responds to Bates’ third big question of information science, “How can access to recorded information be made most rapid and effective?” (Bates, 1999, p. 1048).

1.4 Law School Education in the United States

Law school education in the United States is a three year, graduate professional degree (ABA & LSAC, 2011) followed by a state licensing exam for those that wish to practice law in a particular jurisdiction. The American Bar Association (ABA), the accrediting body for law school education in the United States, does not specify an undergraduate focus in order to prepare students for the graduate law degree. Instead, students are advised that they “may choose to major in subjects that are considered to be traditional preparation for law school, such as history, English, philosophy, political science, economics, or business, or ... may focus ... in areas as diverse as art, music, science, mathematics, computer science, engineering, nursing, or education” (ABA & LSAC, 2011, p. 4). Assessment in law school is unique. “[I]n most courses, grades [are] determined primarily from examinations administered at the end of the semester or, at some schools, the end of the year. The professor may give little feedback until the final examination” (ABA & LSAC, 2011, p. 6). Law students are frequently taught by the “case method.” In this approach, law professors question students about the issues, facts, legal holdings and rationales in specific cases. Through this “Socratic dialogue” with their professors, students inductively internalize the major principles of the various areas of the law.

There is no dissertation or thesis requirement for the traditional three year, Juris Doctor (J.D.) degree. Also, the terminal degree for law professors has traditionally been the same three year Juris Doctor degree that is common to all law school graduates. Increasingly however, faculty members are being hired that have a PhD in addition to their J.D. (Rachlinski, 2011) in subjects such as economics, political science, history, sociology, etc. There is a typical first-year curriculum that includes the following required courses: (1) Contracts, (2) Civil Procedure, (3) Property, (4) Torts, (5) Criminal Law, (6) Constitutional Law, and (7) Legal Research and Writing (Carpenter, 2012, pp. 50-55). Additionally, the Multi-State Bar Examination (MBE), a multiple-choice standardized component of almost all state bar examinations, tests aspiring lawyers in the following subjects: (1) Constitutional Law, (2) Contracts, (3) Criminal Law and Procedure, (4) Evidence, (5) Real Property, and (6) Torts (National Conference of Bar Examiners

(NCBE)). Individual states mandate additional bar exam topics such as Administrative Law, Business Associations, Taxation, Wills and Trusts, etc. However, “[t]ested subject matter of bar examinations does not appear to play a prominent role in a law school’s determination of which courses to require for graduation” (Carpenter, 2012, p. 15). The overwhelming majority of courses that law students take are electives. The choice of these electives could be aided by the use of a domain map.

1.5 Structure of the Dissertation

This dissertation is broken into the following additional parts. Section 2, Literature Review, surveys the literature upon which this research is based. It includes a general introduction to the specific methods and techniques used. Section 3, Methods, Data, and Data Collection, describes the data used for this study, how it was obtained, and the specific steps used to manipulate the data in order to derive the results given in the subsequent section. It also describes the creation and constituent parts of the ‘gold-standard’ used to evaluate the various map making input techniques. Section 4, Results, reveals summary statistics as to which domain map input technique performed the best relative to the gold-standard. Section 5, Mapping the Structure and Evolution of the Domain of Law, provides a map for each map year, 1931-32, 1972-73, and 2010-11, as well as a metric and visual evaluation of how the course-subjects have changed over time. Section 6, Thematic Overlays, demonstrates the utility of domain maps to succinctly convey information by overlaying thematic data upon the base-maps established in the previous section. Section 7, Conclusions, summarizes the findings of the dissertation and addresses the significance of the research in terms of its intellectual merit and broader impacts.

2. Literature Review

Relevant literature for this dissertation involves the spatial studies of disciplines (Section 2.1) and other co-occurrence studies (Section 2.2). Additionally, important methodological considerations include: the normalization of co-occurrence data (Section 2.3.1), techniques to spatialize multi-dimensional data: Proxscal MDS, VOSviewer, spring-force algorithms (Section 2.3.2), cluster analysis techniques (Section 2.3.3), and the common ways in which domain maps are validated (Section 2.4). Another crucial element of the literature relied upon for this dissertation is indicators of the topical similarity of courses in legal academia (Section 2.5). The literature review concludes with a discussion of the use of AALS course-subjects by legal scholars (Section 2.6) and additional claims about law school course-subjects (Section 2.7).

2.1 Spatial and Longitudinal Studies of Disciplines

This dissertation involves a: (1) longitudinal, (2) spatial mapping analysis, (3) of academic courses, (4) based on the co-occurrence of different course-subjects taught by the same professor. **Longitudinal** is defined as: “concerned with the development of persons or groups [or things or entities] over time” (Pickett, 2006, p. 1031). **Diachronic** is a synonym that is also used in the literature (White & Calhoun, 1984, p. 83): “of or concerned with phenomena ... as they change through time” (Pickett, 2006, p. 499). A spatial mapping analysis is one that uses **spatialization** (Fabrikant & Skupin, 2005, p. 668; Slocum, 2005, p. 459) and the **distance-similarity metaphor** (Montello et al., 2003) to derive insight into a particular domain. In other words, proximity is an indicator of topical or conceptual similarity. For this work, a **course** is the basic unit of academic study. A course usually lasts for one semester (or possibly a quarter), is comprised of one or more credit hours, and has its own entry on a student’s academic transcript. While no study has been conducted employing all four of the elements set out above, the studies discussed in this section are the most similar to and informative for this dissertation.

2.1.1 Spatial Representations of Academic Courses or Disciplines

The two most similar studies to this dissertation research also involve a spatial mapping analysis of either academic courses or disciplines (Biglan, 1973; White & Calhoun, 1984). The Biglan study was a pioneering work in empirical topic mapping. Biglan was one of the first domain mappers to employ an expert card-sorting exercise to create a similarity matrix of 36 academic disciplines (accounting, finance, horticulture, zoology, etc.) from the perspective of university professors (*see Figure 4*). White and Calhoun (1984) produced a spatial map of the curriculum of the Library and Information Science program at Drexel University based on the co-occurrence of elective courses taken by the same students from 1977-1982 (*see Figure 5*). White and Calhoun did several things that are illustrative for this dissertation. They labeled the axes in both directions (left-right, up-down), identified a core group of courses applicable to general library studies at the center, and noted various specializations that radiated from the core. Furthermore, instead of raw co-occurrence counts, they used normalized, Pearson r correlation coefficients. *See* (Boll & Zweizig, 1985) for criticism of this work and the authors' reply (White & Calhoun, 1985). Both the Biglan and White and Calhoun studies used multidimensional scaling (MDS) as the spatialization technique and reported stress values for the preferred two-dimensional solutions. Stress values are "Kruskal's index of goodness of fit between the similarity data and the multidimensional solution" (Biglan, 1973, p. 197). The Biglan study had a two-dimensional stress coefficient of 0.311 while that in the White and Calhoun study was 0.27.

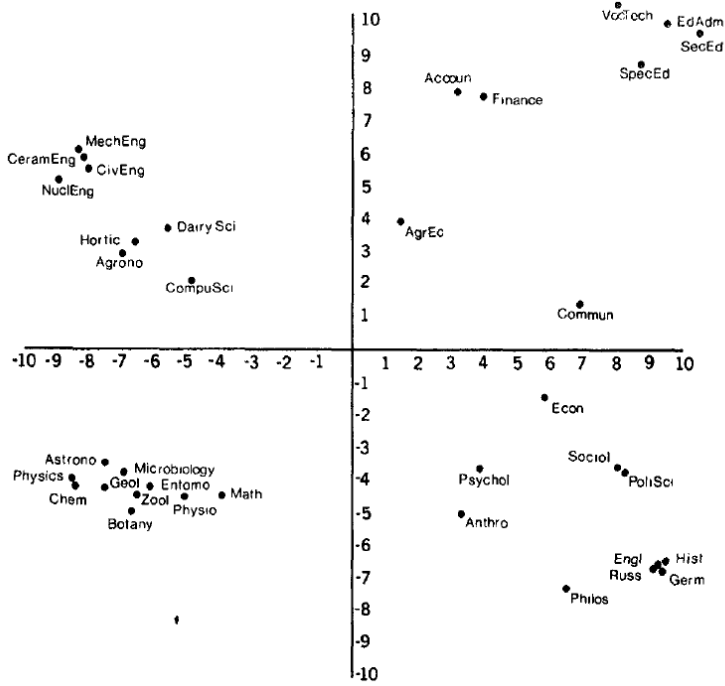


Figure 4: Spatial Mapping of the Perceived Similarity of Academic Subjects. Reproduced from (Biglan, 1973, p. 198).

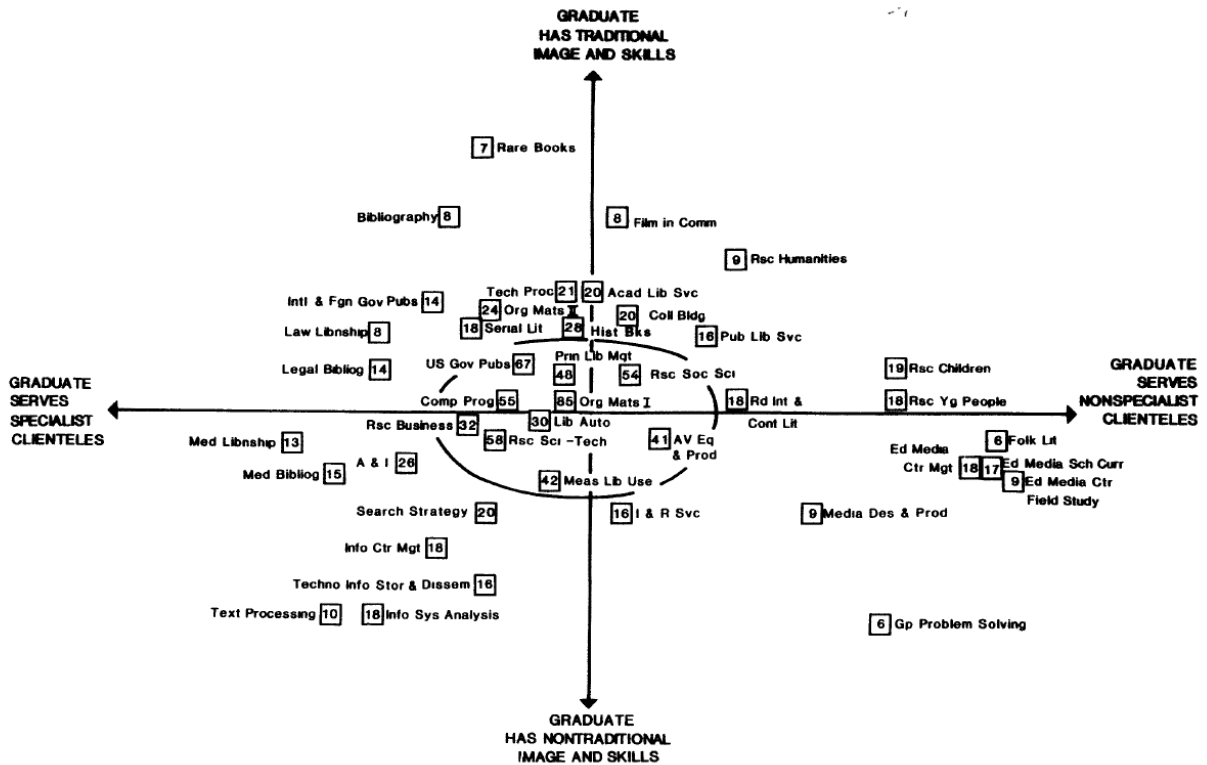


Figure 5: Map of a Curriculum Produced from the Co-Occurrence of Elective Courses Taken. Reproduced from (White & Calhoun, 1984, p. 85).

2.1.2 Spatial Longitudinal Studies of Disciplines

Three studies are similar to this dissertation in that they are a longitudinal spatial mapping analysis of either academic courses (White & Nolt, 1987), academic sub-fields (White & McCain, 1998), or subject assignments in a dissertation abstracts database (Jeong, 2001). All three use MDS for their spatialization. They are informative in how they illustrate change over time. White and Nolt expand on the earlier work of (White & Calhoun, 1984) by adding an additional time-slice (1982-84) to the previous work (1977-82). What is methodologically interesting is that they evaluated change in course location by looking at a specific course's placement on the horizontal and vertical axes of each of the two maps using Pearson r values. They also noted various 'course careers.' These are changes in the adjacencies of individual subjects over time— changes that sometimes reflect the merger or splintering of previous course subjects.

White and McCain used **author co-citation analysis** (ACA) as applied to articles from twelve key journals from 1972-1995 to do a longitudinal analysis of the field of information science in three distinct time bins (White & McCain, 1998). Most interestingly for this dissertation is the map showing the shift in topic space location of the most changing 19 authors over the three time periods. Lines indicate movement of each author in the topic space of the three superimposed time periods (*see* **Figure 6**).

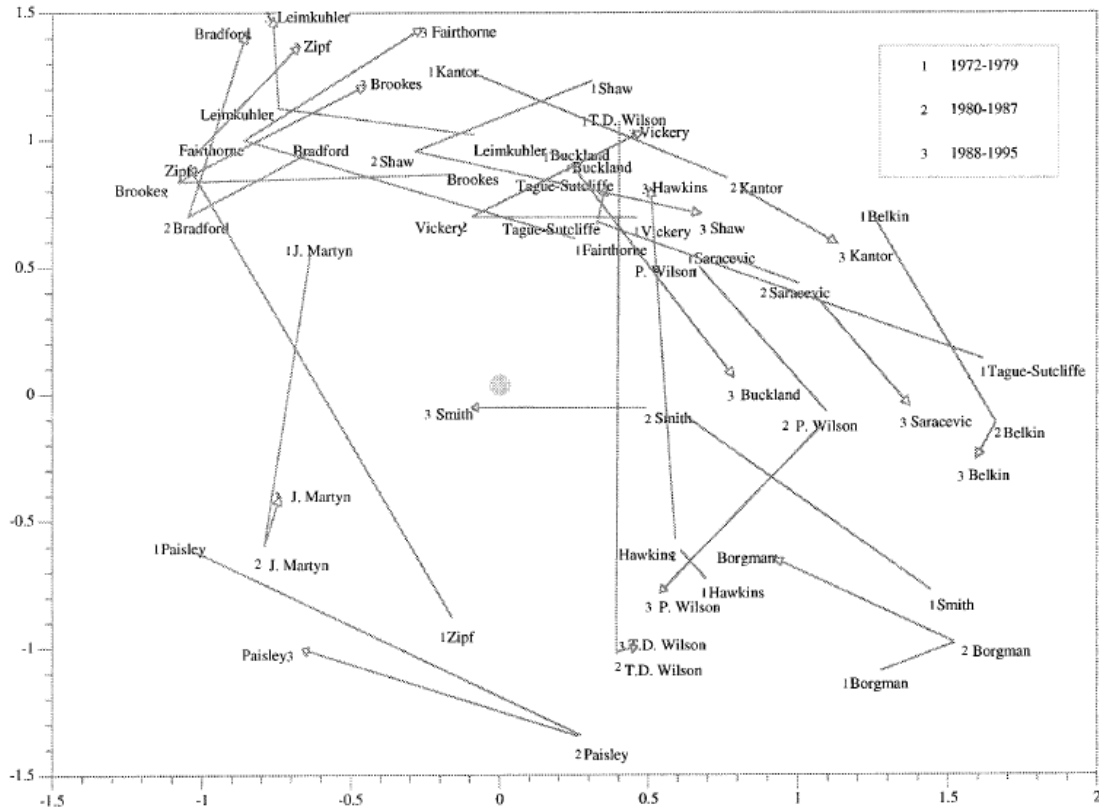


Figure 6: The Shift in Citation Images for 19 Authors for 3 Time Spans: (1) 1972-1979, (2) 1980-1987, and (3) 1988-1995. Reproduced from (White & McCain, 1998, p. 349).

Jeong conducted a longitudinal study of academic disciplines by analyzing the co-occurrence of subject assignments in the *UMI Dissertation Abstracts* database (2001). While particularly interested in the change over time of the adjacencies of information science, library science, and computer science against a background of fifteen other disciplines (1970-1997), Jeong noted that the three MDS maps corresponding to each time frame have different scales and that only the relative positions may be compared. Jeong made a conscious decision to not emulate the work of White and his collaborators in regards to labeling the axes. Instead, Jeong chose to let the spatial layout speak for itself (see **Figure 7** and **Figure 8**).

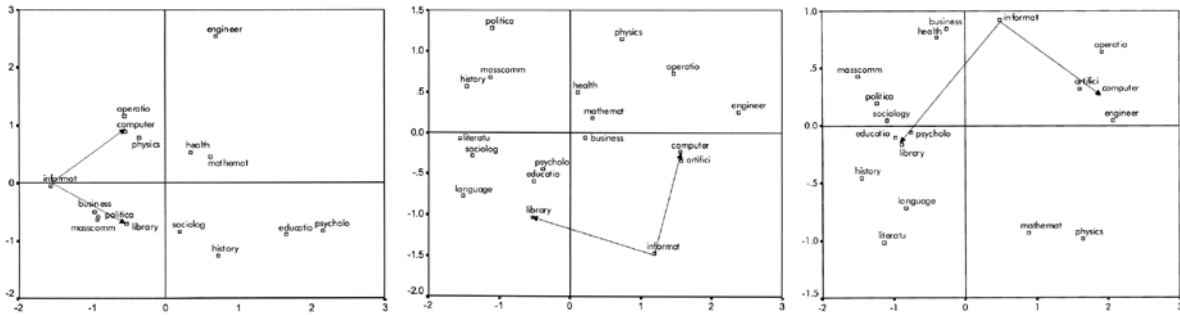


Figure 7: Intellectual Space of 18 Academic Disciplines Corresponding to the 1970's, 1980's, and 1990's, Respectively. Reproduced from (Jeong, 2001, pp. 316-317).

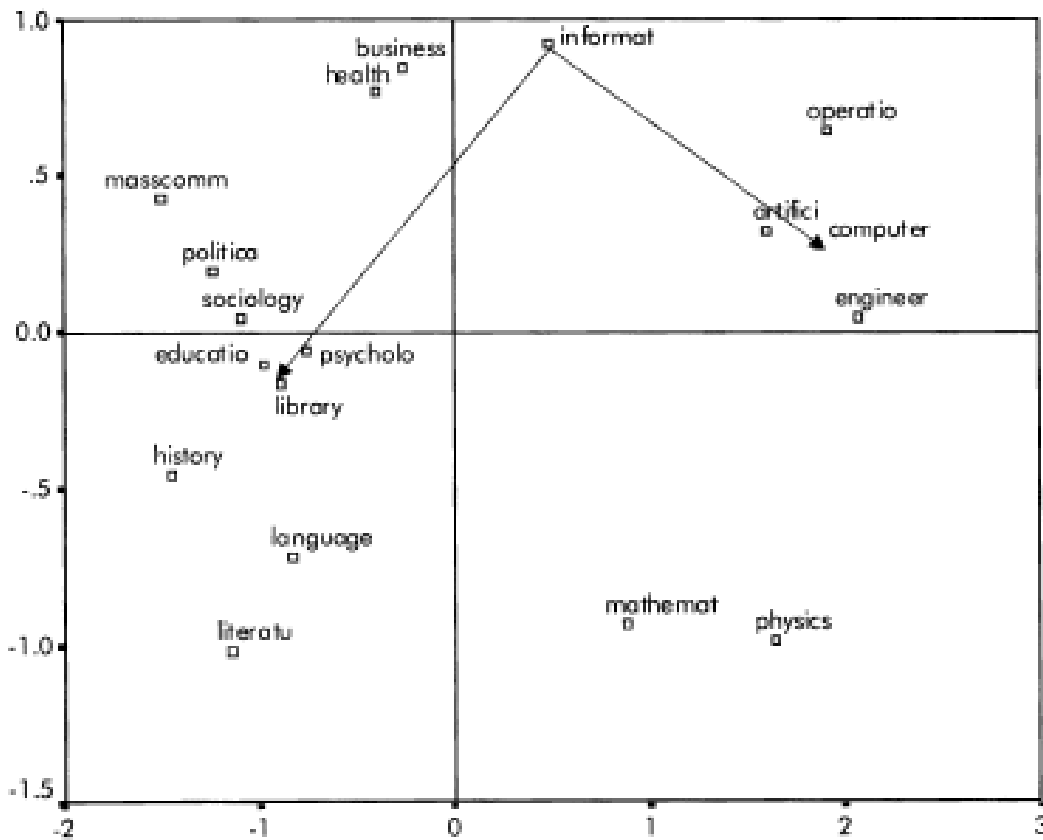


Figure 8: Enlargement: Intellectual Space of 18 Academic Disciplines Corresponding to the 1990's. Reproduced from (Jeong, 2001, p. 317)

2.1.3 Course Catalog Studies

There are also 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. While not spatial in nature, these studies are both longitudinal and deal with academic courses. For instance, Perlman and McCann examined 400 college catalogs to do an analysis of course offerings in undergraduate psychology curriculums (Perlman & McCann, 1999). 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 / non-vocational or applied / non-applied courses). Similarly, as part of his survey of doctoral education in Library and Information Science, Bobinski looked at the academic catalogs of twenty-one doctoral programs and analyzed their program requirements and course listings (Bobinski, 1986).

2.1.4 Studies Involving Law School Courses

There have also been several studies or essays about the law school curriculum over the years (Agnor, 1950; Gee & Jackson, 1975; Jackson & Gee, 1975; Powers, 1986, 1987; Reed, 1928). Collectively, these articles reveal changes over time and things about the law school curriculum that have remained the same. From the earliest study, law school courses are frequently associated with particular years in the traditional three year graduate curriculum. Courses are most frequently divided into two groups: (1) first year courses, and (2) second and third year courses. Reed (1928, p. 256) identified a core group of first year courses taught by almost all law schools: Contracts, Torts, Crimes, and Property. Sixty percent of schools also included Pleading and Agency in their first year program schedule. Reed also identified the "twenty-five standard components of the law school curriculum"² (1928, p. 254). Agnor (1950) surveyed the catalogs of 100 AALS law schools and reported the eighteen courses for which there was a clear consensus in terms of inclusion in catalogs. Agnor also reported the "average curriculum" broken down

² Agency, Bailments and Carriers, Bankruptcy, Bills and Notes, Conflicts, Constitutional Law, Contracts, Corporations (Private), Corporations (Public), Crimes, Damages, Domestic Relations, Equity, Evidence, Insurance, Mortgages, Partnership, Pleading, Property, Quasi-Contracts, Sales, Surtyship, Torts, Trusts, Wills and Administration.

by year (First Year³, Second Year⁴, and Third Year⁵). In a pamphlet length exploration of law school curriculums, Gee and Jackson (1975) performed a content analysis of the catalogs of 127 American Bar Association (ABA) approved law schools for 1974-75. They also reported typical curriculums for several different time periods: 1832-69 (Harvard Law School); 1879-80 (Harvard Law School); 1916-17 (Harvard Law School); 1925-26 (Reed, 1928); 1949-50 (Agnor, 1950); 1969-70 (the authors' own survey of 62 catalogs); and 1974-75 (the authors' own survey of 127 catalogs). Gee and Jackson reported that 12 courses were required by at least 25% of the surveyed schools.⁶ The first seven of these are the 'almost consensual' First Year curriculum (Gee & Jackson, 1975, pp. 14-15).

Reed (1928) identified two different types of law school curriculums: (1) proscribed, and (2) elective. In the former, the student's curriculum is set out and is not open to many electives. Reed strongly endorsed the elective curriculum type and speculated that the elective approach is better for a school's faculty in that it encourages them to "extend its own knowledge over widening areas of the law ... [and] contributes to the development of productive scholarship" (Reed, 1928, p. 232). Almost all first year curriculums discussed above are required courses (proscribed). The more interesting topical variance occurs in the context of elective courses. Gee and Jackson surveyed the elective courses offered by ABA approved law schools (1975). The authors grouped these electives into thirty-three categories⁷ and gave

³ FIRST YEAR (*all work required*): Agency (2 hours); Contracts (6 hours); Criminal Law (3 hours); Introduction (2 hours); Legal Bibliography (1 hour); Procedure (4 hours); Property (6 hours); and Torts (6 hours). First Year Total = 30 hours.

⁴ SECOND YEAR (*required courses*): Constitutional Law (4 hours); Corporations (4 hours); Equity (4 hours) and Evidence (4 hours). (*elective courses*): Titles or Conveyances (3 hours); Domestic Relations (2 hours); Sales (3 hours); and Bills and Notes (3 hours). Second Year Total = 27 hours.

⁵ THIRD YEAR (*all work elective*): Federal Taxation (4 hours); Security Transactions (3 hours); Insurance (2 hours); Future Interests (3 hours); Trusts (3 hours); Wills (3 hours); Other electives (5 to 10 hours). Third Year Total = 23 to 28 hours.

⁶ Specifically Required Courses (with percentages of the 127 surveyed schools requiring them): Contracts (100%); Torts (99.2%); Property (98.4%); Civil Procedure (92.1%); Criminal Law (90.5%); Legal Research and Writing (85%); Constitutional Law (82.7%); Legal Profession (53.5%); Legal Method/Process (45.7%); Evidence (40.9%); Business Organizations (29.9%); and Taxation (29.1%).

⁷ (1) Administrative and Constitutional Law, (2) Admiralty, (3) Applied Legal Education (includes externships and other courses with live client contact), (4) Basic Property Concepts, Real Estate and Finance, (5) Business and Non-Profit Institutions and Finance, (6) Commercial Law, Debtor-Creditor Rights and Remedies, (7) Civil Justice, Jurisdiction and Procedure, (8) Contractual Obligations, (9) Criminal Justice: Law, Process and Procedure, (10) Discrimination and the Law, (11) Evidence and Proof of Fact, (12) Estates, Trusts, and Future Interests, (13) Family Law, (14) Federal Practice and Procedure, (15) Interdisciplinary and Allied Skills (includes courses from other areas of study which are integrated with legal study), (16) International, Foreign and Comparative, (17) Juvenile Law and Process, (18) Labor-Management Relations, (19) Land Resources Policy and Planning, (20) Law and Social Issues, (21) Legal Profession, Ethics and Legal Education, (22) Legal Theory, Philosophy and History, (23) Legislation and Legislative Process, (24) Natural Resources and the Environment, (25) Patent, Copyright, and Trademark, (26) Professional Skills, Training and Functions (includes in-house simulation courses which do not

numerous statistics about each elective course. *See Appendix 1: Crosswalk Between Jackson and Gee and AALS Subjects.* The grouping of the thirty-three law school course categories are used in this dissertation as one of five external indicators of topical similarity between course-subjects. *See Section 3.5.3.*

Powers and the ABA's Office of the Consultant on Legal Education replicated Gee and Jackson's work ten years later (Powers, 1986). As to courses required by more than 25% of Law Schools, two courses dropped off the list in this latter study—Legal Method and Taxation. The biggest gain was the Legal Profession course (Professional Responsibility). This moved from being a required class in 53.5% of schools in 1974-75 to being required in 80.5% of schools in 1984-86 (Powers, 1986, pp. 12-13). The Powers study also analyzed elective offerings in the same thirty-three categories used by Gee and Jackson. The biggest increase in elective offerings were in the areas of Discrimination and the Law (69.5% increase), Patent, Copyright and Trademark (59.4% increase), and Juvenile Law and Process (57% increase). The biggest decline was in the area of Law and Social Issues (-32%) (Powers, 1986, pp. 26-27).

Gee and Jackson (1975) were also innovative in exploring the way that bar examination subjects also impact the law school curriculum. At the time of their study, 85-95% of the graduates from ABA-approved law schools took at least one state bar examination (Gee & Jackson, 1975, p. 33). The authors received information from 43 of the 51 jurisdictions solicited as to what subjects were tested on their bar examinations. The authors reported these subjects as well as their frequencies⁸ (Gee & Jackson, 1975, p. 37). Gee and Jackson noted that the additional bar examination courses, combined with the already

have live client contact), (27) Regulation of Business and Industry, (28) Remedies, (29) State and Local Government Law, Policy and Relations, (30) State Law, Practices, and Procedures, (31) Taxation, (32) Torts and Compensation for Injuries, and (33) Miscellaneous.

⁸ Subjects tested on bar examinations: (1) Criminal Law (100%), (2) Evidence (100%), (3) Torts (100%), (4) Real & Personal Property (97%), (5) Contracts (95%), (6) Business Organizations (90.7%), (7) U.C.C (90.7%), (8) State & Federal Procedure (90.7%), (9) Constitutional Law (88.4%), (10) Wills (88.4%), (11) Trusts & Estates (86%), (12) Equity (72.1%), (13) Ethics (67.4%), (14) Family Law (67.4%), (15) Conflict of Laws (55.8%), and (16) State and Federal Tax (51.1%). "Other Topics which occurred on bar examinations in more than one jurisdiction were: Administrative Law, Bankruptcy, Copyright, Labor Law, Mortgages, Oil and Gas Law, and Water Law" (Gee & Jackson, 1975, p. 37).

required law school courses, are in reality the true law school curriculum that most students should be taking.

Reed (1928) was one of the first to remark on the fissuring of legal subjects—the creation of new subjects from existing ones. He noted that this was true for ‘Wills and Administration’ and ‘Mortgages’ splintering off from ‘Property’ and ‘Bills and Notes (Negotiable Instruments),’ ‘Sales,’ ‘Insurance,’ and ‘Suretyship’ splintering off from ‘Contracts.’ Reed is also one of the first to identify law schools that pioneered individual legal subjects. He noted that Harvard Law School pioneered courses in ‘Restraint of Trade,’ ‘Labor Law’, and ‘Legal Liability’ (Reed, 1928, p. 254). Reed also identified ‘Moot’ or ‘Practice Court,’ ‘Legal Bibliography,’ and ‘Legal Ethics’ as three courses that do not fall into “any of the recognized branches of practitioners’ law” (Reed, 1928, p. 255). Reed noted that the latter two subjects were relatively new in 1928.

Reed (1928) identified several subjects that fall between the responsibility of college (undergraduate education) and law school. He called these “borderland subjects.” They are: “international law, comparative law, legal history, and legal philosophy or jurisprudence” (Reed, 1928, p. 224). As evidence by their long inclusion in the AALS course-subject canon, these are firmly considered law school subjects today (AALS, 2011). Reed also identified four subjects which he separated out as professional specialties: Admiralty, Patent Law, Mining Law, and Irrigation Law. Perhaps the most interesting statement made by Reed is his assertion that there is no logical plan to the law school curriculum: “The curriculum is not an organic whole, divided into parts. It is a mere aggregate or conglomerate of independently developed units” (Reed, 1928, p. 252). This work reveals that while course-subjects might have developed in an agglomerative fashion, there is a consistent structure to the law school curriculum as revealed by domain maps for the years 1931-32, 1972-73, and 2010-11.

2.2 Co-Occurrence Studies

There is a long history of utilizing the co-occurrence of specific events to conduct an analysis of a particular domain. The underlying assumption is that items that co-occur together are categorically or substantively more similar than those that do not. This includes co-voting, word co-occurrence, bibliometric coupling, co-authorship, co-citation, co-nomination, co-courses taken, co-classification, and co-membership. These developments have been surveyed in several places (Bar-Ilan, 2008; Börner, 2010). They are discussed below in chronological order of their initial discovery and use. However, to the best of the author's knowledge, there has not been a study that utilizes incidences of CSCO—the same professor teaching multiple, different courses-subjects during the same academic year. This is most likely due to the scarcity of data of this type.

2.2.1 Co-Voting (1941)

Co-voting analysis has been conducted for decades and has been surveyed by Hook (2007a, pp. 224-227). Co-voting analysis generally includes either: (1) judges voting together on judicial opinions, or (2) legislators voting together on proposed legislation.

2.2.1.1 Judicial Co-Voting

The genesis for voting alignment matrices (co-voting frequency tables) in the judicial context appears to be the work of C. Herman Pritchett (Pritchett, 1941, 1942, 1948, 1954). Also, beginning with the 1956 Term, the *Harvard Law Review* has annually published co-voting matrices for the nine justices of the United States Supreme Court (Harvard Law Review, 1957, 2010). Additional resources break down Supreme Court co-voting by specific issue areas (Epstein et al., 2007c; Riggs, 1988; Wilkins et al., 2005). Fifty-five years of United States Supreme Court co-voting data is freely available in *The Supreme Court Database* (Spaeth et al., 2012).

Early efforts to spatially visualize the relationship of the Justices to one another based on their co-voting behavior were discussed in (White, 2005). Perhaps the first was Pritchett's linear distribution of

the Justices (1941, p. 894). Thurston and Degan (1951) used factorial analysis to produce three dimensional vector-space representations of the Justices’ co-voting patterns in the 1943 and 1944 Terms (see **Figure 9**). Schubert also used factorial analysis to produce spatial distributions of the Justices (Schubert, 1962, 1963). Subsequently, many other scholars have also used co-voting data to produce spatial representations of the voting relationships amongst the Justices: hand-drawn diagrams of the influence relationships amongst the Justices (Spaeth & Altfeld, 1985); Markov chain Monte Carlo methods with a Bayesian measurement model (Epstein et al., 2003; Epstein et al., 2007a; Martin & Quinn, 2002, p. 797; Martin et al., 2005); statistical scaling techniques also involving the voting patterns of Courts of Appeal judges (Epstein et al., 2007b); network science and correspondence analysis (Johnson et al., 2005); vector models and singular value decomposition (Sirovich, 2003); and multidimensional scaling and network layout techniques (Hook, 2007a, 2014).

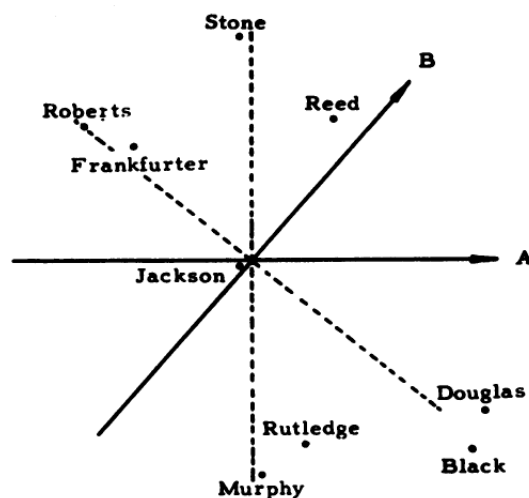


Figure 9: Three-Dimensional Vector-Space Representations of the Justices’ Co-Voting Patterns in the 1943 and 1944 Terms. Reproduced from (Thurstone & Degan, 1951, p. 630).

2.2.1.2 Legislative Co-Voting

Legislative votes are often referred to as ‘roll call’ votes. While seldom referred to as co-voting, this is indeed the phenomenon being analyzed—the incidences of legislators voting together on particular issues. Poole (2005) wrote a book-length treatment of spatial models for legislative co-voting. This type

of analysis is also being integrated into common statistical software programs (Poole et al., 2008). Other scholars have also used co-voting analysis to produce spatial representations of a particular group of legislators (Clinton et al., 2004; Clinton & Meirowitz, 2001; Jackman, 2001; Moody & Mucha, 2013; Poole & Rosenthal, 1991).

2.2.2 Word Co-Occurrence (Term Co-Occurrence) (1961)

Doyle, an information retrieval researcher, was perhaps the first to use word co-occurrence in a document set to produce a spatial representation of that document. In 1961, Doyle called for literatures to be presented with a ‘master framework’ or ‘semantic road map’ such that the documents they contained would be visible like items on a shelf in a supermarket (Doyle, 1961). In order to create such document maps, Doyle used the frequency of words in documents focusing on highly correlated word pairs appearing in 618 psychological abstracts (Doyle, 1962). The structure of the domain map was determined based on Pearson correlation coefficients. In the network map image, these coefficients are displayed along the edges. Dashed linkages indicate word pairings that co-occur less frequently than solid links. The arcs (arrows) point to the second word of commonly occurring two-word pairs (e.g. ‘stimulus response,’ ‘college students,’ ‘group therapy,’ etc.) (*see Figure 10*). Also, just like domain map creators today, Doyle had to determine a reasonable, co-occurrence threshold amount so the map would neither be too dense nor too sparse.

Since Doyle, numerous other domain mappers have used term co-occurrence to both study domains and to produce spatial representations of those domains (Callon et al., 1983; Callon et al., 1986; Jacobs, 2002; Leydesdorff & Hellsten, 2005; Noyons & Van Raan, 1994; Su & Lee, 2010). Furthermore, the use of the related concept of term frequencies has become a staple of the information retrieval community. The term frequency in a document relative to the inverse of the frequency of the term in an entire document collection (tf-idf (term frequency–inverse document frequency)) and other such term frequency

metrics are extensively used to optimize search engines—including co-term (term-term) frequency measures (Salton, 1968; Salton & Buckley, 1988).

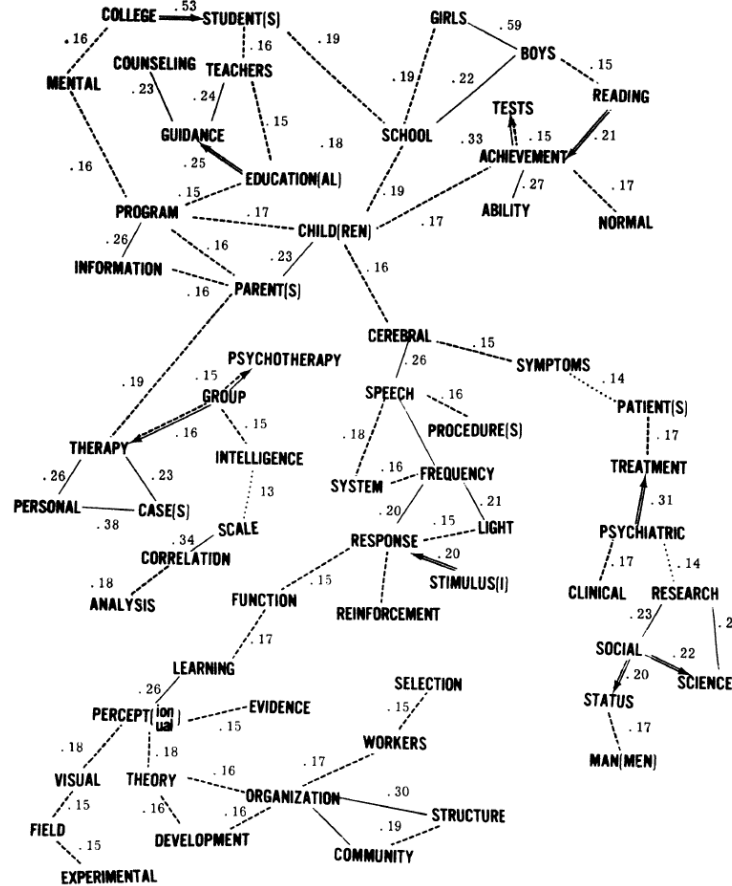


Figure 10: Doyle's Replicable Domain Map of the Field of Psychology. Reproduced from (L. B. Doyle, 1962, p. 382).

2.2.3 Bibliographic Coupling (Reference Co-Occurrence) (1963)

Bibliographic coupling is when two works each cite a common third work (Kessler, 1963)). Thus, it may be conceptualized as the co-occurrence of citing the same work. In 1968, Price and Schiminovich used bibliographic coupling to map a corpus of 240 articles on high energy physics (Price & Schiminovich, 1968). The authors produced simple domain maps in the form of network graphs. Papers with a higher percentage of common citations are portrayed as being linked together with thicker edges (*see* **Figure 11**).

Other researchers have also used bibliographic coupling to both study domains and to produce spatial representations of those domains (Glänzel & Czerwon, 1996; Jarneving, 2001; Vladutz & Cook, 1984). Furthermore, at least one group of researchers has concluded that bibliographic coupling outperforms other similarity techniques (co-citation, and direct citation) in terms of accuracy (Boyack & Klavans, 2010). However, this assertion is questioned in a more recent paper (Waltman & Van Eck, 2012).⁹

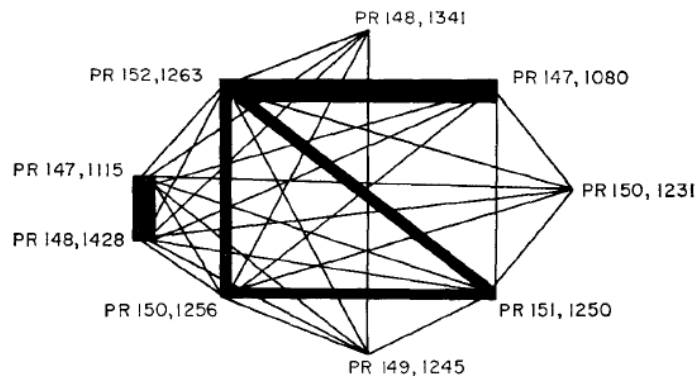


Figure 11: Bibliographic Coupling of High Energy Physics Papers (Symmetries and Mass Differences Cluster). Reproduced from (Price & Schiminovich, 1968, p. 278).

2.2.4 Co-Authoring (1966)

Co-Author linkages are another means to map a literature. This technique involves the instances of “two authors (or their institutions and countries) listed on one paper, patent, or grant[.] The more often two authors collaborate, the greater the weight of their joint coauthor link” (Börner, 2010, p. 55). Amongst the first to do extensive co-author analysis were De Solla Price and Beaver (1966). Since, numerous scholars have used co-author status to analyze and map domains (Edelman & George, 2007, 2008; Logan & Shaw, 1987; Peters & Van Raan, 1991; Stokes & Hartley, 1989) (*see* **Figure 12**).

⁹ “[R]ecently Nees and I had several discussions [with Boyack and Klavans on a paper that we have written (<http://dx.doi.org/10.1002/asi.22748>), and it seems that Boyack and Klavans have somewhat changed their opinion on the performance of bibliographic coupling relative to direct citations. It seems they agree with Nees and me that, given a sufficiently long period of analysis, direct citations may be preferable over bibliographic coupling. This is more or less what we claim in our paper.” Email correspondence with the author from Ludo Waltman.

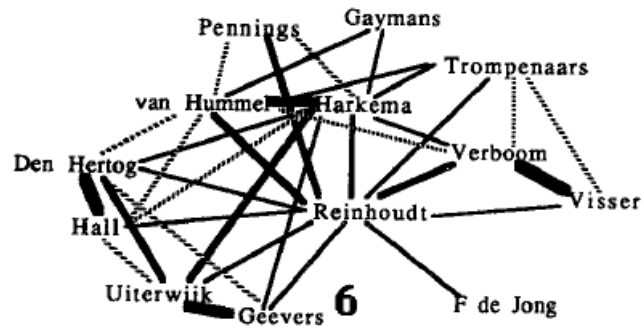


Figure 12: Co-Author Graph (Segment). Reproduced from (Peters & Van Raan, 1991, p. 248).

2.2.5 Co-Citation (1973)

The use of co-citation to map literatures was pioneered by Henry Small (1973) working in the United States (*see Figure 13*) and Irina Marshakova working independently in the Soviet Union (1973). There are several varieties of co-citation analysis (Börner, 2010, p. 55). Document co-citation analysis (DCA) is when two articles (documents) are both cited by a third article. Author co-citation Analysis (ACA) is when two authors are both cited by a common work. Thus, author co-citation analysis is slightly more generalized (expansive) than document co-citation analysis. ACA was pioneered by Howard White (White, 1981; White & Griffith, 1981). Co-citation in both of these forms has been used extensively to study and map domains (Braam et al., 1991a, 1991b; Marshakova, 1981; Small, 1999; White & McCain, 1998). Co-citation has also been conducted at the journal level (McCain, 1991).

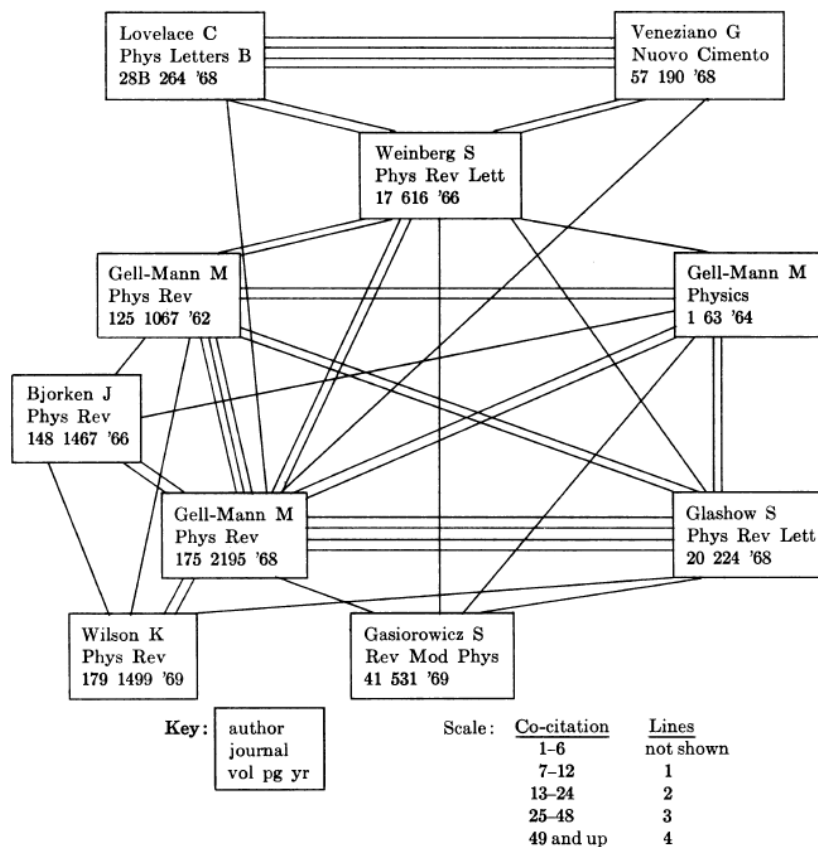


Figure 13: Document Co-Citation Network for Frequently Cited Papers in Particle Physics. Reproduced from (Small, 1973, p. 266).

2.2.6 Other Co-Occurrence Data

There are still more studies that rely on the incidence of co-occurring phenomena to assess the similarity of various entities and to distribute them spatially. Lenk (1983) produced a spatial, topical map of research scholars based on their being co-nominated by survey participants who were asked to identify researchers in their field that they most esteemed. Also, as discussed above, White and his collaborators used the co-occurrence of the same student taking multiple different elective courses in order to map the library and information science curriculum at Drexel University (White & Calhoun, 1984; White & Nolt, 1987). The incidence of the same classification terms being assigned to the same work have also been used to produce spatial maps of domains (Spasser, 1997; Todorov, 1989). In an earlier, theoretical work, McGrath speculated on the use of books co-checked out from libraries (by the same patrons) to map book

literatures (McGrath, 1984). Hook used co-classification of the West Topic and Key Numbers assigned to Supreme Court cases to produce a domain map of the topic space of the United States Supreme Court (2007b). Furthermore, McCain (1993) used the incidence of the same person belonging to multiple special interest groups (SIG's) to map the topical space of the American Society for Information Science. All of the co-occurrence examples referenced in this section lend support to the legitimacy of using CSCO to produced topical domain maps of law school course-subjects.

2.3 Map Production

The domain maps produced by this research have been created by and enhanced through several intermediate steps. These steps are normalization, ordination (spatialization), and clustering analysis. Accordingly, the literature associated with these techniques is surveyed below.

2.3.1 Normalization of Co-Occurrence Data

Normalization is a mathematical transformation of one's data in order to more fairly and accurately compare items that occur in varying frequencies. Van Eck and Waltman surveyed and organized the various normalization approaches (or similarity measures) used with co-occurrence data in the scientometrics community (2009). The authors identify two major categories of normalization techniques: (1) Direct Similarity Measures (cosine, inclusion index, Jaccard index, generalized similarity index, and association strength) and (2) Indirect Similarity Measures (Bhattacharyya distance, cosine [different from previous], Jensen-Shannon distance, Pearson correlation, and chi-squared distance). As to indirect similarity measures, Leydesdorff has stated that “[f]or purposes of visualization, the cosine is the preferred measure for the reasons given by Ahlgren et al. [(Ahlgren et al., 2003)]” (Leydesdorff, 2008). While having previously analyzed Indirect Similarity Measures (Van Eck & Waltman, 2008), the authors conclude that Direct Similarity Measures are “closer to the intuitive idea of similarity” as used for normalization by the scientometrics community (Van Eck & Waltman, 2009, p. 1645). The authors make this assertion because indirect similarity measures rely on the overall co-occurrence profiles of two items

being compared. Thus, items that have similar co-occurrence profiles but no direct co-occurrence will still be considered highly related. Indirect Similarity Measures have traditionally been used for author co-citation analysis (Van Eck & Waltman, 2009, p. 1635).

Direct Similarity Measures can further be broken down into two categories: (A) Set-Theoretic Similarity Measures (cosine, inclusion index, Jaccard index and generalized similarity index) and (B) Probabilistic Similarity Measures (association strength). Van Eck and Waltman demonstrate that Probabilistic Similarity Measures such as the association strength are better than Set-Theoretic Similarity Measures as the later “do not properly correct for size effects” (Van Eck & Waltman, 2009, p. 1648). The two authors also note that “[t]he cosine seems to be the most popular direct similarity measure in the field of scientometrics” (2009, p. 1638). Based on theoretical and empirical observations, Van Eck and Waltman concluded that the association strength normalization transformation is the best direct similarity measure. There have been additional discussions as to what properties good normalization measures should have (Egghe, 2010a, 2010b; Egghe & Leydesdorff, 2009).

There has been some discussion in the information science literature as to whether or not to normalize symmetrical co-occurrence (pairwise association) matrices. Leydesdorff and Vaughan argued symmetrical co-citation matrixes should not be normalized prior to the application of spatialization techniques such as MDS (Leydesdorff & Vaughan, 2006). This assertion was refuted by Waltman and Van Eck (2007) and in turn rebutted by Leydesdorff (2007). At least one group of scholars has found that raw, non-normalized values consistently underperform normalized values of a symmetrical co-occurrence matrix when spatialized (Boyack et al., 2005; Klavans & Boyack, 2006a).

2.3.2 Ordination/Spatialization Techniques

Once pair-wise similarity has been obtained in a co-occurrence matrix, an ordination or spatial layout must be performed to visualize the data. While there are many different techniques (Börner, 2010, p. 62; Börner et al., 2003; Wilkinson & Friendly, 2009), three specific approaches are commonly used in the production of domain maps. They are: multidimensional scaling (MDS); the VOS mapping technique

(visualization of similarities) and its corresponding software platform, VOSviewer (Van Eck & Waltman, 2010); and spring force layout algorithms.

2.3.2.1 MDS

MDS is a structural modeling technique that takes a multitude of pair-wise associations, conceptualized as a scaled unit of distance between the pairings of any two particular concepts, and reduces all such pairings to a finite number of dimensions (Kruskal & Wish, 1978). It is this dimensionality reduction that allows one to begin to understand the structure inherent in a summation of all of the pair-wise associations. The Multidimensional scaling (MDS) algorithm is freely available in the R statistical software package (R Project). Poole has remarked that the MDS process is analogous to taking the mileage matrix of miles between cities found on many highway maps and creating a spatial distribution of the cities from that matrix (Poole, 2005). *See also* (Leydesdorff, 2014).

MDS iteratively seeks to optimize a stress function and begins from an initial solution that is oftentimes chosen at random. This results in solutions that vary in appearance. However, the Proxscal version of MDS implemented in SPSS (IBM Corp., 2010) uses the simplex initial configuration and behaves deterministically unless another initial configuration is chosen. This means that repeated processing of the data will produce similar spatial distributions. However, the image might be inverted up or down or left to right. In other words, the layout is invariant except for rotation and mirroring. Deterministic spatializations using the same scaled axes are important for making numerical comparisons as to the movement of particular course subjects when comparing domain maps representing different time periods. Also with MDS, the axes of the distributed points can often be interpreted by such continuums as liberal to conservative or theoretical to pragmatic.

2.3.2.2 VOS

The VOS (visualization of similarities) mapping technique and its software platform, VOSviewer, is an alternative to MDS (Van Eck & Waltman, 2010). “The idea of the VOS mapping technique is to

minimize a weighted sum of the squared Euclidean distances between all pairs of items. The higher the similarity between two items, the higher the weight of their squared distance in the summation” (Van Eck & Waltman, 2010, p. 531). As to co-occurrence data, the creators of the VOS technique contend that it is superior to MDS because it avoids two common artifacts of MDS: (1) “the tendency to locate the most important items in the center of a map and less important items in the periphery;” and (2) “the tendency to locate items in a circular structure” (Van Eck et al., 2010, p. 2414). VOS purposefully produces results that are deterministic. “It is of course important that VOSviewer produces consistent results. The same co-occurrence matrix should therefore always yield the same map (ignoring differences caused by local optima)” (Van Eck & Waltman, 2010, p. 532). As with MDS, the VOS layout is invariant and in this case not even susceptible to rotation and mirroring unless commanded by the user.

2.3.2.3 Spring Force Algorithms

Spring force algorithms, also known as force directed placement algorithms, are particularly useful in visualizing network data. The algorithms work as if the aggregate pair-wise similarities in the data were forces, like rubber bands, pulling with different strengths on the various concepts. Spring Force layout algorithms are embedded in the Pajek network analysis software (Batagelj & Mrvar, 1998). Fruchterman-Reingold (1991) and Kamada-Kawai (1989) are used frequently. Depending on the implementation of the layout algorithms, the network visualizations are most often stochastic. This means that repeated processing of the data will produce different images. However, with complex node and link structures, the large-scale morphology will be more or less the same. But, the orientation may be different (left/right and up/down) and some nodes will be slightly different compared to each other. It is important to note that spring force algorithms (like MDS, VOS) can be run with predefined initial parameters to make them deterministic.

2.3.3 Cluster Analysis and the QAP Technique

Cluster analysis, or aggregation, is used to “identify data entities with common attribute values or dense connectivity patterns” (Börner, 2010, p. 50). It is a means of achieving insight through simplification. For a good review of the subject, *see* (Fortunato, 2010). Furthermore, cluster analysis facilitates cognitive chunking. Well-defined regions on a domain map allow a viewer to perform regional chunking and to develop hierarchical memory structures based on those regions (MacEachren, 2004, pp. 78-79, 107). This, in turn, facilitates image memory and the learnability of the domain map. Well-defined regions can be identified through cluster analysis. Two common cluster techniques used in the scientometrics literature are factor analysis and k-means clustering. Additionally, QAP analysis is a means of comparing two matrices of similarity data to obtain how similar the underlying networks are in terms of their structure. These techniques are discussed further below.

2.3.3.1 Factor Analysis

“Factor analysis is a complex algebraic method used to discover patterns among the variations in values of several variables. This is done essentially through the generation of artificial dimensions (*factors*) that correlate highly with several of the real variables and that are independent of one another” (Babbie, 2004, p. 455). Scientometricians have used factor analysis to identify clusters of topics in a domain (Leydesdorff et al., 2011; Leydesdorff & Rafols, 2009; Moya-Anegón et al., 2007). Usually, factor analysis is performed on normalized data. Exploratory factor analysis is when the amount of factors or principle components is not known ahead of time and a researcher is trying to determine the amount of factors present. “[T]he criterion for the optimization in the case of factor analysis is no longer to explain as much variance as possible in the data, but to find common factors in the set that explain the covariance between the variables” (Leydesdorff & Rafols, 2009, p. 352). Covariance in this sense means that two or more variables react in predictable ways when acted upon by an outside force.

2.3.3.2 K-Means

“K-means clustering consists of a greedy-algorithm which iteratively assigns items to a pre-determined number of clusters to optimize both inter-cluster distance and intra-cluster cohesion. It therefore belongs to a class of unsupervised clustering algorithms which includes Kohonen self-organizing maps [(Kohonen, 1995)] and automated probabilistic classifiers such as decision-tree learners [(Tufekci, 1993)]” (Bollen & Van de Sompel, 2006, pp. 233-234). The algorithm has a complex history that is well described in (Zitt et al., 2011, p. 23). K-means clustering has been used by scientometricians to identify clusters in a domain analysis (Bollen & Van de Sompel, 2006; Boyack et al., 2005; Gomez et al., 2009). It requires the number of resultant clusters, k , to be supplied ahead of time (Norusis, 2005) and can either be stochastic or deterministic dependent on its implementation. Frequently, k -means cluster analysis is performed over a range of predetermined cluster amounts (5, 10, 15, 20 etc.), and when stochastic, with multiple iterations for each cluster amount. Additionally, the cluster results are often validated against another source of group similarity that is frequently determined by human input.

2.3.3.3 QAP Analysis

The QAP (quadratic assignment problem) procedure (Lawler, 1963), also known as quadratic assignment procedure, “considers a set of objects to be assigned on a set of available locations, considering the flow between all of the objects, and the distances between all of the locations, aiming to minimize the overall flow cost” (Inostroza-Ponta et al., 2007, p. 157). While QAP analysis has been used to cluster items (Inostroza-Ponta et al., 2007), it is primarily used by the scientometrics community to ascertain the similarity of two or more networks based on their underlying similarity matrices (Ni et al., 2013; White et al., 2004). The implementation of the QAP algorithm most often used appears to be the one in UCINET (Borgatti et al., 2002). The network matrices being compared must be of equal size and completely square (same number of rows as columns). Also, the column and row headers should be organized (sorted) the same way. The procedure gives a correlation coefficient between two or more networks as to

the likelihood of a large value in one cell of the network matrix corresponding to a similarly sized number in the corresponding cell in the other network matrix. The procedure handles statistical significance by running numerous (e.g. 5000) permutations of the scrambled matrixes (rows and columns both permuted) in order to establish the frequency that a similar coefficient value happens by chance. If a similar or larger coefficient happens by chance below or at the standard 5% of all random permutations, the correlation coefficient is said to be statistically significant to the 95% confidence interval.

2.3.4 Studies that Compare Different Techniques

Studies that compare different map production techniques either in comparison with themselves or to an external standard (“statistical validation” (Boyack et al., 2005, p. 354)) are informative as to which normalization, ordination (spatialization), and clustering approaches should be used. Klavans and Boyack compared different normalization techniques for both intercitation and co-citation rates for 7121 journals at the journal level (2006a). The authors articulated a framework of criteria for choosing the input measures and normalization that consists of four components: (1) accuracy, (2) coverage, (3) scalability, and (4) robustness. Accuracy is further broken down into local accuracy and global accuracy. Local accuracy is a measure of how well individual items are indicated as being similar relative to some independent (external) source of similarity. Global accuracy is a measure of how well clusters of individual items relate to other clusters. Coverage is “the percentage of unique tokens that are identified for a specific threshold of relatedness” (2006a, p. 253). Scalability is how easily the normalization measure can be applied to large datasets. Robustness is a measure of how accurate the normalized data is after ordination. It also refers to how sensitive a solution is to noise. In other words, when random values are added to a certain percentage of the input data, what is the amount that the layout and cluster solutions are affected.

For their initial paper, Klavans and Boyack (2006a) only looked at local accuracy as opposed to global accuracy. The authors used rankings of the similarity values between any two journals for each normalization scheme, as opposed to the actual normalized values, to compare the different input

measures and normalization techniques. The authors used the rankings approach as it is not possible to directly compare the values from different normalization techniques as the values will vary greatly in magnitude between any two techniques while being consistent in magnitude within a particular technique.

Klavans and Boyack found that local accuracy actually increased after ordination for all of the normalization techniques. This may be a result of the fact that the authors did not use the full similarity matrix for ordination, but rather only the 15 highest ranking similarities for each journal. While intercitation data (not available to the author in the course-subject context) out performed co-citation data, the best normalized measures for each, at high coverage, were the cosine and K50 (a modified cosine technique). The same authors, with the addition of Börner, used the same data (7121 journals) and comparative standard (ISI journal category assignments) to assess the global accuracy (relationships between clusters) of their data (Boyack et al., 2005). The authors used a mutual information measure (z-score) from genomics research (Gibbons & Roth, 2002) to compare clusters of content for different normalization approaches after their ordination using VxOrd, with cluster information from ISI journal category assignments. K-means clustering at several different cluster sizes was used and the authors concluded that for co-citation data, the K50 normalization technique produced the best global accuracy with clusters that were balanced and not too tight (Boyack et al., 2005).

2.4 Validation

Domain maps should be validated (Börner, 2010, pp. 50-51) in order to verify their structural accuracy to the furthest extent possible. Validation has traditionally occurred in one of two ways: (1) examination by experts in the domain, and (2) consistency with extrinsic (from outside the data or technique) sources of structure of the domain (McCain, 1985). Ideally, it's best to use both methods as few experts, and in some cases no experts, have global knowledge of an entire, large domain. Additionally, there is both local and global accuracy (Klavans & Boyack, 2006a). Domain experts might be particularly good as to local accuracy for map regions that most closely match their subject expertise. As to legal academia with

only up to 104 controlled course-subjects, it is possible that some domain experts will have a sense of the global structure. However, it is still prudent to validate CSCO maps with extrinsic sources of structure that do not involve domain experts.

2.4.1 Validation by Experts

The long tradition of validating domain maps through the use of experts has been surveyed and summarized in an article by Klavans & Boyack (2006a). Katherine McCain was one of the first to thoroughly explore the topic in her doctoral dissertation (McCain, 1985). In order to validate her domain maps, McCain obtained the opinions of experts (“subjective similarity judgments”) by having them sort cards containing the names of scholars into piles based on similarity. She then converted these results into a similarity matrix and performed MDS and cluster analysis on the data. McCain concluded that the maps produced from the card sort analysis were sufficiently similar to the author co-citation analysis (ACA) maps she produced of the same domain so as to validate the ACA maps. She made this conclusion after a statistical technique called canonical correlation that compares the plotting of all of the points on the two maps to see if they are correlated to a high degree beyond random chance. In another example of using human expertise, Tijssen had fourteen subject experts create mental maps of the domain of neural-networks which he then connected together and proposed using to validate domain maps created from bibliometric data (1993). Skupin, Biberstine, and Börner, also used subject experts to validate and comment on a large scale map of the medical sciences (2013).

2.4.2 Validation by Extrinsic Sources of Data

The validation of domain maps through the use of extrinsic sources of data can take one of two forms: (1) empirical data not reliant on human judgment, and (2) extrinsic sources of structure that are also based on expert opinion (taxonomies, table of contents, essays on the structure of a domain, etc.).

2.4.2.1 Extrinsic Empirical Data

Klavans and Boyack used textual coherence to compare the accuracy of two maps of the same domain but produced using different methods (Klavans & Boyack, 2011). Using title and abstract data for papers in the domain, the authors applied word probability vector techniques to arrive at clustering and structural data independent of the citation-based methods used to spatially portray the domain. The authors cite other studies that use similar textual analyses to assess cluster quality: (Boyack & Klavans, 2010; Braam et al., 1991a; Glänzel & Czerwon, 1996; Janssens et al., 2006; Janssens et al., 2009; Jarneving, 2007). These are all examples of empirical, extrinsic validation techniques that do not rely on human categorization or organization.

2.4.2.2 Extrinsic Expert Opinions

Additionally, many domain maps have been validated based on a comparison with knowledge organization systems created by human judgment. For instance, Klavans and Boyack, used the disciplinary category assigned to journals by human indexers and abstracters to assess the accuracy of the spatial adjacencies of their domain maps (Boyack et al., 2005; Klavans & Boyack, 2006a, 2006b).

2.5 Indicia of Structure of Law School Courses

In addition to validating the course-subject co-occurrence maps by having domain experts do a card sort and interviewing them about the maps, the course-subject maps should be validated using extrinsic sources of structure. As full-text electronic versions of legal academic textbooks are not easily available for textual validation, this dissertation validated the maps from several extrinsic sources of structure that are products of human judgment. The first is the syndetic structure ('see also' statements) inherent in the AALS listings of teachers by subject. The second are the course-subjects that have either merged or diverged throughout the years as set out in the same AALS listings of teachers by subject. The third is Jackson and Gee's 1975 grouping of 33 larger categories of law school courses. *See Appendix 1: Crosswalk between Jackson & Gee Categories and AALS Subjects.* The fourth is the contemporary,

2011, super groupings of academic subjects from the *Current Index to Legal Periodicals*. See **Appendix 2: Organization of the Current Index to Legal Periodicals**.

In addition, Kennedy structurally described the law school curriculum (1983). Kennedy asserted that at the core of legal academia are doctrinal courses. See **Figure 14**. Doctrinal courses are the pillar of the common law and include contracts, property, and torts. These courses are also private law courses—legal matters between individuals and/or businesses that do not involve the government. It is around these doctrinal courses that all other courses are situated. These other courses include the following types: public law (involving the government), clinical, legal process, interdisciplinary, and policy-oriented. It will be interesting to see if the doctrinal courses, which are also first-year courses, are as central on the CSCO domain maps of legal academia as conceptualized by Kennedy.

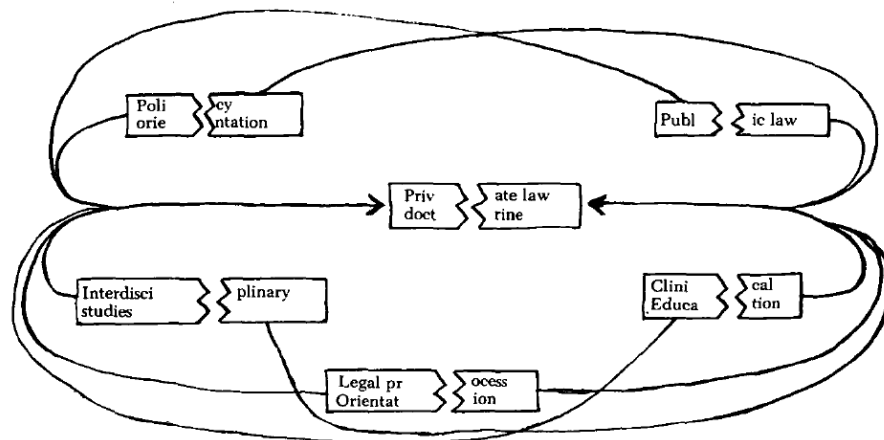


Figure 14: Kennedy’s Diagram of Legal Academia. Reproduced from (Kennedy, 1983, p. 12)

2.6 Use of AALS Course-Subjects by Legal Scholars

An additional source of validation of either the structural aspects or the metric analysis of the dissertation is claims made by scholars related to 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). Garvin compared the number of commercial law professors with those in criminal law (‘a stable field’) and intellectual property (‘a booming field’) over a forty year timespan

1965-66 to 2005-06. 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 that “[a]n aging field will tend to produce less scholarship and thus figure less in the minds of prospective law teachers” (Garvin, 2007, pp. 408-409). Additionally, Michigan law professor Layman 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).

2.7 Additional Claims about Law School Courses

Stadler made assertions about which legal subjects were waning in interest, and which were on the rise (2006). The author hand coded fifty-eight 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 non-student 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 non-student written articles, Stadler made judgments as to which subjects were popular and which were not. She couched her recommendations in the language of Wall Street and catered her recommendations for lawyers wishing to become law professors in terms of strong buys,¹⁰ weak buys,¹¹ weak sells,¹² and strong sells.¹³

2.8 Literature Review Summary

The research described above is the ‘prior art’ in terms of studies that perform spatial and longitudinal studies of disciplines. Their very existence lends support to the desire to see how the legal canon of

¹⁰ Strong Buys: bankruptcy, education, energy, family and gender, health, labor and employment, and tax law.

¹¹ Weak Buys: alternative dispute resolution, first amendment, intellectual property, international and comparative, international trade, ‘law ands,’ and media law.

¹² Weak Sells: civil procedure, evidence, contracts, corporations, criminal law and procedure, elections, legal history, property, and tort law.

¹³ Strong Sells: administrative, antitrust, commercial, constitutional, environmental, jurisprudence, admiralty, and trusts and estates.

course-subjects in the United States has developed over time. Furthermore, the use of CSCO data to produce domain maps for law school education is supported by the numerous and diverse uses of other co-occurrence studies to map and visualize domains. Also, this research has been performed with and informed and motivated by: the specific techniques used by previous scientometricians to create and validate domain maps; the data that exists to validate the legitimacy of CSCO maps in the context of law school education; and studies that make use of and evaluate changes in the law school curriculum.

3. Methods, Data, and Data Collection

This dissertation was completed in the following eleven steps. (1) Prior studies on the longitudinal analysis of disciplines were researched to inform the author's research questions and methods. (2) The author and student workers harvested course-subject data from the AALS directories and stored it in a relational database. (3) The author and student workers harvested "list[s] of teachers by subject" from AALS directories and stored them in the same relational database. (4) The author produced the co-occurrence matrix of CSCO events for the studied time slices: 1931-32, 1972-73, and 2010-11. (5) The author derived a 'gold-standard' of related course-subject pairs based on five external sources of course-subject topical similarity that included a card sort exercise with 18 experts in legal education. (6) The author normalized the co-occurrence data using three different techniques and evaluated which was most accurate when compared to the gold-standard. (7) The author used each of the three different sets of normalized and raw values and spatially rendered them using three different ordination techniques. (8) The spatialized results were compared to the gold-standard to ascertain which was most accurate. (9) The author employed two different clustering techniques and compared them to the card-sort similarity matrix. (10) The best clustering data as well as additional thematic data was overlaid on the most accurate map for map year 2010-11. (11) Domain maps for 1931-32 and 1972-73 were produced from the best normalization and ordination techniques as determined by the analysis of the 2010-11 data compared to the gold-standard. *See Figure 15* for a schematic representation of the different treatments applied to the different map making steps.

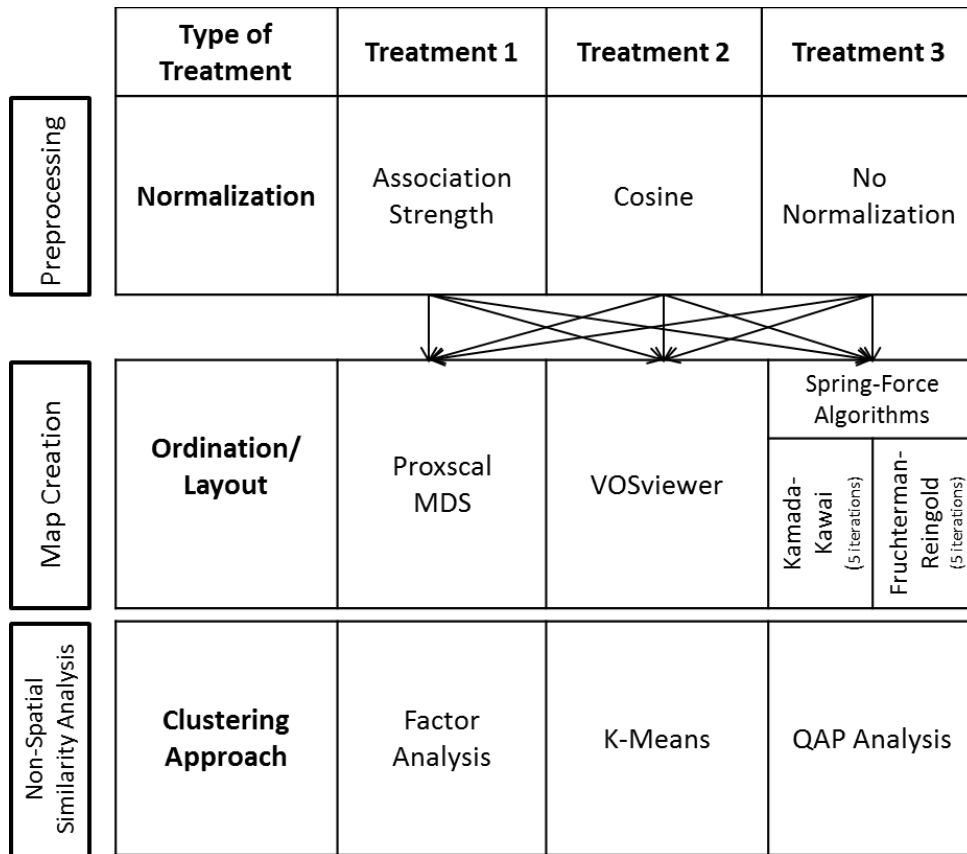


Figure 15: Different Treatments Applied to the Map Making Steps
 [Note: This Figure is the Same as **Figure 3.**]

3.1 AALS Data

The Association of American Law Schools (AALS) was founded in 1900 (AALS, 2013) and is the main learned society for law school professors in the United States. Its purpose is “the improvement of the legal profession through legal education” (AALS, 2010b). Presently, very few law schools in the United States are not members of the AALS. However, at its inception and by design, the AALS was much more exclusive. The early motivation for the creation of the AALS was to promote law schools that had full-time students and full-time faculty. The AALS actively lobbied against and excluded profitable, often proprietary, part-time law schools (and/or night schools) which the AALS regarded as having lower standards (Mazza, 1998; Stevens, 1983, pp. 96-103). In 1921, there were 142 law schools in the United

States (Reed, 1921, p. 443). However, in 1922, there were only 55 law schools that were members of the AALS (AALS, 1923).

Since 1922, the AALS has produced an annual directory of its members that contains biographical information about law professors, administrators, and librarians at each member school (AALS, 1923). *See Appendix 3: AALS Directories—Titles, Content, and Notes.* Each directory contains a list of faculty members by school for that particular year. Also, beginning in academic year 1931-32 (AALS, 1931), and appearing in most years thereafter, the AALS directories include lists of what subjects were taught by which faculty member. This information is contained in the lists of “Law Teachers by Subject.” *See Appendix 3.* Much of the information contained within the AALS Directories was manually harvested pursuant to a grant from the Law School Admission Council.

3.1.1 LSAC Grant

The Law School Admission Council (LSAC) is a nonprofit corporation founded in 1947 that administers the Law School Admission Test (LSAT) (LSAC, 2010a). The LSAC also awards grants to study legal education and the legal profession (LSAC, 2010b). In November 2006, the Law School Admission Council (‘LSAC’) funded a two-year grant on the longitudinal analysis of legal scholarship.¹⁴ Originally, and as funded, there were four co-principal investigators (PI’s)¹⁵ and two ‘other key personnel’¹⁶—including the author in the latter category. However, shortly after work started on the grant, the author was made a co-PI in light of the substantial contribution that he would make towards the project.¹⁷ The work that resulted from the grant produced an extensive infrastructure from which to conduct an analysis of the legal academy’s production, content, and consumption of scholarship.

¹⁴ The Production, Content, and Consumption of Legal Scholarship: A Longitudinal Analysis (\$159,511).

¹⁵ (1) William Henderson (Indiana University—Maurer School of Law), (2) Olufunmilayo Arewa (Northwestern University School of Law), (3) Kenneth G. Dau-Schmidt (Indiana University—Maurer School of Law, and (4) Andrew Morriss (University of Alabama School of Law).

¹⁶ Mark A. Newton (database consultant) and Peter A. Hook (librarian consultant).

¹⁷ This was accomplished via a phone conversation between Ann Gallagher of the LSAC and Bill Henderson and was subsequently memorialized in an email to Ann Gallagher dated March 6, 2007 10:14 A.M from Bill Henderson: “Peter Hook, who is currently listed as project consultant, will be added as a principal investigator. We are doing this because Peter’s knowledge of both library science and information systems are proving indispensable to several facets of the project. The change in his designation reflects his anticipated contribution.”

This infrastructure is in the form of a large-scale, relational database that incorporates information from the Association of American Law Schools ('AALS') annual directories of law teachers. The author worked extensively with the database consultant, Mark Newton, to both structure the database and to choose which data elements to harvest so as to yield the greatest benefit for subsequent bibliometric studies. As pertains to this data, all co-PI's have given their express consent for the author to exclusively investigate CSCO events to produce spatial representations of the topic space of law school course subjects for purposes of this doctoral dissertation.

3.1.2 Law Teacher Universe (1922 - 1989)

A threshold question for the LSAC grant analysis was who is/was in the American legal academy. In order to answer this question, the co-PI's oversaw the harvesting of data from the AALS directories of law teachers from their inception in 1922-23 until 1989-90. This component of the relational database infrastructure is referred to as the 'Law Teacher Universe.' The co-PI's hired up to seven student workers at a time to do manual, data-entry utilizing an intelligent database template and rigorous logistics to help manage the work flow. Over the course of a year and a half, the students harvested all of the data from the lists of "Law Teachers by School."

The resulting Law Teacher Universe includes the full names of over 37,000 professors, lecturers, librarians, and administrators. Aggregated from the values captured for each academic year, the Law Teacher Universe includes each instructor's employment history at an AALS law school. This employment information, along with occasional reliance on the full biographical information about an author, enabled the student workers to disambiguate the identities of individuals with similar first and last names. The PI's took extensive steps to insure that the Law Teacher Universe contains very few merged or duplicate records for individual law school teachers.

The data includes 179 schools located in the United States, twenty-two located in Canada (most appearing after 1975 with the inception of the separate 'Canadian Law Teachers by School' list in

academic year 1976-77 (AALS, 1976)), three located in Puerto Rico, and one located in the Philippines (during the time it was a territory of the United States). See **Appendix 4: Law School Information**. The data includes 8,318 ‘school faculty events’—all faculty members, by school, for a particular directory year. Furthermore, there were over 267,800 ‘affiliation events’—each faculty member’s affiliation by year. In other words, the co-PI’s captured year by year listings of every person’s academic affiliation as reported in the AALS directories.

After each directory year was inputted using the method described above, students validated the results. Comparing printouts (or screen views) from the database’s listing of faculty members by school for a particular directory year with photocopied pages from the AALS directories, the students made sure that the two lists were identical. The law schools included in the AALS Directories are not the complete universe of law schools in the United States. In fact, as the AALS became more established as an organization, more schools joined. The following chart gives the number of schools included in the AALS directories and the amount of ABA accredited law schools (still in existence during the present day) for a given year. After 1960-61, all, or close to all of the ABA accredited schools are included in the AALS directories. See **Table 1**. What is not known is the amount of law schools that were both not in the AALS directories and not accredited by the ABA for each time period.

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 & LSAC, 2010))
	Total	US	Canada	Other	
1923-24 (First year of ABA accreditation)	58	56	1	1	40
1930-31 (AALS, 1930)	68	66	1	1	73
1940-41 (AALS, 1940)	91	90	0	1	101
1950-51 (AALS, 1950)	107	105	0	2	117
1960-61 (AALS, 1960)	131	130	0	1	130
1970-71 (AALS, 1970)	147	145	0	2	147
1980-81 (AALS, 1981a)	192	168	21	3	168
1989-90 (AALS, 1989)	197	172	22	3	173
2010-11 (AALS, 2013)	198	196	0	2	198

Throughout the data harvesting process, the co-PI's were on guard against two types of mistakes: (1) conflating distinct individuals with the same name as the same person, and (2) creating multiple unique ID's for the same person. Mistake type 1 was combated by looking at the full biographical information when the facts were anomalous—person was teaching for a long period of time or concurrently in widely separated locations. A notebook was kept that detailed such problems until they could be corrected by one of the principal investigators or the database consultant.

Mistake type 2 was combated through an intensive effort by one of the student workers. The student sorted the list of faculty members in the database ('Law Teacher Universe') and identified all of the same, or near equivalent names (differing by one or two letters, or a near equivalent first or middle name—Albert Abel; Albert S. Abel; Albert Salisbury Abel; or Gary J. Abraham; Gerald Abraham). The student had in front of her affiliation data and dates for the potential duplicates. When necessary, she consulted additional biographical information about the people from the full biographical entries in the directories (law school and undergraduate institution attended, work history, publications, etc.). In those circumstances in which the student could be reasonably certain that the person was the same (by a 'preponderance of the evidence standard'), the unique ID's were merged into one and a paper trail was created documenting this process. This was an investment of several weeks of student worker time. However, as over seven hundred people with multiple ID's were detected and merged, this made the dataset significantly more accurate.

3.1.3 AALS Subjects Taught By Year

Another key item of information that the co-PI's captured was the course-subjects appearing in the list of "Law Teachers by Subject." Beginning in academic year 1931-32 (AALS, 1931) and appearing in most years thereafter the AALS directories include lists of all of the teachers that taught a particular course-

subject.¹⁸ These lists represent the ‘canon’ of law course-subjects for a particular year and changed remarkably over time. They reveal a great amount of information about the advent of new course-subjects and the merging, diverging, or removal of others. Furthermore, these are ‘controlled’ course-subjects. While controlled from the outset by unknown individuals, after some uncertain date, survey respondents chose from a preselected list (‘canon’) of course-subjects supplied by the AALS. The appearance of the survey instrument sent to each faculty member and first published in the directory itself in academic year 1968-69, reveals the instructions used to collect this data:

10. SUBJECTS TAUGHT: Include subject titles and code numbers appearing on the List of Subjects on the back page of the Instruction Sheet. Choose those which are the nearest equivalents to the actual titles of your courses. If your subject or a near equivalent does not appear in the List, you may include it if, and only if, it is an entirely new subject of general interest not heretofore in the curriculum of the schools. Indicate with “X” the subjects you will be teaching during the coming school year. After each subject, indicate “S” if a seminar and either “A” for those taught 1-5 years, “B” for those taught 6-10 years, or “C” for those taught over 10 years (e.g., Agency 040 C X, Torts 730 B X, Trusts and Estates 760 S A.) *You should be listed only under subjects (1) in which you are now teaching or (2) in which you are an experienced teacher and wish to continue to be recognized.* [Emphasis in the original.] (AALS, 1969b, p. 9).

It is assumed that prior to law faculty selecting from a controlled list of course-subjects, slightly diverging subjects were collected into controlled groupings by the producers of the list of “Law Teachers by Subject.”

3.1.3.1 Binning by Years Taught

Furthermore, in all lists of “Teachers by Subject,” the teachers are grouped into bins as to the length they have taught a particular subject: (1) “One to five years,” (2) “Six to ten years,” (3) or “Over ten years.”

¹⁸ More recently, some have asserted that faculty members are not entirely honest in reporting this data. (1) “[The] list of “Law Teachers by Subject” is more fiction than fact. The explanation has to do with intellectual curiosity, I think: When asked to list the subjects in which she has an interest, what scholar would not select as many subjects as she could? She might not be teaching courses or writing articles on those subjects now, but as a fictional Atlantan famously declared, “After all, tomorrow is another day” (Stadler, 2006, p. 41). (2) An Indiana University Maurer School of Law professor also told the author that faculty members had an incentive to say they are teaching a lot of subjects early. That way, they will reach the “over ten year” category faster and they will be more marketable when they go on the job market for a lateral transition. (3) Another Indiana University Maurer School of Law professor told the author that he claims that he teaches certain subjects when he does not because he wants publishers to send him free evaluation copies of casebooks for those subjects.

This additional information is helpful in making determinations as to the experience a particular instructor has in a subject area.

3.1.3.2 Harvested Data

Data as to course-subjects taught was harvested for five academic years by the student workers: 1931-32; 1941-42; 1949-50; 1961-62; and 1972-73. Additionally, the author harvested course-subjects data for 1932-33 as well as 2010-11. As to the 2010-11 data, this was not incorporated into the relational database but exists as a stand-alone database. Unfortunately, in the more recent years, there were widespread redundancies in the lists of teachers by subject that would have otherwise corrupted the count information. Teachers were frequently listed several times under the same time bin (one to five years, six to ten years, over ten years) and frequently in more than one time bin. For 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 for the map years of interest (1931-32, 1972-73, and 2010-11) are set out in **Table 2**. Data for the remaining years has not been cleaned for redundancies.

Table 2: Harvested Data for Teachers by Subject

	Academic Year	Directory Year ID	Number of Controlled Course-Subjects	Number of Faculty Members (List of Teachers by School)	Number of Faculty Members With Teachers by Subject Data	Number of Faculty / Subject Affiliations	Pairwise Co-Occurrences (Course-Coupling)
1	1931-32	10	58	884	725	2,674	5,869
2	1932-33	11	60	890	791	4,417	Unknown
3	1941-42	20	63	1,260	1,141	3,358	Unknown
4	1949-50	25	66	1,987	1,507	5,193	Unknown
5	1961-62	37	82	2,976	2,125	5,485	Unknown
6	1972-73	48	86	5,571	4,887	19,025	44,364
7	2010-11	96	104	?	9,970	36,216	61,856
						76,368	112,089

3.1.3.3 *Syndetic Structure*

Syndetic structure refers to “[c]ross-reference links between descriptors or headings in an indexing system” (Anderson & Pérez-Carballo, 2005) (e.g. ‘related to,’ ‘broader than,’ ‘narrow than,’ ‘use for,’ etc.). Syndetic structure appears in the controlled, AALS list of course-subjects taught as one of four types: (1) statements of inclusion, (2) ‘see’ statements, (3) ‘see also’ statements, and (4) ‘cross-referenced under’ statements. (The latter three manifestations have the same meaning.) Below are some examples of each:

Includes – “International Transactions (Includes Common Market, Foreign Patents, International Policies, International Taxation and Regional Organizations)” (AALS, 1963, p. 389).

See – “Titles (See Conveyances)” (AALS, 1938, p. 220).

See Also – “Suretyship (See also Securities)” (AALS, 1935, p. 180).

Cross-Referenced Under – “Financial Institutions (Cross-referenced under Regulated Industries)” (AALS, 2004, p. 1239).

All permutations of the course-subjects as they varied year by year, including the syndetic structure, have been captured in the AALS database. They reveal the growth and evolution of the academic field of law as conceptualized by the AALS survey instrument. The ‘includes’ statements are particularly helpful in determining which subjects were folded into later subjects. *See Appendix 5: Subjects in AALS Lists of Teachers by Subject and Appendix 6: AALS Subject Changes, Year by Year.* In fact, the ‘includes’ statements were the only method to conclusively track the particularly byzantine convergence of five topics into one (Estates and Trusts), *see Figure 25.* Most importantly, this knowledge allows for longitudinal comparisons by making sure that the course-subject bins appropriately account for the evolution of topics (mergers, divisions, and entirely new topics).

The most recent, completely new subjects added were ‘Disability Law’ and ‘National Security Law’ (AALS, 2009, pp. 1469-1470). The database captures whether the subjects are compound ‘C’ (have

‘includes’ statements), simple ‘S’ (no ‘includes’ statements), or involve cross-references ‘see also or ‘cross-referenced under’ without any ‘includes’ statement (“R”). Any topic that was ever a top level subject in its own right is labeled as a ‘Subject.’ Those topics which only appear as nested includes within a larger topic are labeled as ‘Includes.’

3.1.3.4 Uncontrolled Subjects

Uncontrolled subjects, those not governed by the pre-populated list provided to all survey recipients, appear in the classes taught portion of a faculty member’s full biography. This is most likely the place to look to detect the first appearance of a particular subject being taught.

3.2 Conversion of Two Mode Network to Single Mode Network

As harvested and stored in the database, the teacher/course-subject events were stored as a two mode, arc list. This consisted of teachers affiliated with (or pointing to) a single course-subject that they taught for a particular directory year. (Individual teachers could be listed multiple times for each of the different subjects that they taught during a directory year.) To be visualized, this two mode network had to be collapsed to a single mode network—counts of the incidence of course-subjects being taught together by the same teacher (CSCO). In other words, the teachers had to be removed from the network leaving only course-subjects and how often they were taught together. While there are several different ways to do this, as done in this dissertation, the first step was to utilize a database program (Microsoft Access) and a crosstab query to obtain a list of each faculty member and the one or more courses they taught for the given year on the same row of a table. Each course that an individual taught was in a different column. Next columns were manipulated in a spreadsheet (Microsoft Excel) to obtain all different pairings of the different course-subjects a person taught.

For those incidences of individuals teaching only one course-subject for a particular academic year, this resulted in no pairwise co-occurrences of course-subjects and these events were not reflected in the single mode network. If a person taught two course-subjects, this resulted in only one pairwise co-

occurrence. If a person taught three course-subjects, this resulted in three pairwise co-occurrences. If a person taught four course-subjects, this resulted in six pairwise occurrences, and so forth. The general formula for the number of pairwise occurrences for some number of items in a group consisting of x different items is: $(x * (x-1))/2$. Thus, if a person taught five different course-subjects in a given year this results in 10 pairwise co-occurrences $((5 * 4) / 2)$, or ten pairwise counts of two different course-subjects being taught together relative to one another. These are the desired CSCO counts. While producing such pairwise co-occurrences, the smaller of each of the two unique identifier numbers for each course was kept on the right of its pairing with a larger course-subject identifier number. This made it easy to query a database to obtain the counts of how often two course-subjects were taught by the same faculty member. This revised edge list consisting of all pairwise co-occurrences with counts was fed into the Sci² Tool (Sci2 Team, 2009) to obtain a co-occurrence matrix.

3.3 Map Generation

Scientometricians have articulated six steps for creating domain maps (Börner, 2010, p. 62; Börner et al., 2003). The following are these steps and their specific implementation in regards to this work. (1) Data Extraction. Data was harvested from the list of teachers by subject in the annual directories of the American Association of Law Schools (AALS). (2) Unit of Analysis. This is the course-subjects taught. (3) Measures. For this research, measures are the co-occurrence counts of the same course-subjects being taught by the same faculty member. (4) Similarity. For this research, similarity consists of a symmetrical co-occurrence matrix normalized by variants of the Association Strength technique, the Cosine technique, and non-normalized (raw) data. (5) Ordination. This step consists of three sub-parts, all applicable to this dissertation: (5a) Dimensionality Reduction—MDS, and the VOS mapping technique, (5b) Cluster Analysis—Factor Analysis, K-Means, and QAP Analysis, (5c) Force-Directed Placement—Kamada-Kawai and Fruchterman-Reingold. The final step is, (6) Display. Display includes analysis and

interpretation of the maps produced from the best interim techniques when evaluated against the ‘gold-standard.’

3.3.1 Normalization

As discussed in Section 2.3.1 there are numerous ways to normalize co-occurrence data and even disagreement as to whether co-occurrence data should be normalized prior to ordination. This dissertation employs three different normalization treatments: (1) Association Strength, (2) Cosine, and (3) no normalization (raw). Furthermore, as discussed by Van Eck and Waltman (2009, pp. 1636-1637) there are two significantly different ways to calculate the denominator for each method: (1) using the total number of occurrences and (2) using the total number of co-occurrences (column sums). These two variants lead to potentially different results and should be empirically compared and discussed. Additionally, Klavans and Boyack (2006a, p. 255) identify another set of variants applicable to each method—whether or not to include the matrix diagonal (the amount an item occurs in the dataset, or in other words, co-occurs with itself) in normalization calculations. Klavans and Boyack note that most scientometricians treat the diagonal as missing when calculating normalization values and the practice is followed in this dissertation. As applied to this dissertation, the various ways to normalize the data using the Association Strength and Cosine techniques are set out below.

3.3.1.1 Association Strength

3.3.1.1.1 Association Strength (Van Eck & Waltman, 2007)

Van Eck and Waltman employed the Association Strength normalization technique in a paper that used the co-occurrence of concepts from abstracts to map the computational intelligence field (2007). In that work, the “association strength a_{ij} for concepts i and j is defined as $a_{ij} = mc_{ij} / c_{ii}c_{jj}$ for $i \neq j$, where c_{ij} denotes the number of abstracts in which the concepts i and j both occur, c_{ii} denotes the number of abstracts in which concept i occurs, and m denotes the total number of abstracts” (Van Eck & Waltman,

2007, p. 630). As applied to CSCO data used herein, this 2007 version of the Association Strength normalization formula is:

$$\frac{(\text{total number of teachers per year}) \times (\text{co-occurrence counts between subjects a and b})}{(\text{count of people teaching subject a}) \times (\text{count of people teaching subject b})}$$

3.3.1.1.2 Association Strength (Van Eck & Waltman, 2009)

In their 2009 paper analyzing the properties of various normalization measures, Van Eck and Waltman define Association Strength more simply as one of two variations: (1) the total number of co-occurrences between objects *i and j* / ((total number of occurrences of object *i*) x (total number of occurrences of object *j*)) or (2) the total number of co-occurrences between objects *i and j* / ((total number of co-occurrences involving object *i*) x (total number of co-occurrences involving object *j*)). Variation (2) involves column summations of the co-occurrence matrix for each object *i and j* in the denominator. Van Eck and Waltman assert that “[b]oth [methods of calculating the denominator] are used in scientometric research ... but [variation 1] seems to be more popular” (2009, p. 1637). In fact, the authors use the first variation for all of the theoretical analyses in their paper. They also acknowledge the difference between the method used in their 2007 paper and their 2009 analysis. However, the differences are proportional and thus the two formulas are not significantly different. As to the two methods of calculating the denominator (applicable to most normalization methods and not just the Association Strength technique), this difference appears non-trivial and should be tested against an externally derived gold-standard for differences in results. As applied to CSCO data used herein, the two versions of the Association Strength normalization technique are as follows:

(1) Association Strength (2009): Total Occurrences Method

$$\frac{\text{(co-occurrence counts between course-subjects a and b)}}{\text{(count of people teaching course-subject a) x (count of people teaching course-subject b)}}$$

(2) Association Strength (2009): Column Totals Method

$$\frac{\text{(co-occurrence counts between course-subjects a and b)}}{\text{(total co-occurrences involving course-subject a) x (total co-occurrences involving course-subject b)}}$$

3.3.1.2 Cosine Normalization

Similarly, cosine normalization also has two variants (Van Eck & Waltman, 2009):

(1) Cosine Total Occurrences Method

$$\frac{\text{(co-occurrence counts between course-subjects a and b)}}{\sqrt{\text{(count of people teaching course-subject a) x (count of people teaching course-subject b)}}}$$

(2) Cosine Normalization: Column Totals Method

$$\frac{\text{(co-occurrence counts between course-subjects a and b)}}{\sqrt{\text{(total co-occurrences involving course-subject a) x (total cooccurrences involving course-subject b)}}}$$

It is worth noting that the cosine normalization formula used by (Boyack et al., 2005; Klavans & Boyack, 2006a) is the column totals method and not the total occurrences method used for the analysis in (Van Eck & Waltman, 2009).

3.3.1.3 Rank Order for Meaningful Comparisons

Similar to the analysis used in (Boyack et al., 2005; Klavans & Boyack, 2006a), a rankings analysis of all normalized co-occurrence values was used in this dissertation to assess the different normalization techniques and their denominator variants against a comparative ‘gold-standard’ (see Section 3.5). The rankings approach was used because it is not possible to directly compare the values from different normalization techniques as the values vary greatly in magnitude between any two techniques while being consistent in magnitude within a particular technique. For each normalization technique and variant, the values in the upper half of the normalized matrix were sorted by the highest normalized value and assigned a ranking (1,2,3 etc.). 5,356 $\left(\frac{(104 \times 104) - 104}{2}\right)$ pairwise co-occurrence values for the 2010-11 course-subjects were thus placed in rank order. The same values (ties) resulted in the same ranking number (1,2,3...1247, 1248, 1248, 1250, 1251, etc.). However, there were very few ties with the exception of the 1,467 course-subject pairs that were never taught by the same faculty member and had a normalized value of zero. The average of the rankings values for each of the pair of course-subjects identified as related by the ‘gold-standard’ were then used to evaluate the success or deficiencies of each normalization technique and their variants as pertains to the CSCO data used in this dissertation. Also, rank quintiles of how often each of the applicable course-subjects was taught by faculty members were used in order to evaluate how each normalization technique handled the vastly differing amounts that course-subjects were taught.

3.3.2 Ordination/Spatialization

After normalization, the next step in domain map creation is ordination/spatialization. This dissertation employs three different ordination/spatialization treatments: (1) MDS, (2) VOS, and (3) spring force algorithms. The goal is to convert measures of similarity into a two-dimensional spatial representation of the course-subjects that employs the distance-similarity metaphor. Each of the normalization treatments are used as inputs for each of the ordination/spatialization treatments. While producing two-dimensional

maps, each treatment also results in a matrix of distances between each of the course-subjects for a particular map year. As done with the normalization analysis, each of these distance matrixes is converted to an edge list with rankings of the distances—from closest (most similar, highest ranking) to furthest apart (least similar, lowest ranking). These rankings are then compared against the gold-standard to ascertain which of the ordination/spatialization techniques, with which of the different normalization treatments, produces the lowest average of the ranked values of the gold-standard pairs of similar course-subjects.

3.3.2.1 *Multidimensional Scaling (MDS)*

The version of MDS used in this dissertation is Proxscal (Commaneur & Heiser, 1993) as implemented in SPSS version 19 (IBM Corp., 2010). For replicability, the applicable decision points in the implementation of the software are set out in the following footnote.¹⁹ SPSS allows one to save out Viewer Files (.spv) that includes the “Final Coordinates” of each of the course-subjects in the common-space, Proxscal MDS solution. These x,y values were then correlated with the appropriate course-subjects for each of the 5,356 possible course-subject pairs (for map year 2010-11). Using this formula:

$$\sqrt{((X1 - X2)^2 + (Y1 - Y2)^2)}$$

¹⁹ **Data Format** window: “The data are proximities.” **Model** window: Proximity Transformations, “Interval.” Shape, “Full Matrix.” Proximities, “Similarities.” Dimensions, “Minimum: 2, Maximum: 2.” **Restrictions** window: “No restrictions.” **Options** window: Initial Configuration, “Simplex.” Iteration Criteria [defaults], Stress convergence, “.0001.” Minimum Stress, “.0001.” Maximum iterations: “100.” **Plots** window [all selectable]: “Common space,” “Original vs. transformed proximities,” and “Transformed proximities vs. distances.” Source plots, “All sources.” **Output** window: Display [all selectable]. Note: Interval transformation was chosen over ordinal transformation because the data was truly an interval measure—the interval distances between values are consistent and have meaning (Babbie, 2004, p. 135). This is consistent with the Proxscal help information on transformations: “TRANSFORMATION offers four different options for optimal transformation of the original proximities. The resulting values are called transformed proximities. The distances between the objects in the configuration should match these transformed proximities as closely as possible” http://pic.dhe.ibm.com/infocenter/spsstat/v20r0m0/index.jsp?topic=%2Fcom.ibm.spss.statistics.help%2Fsyn_proxscal_transformation.htm (visited May 9, 2014). Also: “If theoretical or empirical reasons speak for a certain scale level, then it usually makes sense to pick a corresponding MDS model. In practice, however, one often scales given proximities with both ordinal and interval MDS: Ordinal MDS normally leads to smaller Stress values, but it can also over-fit the data (rather than smoothing out noise in the distances) and, occasionally, it can lead to largely meaningless degenerate solutions (Borg et al., 2013, p. 39). This was consistent with a pretest of the data—interval transformation produced much more intuitively satisfying layouts than ordinal transformation.

distances were calculated for each of the 5,356 course-subject pairs. Rank values were given for each of these distances—1 to 5,356, with 1 being the closest and 5,356 being the furthest. The average of the ranking values was calculated for each of the 115 gold-standard pairs and this average was used to compare results amongst the five different normalization approaches when used as input for the MDS implementation for map year 2010-11.

3.3.2.2 VOS (*Visualization of Similarities*)

The version of VOS used in this dissertation was that implemented in VOSViewer version 1.5.4. For replicability, the applicable decision points in the implementation of the software are set out in the following footnote.²⁰ Once created, a map file (.txt) may be saved out of VOSViewer that contains x,y coordinates for each of the course-subject nodes. A similar analysis as that performed for the MDS distances was used to obtain the average ranking of the VOS distances of the gold-standard pairs for each of the five normalization input methods for map year 2010-11.

3.3.2.3 Spring Force Algorithms

The layout of the CSCO data using spring force algorithms was accomplished through the implementation of those algorithms in the network analysis software, Pajek (Batagelj & Mrvar, 1998), version Pajek64 3.14. The two algorithms used were: Fruchterman-Reingold (1991) and Kamada-Kawai (1989). The five input files (for all normalization variants, 2010-11) were the same Pajek formatted input files used for the VOSViewer analysis. For replicability, the applicable decision points in the implementation of the software are as follows. In the draw function, the “meaning of the lines” (edge weights) is “similarities” as the normalization procedures produced higher edge weights for the more

²⁰ Select: Create map from Pajek.net file. Select: Do not use original coordinates. Minimum total link strength of an item: leave at default of zero. On the Map Tab: Advanced Parameters: Normalization Method: No Normalization. Uncheck Ignore Self Links (although there are not any in the dataset). Random Number Generator (leave defaults). Mapping (leave defaults). Random Starts 1. Convergence 1E-8. Max Iterations 1000. Clustering (not applicable since not run). Run: Mapping Only. Action Tab: Options: Labels: Size .66. Size Variation: zero (all the way to the left). No Overlap (unchecked). Blurred background (unchecked). Gradual Appearance (unchecked). Optimized Screenshots (checked). Lines (leave defaults). Visualization: Item colors: (no item colors).

similar course-subjects. All ordinations using the spring force algorithms, both initially, and as export files were two-dimensional rather than three-dimensional. Kamada-Kawai Free was used instead of Kamada-Kawai Separate Components as the dataset did not have any separate, disconnected components. To obtain x,y coordinates, the rendered layouts were exported as SVG files (SVG General). As spring force algorithms are stochastic, five iterations were performed for each of the two types of spring force algorithms and each of the five different normalization variant input values, (2 x (5 x 5)) or 50 treatments total. Additionally, there are two methodological variants from which to ultimately compare the results of the spring force ordinations.

3.3.2.3.1 Spring Force Algorithm Method 1

In this method, for each of the normalization variants being tested ((1) Association Strength (2009) Total Occurrences, (2) Association Strength (2009) Column Totals, (3) Cosine Total Occurrences, (4) Cosine Column Totals, and (5) Non-Normalized), the results were fully calculated for each of the five iterations similar to the methodological technique used for the MDS and VOS results. In other words, x,y values were correlated with the appropriate course-subjects for each of the 5,356 possible course-subject pairs, distances were calculated, ranking values were assigned, and the average of the 115 gold-standard pair ranking values was determined. Afterwards, the five separate iteration results were averaged together to make comparisons between the different normalization approaches as rendered by the specific spring force algorithm. In other words, this is an average of averages approach.

3.3.2.3.2 Spring Force Algorithm Method 2

In this method, for the five different iterations, all five distances obtained for each of the 5,356 possible course-subject pairs were averaged. Then, the averaged distances were ranked (1 to 5,356), and the average of the 115 gold-standard pair ranking values was determined.

3.3.3 Clustering

Cluster analysis requires complex and numerous mathematical calculations and is almost always performed with the aid of statistical software programs. The specific methods, software, and decision points are set out below for each of the clustering techniques.

3.3.3.1 Factor Analysis

Based on the results of the normalization and ordination analysis, factor analysis was performed on the best performing normalized 2010-11 data. The matrix of course-subject co-occurrence data, normalized by the association strength (2009) total occurrences method, was analyzed using SPSS Version 21.0 (IBM Corp., 2012) to identify principle components, or factors, that aggregate the course-subjects into larger groupings.²¹ Comparisons were then made to the groupings identified by the eighteen human subjects (*see Section 3.6*), as well as a similar factor analysis performed on the matrix of course-subjects identified as similar by the human subjects. This later data did not have to be normalized as all 104 course-subjects were present for each card sort exercise and had the same opportunity to be identified as similar to each of the 103 other course-subjects.

3.3.3.2 K-Means

K-means clustering was performed using the algorithm implemented in SPSS Version 21.0 (IBM Corp., 2012). As K-means analysis is sensitive to the selection of each of its component variants, it is important to note the decision points made in the analysis.²² Once again, the CSCO cluster analysis results were

²¹ The specific inputs and decision points for the factor analysis performed on SPSS are as follows: **Descriptives** (leave defaults: Statistics, Initial solution checked; Correlation Matrix, nothing checked); **Extraction** (Analyze, leave Correlation Matrix checked; Display, uncheck unrotated factor solution, check Scree plot; Extract, Based on Eigenvalue, Eigenvalues greater than 1; Maximum Iterations for Convergence: 25); **Rotation** (Method, Varimax; Display, Rotated Solution; Maximum Iterations for Convergence: 300); **Scores** (leave everything unchecked); **Options** (Missing Values, Exclude cases listwise; Coefficient Display Format, Sorted by size, leave everything else unchecked. However, the analysis effectively used the threshold, Suppress Small Coefficients, absolute value below: .4—a common threshold when performing factor analysis.)

²² The specific inputs and decision points for the k-means analysis performed on SPSS are as follows: **Initial Screen** (Method, Iterate and classify; Cluster Centers, leave blank; Number of Clusters, [varies]); **Iterate** (Maximum Iterations, 100; Convergence Criterion, 0; Use running means, unchecked); **Save** (check Cluster membership; check

compared against the human subject card sort data to see differences in how the two datasets cluster. The clustering algorithm was run on both datasets at increasing numbers of predetermined cluster sizes (15, 20, and 25).

3.3.3.2 QAP Analysis

QAP analysis was used to compare the best performing CSCO normalized network (association strength (2009) total occurrences method) to the card sort matrix of expert determined related course-subjects. The implementation of the algorithm was that used by UCINET (Borgatti et al., 2002). Both matrixes were loaded into UCINET after selecting the following path: Tools -> Testing Hypotheses -> Dyadic (QAP) -> QAP Correlation (old). (Note: The new version of the QAP Correlation did not produce an observed Pearson correlation value. The MR (multiple regression) options were not appropriate as there were only two matrices being compared.) The amount of random permutations to test against for significance was changed from 2500 to 5000.

3.4 Human Subjects

This research involved human subjects in two different ways. First, a large amount of data about identifiable humans was harvested from the AALS Directories. This included the school affiliation of law school faculty members and the subjects they taught for the sampled years. As this information is publically available, it was determined to be not under the purview of the Internal Review Board. Second, this research involved human subjects answering questions about legal course-subjects and sorting index cards containing law school course-subjects into piles based on topical similarity. The eighteen human subjects were law professors, law librarians, and/or legal taxonomers. This part of the research study was classed as exempt after consideration by the Internal Review Board (IRB) at Indiana

Distance from cluster center); and **Options** (Statistics: check Initial cluster centers, check ANOVA table, check Cluster information for each case; Missing Values, Exclude cases listwise).

University—Bloomington (IRB Study Number: 1101004680). All related IRB documents are set out in the appendix.

3.4.1 Human Subject Demographics

The human subjects that participated in this study included eighteen experts in various aspects of law school education in the United States. Given the amount of time requested of the subjects (one to two hours) they were individually contacted by the author and asked to participate. In other words, all subjects were previously known to the author and had a sufficient affiliation with the author so as to give of their time uncompensated. Additionally, all willing subjects were accepted into the study. Subjects were chosen to represent a wide array of subject expertise (Constitutional Law, Criminal Justice, Evidence, Legal History, Legal Taxonomy, Regulatory Law, Taxation, etc.) and the author avoided duplication once a participant with particular subject expertise agreed to participate. Subjects were generally chosen from two, large, Midwestern, public law schools. Their demographic information is as follows:

- 18 subjects (11 males, 7 females)
- Position:
 - 10 law professors of various non-repeating specialties,
 - 4 academic law librarians,
 - 1 legal research and writing faculty member,
 - 1 history professor specializing in the history of law,
 - 1 clinical law professor,
 - 1 person in the legal publishing industry knowledgeable about legal taxonomy.
- Law Degree: 16 with law degrees, 2 without law degrees.

3.4.2 Card Sort

Individually, with the author present and at a location convenient to each subject, the subjects were handed a stack of 104 index cards. Each card contained the name of one course-subject from the list of “Law Teachers by Subject” from the AALS annual directory covering academic year 2010-11 (AALS, 2010a). The includes statements (“Includes Agency and Partnership; Corporations; Business Planning”) and cross references (“Cross-referenced under REGULATED INDUSTRIES”) were not contained on the index cards. The subjects were given the following instructions:

In front of you, in random order, are 104 index cards with the course subjects currently used in the American Association of Law Schools (AALS) annual directory’s listing of Teachers by Subject. Please place them in as many groupings and sub-groupings as appropriate based on their topical similarity. Once the cards are in groupings and sub-groupings, please label the groupings and sub-groupings with the yellow sticky notes and a descriptor word or words for each grouping and subgrouping. Finally, please arrange the groupings and sub groupings spatially on the table based on the topical similarity of the groupings. Upon completion of the sorting and labeling, I will ask you a few questions about the process and the topical relatedness of the groupings.

The card sorting exercise and some interview questions asked by the author took the human subjects a range of 35 minutes to 106 minutes to complete. The average was 68 minutes. Subjects were not instructed as to how many levels in their hierarchy of nested categories to include. Without prompting, this resulted in the following distribution:

- 4 subjects: 1 level (no category containing sub-categories)
- 11 subjects: 2 levels
- 1 subject: 3 levels
- 2 subjects: 4 levels

For reasons of expediency and simplicity, only relationships in the first level of categorization were considered. This resulted in 4690 pairwise co-occurrences of course-subjects that the eighteen human subjects found to be topically related (includes duplicates). While all subjects were instructed to group

the course-subject cards based on their topical similarity with one another, not every human expert did this entirely based on factual or subject matter similarity of the course-subjects. Other conceptual similarities could also have been captured. One human expert commented that in addition to topical similarity, there was procedural similarity (same type of procedures or methods used), as well as source of law similarity (derived primarily from statutes, administrative regulations, or cases).

3.5 Indicators of Topical Similarity

This dissertation spatially distributes law school course-subjects based on their topical similarity as deduced from course-subjects taught by the same faculty member. The interim steps used to produce the course-subject maps, as well as the final validation of the maps, were guided and evaluated by indicators of topical similarity of law school course-subjects contained in several sources. These sources are: (1) the syndetic structure (cross-references) contained in the AALS directories (AALS, 1931, 2011); (2) the mergence and divergence of AALS course subjects over time; (3) the Jackson and Gee categories of law school courses (1975); (4) the topic categories of the *Current Index to Legal Periodicals* (CILP) (Gallagher Law Library—University of Washington, 2011); and (5) the results of a card sorting exercise performed by experts in legal education. A summary of the resultant edge counts (pairwise co-occurrences) from these different similarity indicators are set out in **Table 3** and explained subsequently. The best of the course-subject pairwise co-occurrences, as obtained through the analysis described below, became the ‘gold-standard’ from which to evaluate all course-subject maps and the interim steps used in their creation.

Table 3: Summary of 5 Different Indicators of Course-Subject Similarity

Map Year	Number of AALS Course-Subjects	Source 1				Source 2		Source 3		Source 4		Source 5		Total Unique Edges (Pair-wise Co-Occurrence) (Aggregate of 5 Different Sources)	Amount of Unique Course-Subjects Included in Total Unique Pair-wise Co-Occurrence	Percentage of AALS Course-Subjects Included in Total Unique Pair-wise Co-Occurrence
		Syndetic Structure				Mergence & Divergence		Jackson & Gee		CILP		Card Sort				
		Bidirectional Edges	Unidirectional Edges	Total Edges	% of AALS Course-Subjects Included	Bidirectional Edges	% of AALS Course-Subjects Included	Bidirectional Edges	% of AALS Course-Subjects Included	Bidirectional Edges	% of AALS Course-Subjects Included	Bidirectional Edges	% of AALS Course-Subjects Included			
1931-32	58	7	3	10	26%	26	47%	52	74%	40	45%	42	67%	108	56	97%
1972-73	86	18	9	27	38%	30	38%	104	84%	83	42%	84	66%	222	84	98%
2010-11	104	20	9	29	35%	40	39%	147	79%	122	45%	149	81%	321	103	99%

3.5.1 Syndetic Structure of AALS Course Subjects

Included in the AALS lists of “Teachers by Subject,” the source of the course-subject data, are cross-references (or see also references) between some of the course-subjects. Cross-referenced course-subjects are one indication that the course-subjects are topically similar. The cross-references are not always symmetrical. For instance, academic year 1931-32 contains the following two course-subjects: (1) “REAL PROPERTY (See also Future Interests)” and (2) “FUTURE INTERESTS” (AALS, 1931). This asymmetrical cross-reference is a unidirectional edge, or arc, pointing from the node ‘Real Property’ to ‘Future Interests.’ The amount of cross-references applicable for each of the mapped years is given in **Table 4** and **Table 5**. It should be noted that cross-references or includes statements were not used (given) for academic years 1947-48 to 1969-70.

Table 4: Syndetic Structure Data Summary

Purpose Created:	To assist people with finding similar course-subjects when using the AALS directories and their lists of “Law Teachers by Subject.”
Date Created:	Lists of “Teachers by Subject” (course-subject lists) with cross-references and ‘includes statements’ were first created in 1931-32 and updated (changed) 45 times between 1931-32 and 2011-12.
Last Updated:	2011-12
Structure:	Graph
Number of Categories:	No greater groupings of AALS course-subjects are given. The amount of cross-references changes from year to year.
1931-32 AALS Course-Subject Pairwise Co-Occurrence Implications:	10 Total Edges (7 Bi-Directional Edges, 3 Unidirectional Edges (Arcs))
	15 out of 58 AALS Course-Subjects Included (26%)
1972-72 AALS Course-Subject Pairwise Co-Occurrence Implications:	27 Total Edges (18 Bi-Directional Edges, 9 Unidirectional Edges (Arcs))
	33 out of 86 AALS Course-Subjects Included (38%)
2010-11 AALS Course-Subject Pairwise Co-Occurrence Implications:	29 Total Edges (20 Bi-Directional Edges, 9 Unidirectional Edges (Arcs))
	36 out of 104 AALS Course-Subjects Included (35%)

Cross-references in subsequent, or earlier years, may also be an indicator of topical similarity for each of the mapped years evaluated. **Figure 16** represents all of the cross-references contained in the AALS lists of “Teachers by Subject” from 1931-32 to 2011-12—all 45 iterations of changes in the listing of course subjects over that same time period. They are portrayed as a node-link diagram with the 60 nodes being course-subjects using the earliest instantiation of the course-subject name and arcs representing the cross-references. **Table 5** includes the total count of cross-references for both the actual map year, and all additional cross references that may be used as indicators of similarity when taking into account relevant cross-reference relationships that arose in previous or subsequent years to the mapped academic years. This substantially increases the number of relevant edges.

Table 5: Amount of Cross-References for Mapped Years

Academic Year		Total Number of Course-Subjects	Cross-References			
			Total Cross-References	Bidirectional Edges	Unidirectional Edges	Total Edges
1931-32	just map year	58	8	3	2	5
	all applicable	58	17	7	3	10
1972-73	just map year	86	9	3	3	6
	all applicable	86	45	18	9	27
010-11	just map year	104	37	18	1	19
	all applicable	104	49	20	9	29

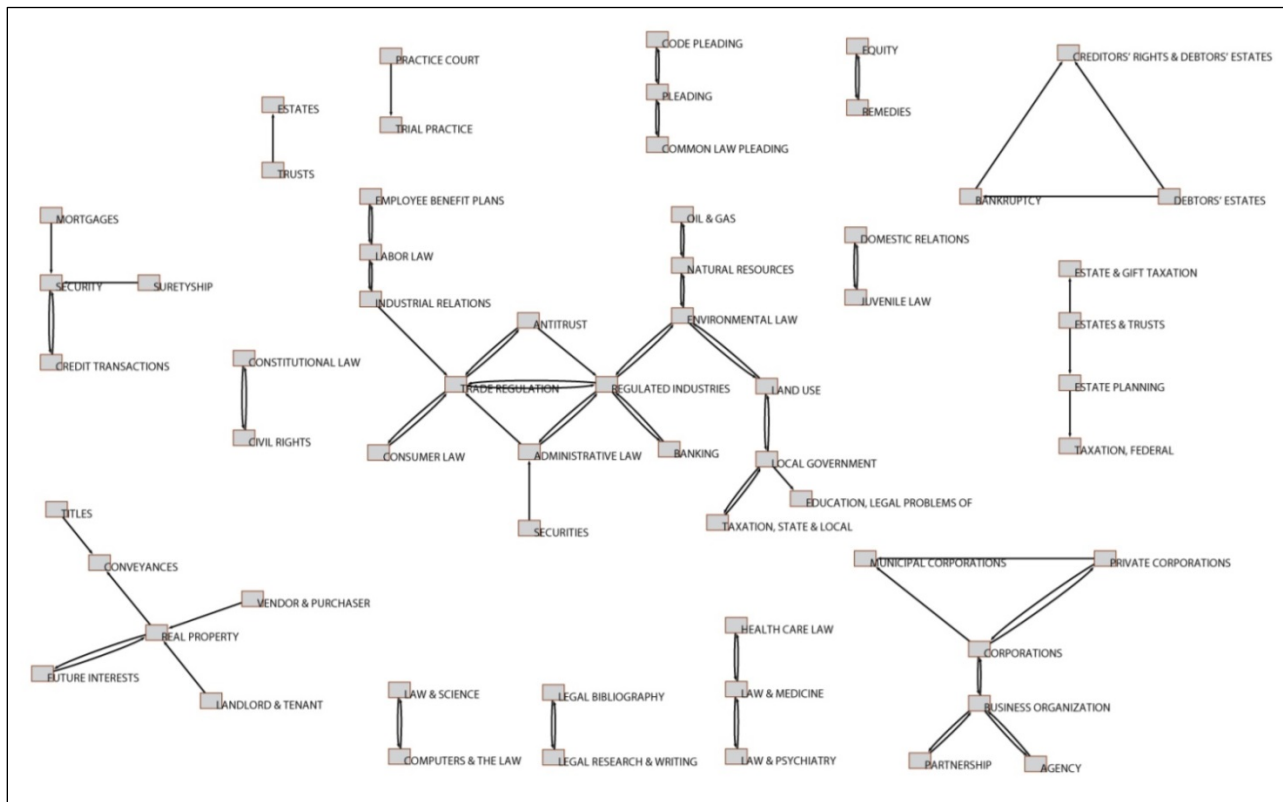


Figure 16: All Cross-References Rendered as a Node-Link Diagram

3.5.1.1 1931-32

Appendix 8 includes all of the cross-references that are applicable to map year 1931-32, even though some of them first occurred after 1931-32. The table also states how soon after map year 1931-32 a cross-referenced relationship arose as well as the total count of the amount of directory years the cross-referenced relationship persisted. The column ‘Strength of Indicator of Similarity’ is derived from the

count of the number of directory years a cross-reference link existed. ‘Weak’ is assigned for those cross-references that existed for only one or two directory years. “Mid” is assigned for those cross-references (or corollaries of the cross-references for those asymmetrical cross-references) that persisted for three to nine years. ‘Strong’ is assigned for cross-references (or corollaries of the cross-references for those asymmetrical cross-references) that persisted for ten or more years.

While it may be valid to privilege the eight cross-references that occurred in the mapped year itself, 1931-32, it is important to note that this was the very first year that the AALS directories included lists of teachers by subject. Thus, the nascent taxonomy was subject to immediate changes. Several of the cross-reference relationships only persisted for that initial year. However, cross-references that began occurring after the 1931-32 year often persisted for numerous years and should be considered as indicators of similarity between the 1931-32 course-subjects. One cross-reference relationship, that between ‘administrative law’ and ‘trade regulation’ did not arise until 39 years after academic year 1931-32. However, it persisted for 35 directory years and may be seen as some indication of similarity between the two 1931-32 course subjects.

3.5.1.1 1972-73

Appendix 9 includes all of the cross-references that are applicable for map year 1972-72, even though some of them first occurred either before or after 1972-73. Furthermore, course-subjects are given with two names: (1) the name first used, and (2) the name used during academic year (1972-73). **Appendix 9** also includes cross-references that were subsumed, in part, by another course-subject. For instance, there is some indication of relatedness between Negotiable Instruments and Regulated Industrial and Other Activities in 1972-73 as a cross-reference between Banking and Regulated Industries began in academic year 1987-88 and persisted for 24 years (until the present). Furthermore, in 1972-73, Banking was part of Negotiable Instruments (“NEGOTIABLE INSTRUMENTS Includes Banking, Bills and Notes and Commercial Paper”) (AALS, 1972, p. 766). Thus, there is some relatedness between “Negotiable Instruments” and “Regulated Industrial and Other Activities.”

3.5.1.1 2010-11

Employing the same criteria for inclusion as the two previous map years, **Appendix 10** includes all applicable cross-references for map year 2010-11.

3.5.2 Mergence and Divergence of AALS Course Subjects

Changes in the canon of AALS course-subject lists may also be indicators of topical similarity. For instance, when two course-subjects are merged into one, this may be taken as an indicator that they are related. For map years covering the time when the course-subjects are still separate, the subsequently merged course-subjects should be spatially proximate on the map. Similarly, two course-subjects that diverge from a common course-subject may also be considered similar. For map years in which there are two course-subjects that formerly used to be one, these course-subjects should be spatially proximate. At the outset of the AALS course-subject canon in 1931-32, there were 58 course-subjects. Only seventeen were neither merged, or diverged, or considerably changed in scope from 1931-32 to 2011-12. *See Table 7.* Only six course-subjects ended with the exact same name as which the course-subject began. Only two course-subjects (“Conflict of Laws” and “Contracts”) used that exact same name throughout the dataset. (These seventeen unchanged topics do not provide any indicia of similarity deduced from mergence or divergence.)

Table 6: Merge and Divergence Data Summary

Purpose Created:	Not explicitly created. This category is drawn from well supported inferences made by the author based on include statements, the changes in the names of the AALS course-subjects over time, and the timing of those name changes.
Date Created:	Not Applicable
Last Updated:	Not Applicable
Structure:	Graph
Number of Categories:	Not Applicable
1931-32 AALS Course-Subject Pairwise Co-Occurrence Implications:	26 Bi-Directional Edges
	27 out of 58 AALS Course-Subjects Included (47%)
1972-72 AALS Course-Subject Pairwise Co-Occurrence Implications:	30 Bi-Directional Edges
	33 out of 86 AALS Course-Subjects Included (38%)
2010-11 AALS Course-Subject Pairwise Co-Occurrence Implications:	40 Bi-Directional Edges
	41 out of 104 AALS Course-Subjects Included (39%)

Table 7: Course Subjects not Significantly Changed 1931-32 to 2011-12

Unchanged Serial Number	1931-32 Course-Subject ID	Course-Subject Name 1931-32	2011-12 Course-Subject ID	Course-Subject Name 2011-12	Ended with the Exact Same Name as Beginning	Kept the Exact Same Name Throughout
1	1	Administrative Law	415	Administrative Law	No	No
2	2	Admiralty	171	Admiralty	No	No
3	4	Air Law	364	Aviation and Space Law	No	No
4	6	Bills and Notes	369	Commercial Paper	No	No
5	11	Conflict of Laws	11	Conflict of Laws	Yes	Yes
6	13	Contracts	13	Contracts	Yes	Yes
7	23	Evidence	23	Evidence	Yes	No
8	20	Domestic Relations	433	Family Law	No	No
9	24	Federal Jurisdiction and Procedure	378	Federal Courts	No	No
10	42	Patent Law	380	Intellectual Property	No	No
11	29	Introduction to Law	29	Introduction to Law	Yes	No
12	39	Office Practice	450	Law Office Management	No	No
13	34	Legal History	34	Legal History	Yes	No
14	35	Legislation	35	Legislation	Yes	No
15	38	Municipal Corporations	452	Local Government	No	No
16	40	Oil and Gas	455	Oil and Gas	No	No
17	33	Legal Ethics	457	Professional Responsibility	No	No

As 1931-32 is the first year in which a list of faculty members by subject appears in the AALS directories, only subsequently merged course-subjects provide indicia of similarity for map year 1931-32. These 26 bi-directional edges, or 52 uni-directional arcs, are set out in **Appendix 11**. For map year 1972-73, course-subjects that were formerly joined and subsequently diverged (divergence) as well as course-subjects that were subsequently merged (mergence) provide indicia of topical similarity. These 30 bi-directional edges, or 60 uni-directional arcs, are set out in **Appendix 12**. For map year 2010-11, there was no applicable mergence that occurred in the one remaining academic year of the dissertation dataset (2011-12). Thus, all indicia of similarity are derived from formerly joined and subsequently diverged (divergence) course-subjects. These 40 bi-directional edges, or 80 uni-directional arcs, are set out in **Appendix 13**.

3.5.3 Jackson and Gee

Jackson and Gee published a report on the type and frequency of electives offered at law schools in the United States (1975). They analyzed law school courses by placing them in 33 categories. Their Appendix II lists the courses included in each of the categories and these allow one to construct a crosswalk to the AALS course-subjects. **Appendix 1: Crosswalk between Jackson & Gee Categories and AALS Subjects**, maps the Jackson and Gee categories onto the AALS course-subjects in use in 1975-76. Inclusion in the same Jackson and Gee category is evidence of topical similarity between the course-subjects. The resultant pairwise co-occurrences of AALS course-subjects by inclusion in the same Jackson and Gee category are set out in **Appendix 14**, **Appendix 15**, and **Appendix 16** for each applicable map year. The analysis excludes those courses listed in Jackson and Gee's "Miscellaneous" category. This catchall does not provide evidence of topical similarity, but rather an inability to decisively include the course in one of the other thirty-two categories.

Table 8: Jackson and Gee Data Summary

Purpose Created:	Study of law school courses in the United States. To put law school courses into a “manageable number of course content categories” (Jackson & Gee, 1975, p. 4).
Date Created:	1975
Last Updated:	Not Updated (Snapshot in Time)
Structure:	Tree (shallow—categories are not binned into super-categories)
Number of Categories:	33 Mutually Exclusive Bins (possible, secondary, category placements are noted for some courses.)
1931-32 AALS Course-Subject Pairwise Co-Occurrence Implications:	52 Bi-Directional Edges
	43 out of 58 AALS Course-Subjects Included (74%)
1972-72 AALS Course-Subject Pairwise Co-Occurrence Implications:	104 Bi-Directional Edges
	72 out of 86 AALS Course-Subjects Included (84%)
2010-11 AALS Course-Subject Pairwise Co-Occurrence Implications:	147 Bi-Directional Edges
	82 out of 104 AALS Course-Subjects Included (79%)

3.5.4 Current Index to Legal Periodicals (CILP)

Another source of topical similarity for law school course-subjects is the *Current Index to Legal Periodicals* (‘CILP’). It is known as the *Washington List* as it was created and is maintained by the law library at the University of Washington School of Law (Wolotira, 2012). It is a current awareness service (table of contents service) for legal academics and provides a listing of recent legal articles by subject. Users can elect to receive email notifications as to new articles pertaining to subjects of their choice. To aid the process of subject selection, there are twelve ‘topics’ that allow one to subscribe to several related subjects at once. *See Appendix 2: Organization of the Current Index to Legal Periodicals.* These super categories are indicators of similarity for their constituent subjects and indicate pairwise similarity between each of the included subjects. **Appendix 17** contains the CILP topic categories, their constituent subject members, and the correlating AALS course-subjects for each of the map years. CILP subjects may appear in more than one CILP topic category. Of the 98 CILP subjects, only 53 appear in topic

categories. **Appendix 18, Appendix 19, and Appendix 20** provide the resultant pairwise course-subject associations for each of the map years.

Table 9: CILP Data Summary

Purpose Created:	To allow users to subscribe to current awareness content for information about law related journal articles.
Date Created:	Harvested from website: Feb. 14, 2011
Last Updated:	No changes as of December 19, 2012
Structure:	Graph (due to the non-exclusive nature of the 12 topic categories)
Number of Categories:	12 Non-Exclusive Bins for 98 Subject Categories
1931-32 AALS Course-Subject Pairwise Co-Occurrence Implications:	40 Bi-Directional Edges
	26 out of 58 AALS Course-Subjects Included (45%)
1972-72 AALS Course-Subject Pairwise Co-Occurrence Implications:	83 Bi-Directional Edges
	36 out of 86 AALS Course-Subjects Included (42%)
2010-11 AALS Course-Subject Pairwise Co-Occurrence Implications:	122 Bi-Directional Edges
	47 out of 104 AALS Course-Subjects Included (45%)

3.5.5 Human Subjects Card Sort

The results of the card sorting exercise (*see Section 3.4.2*) provide additional data as to the topical similarity of law school course-subjects. For purposes of validating the maps and as well as the selection of their preliminary treatments, the 3,456 course-subject pairings that resulted from the card sorting data (out of 5,356 theoretically possible— $\frac{((104 \times 104) - 104)}{2}$) had to be reduced (thresholded) to a usable amount. Included in the analysis below are all course-subject pairings that at least ten out of the eighteen subjects (taking into account only the first level of their categorization scheme if they had multiple levels) indicated were related. As to the 2010-11 mapping year, this resulted in 149 course-subject pairs—a figure roughly equal to the amount of pairings from the Jackson and Gee (147) and *CILP* (122) data. While the human subjects were asked to sort 2010-11 course-subjects, their results have been extrapolated

by the author backwards in time as to what the relevant course-subjects would have been, if in existence, for the other mapping years (1931-32 and 1972-73). The resultant similar course-subjects are given in **Appendix 21**, **Appendix 22**, and **Appendix 23** for each of the relevant map years.

Table 10: Card Sort Data Summary

Purpose Created:	To validate course-subject co-occurrence maps as part of this dissertation.
Date Created:	Card Sorting conducted from April 27 to July 29, 2011.
Last Updated:	Not applicable.
Structure:	Individual subjects' results were represented as hierarchical trees. Aggregated amongst multiple subjects, the results form a graph.
Number of Categories:	Varies by individual subject. The range is 15 to 39 categories at the most specific level for each subjects' hierarchy.
1931-32 AALS Course-Subject Pairwise Co-Occurrence Implications:	42 Bi-Directional Edges
	39 out of 58 AALS Course-Subjects Included (67%)
1972-72 AALS Course-Subject Pairwise Co-Occurrence Implications:	84 Bi-Directional Edges
	57 out of 86 AALS Course-Subjects Included (66%)
2010-11 AALS Course-Subject Pairwise Co-Occurrence Implications:	149 Bi-Directional Edges
	84 out of 104 AALS Course-Subjects Included (81%)

3.5.5 Combined Indicators of Similarity

The results of the five individual sources of course-subject similarity have been aggregated to reveal the amount of overlap and the overall percentage of AALS course-subjects included for each of the mapped years. These aggregated charts are the basis of evaluation for the domain maps as well the component steps and treatments in the creation of the domain maps. As **Table 11** indicates, almost all course-subjects, for each of the mapped years, are included in at least one pair-wise co-occurrence. **Table 12** reveals that the *CILP* data has the highest percentage of pairwise co-occurrence that is not replicated in any of the four other methods. The aggregated pairwise-co-occurrences for each relevant map year,

ranked by the amount of sources that indicated similarity, are set out in **Appendix 24**, **Appendix 25**, and **Appendix 26**.

Table 11: Distribution of the Amount of Similarity Agreement

Map Year	Count of Pairwise Co-Occurrence That the Various Combinations of Five Sources Indicate are Similar					Total Unique Edges (Pair-wise Co-Occurrence) (Aggregate of 5 Different Sources)	Number of AALS Course-Subjects	Amount of Unique Course-Subjects Included in Total Unique Pair-wise Co-Occurrence	Percentage of AALS Course-Subjects Included in Total Unique Pair-wise Co-Occurrence	Course-Subjects Not Appearing in any Pair-Wise Similarity Co-Occurrence
	All 5 Sources	4 Sources	3 Sources	2 Sources	Only 1 Source					
1931-32	2	4	8	26	68	108	58	56	97%	(1) Federal Jurisdiction and Procedure and (2) Torts
1972-73	1	6	16	52	147	222	86	84	98%	(1) Atomic Energy and (2) Military Law
2010-11	3	6	27	82	203	321	104	103	99%	(1) Native American Law

Table 12: Distribution of the Amount of Similarity Agreement by Individual Source

Similarity Source		Total Pairwise Co-Occurrence (Edges)	5 Sources	4 Sources	3 Sources	2 Sources	1 Source	Percentage of Total with Which no Other Source Agrees (1 Source)
Syndetic Structure (Cross-References)	1931-32	10	2	1	1	1	5	50%
	1972-73	27	1	4	5	8	9	33%
	2010-11	29	3	3	5	8	10	34%
Mergence/Divergence	1931-32	26	2	4	5	9	6	23%
	1972-73	30	1	4	8	16	1	3%
	2010-11	40	3	4	17	5	11	28%
Jackson and Gee	1931-32	52	2	4	8	21	17	33%
	1972-73	104	1	6	14	40	43	41%
	2010-11	147	3	6	23	59	56	38%
CILP	1931-32	40	2	4	7	5	22	55%
	1972-73	83	1	5	11	12	54	65%
	2010-11	122	3	5	12	27	75	61%
Card Sort	1931-32	42	2	3	3	16	18	43%
	1972-73	84	1	5	10	28	40	48%
	2010-11	149	3	6	24	65	51	34%

3.5.6 Analysis and Thresholding of Similarity Pairwise Co-Occurrence

The author was limited as to how many course-subject co-occurrence pairs he could use to evaluate the different inputs for each step in the map creation process. Accordingly, an analysis was conducted as to the five indicator sources and their level of agreement for map year 2010-11 (321 total pairwise co-occurrences) to help inform the possibility of reducing, or thresholding, the 321 pairs and to arrive at a workable ‘gold-standard’ to validate the maps and their interim steps. This analysis was conducted by two separate methods—(1) comparisons with course-subject co-occurrence (CSCO) teaching data in order to find the best value at which to threshold, and (2) outlier detection using normalization, MDS, and K-means clustering.

3.5.6.1 Comparisons with Course-Subject Co-Occurrence (CSCO) Teaching Data

This analysis was conducted using the Association Strength normalization technique (2007 total occurrences method) (see section 2.3.1) as to the counts of the course-subjects taught by the same faculty members in 2010-11. The values in the upper half of the normalized matrix were sorted by the highest normalized value and assigned a ranking (1,2,3 etc.). 5,356 $\left(\frac{(104 \times 104) - 104}{2}\right)$ pairwise co-occurrence values for the 2010-11 course-subjects were thus placed in rank order. The same values (ties) resulted in the same ranking number (1,2,3...1247, 1248, 1248, 1250, 1251, etc.). Of the 5,356 possible, there were 328 ties in addition to the 1,467 ties that resulted from course-subject pairs that were never taught by the same faculty member and had an Association Strength normalized value of zero. **Table 13** shows the distributions and amounts of the five quintiles as well as the 311 indicated similar course-subject pairs. (Ten pairings containing Forensic Medicine were excluded as this course-subject was an anomaly that was only taught by one faculty member who also taught four other course-subjects).

Table 13: Quintile Rank of 2010-11 Course-Subject Pairs Indicated as Similar

Quintile	Total Amount of Course-Subject Pairs (Not equal due to the 1,467 course-subject pairs that were never taught by the same faculty member and had an association strength normalized value of zero.)	Number of the 311 Indicated Similar Course-Subject Pairs
Top 20%	1071	233
Top 21% to 40%	1071	30
Top 41% to 60%	1071	11
Top 61% to 80%	676	8
Lowest 20%	1467	29
TOTALS	5356	311

The fact that the overwhelming preponderance of indicated similar course-subject pairs appear in the top quintile is strong evidence that faculty members teach courses that are topically similar. However, of the 100 highest ranked, normalized course-subject pairs, only 60 are indicated as similar by one of the five similarity indicator methods. Assuming the correctness of the hypothesis that faculty members teach topically related courses, this may indicate that while good, the five external sources of topical similarity do not reveal the full picture and omit some course-subject pairings that are quite similar. Furthermore, the comparison with the course-subject data allows an analysis of each of the five similarity indicators and how well the 311 similar course-subject pairings correspond to the normalized frequency in which those course-subjects were taught by the same faculty member. **Table 14** shows the correlation between the CSCO rankings data and each level of similarity method agreement. Generally, as the agreement amongst the similarity methods goes down, the average (arithmetic mean) of the rankings increases. The pairwise course-subjects that only one method indicated as similar are far less correlated with the rankings of the frequency with which they are taught by the same faculty member. This indicates that it may be reasonable to threshold the pairwise co-occurrence to only instances in which two or more methods indicate that they are similar.

Table 14: Rank Analysis Corresponding to Teaching Data by Amount of Similarity Method Agreement for Map Year 2010-11

Amount of Similarity Method Agreement	Total Pairwise Co-Occurrence (Edges)	Mean of Association Strength Normalized Values (Higher Number Equates to more Correlation as to Topical Similarity)	Mean of Ranked Values (out of 5,356)(Lower Number Equates to more Correlation as to Topical Similarity)	Distribution by Quintile
5 of 5 Similarity Methods in Agreement	3	7.42	104	All three are in the Top 20%
4 of 5 Similarity Methods in Agreement	6	13.46	80.5	All six are in the Top 20%
3 of 5 Similarity Methods in Agreement (3 pairings containing Forensic Medicine excluded)	24	8.70	291.33	23 in the Top 20%; 1 in the Lowest 20%
2 of 5 Similarity Methods in Agreement	82	6.29	520.67	74 in the top 20% 3 in the Top 21% to 40% 0 in the Top 41 to 60% 1 in the Top 61 to 80% 4 in the Lowest 20%
1 of 5 Similarity Methods in Agreement (7 pairings containing Forensic Medicine excluded)	196	3.06	1214.93	127 in the top 20% 27 in the Top 21% to 40% 11 in the Top 41 to 60% 7 in the Top 61 to 80% 24 in the Lowest 20%
All Pairwise Co-Occurrences (10 pairings containing Forensic Medicine excluded)	311	4.59	928	233 in the top 20% 30 in the Top 21% to 40% 11 in the Top 41 to 60% 8 in the Top 61 to 80% 29 in the Lowest 20%

Ultimately, a gold-standard was desired to assess the maps and the steps used in their creation. It is analytically circular to use teaching data to inform a thresholding decision that is then used to evaluate the validity of domain maps created from teaching data. However, the analysis above suggests that when only one of the five different methods indicates similarity, that similarity is suspect. Given the need to reduce the amount of pairwise co-occurrences used as the evaluative “gold-standard,” it is reasonable to threshold at the level that at least two of the five methods indicate similarity between the course-subject pairs. This assertion would have also had validity a priori and apart from using the teaching data to confirm a good point for thresholding.

A similar analysis can be used to evaluate the relative accuracy of each of the individual similarity indicator methods (at least relative to their correspondence with teaching data). **Table 15** relates the averaged rankings data for each of the five similarity methods. In order of their correspondence to teaching data based on the mean of the Association Strength normalized values they are (from most

correspondence to least): (1) Mergence/Divergence, (2) Syndetic Structure, (3) Card Sort, (4) Jackson and Gee, and (5) CILP. It is interesting to note that when the mean of ranked values is evaluated, Syndetic Structure is the best (instead of Mergence/Divergence) and Jackson and Gee is the worst (instead of CILP).

Table 15: Rank Analysis Corresponding to Teaching Data by Similarity Method

Similarity Method	Total Pairwise Co-Occurrence (Edges)	Mean of Association Strength Normalized Values (Higher Number Equates to more Correlation as to Topical Similarity)	Mean of Ranked Values (out of 5,356)(Lower Number Equates to more Correlation as to Topical Similarity)	Distribution by Quintile	Rank of Similarity Method by Highest Mean of Association Strength Normalized Values
Syndetic Structure (Cross-References)	29	6.92	350.24 BEST	26 in the top 20% 2 in the Top 21% to 40% 1 in the Top 41 to 60%	2
Mergence/Divergence (4 pairings containing Forensic Medicine excluded)	36	7.88 BEST	471.83	32 in the top 20% 1 in the Top 21% to 40% 1 in the Top 41 to 60% 0 in the Top 61 to 80% 2 in the Lowest 20%	1 BEST
Jackson and Gee (9 pairings containing Forensic Medicine excluded)	138	5.20	991.38 WORST	103 in the top 20% 10 in the Top 21% to 40% 2 in the Top 41 to 60% 6 in the Top 61 to 80% 17 in the Lowest 20%	4
CILP	122	4.68 WORST	721.65	100 in the top 20% 10 in the Top 21% to 40% 4 in the Top 41 to 60% 2 in the Top 61 to 80% 6 in the Lowest 20%	5 WORST
Card Sort (3 pairings containing Forensic Medicine excluded)	146	6.29	657.46	122 in the top 20% 10 in the Top 21% to 40% 3 in the Top 41 to 60% 1 in the Top 61 to 80% 10 in the Lowest 20%	3
All Pairwise Co-Occurrences (10 pairings containing Forensic Medicine excluded)	311	4.59	928	233 in the top 20% 30 in the Top 21% to 40% 11 in the Top 41 to 60% 8 in the Top 61 to 80% 29 in the Lowest 20%	NA
All Pairwise Co-Occurrence Indicated by at least Two Methods (Threshold Value) (3 pairings containing Forensic Medicine excluded)	115	7.20	438.97	106 in the top 20% 3 in the Top 21% to 40% 0 in the Top 41 to 60% 1 in the Top 61 to 80% 5 in the Lowest 20%	NA

3.5.6.2 Outlier Detection Using Normalization, MDS, and Clustering

A second assessment of the five topical similarity indicator sources was performed by conceptualizing the different methods as nodes with their resulting overlap of course-subject pairwise co-occurrences creating a fully connected clique. The goal was to see which of the five sources, if any, was an outlier compared to the others. **Table 16** provides a matrix of the counts of the overlap of pairwise co-occurrences for each of the five sources for map year 2010-11. The parenthetical number in the column and row headings is the total amount of topically similar course-subject pairwise co-occurrences that were indicated by each source. The percentage number in parentheses in each of the data cells is the percentage overlap relative to the overall amount of pairwise-co-occurrences per each column heading.

Table 16: Overlap Count Matrix for Similarity Sources for Map Year 2010-11

	Syndetic Structure (Cross-References) (29)	Mergence/Divergence (40)	Jackson and Gee (147)	CILP (122)	Card Sort (149)
Syndetic Structure (Cross-References)(29)		7 (18%)	13 (9%)	9 (7%)	10 (7%)
Mergence/Divergence (40)	7 (24%)		23 (16%)	10 (8%)	23 (15%)
Jackson and Gee (147)	13 (45%)	23 (58%)		24 (20%)	75 (50%)
CILP (122)	9 (31%)	10 (25%)	24 (16%)		35 (23%)
Card Sort (149)	10 (34%)	23 (58%)	75 (51%)	35 (29%)	

3.5.6.2.1 Normalization

To be more meaningful, this overlap data was normalized using the Association Strength normalization technique, total occurrences method (see section 2.3.1 and **Table 17**). As applied to this data, the formula was: (amount of unique pairwise co-occurrences x count of overlap between similarity sources A & B)/(total co-occurrences indicated by source A x total co-occurrences indicated by source B). The data cells for each of the first five rows contain a normalized value—the higher the number, the more two similarity sources overlap. It is not surprising that Syndetic Structure and Mergence/Divergence are the most correlated. Both stem from the course-subject categorizations published by the AALS and, presumably, were created by the same team. The ‘column sum’ row in **Table 17** is a sum of all of the

normalized values of similarity for each of the indicator sources listed in the column heading. The fact that CILP has the lowest sum solidifies its status as an outlier. (It also has the highest percentage of pairwise co-occurrences with which no other source agrees. See **Table 12.**) Mergence/Divergence is most central in the network as it has the highest sum of Association Strength values.

Table 17: Normalized Values for Overlap Between Similarity Sources for Map Year 2010-11

	Syndetic Structure (Cross-References)	Mergence/Divergence	Jackson and Gee	CILP	Card Sort
Syndetic Structure		1.937	0.979	0.817	0.743
Mergence/Divergence	1.937		1.256	0.658	1.239
Jackson and Gee	0.979	1.256		0.430	1.099
CILP	0.817	0.658	0.430		0.618
Card Sort	0.743	1.239	1.099	0.618	
Column Sum	4.475	5.089	3.763	2.522	3.699

3.5.6.2.2 Layout

This normalized data was visualized using MDS (Proxscal in SPSS version 19, same decision points as footnote 19 above). See **Figure 17**. As can be seen from the layout, CILP is indeed an outlier, but not by much. See **Table 18** for the stress and fit measures for this MDS solution.

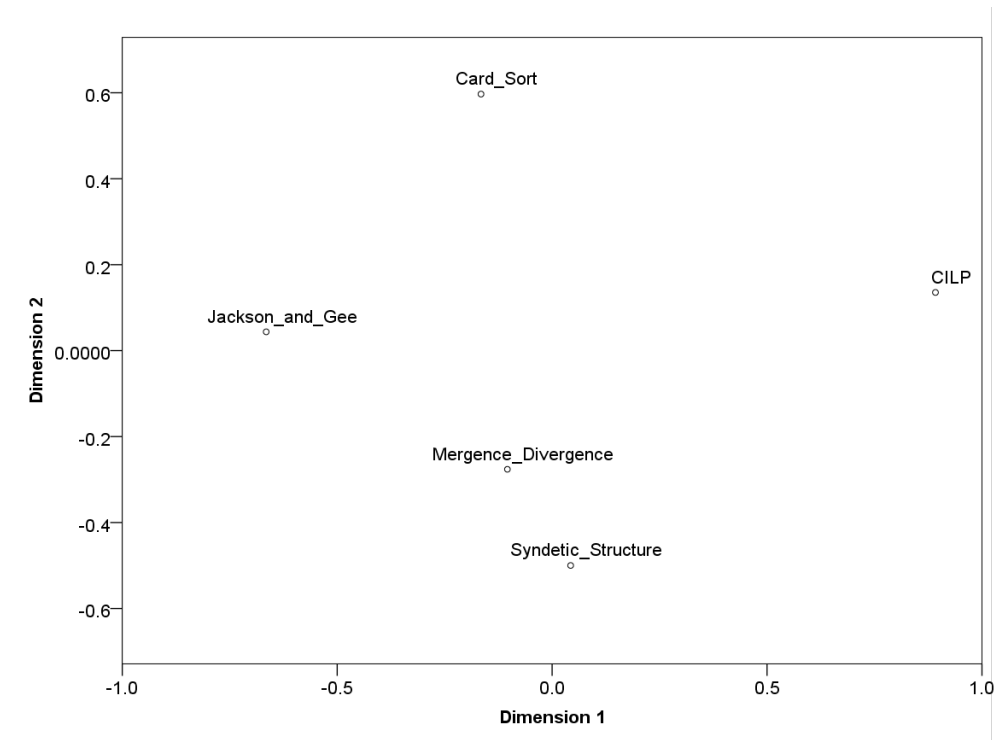


Figure 17: Common Space, MDS Layout (Proxscal, SPSS 19) of the Similarity Source Overlap

Table 18: Stress and Fit Measures of MDS of the Similarity Source Overlap

Normalized Raw Stress	.00975
Stress-I	.09873 ^a
Stress-II	.29941 ^a
S-Stress	.03741 ^b
Dispersion Accounted For (D.A.F.)	.99025
Tucker's Coefficient of Congruence	.99511

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.010.

b. Optimal scaling factor = .974.

3.5.6.2.3 Clustering Analysis

Clustering of the normalized overlap data was also performed in order to garner any additional insights. Employing K-means clustering with the creation of two cluster groupings (the number of clusters is required to be specified at the outset), the five similarity sources cluster into the following two groups: (1) Syndetic Structure, Jackson and Gee, and Card Sort and, (2) Mergence/Divergence and CILP. The fact that Jackson and Gee and CILP are grouped in different clusters indicates that the two potential outliers are affiliated with different similarity indicators. Because CILP clusters with a similarity indicator that is strongly correlated as accurate (in terms of CSCO data), Mergence/Divergence, this diminishes CILP's status as a clear outlier and supports thresholding at the level of at least two similarity sources in agreement rather than merely excluding the CILP indicated similar course-subjects that are not indicated as similar by one of the four other similarity sources. The same is also true for Jackson and Gee.

3.5.7 Final 'Gold-standards'

Because of the analysis set out above, the final evaluative gold-standard for each of the map years is all pairwise co-occurrences that at least two of the five indicators of similarity suggest are similar (less three pairings in 2010-11 that include Forensic Medicine). *See Appendix 24, Appendix 25, and Appendix 26.* This results in the metrics set out in **Table 19**. The distribution of the rank quintiles of the overall amount of teachers teaching a particular course-subject are helpful for evaluating and understanding the results of the different normalization formulas.

Table 19: Distributions and Metrics of the Final Evaluative ‘Gold-standards’

Map Year	Count of Pairwise Co-Occurrence That the Various Combinations of Five Sources Indicate are Similar				Amount of Pairwise Co-Occurrences that at Least 2 of the 5 Indicators of Similarity Suggest are Similar	Number of AALS Course-Subjects	Amount of Unique Course-Subjects Included in Total Unique Pair-wise Co-Occurrence Gold-standard	Percentage of AALS Course-Subjects Included in Total Unique Pair-wise Co-Occurrence	Most Frequently Appearing Course-Subject (Number in parentheses is number of co-occurrence pairs in which the course-subject is included)	Course-Subjects Not Appearing in any Pair-Wise Similarity Co-Occurrence	Distribution of the Gold-standard Course Subjects by Rank Quintile of Overall Amount of Teachers Teaching that particular Course-Subject
	All 5 Sources	4 Sources	3 Sources	2 Sources							
1931-32	2	4	8	26	40	58	57	98%	Bills and Notes (8) Trusts (8) Suretyship (7) Real Property (7)	Federal Jurisdiction and Procedure	Not Calculated
1972-73	1	6	16	52	75	86	84	98%	Securities Regulation (16) Trusts and Estates (13) Commercial Law (12) Accounting (12)	Atomic Energy Military law	Not Calculated
2010-11	3	6	24	82	115	104	76	73%	Environmental Law (7) Law and Science (7) Water Rights (7)	Admiralty Alternative Dispute Resolution Clinical Teaching Contracts Critical Legal Studies Critical Race Theory Disability Law Education Law Entertainment Law Evidence Federal Courts Feminist Legal Theory Forensic Medicine Government Contracts Immigration Law Insurance Law Intellectual Property Introduction to Law Judicial Administration Law and Religion Legal Method Legislation Military Law National Security Law Native American Law Payment Systems Sports Law Women and the Law	17 Top 20% 18 Top 21 to 40% 17 Top 41 to 60% 11 Top 61 to 80% 13 Lowest 20%

3.6 Categories Identified by Human Subjects

In addition to information about the relatedness of the various 2010-11 course-subjects, the human subjects also provided valuable information as to higher order categories and their labels into which the individual course-subjects may be aggregated. This information was particularly informative when analyzing the results of the various clustering techniques in **Section 4.3**. In total, the subjects assigned 511 category names (includes duplicates) to groupings of law school course-subjects. **Table 20** contains the top 25 category names as well as all of those categories used by five or more of the human subjects. These category names were controlled, in part, by the author—similar category names were counted as being an iteration of one controlled category label. *See* **Table 21**. (It is the controlled category label that is given in **Table 20**.) It is interesting to note that all of the traditional first year law school courses (*see* Section 1.4) are represented as categories: ((1) Contracts, (2) Civil Procedure, (3) Property, (4) Torts, (5) Criminal Law, (6) Constitutional Law, and (7) Legal Research and Writing). This is not surprising as these are bedrock components of law school education. Some of the category labels would have higher counts if the other levels of the experts' hierarchy were also used in the analysis.

Table 20: Human Subject Named Categories (Used by 5 or more Human Subjects)

Category Name	Amount of Human Subjects that used the Category	Notes
Torts	17	
Taxation	16	
Contracts	15	
Property	15	
Criminal Law	14	
Family Law	12	
Constitutional Law	12	
International Law	12	
Administrative Law	10	
Professional Skills	9	
Intellectual Property	9	
Commercial Law	8	
Environmental Law	8	
Civil Procedure	7	
Law and Science	6	
Jurisprudence	6	
Education Law	6	
Communications Law	5	
Natural Resources	5	
Evidence	5	
Legal Theory	5	
Labor and Employment	5	
Introduction to Law	5	
Poverty Law	5	
Labor Law	5	Subsumed by Labor and Employment Above

Table 21: Example of the Make-up of one Controlled Category Label

Human Subject's Category Label	Controlled Term
Practical / Skills Based	Professional Skills
Practical Legal Skills	Professional Skills
Practice	Professional Skills
Practice	Professional Skills
Practice of Law	Professional Skills
Practice of Law	Professional Skills
Preparation for Practice	Professional Skills
Professional Skills	Professional Skills
Professional Training	Professional Skills

4. Results

The gold-standard created for this work allows for a comparison of domain map production techniques and an assessment as to which is best relative to CSCO data. It provides insights useful for data miners, information visualization experts, scientometricians, and domain mappers.

4.1 Normalization Results and Analysis

Normalization is extremely important. As the results below indicate, without efforts to normalize data, one cannot fairly draw comparisons between groups of items that occur with differing frequencies. Accordingly, an information scientist must be equipped with the best normalization algorithms to understand and make predictions using co-occurrence data. This section explains how five different normalization algorithms perform and provides additional evidence as to why the Association Strength normalization algorithm is best for co-occurrence data.

4.1.1 Support for the Hypothesis That Teachers Teach Topically Similar Course-Subjects

A first point of analysis is how well the CSCO data correlates with the gold-standard for each map year. **Table 22** reports the amount of gold-standard course-subject pairs in the top quintile of the ranked, normalized, CSCO values for the entire map year taking into account each of the normalization techniques and variants. Generally, most gold-standard pairs are in the top quintile of the normalized CSCO data. This is consistent with expectations if the following two things are true: (1) the gold-standard is an accurate reflection of course-subject topical similarity; and (2) in general, faculty members teach course-subjects that are topically similar such that topically similar course-subjects will have a higher normalized similarity value. Based on the variety of the gold-standard inputs and the manner of their selection, it is assumed that the gold-standard for each map year is an accurate representation of the topical similarity for the course-subject pairs included in the gold-standard. (The gold-standard does not purport to be an exhaustive list of all similar course-subjects.) As to the two most recent map years, 1972-73 and 2010-11, 83% to 97% (depending on the technique and variant) of the gold-standard course-

subject pairs are in the first quintile of normalized CSCO data. This is strong support for the hypothesis that generally, faculty members teach course-subjects that are topically similar. Furthermore, and as will be demonstrated in the subsection 4.2, this lends support to the validity of using CSCO data to make topic maps of the domain of law.

Table 22: Amount of Gold-Standard Course-Subject Pairs in the Top Quintile of Ranked CSCO Values

Map Year	Course-Subjects	Total Gold-standard Course-Subject Pairs	Range of the First Quintile	Total Pairwise Co-Occurrences (half of the matrix not including the diagonal)	Association Strength (2007) Total Occurrences Method		Association Strength (2009) Column Totals Method		Cosine Total Occurrences Method		Cosine Column Totals Method		Non-Normalized Co-Occurrence Values	
					Amount	% of Total Gold-standard Pairs	Amount	% of Total Gold-standard Pairs	Amount	% of Total Gold-standard Pairs	Amount	% of Total Gold-standard Pairs	Amount	% of Total Gold-standard Pairs
1931-32	58	40	1-331	1653	26	65%	27	68%	22	55%	23	58%	18	45%
1972-73	86	75	1-731	3,655	71	95%	73	97%	69	92%	70	93%	64	85%
2010-11	104	115	1-1,071	5,356	106	92%	105	91%	95	83%	95	83%	71	62%

4.1.2 Should CSCO Data be Normalized?

Table 23, **Table 24**, and **Table 25** provide the distribution of the gold-standard course-subject pairs over all quintiles of the ranked normalized and non-normalized CSCO data. The gold-standard pairs consistently skew towards the first quintile when applied to normalized CSCO data. However, the distribution of gold-standard pairs as to the non-normalized data is consistently less skewed (over all map years) and more evenly distributed throughout the five quintiles. This is to be expected as no effort has been made to fairly account for the vastly differing amounts that each course-subject is taught. With the non-normalized CSCO data, courses that are frequently taught will disproportionally have higher CSCO values as the magnitude of their co-occurrence numbers will be greater (even for comparatively lower overall co-occurrence percentages) than for course-subject pairs that are taught by comparatively few faculty members and thus have very low co-occurrence counts (comparatively speaking by magnitude).

Thus, more of these pairs of frequently taught courses will occupy the top quintiles causing the gold-standard pairs that feature course-subjects that are taught more infrequently to occur lower in the overall rankings. Again, assuming the desirability of a large proportion of gold-standard pairs occurring early in the ranked ordering of all course-subject pairs, it appears that CSCO data should be normalized before drawing meaningful comparisons as to how often any two course-subjects are taught by the same professor. Further examples are provided below.

Table 23: Distribution of Gold-Standard Course-Subject Pairs per Rank of CSCO Data, 1931-32

Range by Rank of Course-Subject Pairings (out of 1,653)	All Data is Relative to 40 Course-Subject Pairs in the 1931-32 Gold-standard														
	Association Strength (2007) Total Occurrences Method			Association Strength (2009) Column Totals Method			Cosine (2009) Total Occurrences Method			Cosine (2009) Column Totals Method			Non-Normalized Co-Occurrence Values		
	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount
Top 100	9	9	23%	8	8	20%	17	17	43%	16	16	40%	14	14	35%
Top 200	8	17	43%	6	14	35%	4	21	53%	5	21	53%	2	16	40%
Remainder of Top Quintile (201-331)	9	26	65%	13	27	68%	1	22	55%	2	23	58%	2	18	45%
2nd Quintile (332-661)	7	33	83%	4	31	78%	8	30	75%	8	31	78%	11	29	73%
3rd Quintile (662-992)	1	34	85%	3	34	85%	4	34	85%	3	34	85%	5	34	85%
4th Quintile (993-1,332)	6	40	100%	6	40	100%	6	40	100%	6	40	100%	6	40	100%
5th Quintile (1,323-1,653)	Note: Of the 1,653 possible course-subject pairings in 1931-32, 584 are not taught by any of the same professors. This results in 584 ties for the lowest rank of 1070. Thus, the 4 th Quintile is really the lowest Quintile for the 1931-32 data. Furthermore, 6 of these 584 course-subject pairs are in the Gold-standard (see below, last row).														
Top 5 Course-Subjects Pairs in Terms of Rank (Not Necessarily Gold-standard Pairs)	1. (1) Mining Law & (2) Water Rights (Gold-standard) 2. (1) Air Law & (2) Oil and Gas 3. (1) Air Law & (2) Corporation Finance 4. (1) Air Law & (2) Business Organization 5. (1) Air Law & (2) Legal History			1. (1) Mining Law & (2) Water Rights (Gold-standard) 2. (1) Air Law & (2) Business Organization 3. (1) Comparative Law & (2) Industrial Relations 4. (1) Air Law & (2) Oil and Gas 5. (1) Air Law & (2) Corporation Finance			1. (1) Personal Property & (2) Real Property (Gold-standard) 2. (1) Mining Law & (2) Water Rights (Gold-standard) 3. (1) Code Pleading & (2) Common Law Pleading 4. (1) Future Interests & Real Property 5. (1) Common Law Pleading & (2) Practice			1. (1) Mining Law & (2) Water Rights (Gold-standard) 2. (1) Personal Property & (2) Real Property 3. (1) Future Interests & (2) Real Property 4. (1) Jurisprudence & (2) Roman Law 5. (1) Code Pleading & (2) Common Law Pleading			1. (1) Personal Property & (2) Real Property (Gold-standard) 2. (1) Equity & (2) Trusts 3. (1) Real Property & (2) Wills and Administration (Gold-standard) 4. (1) Future Interests & (2) Real Property 5. (1) Common Law Pleading & (2) Practice		
Gold-standard Course-Subject Pairings in the Lowest Quintile	1070. (1) Agency & (2) Business Organization 1070. (1) Air Law & (2) Trade Regulation 1070. (1) Code Pleading & (2) Pleading 1070. (1) Common Law Pleading & (2) Pleading 1070. (1) Mining Law & (2) Oil and Gas 1070. (1) Oil and Gas & (2) Water Rights														

Table 24: Distribution of Gold-Standard Course-Subject Pairs per Rank of CSCO Data, 1972-73

Range by Rank of Course-Subject Pairings (out of 3,655)	All Data is Relative to 75 Course-Subject Pairs in the 1972-73 Gold-standard														
	Association Strength (2007) Total Occurrences Method			Association Strength (2009) Column Totals Method			Cosine (2009) Total Occurrences Method			Cosine (2009) Column Totals Method			Non-Normalized Co-Occurrence Values		
	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount
Top 100	41	41	55%	35	35	47%	47	47	63%	46	46	61%	23	23	31%
Top 200	15	56	75%	21	56	75%	12	59	79%	13	59	79%	10	33	44%
Remainder of Top Quintile (201-731)	15	71	95%	17	73	97%	10	69	92%	11	70	93%	31	64	85%
2nd Quintile (732-1,462)	2	73	97%	1	74	99%	5	74	99%	4	74	99%	5	69	92%
3rd Quintile (1,463-2,193)	1	74	99%	0	74	99%	0	74	99%	0	74	99%	4	73	97%
4th Quintile (2,194-2,924)	0	74	99%	0	74	99%	0	74	99%	0	74	99%	1	74	99%
5th Quintile (2,925-3,655)	1	75	100%	1	75	100%	1	75	100%	1	75	100%	1	75	100%
Top 5 Course-Subjects Pairs in Terms of Rank (Not Necessarily Gold-standard Pairs)	1. (1) Atomic Energy & (2) Law and Science 2. (1) Air Law & (2) Atomic Energy 3. (1) Natural Resources & (2) Water Rights (Gold-standard) 4. (1) Legal Bibliography & (2) Librarian 5. (1) Atomic Energy & (2) Regulated Industrial and Other Activities			1. (1) Legal Bibliography & (2) Librarian 2. (1) Education, Legal Problems of & (2) Women and the Law 3. (1) Atomic Energy & (2) Law and Science 4. (1) Law and Computers & (2) Librarian 5. (1) Natural Resources & (2) Water Rights (Gold-standard)			1. (1) Criminal Law & (2) Criminal Procedure (Gold-standard) 2. (1) Personal Property & (2) Real Property (Gold-standard) 3. (1) Legal Bibliography & (2) Librarian 4. (1) Negotiable Instruments & (2) Sales 5. (1) Decedents Estates and (2) Trusts and Estates (Gold-standard)			1. (1) Legal Bibliography & (2) Librarian 2. (1) Criminal Law & (2) Criminal Procedure (Gold-standard) 3. (1) Estate Planning & (2) Taxation, Federal 4. (1) Personal Property & (2) Real Property (Gold-standard) 5. (1) Arbitration & (2) Labor Law			1. (1) Criminal Law & (2) Criminal Procedure (Gold-standard) 2. (1) Personal Property & (2) Real Property (Gold-standard) 3. (1) Administrative Law & (2) Constitutional Law 4. (1) Land Use & (2) Real Property 5. (1) Real Property & (2) Trusts and Estates (Gold-standard)		
Gold-standard Course-Subject Pairings in the Lowest Quintile	3,219. (1) Air Law & (2) Trade Regulation														

Table 25: Distribution of Gold-Standard Course-Subject Pairs per Rank of CSCO Data, 2010-11

Range by Rank of Course-Subject Pairings (out of 5,356)	All Data is Relative to 115 Course-Subject Pairs in the 2010-11 Gold-standard														
	Association Strength (2007) Total Occurrences Method			Association Strength (2009) Column Totals Method			Cosine (2009) Total Occurrences Method			Cosine (2009) Column Totals Method			Non-Normalized Co-Occurrence Values		
	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount	Amount of Gold-Standard Pairs	Cumulative Amount of Gold-standard Pairs	% of Total Gold-standard Pairs for the Cumulative Amount
Top 100	42	42	37%	40	40	35%	37	37	32%	39	39	34%	24	24	21%
Top 200	27	69	60%	31	71	62%	18	55	48%	14	53	46%	5	29	25%
Remainder of Top Quintile (201-1,071)	37	106	92%	34	105	91%	40	95	83%	42	95	83%	42	71	62%
2nd Quintile (1,072-2,142)	3	109	95%	4	109	95%	13	108	94%	13	108	94%	28	99	86%
3rd Quintile (2,143-3,214)	0	109	95%	0	109	95%	1	109	95%	1	109	95%	11	110	96%
4th Quintile (3,215-4,285)	6	115	100%	6	115	100%	6	115	100%	6	115	100%	5	115	115
5th Quintile (4,286-5,356)	Note: Of the 5,356 possible course-subject pairings in 2010-11, 1,467 are not taught by any of the same professors. This results in 1,467 ties for the lowest rank of 3890. Thus, the 4 th Quintile is really the lowest Quintile for the 2010-11 data. Furthermore, 5 of these 1,467 course-subject pairs are in the Gold-standard (see below, last row).														
Top 5 Course-Subjects Pairs in Terms of Rank (Not Necessarily Gold-standard Pairs)	1. (1) Estate and Gift Tax & (2) Estate Planning 2. (1) Forensic Medicine & (2) Labor Law 3. (1) Tax Policy & (2) Taxation, Corporate (Gold-standard) 4. (1) Natural Resources & (2) Water Rights (Gold-standard) 5. (1) Natural Resources & (2) Ocean Resources (Gold-standard)			1. (1) Tax Policy & (2) Taxation, Corporate (Gold-standard) 2. (1) Estate and Gift Tax & (2) Estate Planning 3. (1) Forensic Medicine & (2) Labor Law 4. (1) Natural Resources & (2) Water Rights (Gold-standard) 5. (1) Natural Resources & (2) Ocean Resources (Gold-standard)			1. (1) Criminal Law & (2) Criminal Procedure (Gold-standard) 2. (1) Taxation, Corporate & (2) Taxation, Federal (Gold-standard) 3. (1) Business Associations & (2) Securities Regulation (Gold-standard) 4. (1) Commercial Law & (2) Payment Systems 5. (1) Employment Discrimination & (2) Labor Law (Gold-standard)			1. (1) Taxation, Corporate & (2) Taxation, Federal (Gold-standard) 2. (1) Criminal Law & (2) Criminal Procedure (Gold-standard) 3. (1) Business Associations & (2) Securities Regulation (Gold-standard) 4. (1) Estate and Gift Tax & (2) Taxation, Federal (Gold-standard) 5. (1) Employment Discrimination & (2) Labor Law (Gold-standard)			1. (1) Criminal Law & (2) Criminal Procedure (Gold-standard) 2. (1) Commercial Law & (2) Contracts 3. (1) Civil Procedure & (2) Federal Courts 4. (1) Civil Procedure & (2) Constitutional Law 5. (1) Constitutional Law & (2) Federal Courts		
Gold-standard Course-Subject Pairings in the Lowest Quintile	_____. (1) Law and Economics & (2) Law and Psychiatry (Note, this ranking varies by method—3326, 3529, 3621, 3691, 3123 based on the column headings above, respectively). 3890. (1) Agency and Partnership & (2) Financial Institutions 3890. (1) Aviation and Space Law & (2) Communications Law 3890. (1) Aviation and Space Law & (2) Trade Regulation 3890. (1) Elder Law & (2) Poverty Law 3890. (1) Ocean Resources & (2) Water Rights														

4.1.3 Variance in the Strength of the Gold-standard by Map Year

Based on the distributions of the gold-standard pairs over the entire CSCO rankings for a given map year, it appears that the gold-standard is ‘best’ for map year 1972-73, second ‘best’ for 2010-11, and least ‘best’ for 1931-32. Best, in this case, is defined as having the highest proportion of gold-standard pairs taken from the first quintile of all ranked course-subject pairs. The differences may be accounted for in several ways. First, the strength of the gold-standard as an indicator of topical similarity may vary for the three map years. Second, the assumption that people teach courses that are topically similar when teaching more than one course per AALS directory year, may be less true for some of the map years. Additionally, the variance may be a result of a combination of both of these two phenomena.

The gold-standard is the aggregate of five sources of topical similarity. Two of these sources reflect a contemporary notion of topical similarity: (1) the card sort with experts (conducted in April through July, 2011), and (2) the *CILP* super categories of related topics harvested online February 14, 2011. See **Table 26**. Furthermore, a third gold-standard similarity source, *Jackson and Gee* was also created on a specific date, 1975. These first two contemporary notions of similarity were projected backwards on course-subjects that were in existence eighty or forty years earlier, respectively, for each of the two first map years. However, contemporary notions of topical similarity may be less applicable to the legal academy 80 years in the past as pertains to the 1931-32 CSCO data.

Table 26: Date of Gold-standard Constituent Datasets

1. Syndetic Structure	1931 through 2011 (<i>See Appendix 8-10</i>)
2. Mergence and Divergence	1931 through 2011 (<i>See Appendix 11-13</i>)
3. <i>Jackson and Gee</i>	1975
4. <i>CILP</i> (Current Index to Legal Periodicals)	Harvested online February 14, 2011
5. Card Sort with Experts	April through July, 2011

Furthermore, the assumption that professors teach topically similar courses may have been less true in 1931-32 as it is today. Academic year 1931-32 is the first year that the AALS published its “List of Law

Teachers by Subject.” Law schools were newer then and teaching practices might not have stabilized according to contemporary notions of topical specialization and efficiency. More law faculty members might have been obligated to teach widely disparate course-subjects so that law schools might offer the full range of course-subjects necessary to educate lawyers. Nonetheless, with both normalization methods and each of their variants, at least 75% of the gold-standard pairs in 1931-32 are in the first two quintiles of all ranked course-subject pairs. This still suggests that in 1931-32, more often than not, faculty members taught topically similar courses—just not to the same extent as in subsequent map years.

There are also several reasons why the gold-standard might have correlated more highly with CSCO data in 1972-73 than in 2010-11. First, *Jackson and Gee* (created in 1975) is probably most authoritatively an indicator of topical similarity for the most proximate map year, 1972-73. Second, in the intervening years between 1972-73 and 2010-11 there was a proliferation in the number of “law and” courses: (1) Law and Psychiatry (1974-75); (2) Law and Economics (1987-88); (3) Law and Literature (2004-05), and (4) Law and Religion (2004-05). The gold-standard sources of similarity often lump these “law and” courses together. This is likely due to their shared interdisciplinary application of legal concepts. However, this does not mean that topically or doctrinally they share much of an overlap in content such that they are likely to be taught by the same faculty members. For instance, while (1) Law and Economics and (2) Law and Psychiatry is a gold-standard pair, this pairing was very low in the ranking of overall course-subject similarity for map year 2010-11. This may be an example in which the gold-standard indicates that two course-subjects are similar based on one conceptualization of similarity (in this case, a higher or more abstract conceptualization), but that in practice they are not similar enough to be frequently taught by the same faculty members seeking to maximize their teaching efficiency and subject expertise.

4.1.4 Less Successful Gold-standard Pairs

Only one gold-standard course subject pair, (1) Air Law and (2) Trade Regulation (or their contemporary equivalents), was not taught by any of the same faculty members for any of the map years—1931-32,

1972-73, or 2010-11. This may stem from the fact that only two of the five similarity sources indicate that Air Law and Trade Regulation are similar—*Jackson and Gee* and *CILP*. Aviation and Space Law is a highly regulated industry. Thus, *Jackson and Gee* have both course-subjects under the category, “Regulation of Business and Industry.” *CILP* has them under the category, “Technology Group.” While high tech industries are often highly regulated and involve consumer protection and trade regulation, this co-listing might be inappropriate when it comes to topical similarity. Also, both of these course-subjects are not frequently taught—thus diminishing the chance that they would be taught together.

The remaining 1931-32 gold-standard pairs with no teaching overlap are also surprising by modern conceptualizations of similarity. One would expect more teaching overlap amongst the various flavors of what is today known as civil procedure. Generally, civil procedure encompasses the rules governing how and where non-criminal lawsuits are brought and conducted. As to the 1931-32 course-subjects, the civil procedure course-subjects are: (1) Code Pleading, (2) Pleading, and (3) Common Law Pleading. While there was no direct teaching overlap between several combinations of these course-subjects, (1) Code Pleading and (2) Pleading; and (1) Common Law Pleading and (2) Pleading, the relationship between (1) Code Pleading & (2) Common Law Pleading (not a gold-standard pair) was one of the highest ranked in terms of CSCO similarity for 1931-32. It remains to be seen whether ordination techniques, when exhaustively accounting for all of the myriad similarity relationships in a given map year, might bring these modernly related course-subjects together for map year 1931-32.

The sources of topical similarity suggest that the course-subjects (1) Mining Law, (2) Oil and Gas, and (3) Water Rights are within the same category. *Jackson and Gee* has these three course-subjects in the “Natural Resources and the Environment” category. *CILP* has them in the “Environmental Law Group” category. In 1931-32, some of these course-subjects had no teaching overlap: (1) Mining Law and (2) Oil and Gas; and (1) Oil and Gas and (2) Water Rights. However, (1) Mining Law and (2) Water Rights (a gold-standard pair) is frequently ranked as one of the most similar course-subject pairs in 1931-

32. This might be another example of contemporary notions of similarity not having time to manifest in actual teaching practice in 1931-32.

4.1.6 Sensitivity of the Association Strength to Small Numbers

Ludo Waltman and Nees Jan Van Eck note the following:

[There is a] tendency of the association strength to give very high values for combinations of items that both have very low total occurrences (or very low column totals). In our experience, often the pairs of items with the highest association strengths have very low total occurrences/column totals. The reliability of these very high association strengths then is relatively low (i.e., adding or removing a single co-occurrence would directly lead to a quite different association strength value) (email correspondence with the author on August 14, 2013).

This may be seen with the 1931-32 CSCO data and the course-subject, Air Law. Air Law is only taught by three people and ranks last in terms of the amount of people teaching the course-subject for 1931-32. *See Appendix 41: Course-Subject Metrics 1931-32.* Thus, for normalization purposes, Air Law has both very low total occurrences and very low column totals. Yet, for both variants of the Association Strength, course-subject pairs that include Air Law are three of the five most similar course-subjects based on the normalized CSCO data. Alternatively, pairs involving Air Law have much more divergent ranks when employing either variant of the Cosine normalization. *See Table 27.* (However, the ordering is the same for each variant—either total occurrences or column totals, regardless of whether Association Strength or Cosine was used.) Similar observations might be made about course-subject pairs involving Forensic Medicine. In the 2010-11 CSCO data, Forensic Medicine was only taught by one individual who happened to teach four other course-subjects as well. (This was the only course-subject that was excluded from otherwise being in the gold-standard for unreasonably small numbers.) As to the Association Strength normalization variants, the course-subject pair (1) Forensic Medicine & (2) Labor Law appears on each list of top five most similar course-subjects. The same pair is absent from the top five list for each of the Cosine variants, *see Table 25.*

Table 27: Highly Ranked Course-Subject Pairs Involving Air Law (with Ranks)

Association Strength (2007) Total Occurrences Method	Association Strength (2009) Column Totals Method	Cosine (2009) Total Occurrences Method	Cosine (2009) Column Totals Method	Non-Normalized Co-Occurrence Values
2. (1) Air Law & (2) Oil and Gas 3. (1) Air Law & (2) Corporation Finance 4. (1) Air Law & (2) Business Organization	2. (1) Air Law & (2) Business Organization 4. (1) Air Law & (2) Oil and Gas 5. (1) Air Law & (2) Corporation Finance	51. (1) Air Law & (2) Oil and Gas 90. (1) Air Law & (2) Corporation Finance 104. (1) Air Law & (2) Business Organization	14. (1) Air Law & (2) Business Organization 39. (1) Air Law & (2) Oil and Gas 46. (1) Air Law & (2) Corporation Finance	770. (1) Air Law & (2) Business Organization 770. (1) Air Law & (2) Corporation Finance 770. (1) Air Law & (2) Oil and Gas Note: The rank is a tie for each of these as all pairs of course-subjects are only taught by one overlapping faculty member (though not necessarily the same faculty member between the pairs).

4.1.7 Best Normalization Technique and Variant

It is possible to compare each of the normalization techniques and their variants as applied to the CSCO data in order to determine which normalization approach works best. This is done by comparing the average rank value of all gold-standard course-subject pairs, *see* **Table 28**. Again, this analysis assumes that the ‘gold-standard’ is accurate and that the average of the ranked values for each of the gold-standard pairs should be as low as possible. (Note: Lower values equate with higher rankings—1 being best.)

Table 28: Mean Ranking of All Gold-Standard Pairwise Co-Occurrence Pairs Applied to the CSCO Data Using Different Normalization Techniques

Map Year	Association Strength Normalized Value (2007) Total Occurrences Method	Average of Rankings is in the top __% of all Co-Occurrence Pairs	Association Strength Normalized Value (2009) Column Totals Method	Average of Rankings is in the top __% of all Co-Occurrence Pairs	Cosine Normalized Value Total Occurrences Method	Average of Rankings is in the top __% of all Co-Occurrence Pairs	Cosine Normalized Value Column Totals Method	Average of Rankings is in the top __% of all Co-Occurrence Pairs	Non-Normalized Co-Occurrence Value	Average of Rankings is in the top __% of all Co-Occurrence Pairs
1931-32 (ranking out of 1,653)	352	21%	387	23%	374	23%	369	22%	414	25%
1972-73 (ranking out of 3,655)	208	6%	199	5%	213	6%	204	6%	435	12%
2010-11 (ranking out of 5,356)	438.97	8%	438.51	8%	586	11%	610	11%	1054	20%

The data provides some support for the assertion of Van Eck and Waltman (2009) that the Association Strength normalization technique is better than the Cosine normalization technique, particularly for map year 2010-11. For map years 1931-32 and 1972-73, the data is inconclusive. Also, amongst each normalization technique, there is no consistency as to which variant is better. While the Association Strength technique does have the lowest mean ranking for all three map years, in 1931-32 the other Association Strength variant has the highest average. Both normalization techniques and their variants far outperform the non-normalized CSCO data.

As to the 2010-11 map year, the data supports the assertion of Van Eck and Waltman (2009, p. 1646) that the Association Strength technique does a better job than the Cosine technique and other set-theoretic similarity measures as the later “do not properly correct for the size effect and, consequently, do not properly normalize co-occurrence data.” An example of this size effect was seen earlier with the course-subject, Air Law. This can also be seen in the vastly different averages of the ranked Cosine normalized values when comparing data from different quintile ranks of the amount that a particular course-subject was taught, *see Table 29*. When both course-subjects of the gold-standard pairs are in the top 20% of the

amount that a particular course-subject was taught, the average ranks for the Cosine normalized values are very high (low numbers). The reverse is true when both gold-standard course-subject pairs are in the lowest quintile (lowest 20%) of the amount that a particular course-subject was taught. The difference is even more pronounced for the non-normalized (raw) data and lends further support to the assertion that the data should be normalized before making comparisons of the co-occurrence values. In contrast, and true to the assertion of Van Eck and Waltman, the Association Strength normalization technique is more consistent, and thus does a better job, across the vastly different amounts that the course-subjects were taught. In other words, with the Association Strength, there is less variance than with the Cosine technique in the average rank of the 'gold-standard' course-subject pairs between the different quintile ranks.

Table 29: 2010-11 Mean Ranking of Gold-Standard Pairwise Co-Occurrence Pairs Applied to the CSCO Data with Different Ranges of the Amount a Particular Course-Subject is Taught

Map Year	Comparison Level (Number in parentheses is the amount of gold-standard pairs in the range)	Association Strength Normalized Value (2007) Total Occurrences Method	Association Strength Normalized Value (2009) Column Totals Method	Cosine Normalized Value Total Occurrences Method	Cosine Normalized Value Column Totals Method	Non-Normalized Co-Occurrence Value
2010-11	All Gold-standard Pairwise Relationships	438.97	438.51	585.95	609.78	1053.89
2010-11	Both Course-Subjects Are in the Top 20% of the Amount of Faculty Teaching the Course-Subject (5)	450.00	314.80	47.40	40.40	23.20
2010-11	Both Course-Subjects Are in the Lowest 20% of Amount of Faculty Teaching the Course-Subject (6)	705.17	722.50	1700.17	1819.83	3250.83
2010-11	Both Course-Subjects Are in the Middle Quintile (Top 41 to 60%) of the Amount of Faculty Teaching the Course Subject (5)	341.00	318.40	617.20	599.40	1063.00
2010-11	One Course-Subject is in the Top 20% , the other is in the Lowest 20% (4)	169.00	191.50	332.25	359.00	761.50

The comparison with the gold-standard of the two different denominator variants of each normalization technique ((1) total occurrences and (2) column totals) reveals significant differences and a possible explanation for those differences. As might be reasoned a priori, the column totals method will be significantly different than the total occurrences method for those subjects that are taught in large numbers but are frequently the only course-subject that a particular instructor is teaching. **Table 30** contains the top ten (fourteen because of ties) 2010-11 course-subjects with the highest percentage of being the only course-subject taught by an instructor and also reports the average rank of the normalization values of all pairs containing that particular course-subject within the gold-standard. (Eight of these fourteen course-subjects happen to be amongst the 27% of course-subjects not included in any of

the gold-standard pairs.) However, Legal Research and Writing as well as Legal Drafting, both within the top ten percentages of being the only course-subject taught by a professor, have great differences for each normalization technique denominator variant. These two course-subjects are included in four of the top ten greatest differences in normalized values between the two Association Strength variants (*see Table 31*), but in only one of the top ten greatest differences in the normalized values between the two Cosine variants (*see Table 32*). As to the top ten biggest differences between the Cosine denominator variants, it appears that more of these are from the lowest quintiles of how many teachers teach a particular course-subject than was true for the Association Strength denominator variants.

Table 30: Top 10 2010-11 Course-Subjects with the Highest Percentage Being the Instructor’s Only Course-Subject and Average Rank of the Normalization Value of Gold-Standard Pairs Containing that Course-Subject (Bold Course-Subjects are Included in Gold-Standard Pairs.)

Top 10 Course Subjects That are Taught as an Instructor’s only Course-Subject	Count of the Faculty Teaching The Course-Subject	Count of the Faculty Teaching The Course-Subject as their only Course-Subject	% Faculty Teaching that Particular Subject as the only Subject they Teach	Amount of Course-Subject Pairs in the ‘Gold-standard’ Containing that Course-Subject	Association Strength Normalized Value (2007) Total Occurrences Method	Association Strength Normalized Value (2009) Column Totals Method	Difference Between Association Strength Denominator Variants	Cosine Normalized Value Total Occurrences Method	Cosine Normalized Value Column Totals Method	Difference Between Cosine Denominator Variants	Non-Normalized Co-Occurrence Value
(All Gold-standard Pairwise Relationships)	NA	NA	NA	NA	438.97	438.51	37.35 Avg.	585.95	609.78	33.70 Avg.	1053.89
Legal Research and Writing	1601	469	29%	3	507.33	191.00	316.33	79.00	43.00	36	85.00
Critical Legal Studies	19	3	16%	0	NA	NA	NA	NA	NA	NA	NA
Clinical Teaching	1350	187	14%	0	NA	NA	NA	NA	NA	NA	NA
Immigration Law	203	18	9%	0	NA	NA	NA	NA	NA	NA	NA
Government Contracts	23	2	9%	0	NA	NA	NA	NA	NA	NA	NA
Agricultural Law	26	2	8%	4	94.75	105.75	11	726.00	803.25	77.25	2182.50
Introduction to Law	65	4	6%	0	NA	NA	NA	NA	NA	NA	NA
Disability Law	49	3	6%	0	NA	NA	NA	NA	NA	NA	NA
Taxation, Federal	619	33	5%	4	23.50	13.50	10	17.00	13.75	3.25	127.50
Aviation and Space Law	19	1	5%	2	3890	3890	0	3890	3890	0	3890
Military Law	61	3	5%	0	NA	NA	NA	NA	NA	NA	NA
Legal Drafting	143	7	5%	3	404.67	213.33	191.34	335.67	246.67	89.00	590.00
Human Rights	268	13	5%	3	335.00	341.67	6.67	163.67	170.33	6.66	243.67
Intellectual Property	590	28	5%	0	NA	NA	NA	NA	NA	NA	NA

Table 31: Top10 Greatest Differences Between Denominator Variants of the Association Strength Normalization Technique (Bold Course-Subjects are in the Top Ten Highest Percentage of Being the Only Course-Subject Taught by an Instructor.)

2010-11 Subject 1	Quintile Rank of Amount of Faculty Teaching Course-Subject 1	2010-11 Subject 2	Quintile Rank of Amount of Faculty Teaching Course-Subject 2	Association Strength Normalized Value (2007) Total Occurrences Method	Rank out of 5356	Quintile	Association Strength Normalized Value (2009) Column Totals Method	Rank out of 5356	Quintile	Difference in Rank
Legal Research and Writing	Top 20%	Trial Advocacy	Top 20%	1.429923	1038	Top 20%	0.0000206704	427	Top 20%	611
Legal Drafting	Top 41 to 60%	Trial Advocacy	Top 20%	1.610387	876	Top 20%	0.0000178585	540	Top 20%	336
Appellate Practice	Top 41 to 60%	Trial Advocacy	Top 20%	2.107186	607	Top 20%	0.0000216162	397	Top 20%	210
Law and Economics	Top 21 to 40%	Law and Psychiatry	Top 61 to 80%	0.328393	3326	Top 61 to 80%	0.0000021677	3529	Top 61 to 80%	203
Comm-unications Law	Top 61 to 80%	Trade Regulation	Lowest 20%	1.453777	1005	Top 20%	0.0000102449	1192	Top 21 to 40%	187
Appellate Practice	Top 41 to 60%	Legal Research and Writing	Top 20%	3.598029	267	Top 20%	0.0000626093	89	Top 20%	178
Legal Drafting	Top 41 to 60%	Legal Research and Writing	Top 20%	4.180604	217	Top 20%	0.0000786417	57	Top 20%	160
Employment Discrimination	Top 21 to 40%	Workers' Compensation	Lowest 20%	2.050596	627	Top 20%	0.0000139043	784	Top 20%	157
Law and Psychiatry	Top 61 to 80%	Law and Science	Top 41 to 60%	1.928433	686	Top 20%	0.0000134597	813	Top 20%	127
Financial Institutions	Top 61 to 80%	Regulated Industries	Top 41 to 60%	3.201499	318	Top 20%	0.0000203982	437	Top 20%	119

Table 32: Top10 Greatest Differences Between Denominator Variants of the Cosine Normalization Technique (Bold Course-Subjects are in the Top Ten Highest Percentage of Being the Only Course-Subject Taught by an Instructor.)

2010-11 Subject 1	Quintile Rank of Amount of Faculty Teaching Course-Subject 1	2010-11 Subject 2	Quintile Rank of Amount of Faculty Teaching Course-Subject 2	Cosine Normalized Value Total Occurrences Method	Rank out of 5356	Quintile	Cosine Normalized Value Column Totals Method	Rank out of 5356	Quintile	Difference in Rank
Employee Benefit Plans	Lowest 20%	Workers' Compensation	Lowest 20%	0.021607	1917	Top 21 to 40%	0.005488	2113	Top 21 to 40%	196
Ocean Resources	Lowest 20%	Oil and Gas	Lowest 20%	0.046225	835	Top 20%	0.011358	1016	Top 20%	181
Agricultural Law	Lowest 20%	Oil and Gas	Lowest 20%	0.032686	1287	Top 21 to 40%	0.008193	1455	Top 21 to 40%	168
Regulated Industries	Top 41 to 60%	Trade Regulation	Lowest 20%	0.070035	442	Top 20%	0.016787	601	Top 20%	159
Financial Institutions	Top 61 to 80%	Regulated Industries	Top 41 to 60%	0.043894	902	Top 20%	0.011063	1054	Top 20%	152
Legal Drafting	Top 41 to 60%	Trial Advocacy	Top 20%	0.052401	709	Top 20%	0.017424	571	Top 20%	138
Employment Discrimination	Top 21 to 40%	Workers' Compensation	Lowest 20%	0.02484	1693	Top 21 to 40%	0.006459	1830	Top 21 to 40%	137
Energy Law	Lowest 20%	Oil and Gas	Lowest 20%	0.028583	1466	Top 21 to 40%	0.007467	1593	Top 21 to 40%	127
Law and Psychiatry	Top 61 to 80%	Law and Science	Top 41 to 60%	0.024089	1746	Top 21 to 40%	0.006354	1864	Top 21 to 40%	118
Agency and Partnership	Lowest 20%	Commercial Law	Top 20%	0.037915	1086	Top 21 to 40%	0.009971	1183	Top 21 to 40%	97

As between the two denominator variants of each normalization technique, the data is inconclusive as to which is best. More studies with larger and different datasets and gold-standards should be conducted. However, the differences are striking and scientometricians should be aware of them, the reason for them, as well as the sensitivity (both positive and negative) of the Association Strength to items occurring only a few times. The fact that the Association Strength performs the best for the 2010-11 data suggests that a higher proportion of its gold-standard course-subject pairs involve individual course-subjects that are not frequently taught or come from pairs of course-subjects that are not frequently taught. This is indeed the case. See **Table 33**. Compared to 1931-32 and 1972-73, the 2010-11 gold-standard is more skewed towards those course-subjects that are taught less frequently. See **Figure 18**. Based on the analysis above, it is not surprising that the two normalization techniques are less distinguished for map years in which the gold-standard co-occurrence pairs are derived more often from the most frequently occurring

items. As the Association Strength normalization technique does a better job than Cosine in data years with widely varying occurrences of course-subjects (or is skewed to including more items from the less frequently occurring items), and just as good as Cosine in years without a wide variance, Association Strength is the preferred normalization technique (either variant) to use with co-occurrence data.

Table 33: Gold-standard Distribution by Quintile of Amount a Course-Subject is Taught

Map Year	Total Number of Course-Subject Pairs in the Gold-standard	One of Pair from 1 st Quintile (Most Professors Teaching a Course-Subject)	% One of Pair from 1 st Quintile	One of Pair from 2 nd Quintile	% One of Pair from 2 nd Quintile	One of Pair from 3 rd Quintile	% One of Pair from 3 rd Quintile	One of Pair from 4 th Quintile	% One of Pair from 4 th Quintile	One of Pair from 5 th Quintile (Least Professors Teaching a Course-Subject)	% One of Pair from 5 th Quintile
1931-32	40	16	20%	25	31%	12	15%	11	14%	16	20%
1972-73	75	34	23%	38	25%	36	24%	22	15%	20	13%
2010-11	115	43	19%	53	23%	52	23%	37	16%	45	20%

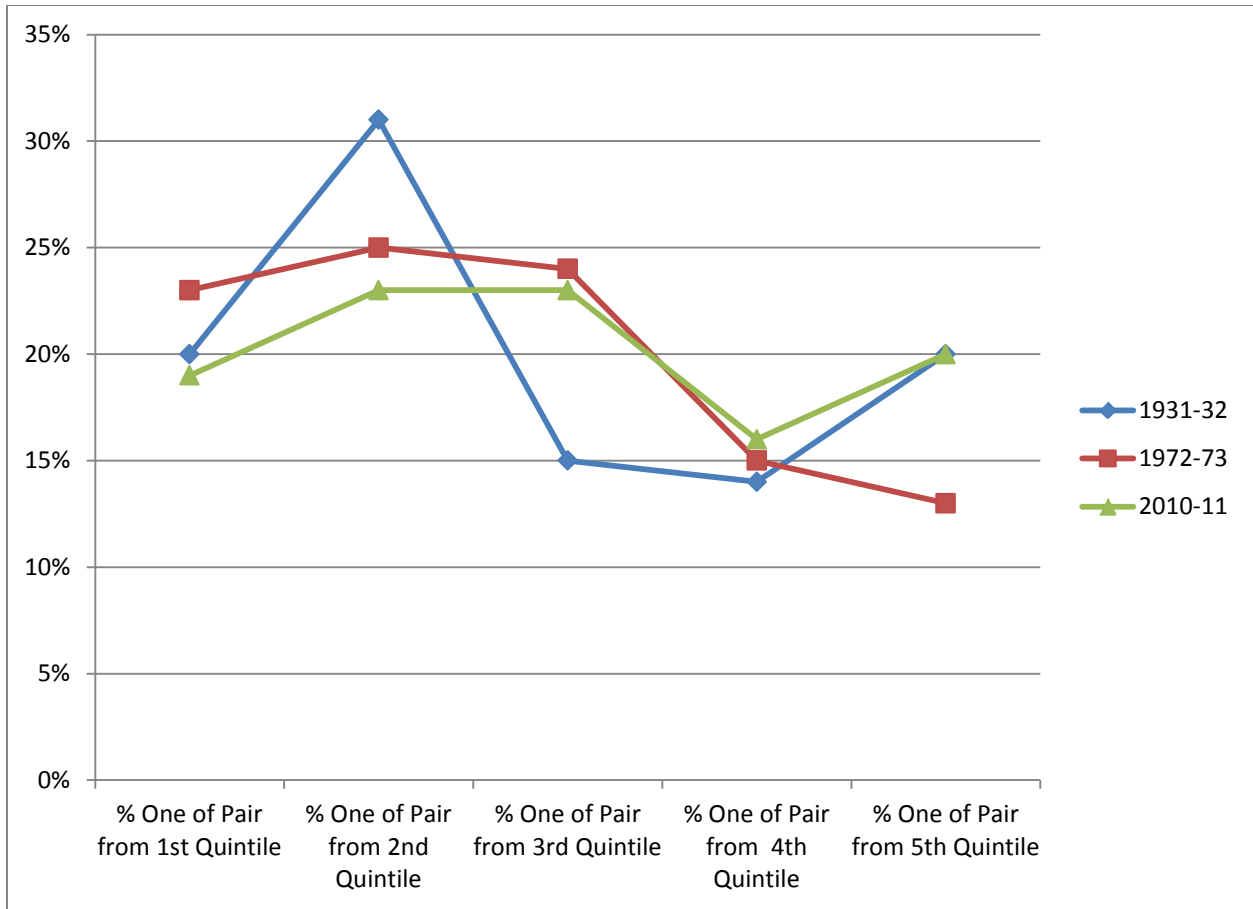


Figure 18: Line Chart of the Gold-Standards for Each Map Year and the % from Each Quintile of How Often the Constituent Course-Subjects are Taught

4.1.8 Section Conclusion

Many conclusions may be drawn from the work completed in Section 4. First, there is strong support for the underlying hypothesis that in general, teachers specialize and teach course-subjects that are topically related to the other course-subjects they teach. This is evidenced by the fact that a high percentage (83% to 95% for map years 1972-73 and 2010-11) of gold-standard pairs are in the top quintile of overall ranked values of the CSCO normalized data. Second, CSCO data should be normalized before making comparisons as to how often course-subjects are taught. Third, because the Association Strength normalization technique does a better job than Cosine in data years with widely varying occurrences of course-subjects (more course-subjects in the gold-standard that are infrequently taught), and just as good

as Cosine in years without a wide variance, the Association Strength is the preferred normalization technique (either variant) to use with co-occurrence data. This confirms the findings of Van Eck and Waltman (2009). However, the Association Strength normalization technique does show greater sensitivity to course-subjects occurring in very small numbers. Depending on the context, this can be a good or bad thing. Scientometricians, however, need to be aware of the phenomena.

4.1.9 Future Work as to Normalization Inputs

In the future, the author would like to conduct similar comparisons with other normalization techniques discussed in the literature. This includes those used in (Boyack et al., 2005; Klavans & Boyack, 2006a) as well as indirect similarity measures and other set-theoretic similarity measures identified in (Van Eck & Waltman, 2009).

4.2 Ordination/Spatialization Results and Analysis

The next step in domain map creation after normalization is ordination. With ordination, the topics are distributed in two dimensional space (or three-dimensional) using the distance similarity metaphor—more similar topics are closer together. Normalized similarity for the course-subjects was determined by how often they were taught by the same faculty member. The next step in the evaluative process is to see how three popular ordination, or layout, techniques compare relative to the gold-standard. The three ordination techniques are the Proxscal implementation of MDS in SPSS 19, the Visualization of Similarities (VOS) algorithm implemented in VOSViewer, and two spring force algorithms implemented in Pajek (Kamada-Kawai and Fruchterman-Reingold). Because of the complexity of evaluating the ordination measures, map year 2010-11, with the largest number of course-subjects and most recent in time, is the only year evaluated. The specific implementation of each ordination method is set out in **Section 3.3.2** with two variant methods for calculating the results for each of the spring force algorithms. The results for each ordination technique are set out below in separate sections with the final sections being an analysis of which is best of the three approaches.

4.2.1 Proxscal MDS Distances Compared to the Gold-standard.

For each normalization input measure discussed in section 4.1, an analysis was conducted pursuant to the methodology discussed in Section 3.3.2. As stated in (Van Eck & Waltman, 2009), the Association Strength (2007) Total Occurrences normalization measure and the Association Strength (2009) Total Occurrences normalization measure are proportional and functionally equivalent. As can be seen below in **Table 34**, they result in the same ordination values. Hereafter, only the Association Strength (2009) will be used. Using Proxscal MDS, the Association Strength (2007, 2009) Total Occurrences normalization method led to the best ordination result relative to the 2010-11 gold-standard.

Table 34: 2010-11 Proxscal MDS Gold-Standard Average Rank of Distances by Normalization Method

	Association Strength (2007) Total Occurrences	Association Strength (2009) Total Occurrences	Association Strength (2009) Column Totals	Cosine (2009) Total Occurrences	Cosine (2009) Column Totals	Non-Normalized
Average of Rankings of Resultant Distances of all 115 Gold-standard Pairs (lower is better)(out of 5,356)	1053 (Best)	1053 (Best)	1292	1385	1400	1889
Average of Rankings is in the top __% of the 5,356.	20% (Best)	20% (Best)	24%	26%	26%	35%

Also, as may be seen in **Table 35** and **Table 36**, the different normalization inputs produce vastly different ranks of distances when rendered with Proxscal MDS. As discussed in Section 4.1, these differences are most likely attributable to the differing amounts that some course-subjects are the only course-subject taught by an instructor and how this phenomena causes great fluctuations between the normalization techniques and their individual variants. The range of fluctuations once again emphasizes how crucial the choice is between normalization techniques as the different normalization inputs result in vastly different layouts.

Table 35: 2010-11 Proxscal MDS Closest Rank of Distances of Course-Subject Pairs by Normalization Method (Shaded Values are Top 5 for Each Method.)

Course-Subject 1	Course-Subject 2	Is the pair in the Gold-standard?	Association Strength (2009) Total Occurrences	Association Strength (2009) Column Totals	Cosine (2009) Total Occurrences	Cosine (2009) Column Totals	Non-Normalized
Estate and Gift Tax	Estate Planning	No	1	1	286	534	1,257
Taxation, Corporate	Tax Policy	Yes	2	2	3	13	368
Natural Resources	Oil and Gas	Yes	3	49	912	782	2,560
Corporate Finance	Securities Regulation	No	4	70	39	103	68
Entertainment Law	Poverty Law	No	5	1,787	679	2,935	335
Taxation, Corporate	Taxation, Federal	Yes	10	3	63	64	2,084
Taxation, Federal	Tax Policy	Yes	21	4	157	231	2,748
Products Liability	Sports Law	No	373	5	1,884	1,825	1,978
Criminal Law	Criminal Procedure	Yes	81	744	1	1	2
Commercial Law	Property	No	4,516	4,497	2	95	289
Estate and Gift Tax	Taxation, Federal	Yes	192	67	4	3	1,347
Alternative Dispute Resolution	Family Law	No	92	930	5	63	2,010
Bioethics	Local Government	No	3,767	3,701	671	2	1,967
Business Associations	Commercial Law	Yes	4,658	4,317	34	4	183
Financial Institutions	Native American Law	No	302	1,921	9	5	308
Comparative Law	Constitutional Law	No	1,065	852	161	160	1
Contracts	Property	No	1,172	475	128	60	3
Appellate Practice	Law and Social Science	No	3,291	7	58	121	4
Alternative Dispute Resolution	Legal Research and Writing	No	1,589	1,496	370	208	5

Table 36: 2010-11 Proxscal MDS Furthest Rank of Distances of Course-Subject Pairs by Normalization Method (Shaded Values are Bottom 5 for Each Method.)

Course-Subject 1	Course-Subject 2	Is the pair in the Gold-standard?	Association Strength (2009) Total Occurrences	Association Strength (2009) Column Totals	Cosine (2009) Total Occurrences	Cosine (2009) Column Totals	Non-Normalized
Feminist Legal Theory	Workers' Compensation	No	4,701	4,908	5,219	5,322	5,352
Appellate Practice	Critical Legal Studies	No	1,295	3,755	5,345	5,334	5,353
Judicial Administration	Ocean Resources	No	4,813	4,152	5,348	5,350	5,354
Critical Legal Studies	Feminist Legal Theory	No	4,026	3,254	5,349	5,352	5,326
Aviation and Space Law	Judicial Administration	No	3,881	2,487	5,351	5,354	5,332
Agency and Partnership	Forensic Medicine	No	3,742	5,344	5,352	5,293	5,186
Corporate Finance	Forensic Medicine	No	3,639	5,150	5,353	5,353	5,339
Judicial Administration	Poverty Law	No	4,715	3,522	5,354	5,346	5,252
Critical Legal Studies	Judicial Administration	No	3,720	3,573	5,355	5,355	5,356
Government Contracts	Judicial Administration	No	5,240	5,048	5,356	5,356	5,355
Corporate Finance	Criminal Procedure	No	4,565	5,352	4,484	4,557	4,334
Criminal Justice	Financial Institutions	No	4,984	5,353	4,758	4,832	4,997
Criminal Procedure	Financial Institutions	No	4,724	5,355	4,942	5,009	5,045
Judicial Administration	Trade Regulation	No	5,298	5,356	5,228	5,229	5,096
Computers and the Law	Forensic Medicine	No	5,352	3,815	4,034	4,345	3,093
Legal Drafting	Tax Policy	No	5,353	1,684	3,992	4,050	1,445
Creditors' and Debtors' Rights	Judicial Administration	No	5,354	5,354	2,751	3,006	2,442
Forensic Medicine	Government Contracts	No	5,355	2,829	3,981	3,909	3,818
Judicial Administration	Payment Systems	No	5,356	5,347	3,083	3,337	3,712

4.2.2 VOS Distances Compared to the Gold-standard

For each normalization input measure discussed in section 4.1, an analysis was conducted pursuant to the methodology discussed in Section 3.3.2. As to VOSviewer ordination with each of the five normalization techniques as input, the Association Strength normalization technique outperformed the Cosine normalization technique and the non-normalized data. See **Table 37**. Furthermore, the Total Occurrences method slightly outperformed the Columns Totals method for both normalization techniques (Association Strength and Cosine). Also, compared to Proxscal MDS, the VOSviewer ordination technique resulted in less variance both between the different denominator variants for each normalization technique and between the Association Strength and Cosine normalization techniques. See **Table 38**.

This consistency is a good thing for an ordination algorithm as the results produced will be more uniform and less variable.

Table 37: 2010-11 VOS (Visualization of Similarities) Gold-Standard Average Rank of Distances by Normalization Method

	Association Strength (2009) Total Occurrences	Association Strength (2009) Column Totals	Cosine (2009) Total Occurrences	Cosine (2009) Column Totals	Non-Normalized
Average of Rankings of Resultant Distances of all 115 Gold-standard Pairs (lower is better)(out of 5,356)	828 (Best)	857	1264	1328	2020
Average of Rankings is in the top __% of the 5,356.	15% (Best)	16%	24%	25%	38%

Table 38: 2010-11 VOS (Visualization of Similarities) Closest and Furthest Rank of Distances Compared to Gold-Standard (Shaded Values are Either Top 5 or Bottom 5 for Each Method)

Course-Subject 1	Course-Subject 2	Is it in the Gold-standard?	Association Strength (2009) Total Occurrences	Association Strength (2009) Column Totals	Cosine (2009) Total Occurrences	Cosine (2009) Column Totals	Non-Normalized
Estate Planning	Taxation, Corporate	No	1	29	1,166	1,381	3,925
Taxation, Corporate	Taxation, Federal	Yes	2	20	321	323	858
Elder Law	Employee Benefit Plans	No	3	5	105	116	1,104
Environmental Law	Water Rights	Yes	4	41	726	881	2,061
Introduction to Law	Legal Method	No	5	4	757	601	2,487
Civil Procedure	Jurisprudence	No	28	1	2	3	1
Estate Planning	Tax Policy	No	15	2	543	747	3,533
Energy Law	Oil and Gas	Yes	32	3	397	191	2,291
Antitrust	International Business Transactions	No	16	66	1	2	27
Creditors' and Debtors' Rights	Payment Systems	No	27	10	3	9	52
Creditors' and Debtors' Rights	Law and Economics	No	163	196	4	11	29
Business Associations	Consumer Law	No	295	169	5	24	748
Civil Procedure	Legal Research and Writing	No	498	388	34	1	12
Intellectual Property	Local Government	No	926	205	13	4	111
Employment Discrimination	Women and the Law	No	97	58	7	5	32
Evidence	Trial Advocacy	No	135	52	20	8	2
Constitutional Law	Federal Courts	No	72	136	10	13	3
Conflict of Laws	Legislation	No	222	548	26	43	4
Criminal Law	Evidence	No	120	67	25	22	5
Aviation and Space Law	Forensic Medicine	No	5,264	5,317	5,343	5,342	5,352
Forensic Medicine	Government Contracts	No	5,333	5,322	5,351	5,351	5,355
Agricultural Law	Forensic Medicine	No	5,322	5,332	5,354	5,354	5,354
Forensic Medicine	Ocean Resources	No	5,344	5,350	5,356	5,356	5,356
Forensic Medicine	Oil and Gas	No	5,345	5,352	5,352	5,353	5,351
Energy Law	Forensic Medicine	No	5,352	5,348	5,355	5,355	5,353
Financial Institutions	Forensic Medicine	No	5,353	5,353	5,348	5,348	5,342
Agency and Partnership	Forensic Medicine	No	5,354	5,354	5,353	5,352	5,348
Forensic Medicine	Securities Regulation	No	5,355	5,355	5,339	5,338	5,326
Corporate Finance	Forensic Medicine	No	5,356	5,356	5,340	5,341	5,327

4.2.3 Spring Force Algorithms Distances Compared to the Gold-standard

For each normalization input measure discussed in section 4.1, an analysis was conducted pursuant to the two methodologies described in **Section 3.3.2.3.1** (Spring Force Algorithm Method 1) and **Section**

3.3.2.3.2 (Spring Force Algorithm Method 2). Contrary to the previous ordination results, the Cosine normalization input used with both spring force algorithm variants outperformed the Association Strength normalized data. *See Table 40*, next section. However, the top five adjacencies for each of the best of the five iterations for each normalization input and spring force algorithm pairing created strange course pairings that would cause a domain expert to question the results. Examples include: Computers and the Law and Taxation, State & Local; Feminist Legal Theory and Trade Regulation; Sports Law and Water Rights; and Commercial Law and Family Law. With only one exception, none of the top five pairings was in the gold-standard. *See Table 39*. Also, none of the five pairings for each input method overlap. In other words, while the overall accuracy (global accuracy) for the Cosine normalization input used with both spring force algorithms may be better than that for the Association Strength normalized data, the local accuracy leaves much to be desired. Also, as can be seen in **Table 40**, the two different methodologies produce substantially different results.

Table 39: 2010-11 Kamada-Kawai Closest Rank of Distances of Course-Subject Pairs by Normalization Method (Best Overall Result of Each of 5 Iterations) (Shaded Values are Top 5 for Each Method.)

Course-Subject 1	Course-Subject 2	Is it in the Gold-standard?	Association Strength (2009) Total Occurrences	Association Strength (2009) Column Totals	Cosine (2009) Total Occurrences	Cosine (2009) Column Totals	Non-Normalized
International Business Transactions	Legislation	No	1	618	247	1427	1329
Computers and the Law	Taxation, State & Local	No	2	5226	963	1002	1936
Corporate Finance	Creditors' and Debtors' Rights	No	3	119	636	305	108
Civil Rights	Conflict of Laws	No	4	3219	1534	2012	136
Contracts	Regulated Industries	No	5	814	518	656	1411
Feminist Legal Theory	Trade Regulation	No	4919	1	5156	4443	4849
Appellate Practice	International Organizations	No	3831	2	3437	3711	2291
Business Associations	Property	No	194	3	336	66	422
Alternative Dispute Resolution	Professional Responsibility	No	28	4	155	73	154
Constitutional Law	Legal Research and Writing	No	611	5	317	271	356
National Security Law	Tax Policy	No	5314	1156	1	4528	2514
Professional Responsibility	Trial Advocacy	No	1476	2131	2	168	121
Sports Law	Water Rights	No	441	5176	3	5044	4071
Conflict of Laws	Legal Research and Writing	No	540	2242	4	1402	949
Critical Race Theory	Law and Literature	No	5173	184	5	3800	4574
Commercial Law	Family Law	No	1371	2679	1878	1	678
Critical Legal Studies	Energy Law	No	4580	4584	5337	2	5141
Critical Race Theory	Juvenile Law	No	1987	1737	462	3	4090
Creditors' and Debtors' Rights	Labor Law	No	3961	457	4006	4	1288
International Organizations	Legal Drafting	No	4081	169	2955	5	2160
Criminal Law	Criminal Procedure	Yes	267	2661	23	739	1
Criminal Procedure	Evidence	No	854	2701	195	588	2
Jurisprudence	Torts	No	714	874	721	1004	3
Constitutional Law	Federal Courts	No	1597	698	122	1357	4
International Law	Jurisprudence	No	1040	218	306	2316	5

4.2.4 Best Ordination Technique

The VOS ordination algorithm utilizing the Association Strength (2009) Total Occurrences method of normalization produced the map that was most consistent with the gold-standard. See **Table 40**. Consequently, it will be used as a base map for all subsequent thematic overlays of data and applied to the mapmaking of the two previous map years—1931-32 and 1972-73. As can be seen in **Figure 19**, the

different ordination techniques, with different normalization inputs, vary substantially in their sensitivity to outliers. All Proxscal MDS ordinations were circular and evenly filled the space. However, the VOSviewer ordination using Cosine normalization was much more affected by the fact that Forensic Evidence was only taught by one instructor who also taught four other course-subjects.

The answer to Research Question 2 is yes. (Can course-subject co-occurrence (CSCO) be used to produce topic maps that are consistent with expert opinion and other indicators of the topical similarity of law school course-subjects?) The average rank of distances of all CSCO gold-standard identified edges (derived from 5 extrinsic sources of topical similarity) are within the top 15% of all possible 2010-11 edges when using the best normalization (Association Strength Total Occurrences) and ordination (VOS) techniques. It is important to note that the results are not as good as the best normalized edge lists as stress has been introduced during the process of reducing the multidimensional space to two dimensions and locating those central course-subjects that are pulled in many different directions.

Table 40: Comparison of All Ordination Techniques Gold-standard Average Rank of Distances by Normalization Method 2010-11

Normalization Technique	MDS Proxscal		VOSviewer		Spring-Force Algorithms (Pajek)							
					Kamada-Kawai				Fruchterman-Reingold			
	Average of Rankings of Distances	Average of Rankings is in the top ___% of the 5,356	Average of Rankings of Distances	Average of Rankings is in the top ___% of the 5,356	Average of Rankings of Distances (METHOD 1)	Average of Rankings is in the top ___% of the 5,356 METHOD 1	Average of Rankings Distances (METHOD 2)	Average of Rankings is in the top ___% of the 5,356 METHOD 2	Average of Rankings of Distances (METHOD 1)	Average of Rankings is in the top ___% of the 5,356 METHOD 1	Average of Rankings of Distances (METHOD 2)	Average of Rankings is in the top ___% of the 5,356 METHOD 2
Association Strength (2009) Total Occurrences	1053	20%	828 (Best)	15% (Best)	2459	46%	2354	44%	1902	36%	1764	33%
Association Strength (2009) Column Totals	1292	24%	857	16%	2483	46%	2417	45%	1918	36%	1765	33%
Cosine (2009) Total Occurrences	1385	26%	1264	24%	1539	29%	1285	24%	1672	31%	1440	27%
Cosine (2009) Column Totals	1400	26%	1328	25%	2390	45%	2281	43%	1867	35%	1716	32%
Non-Normalized	1889	35%	2020	38%	2026	38%	2028	38%	2633	49%	2639 (Worst)	49% (Worst)

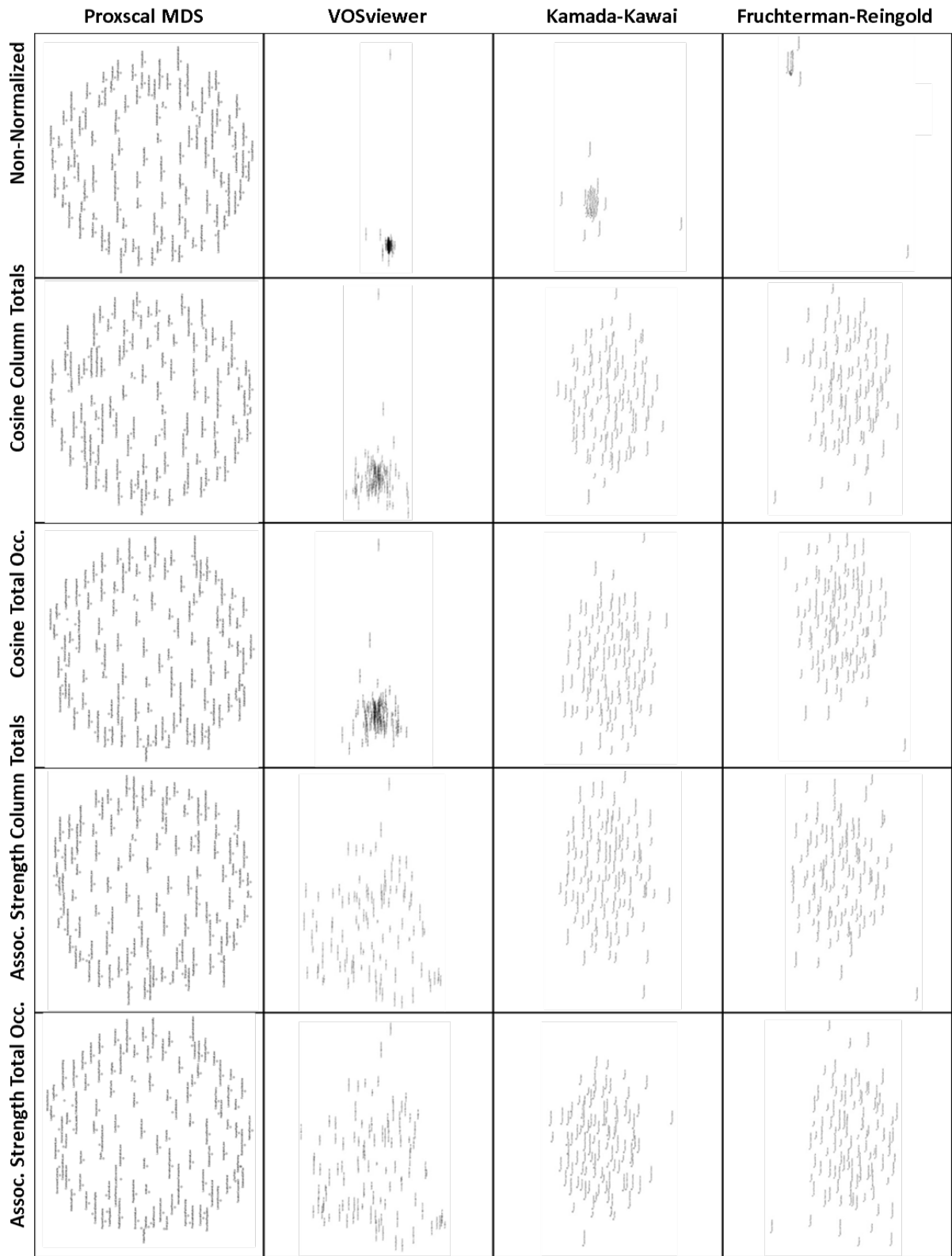


Figure 19: All Ordination Results (Small Multiples)

4.2.5 Section Conclusion

Course-subject co-occurrence (CSCO) can be used to produce topic maps that are consistent with expert opinion and other indicators of the topical similarity of law school course-subjects. This is evidenced by the fact that the average rank of distances of all CSCO gold-standard identified edges are within the top 15% of all possible 2010-11 edges when using the best normalization and ordination techniques. The VOS ordination algorithm, utilizing the Association Strength (2009) Total Occurrences method of normalization, produced the map that was most consistent with the gold-standard. Until demonstrated that a different combination is superior, the author will use VOS ordination and Association Strength (2009) Total Occurrences for all future domain maps.

4.2.6 Future Work

In the future, the author would like to repeat the ranking comparison using a two mode network (both course-subjects and faculty members as nodes) for both spring force algorithms to see if the results are improved. Also, the author would like to replicate the Boyack and Klavens approach of doing the ordination while only using the top 15 co-occurring course-subjects for each individual course-subject (rather than all 103 other course-subjects in 2010-11). Similarly, the author would like to analyze the Top 5, Top10, Top 20, Top 25, and Top 50 co-occurring course-subjects to see the affect this has on the ordination. Finally, the author would like to apply the CSCO approach to mapping other domains. A number of possible datasets might enable such an analysis. For example, one could use instances of faculty members teaching two or more MOOC's (Massive Online Open Course) as determined by the following Websites: www.mooc-list.com and <https://www.coursera.org>. Additionally, one might be able to map all of academia using CSCO data from the International Research Network (IRN) available at <http://nrn.cns.iu.edu>.

4.3 Cluster Results and Analysis

It is desirable to aggregate the course-subjects into groupings. This facilitates both cognitive and regional chunking. In order to accomplish this goal, two clustering approaches were analyzed and compared using the course-subject data: factor analysis and k-means clustering. Additionally, QAP analysis was used to compare the matrix of CSCO data with that of the human subjects' card sort data. This was done as the card sort matrix cluster analysis was used to compare and contrast the CSCO matrix cluster analysis. Additionally, a priori, a good clustering treatment satisfies four basic criteria: (1) all of the course-subjects are assigned to groups, (2) there are few or no groupings with only one course-subject, (3) there are few or no mega-clusters that include too many course-subjects to be interpretable as to their general, unifying theme, and (4) a course-subject can only be included in one, and only, one cluster.

4.3.1 Factor Analysis

For purposes of comparison, a factor analysis was performed on two datasets: (1) the 2010-11 CSCO data, and (2) the human subject matrix of topically similar course-subjects. The later was derived from most detailed level (level one) of the card sorting exercise. This allowed for a comparison of groupings from the incidences of what law faculty members taught (CSCO data) and what the human experts identified as topically similar (card sort data).

4.3.1.1 CSCO Data

For map year 2010-11, a factor analysis was performed on the best normalized CSCO data (association strength (2009) total occurrences). *See Section 3.3.3.1.* The factor analysis identified 28 factors (categories) with eigenvalues above an absolute value of 1.00. This is Kaiser's stopping rule as to how many factors to retain (1960). However, not all of these are interpretable. In other words, a person knowledgeable about the domain cannot always succinctly summarize the higher level factor that explains the included course-subjects. Traditional scree plot analysis (Cattell, 1966) was performed on the factor analysis results. This involves putting a line tangent to the 'elbow' of the scree plot curve and vertically

extending the intersection point down to the x axis (Leydesdorff & Rafols, 2009) in order to reveal the amount of factors that should be maintained. The scree plot analysis of the CSCO data reveals that the first 15 factors should be maintained (a 15 factor solution). See **Figure 20**.

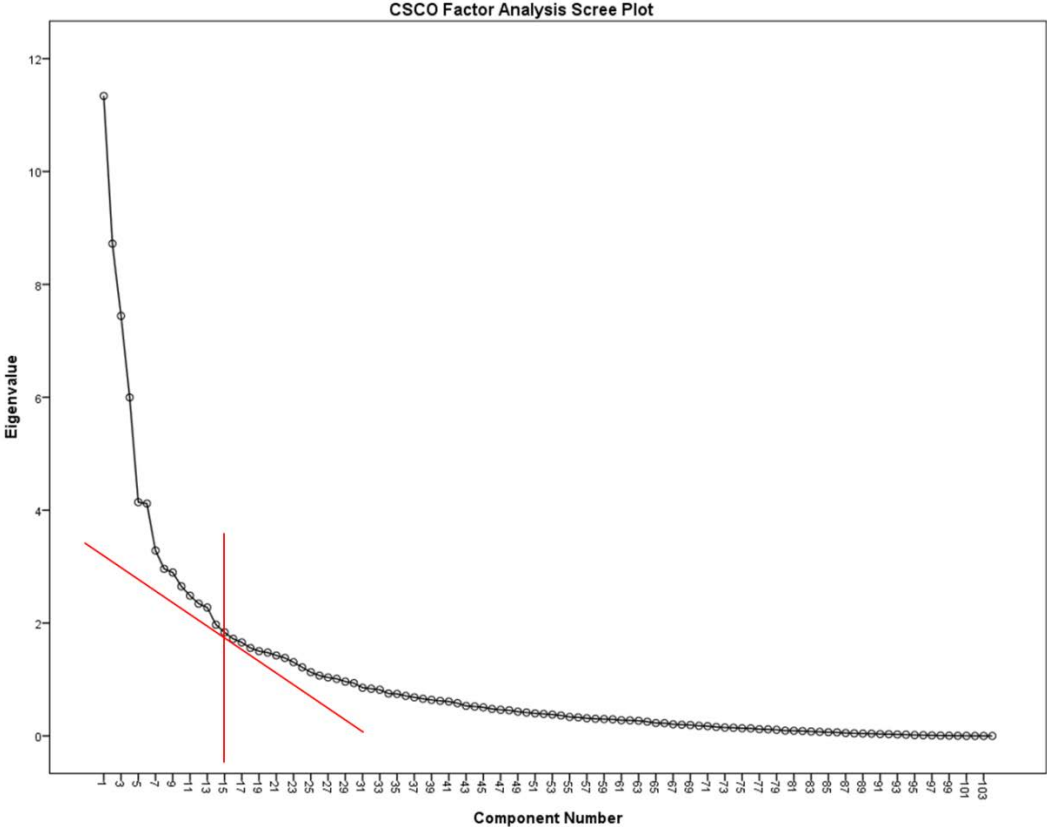


Figure 20: CSCO Factor Analysis Scree Plot

Table 41 sets out the information about these 28 total factors and their course-subject components. The 28 factors account for 79% of the variance in the data. Each course-subject has a factor coefficient of an absolute value of .3 or higher. This is a common threshold when deciding what items to include in a particular factor (Bryant & Yarnold, 1995). As factor titles are not supplied by the statistical software, they must be supplied by the interpreter of the factor analysis. The factor labels below have been supplied by the dissertation author based on the top 25 category names given by the human subjects (*see Section 3.6*) as well as the author's experience with legal education (licensed attorney with a law degree plus ten years of experience working in law schools as an academic law librarian). With factor analysis, a course-subject may appear in more than one factor category. However, shown below, course-subjects are only included with the factor in which their factor coefficient is the highest. This is the factor on which the course-subject most 'loads.'

Table 41: CSCO Factors from Factor Analysis (Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization; Rotation converged in 54 iterations.)

Factor Number	Factor Label (Supplied by Dissertation Author)	Number of Course Subjects in the Factor	Constituent Course-Subjects (Coefficient given in parentheses)	% of Variance	Cumulative %	Notes
1	Environmental Law / Natural Resources / Property / Administrative Law	12	<ul style="list-style-type: none"> • Agricultural Law (.823) • Natural Resources (.806) • Native American Law (.790) • Environmental Law (.778) • Oil and Gas (.747) • Property (.747) • Land Use Planning (.733) • Energy Law (.725) • Water Rights (.562) • Real Estate Transactions (.546) • Ocean Resources (.476) • Administrative Law (.467) 	7.057	7.057	Much of environmental regulation may be seen through the lens of property ownership—what is or is not permissible for an entity to do with its natural resources. Administrative law is much of the legal framework for enforcing environmental constraints on property.
2	Taxation / Estate Planning	9	<ul style="list-style-type: none"> • Taxation Federal (-.854) • Taxation State & Local (-.769) • Estate Planning (-.763) • Law and Accounting (-.762) • Tax Policy (-.760) • Taxation Corporate (-.751) • Estates and Trusts (-.707) • Estate and Gift Tax (-.649) • Employee Benefit Plans (-.493) 	6.654	13.711	Estate Planning and Employee Benefit Plans are mostly about minimizing taxes.
3	International Law	8	<ul style="list-style-type: none"> • Comparative Law (.844) • International Law (.831) • Human Rights (.794) • International Organizations (.732) • Aviation and Space Law (.728) • International Business Transactions (.719) • Conflict of Laws (.590) • Immigration Law (.357) 	5.162	18.873	
4	Commercial Law	5	<ul style="list-style-type: none"> • Creditors' and Debtors' Rights (.835) • Commercial Law (.820) • Contracts (.795) • Consumer Law (.782) • Payment Systems (.744) 	4.606	23.480	
5	Law and Medicine	5	<ul style="list-style-type: none"> • Health Care Law (.822) • Law and Psychiatry (.806) • Law and Science (.756) • Law and Medicine (.701) • Bioethics (.559) 	3.722	27.202	

6	Financial Entities	5	<ul style="list-style-type: none"> • Business Associations (-.797) • Securities Regulation (-.782) • Corporate Finance (-.741) • Law and Economics (-.524) • Financial Institutions (-.443) 	3.692	30.894	
7	Business Regulation	7	<ul style="list-style-type: none"> • Intellectual Property (.807) • Communications Law (.796) • Sports Law (.595) • Trade Regulation (.543) • Computers and the Law (.542) • Antitrust (.468) • Regulated Industries (.464) 	3.621	34.515	
8	Family Law and the Judicial System	5	<ul style="list-style-type: none"> • Women and the Law (.810) • Judicial Administration (.802) • Disability Law (.631) • Family Law (.535) • Juvenile Law (.490) 	3.457	37.971	
9	In the Courtroom	4	<ul style="list-style-type: none"> • Trial Advocacy (-.886) • Labor Law (-.865) • Evidence (-.848) • Criminal Law (-.777) 	3.451	41.423	This factor was hard to interpret and makes little sense. Labor Law is the least well-fitting course-subject in this factor. Employment Discrimination would have been the better labor and employment topic to include in this category as it usually involves more litigation.
10	Protection from Harm	4	<ul style="list-style-type: none"> • Insurance Law (.810) • Products Liability (.745) • Torts (.637) • Welfare Law (.385) 	2.844	44.267	Welfare Law is the least well-fitting course-subject in this factor category.
11	Poverty and Minority Issues	3	<ul style="list-style-type: none"> • Poverty Law (.835) • Critical Race Theory (.803) • Legal Method (.596) 	2.549	46.816	Legal Method is the least well-fitting course-subject in this factor category.
12	Criminal Justice	3	<ul style="list-style-type: none"> • Criminal Procedure (.704) • Criminal Justice (.614) • Law and Social Science (.445) 	2.508	49.324	This is mostly a coherent factor category as Law and Social Science brings in criminology studies. Criminal Law would have fit well in this category.
13	Military Law	2	<ul style="list-style-type: none"> • Admiralty (-.679) • Military Law (-.646) 	2.456	51.781	
14	Procedure and Rights	4	<ul style="list-style-type: none"> • Federal Courts (.747) • Civil Procedure (.627) • Remedies (.567) • Civil Rights (.399) 	2.247	54.028	Civil Rights is the least well-fitting course-subject in this factor category. It is a very strange inclusion.
15	Employment Discrimination	3	<ul style="list-style-type: none"> • Forensic Medicine (.882) • Employment Discrimination (.699) • Alternative Dispute Resolution (.553) 	2.215	56.243	Forensic Medicine does not belong here. It is a false drop due to its status as an extreme outlier with only one faculty member listed as teaching the course-subject. Alternative Dispute Resolution (ADR) is the frequently used path to resolve employment discrimination claims.
16	Constitutional Law	3		2.127	58.369	

			<ul style="list-style-type: none"> • Legislation (-.827) • Constitutional Law (-.404) • Appellate Practice (.384) 			
17	Professional Skills	3	<ul style="list-style-type: none"> • Law Office Management (.807) • Clinical Teaching (.732) • Professional Responsibility (.378) 	2.092	60.461	This is an example of an intuitively satisfying factor category beyond what the scree plot analysis suggests using.
18	Critical Legal Studies	2	<ul style="list-style-type: none"> • Critical Legal Studies (.830) • Law and Religion (.594) 	2.060	62.521	
19	Education	2	<ul style="list-style-type: none"> • Education Law (.738) • Feminist Legal Theory (.518) 	2.004	64.525	This factor hints at the importance of education in the championing of women's issues.
20	National Security Law	2	<ul style="list-style-type: none"> • Government Contracts (.868) • National Security Law (.651) 	1.747	66.271	Hints at the significance of government contracts in the context of the national security law and dealing with defense contractors.
21	Legal Research and Writing	2	<ul style="list-style-type: none"> • Legal Drafting (-.834) • Legal Research and Writing (-.443) 	1.728	67.999	Two flavors of legal writing. Another example of an intuitively satisfying factor category beyond what the scree plot analysis suggests using.
22	Agency and Partnership	1	<ul style="list-style-type: none"> • Agency and Partnership (.802) 	1.681	69.681	Probably should have been grouped with Factor 6, Financial Entities.
23	Entertainment Law	1	<ul style="list-style-type: none"> • Entertainment Law (-.778) 	1.673	71.354	Probably should have been grouped with Factor 7, Business Regulation, with its inclusion of Sports Law and Communications Law.
24	Introduction to Law	3	<ul style="list-style-type: none"> • Introduction to Law (-.598) • Elder Law (.517) • Law and Literature (.412) 	1.587	72.941	Elder Law is the strange inclusion in this factor. Law and Literature is used to explore legal concepts.
25	Equity	2	<ul style="list-style-type: none"> • Equity (.810) • Workers' Compensation (.515) 	1.537	74.478	Strange pairing.
26	Local Government	2	<ul style="list-style-type: none"> • Local Government (.701) • Community Property (.337) 	1.520	75.998	Strange pairing.
27	Jurisprudence	2	<ul style="list-style-type: none"> • Jurisprudence (.542) • Legal History (.441) 	1.447	77.445	
28	[Null Factor Set]	0		1.353	78.798	The one course-subject in this factor, Conflict of Laws (.552), more strongly loads on Factor 3, International Law.

4.3.1.2 Card Sort Data

A similar factor analysis was conducted on the human subject matrix of topically similar course-subjects derived from the most detailed level (level one) of the card sorting exercise and factored the same way as the CSCO data. The factor analysis of the human subject card sort matrix identified 14 factors

(categories) with eigenvalues above 1.00. These 14 factors account for 74% of the variance in the data. See **Table 42**. Additionally, a scree plot analysis revealed that all 14 factors with eigenvalues above 1.00 should be maintained. See **Figure 21**. The maintaining of all 14 factors with eigenvalues above 1.00 as determined by the scree plot analysis probably indicates that, as compared to the CSCO data, the expert determined similarity of the course-subjects is less multidimensional and fractured.

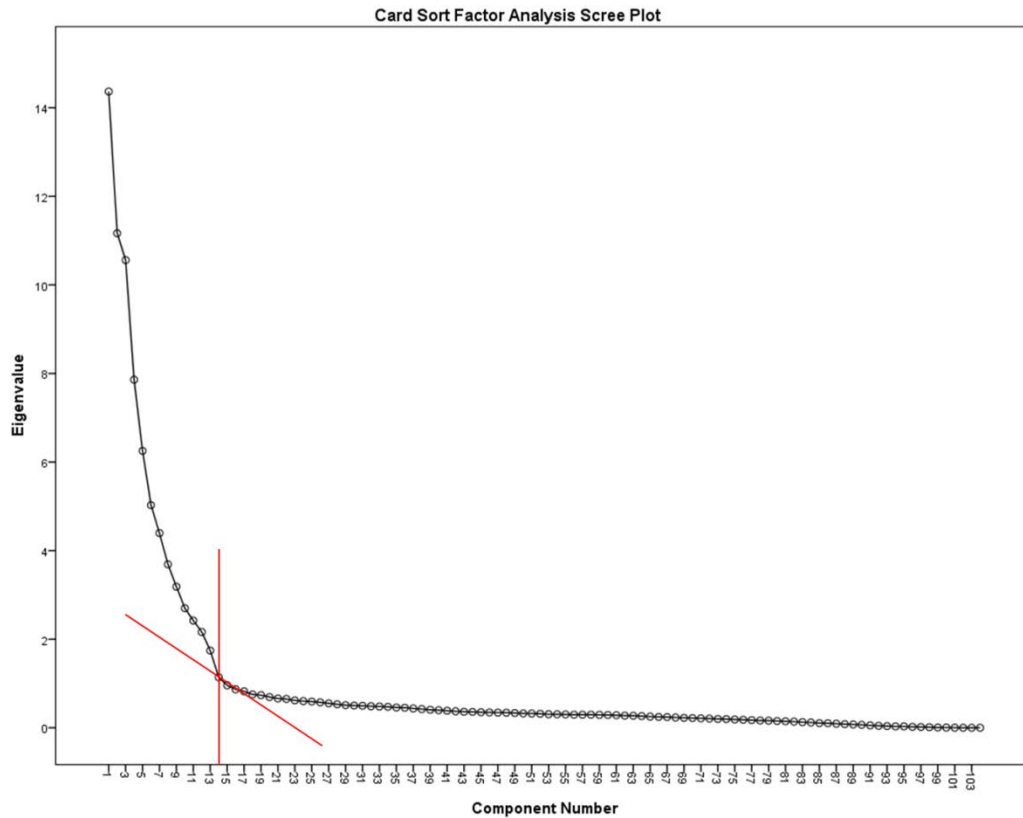


Figure 21: Card Sort Factor Analysis Scree Plot

Table 42: Card Sort Factors from Factor Analysis (Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization; Rotation Converged in 17 Iterations.)

Factor Number	Factor Label (Supplied by Dissertation Author)	Number of Course Subjects in the Factor	Constituent Course-Subjects (Coefficient given in parentheses)	% of Variance	Cumulative %	Notes
1	Business Law	14	<ul style="list-style-type: none"> • Creditors' and Debtors' Rights (.875) • Commercial Law (.855) • Contracts (.589) • Consumer Law (.561) • Payment Systems (.823) • Business Associations (.845) • Securities Regulation (.877) • Corporate Finance (.873) • Financial Institutions (.871) • Agency and Partnership (.846) • Antitrust (.833) • Insurance Law (.756) • Trade Regulation (.631) • International Business Transactions (.620) 	9.877	9.877	This super category is similar to what is included in a business law textbook as taught in business schools—all the ways that legal issues intersect with business issues.
2	Professional Skills	10	<ul style="list-style-type: none"> • Clinical Teaching (.898) • Legal Method (.871) • Legal Drafting (.865) • Legal Research and Writing (.864) • Law Office Management (.860) • Introduction to Law (.839) • Professional Responsibility (.835) • Appellate Practice (.810) • Trial Advocacy (.804) • Alternative Dispute Resolution (.679) 	8.123	18.000	
3	Jurisprudence	10	<ul style="list-style-type: none"> • Jurisprudence (.838) • Women and the Law (.836) • Critical Race Theory (.800) • Critical Legal Studies (.798) • Feminist Legal Theory (.794) • Legal History (.794) • Law and Literature (.726) • Law and Religion (.717) • Law and Economics (.621) • Law and Accounting (.492) 	7.277	25.277	
4	Law of Compassion	11	<ul style="list-style-type: none"> • Disability Law (.849) • Family Law (.649) • Juvenile Law (.754) • Elder Law (.851) • Poverty Law (.837) 	6.942	32.219	

			<ul style="list-style-type: none"> • Welfare Law (.830) • Immigration Law (.779) • Health Care Law (.705) • Native American Law (.690) • Civil Rights (.667) • Education Law (.537) 			
5	Environmental Law / Natural Resources	9	<ul style="list-style-type: none"> • Agricultural Law (.867) • Natural Resources (.866) • Environmental Law (.876) • Oil and Gas (.879) • Land Use Planning (.608) • Energy Law (.874) • Water Rights (.865) • Ocean Resources (.873) • Regulated Industries (.451) 	6.807	39.026	
6	Law and Science	7	<ul style="list-style-type: none"> • Law and Psychiatry (.790) • Law and Science (.768) • Law and Medicine (.807) • Bioethics (.823) • Forensic Medicine (.817) • Computers and the Law (.647) • Law and Social Science (.633) 	5.322	44.347	
7	Procedural	7	<ul style="list-style-type: none"> • Conflict of Laws (-.855) • Federal Courts (-.836) • Civil Procedure (-.831) • Evidence (-.813) • Equity (-.742) • Remedies (-.737) • Judicial Administration (-.682) 	5.310	49.658	
8	International Law	7	<ul style="list-style-type: none"> • Comparative Law (.829) • International Law (.805) • Human Rights (.772) • International Organizations (.805) • Aviation and Space Law (.503) • National Security Law (.694) • Admiralty (.571) 	4.829	54.487	
9	Public Law	6	<ul style="list-style-type: none"> • Administrative Law (.790) • Legislation (.768) • Local Government (.754) • Government Contracts (.712) • Constitutional Law (.624) • Military Law (.565) 	4.260	58.746	
10	Taxation	5	<ul style="list-style-type: none"> • Taxation Federal (-.838) • Taxation State and Local (-.838) • Tax Policy (-.838) • Taxation Corporate (-.838) • Estate and Gift Tax (-.862) 	4.049	62.796	
11	Property	5	<ul style="list-style-type: none"> • Property (.777) • Real Estate Transactions (.733) • Estates and Trusts (.744) 	3.621	66.417	

			<ul style="list-style-type: none"> • Estate Planning (.687) • Community Property (.646) 			
12	Labor and Employment	4	<ul style="list-style-type: none"> • Employment Discrimination (.802) • Workers Compensation (.791) • Labor Law (.740) • Employee Benefit Plans (.729) 	2.889	69.306	
13	Intellectual Property and Entertainment	4	<ul style="list-style-type: none"> • Intellectual Property (.488) • Communications Law (.718) • Sports Law (.744) • Entertainment Law (.634) 	2.288	71.595	
14	Criminal Law and Torts	5	<ul style="list-style-type: none"> • Criminal Law (-.731) • Criminal Procedure (-.723) • Criminal Justice (-.715) • Torts (.404) • Products Liability (.228) 	2.123	73.718	The inclusion of torts with the criminal course-subjects is a large anomaly. However, there are torts (civil liability) that also subject one to criminal liability. Products Liability has a factor coefficient that would otherwise exclude it from the list. However, it has to go somewhere and this is the factor on which it most strongly loads.

4.3.1.3 Discussion

While it may be that CSCO analysis is a demonstrably valid way to produce domain maps of the academic discipline of law in the United States, it may not be the best way. For instance, a map derived from the similarity matrix of the human identified similar course-subjects may be better. However, the latter is much more laborious to produce and may be questionable for distant academic years of which contemporary experts have little familiarity. Similarly, cluster groupings made from CSCO data are definitely correct in one sense. They capture the underlying reality of course similarity based on what people actually teach. They also incorporate the vagaries of scheduling in which some faculty members are obligated to teach course-subjects outside of their main field of teaching and research. In this sense, the cluster groupings made from the human subject data might be superior. Taken in their entirety, the author would choose the 14 factors from the card sort data over the 28 factors from the CSCO data. The former better satisfy the a priori desired characteristics of a clustering approach that avoids the existence of many small groupings of only one or two course-subjects. Also, if one were to accept the diminished number of factors determined by the scree plot analysis, the clustering approach of the factor analysis on

the CSCO data would also violate the desired characteristic of every course-subject belonging to a category.

However, a more nuanced analysis reveals that some groupings may be better derived from the CSCO data. The table below illustrates this point. For instance, human experts may be biased by course-subject names. It is easy to group the taxation course-subjects together as they all have taxation in their name. However, the CSCO grouping reveals a more topical approach that also includes those course-subjects that exist largely to reduce tax obligations—the estate planning course-subjects as well as Employee Benefit Plans. *See Table 43.* These course-subjects were placed in other categories by the experts.

Table 43: Taxation / Wealth Preservation Factor Comparison

CSCO Factor 2		Card Sort Factor 10		Card Sort Factor 11		Card Sort Factor 12	
Taxation / Wealth Preservation		Taxation		Property		Labor and Employment	
Course-Subject	Coefficient	Course-Subject	Coefficient	Course-Subject	Coefficient	Course-Subject	Coefficient
Taxation Federal	-.854	Taxation Federal	-.838				
Taxation State and Local	-.769	Taxation State and Local	-.838				
Estate Planning	-.763			Estate Planning	.687		
Law and Accounting	-.762						
Tax Policy	-.760	Tax Policy	-.838				
Taxation Corporate	-.751	Taxation Corporate	-.838				
Estates and Trusts	-.707			Estates and Trusts	.744		
Estate and Gift Tax	-.649	Estate and Gift Tax	-.862				
Employee Benefit Plans	-.493					Employee Benefit Plans	.729
				Property	.777		
				Real Estate Transactions	.733		
				Community Property	.646		
						Employment Discrimination	.802
						Workers Compensation	.791
						Labor Law	.740

4.3.2 K-Means

The k-means clustering algorithm was used to compare the CSCO data against the human subject card sort data to see differences in how the two datasets cluster. The analysis revealed structural differences in the relationships between the course-subjects in each dataset. As required by the algorithm, three predetermined cluster amounts were used (15, 20, and 25 clusters) to see how each dataset responded to the k-means treatment. The choice of 15, 20, and 25 clusters was determined in part by the factor analysis (14 factors above the elbow line of the card sort data) and the 25 clusters suggested by category names used by five or more of the human subjects (*see* **Section 3.6**).

The accompanying ANOVA analysis output from SPSS states: “The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.” However, high F-Test values have been interpreted as an indicator of cluster cohesiveness and how well a cluster loads on a particular course-subject (Burns & Burns, 2008, p. 558). Additionally, repeated running of the CSCO and card sort k-means analysis produced the exact same results at all three cluster intervals. The specific implementation of the K-means algorithm in SPSS appears deterministic.

The CSCO k-means cluster analysis grossly violated some of the desired conditions of a clustering treatment. Over the three predetermined cluster amounts (15, 20, 25 clusters), the k-means algorithm produced numerous clusters consisting of only one member and large and uninterpretable mega-clusters consisting of 38, 41 and 31 clusters. *See* **Figure 22**. Additionally, as the number of clusters increased, it was hoped that the large mega-clusters would break into several interpretable clusters. Instead, with a few exceptions, the already small clusters fragmented into even smaller clusters and there still remained an uninterpretable mega-cluster. *See* **Table 44**. Also, there was not a consistent evolution of cluster memberships over the three cluster solutions as course-subjects sometimes went back and forth between otherwise disparate clusters. These same traits were largely absent from the card sort k-means analysis.

See **Figure 23** and **Table 45**. Again, this is probably a result of the CSCO data being inherently more multi-dimensional than the card sort data.

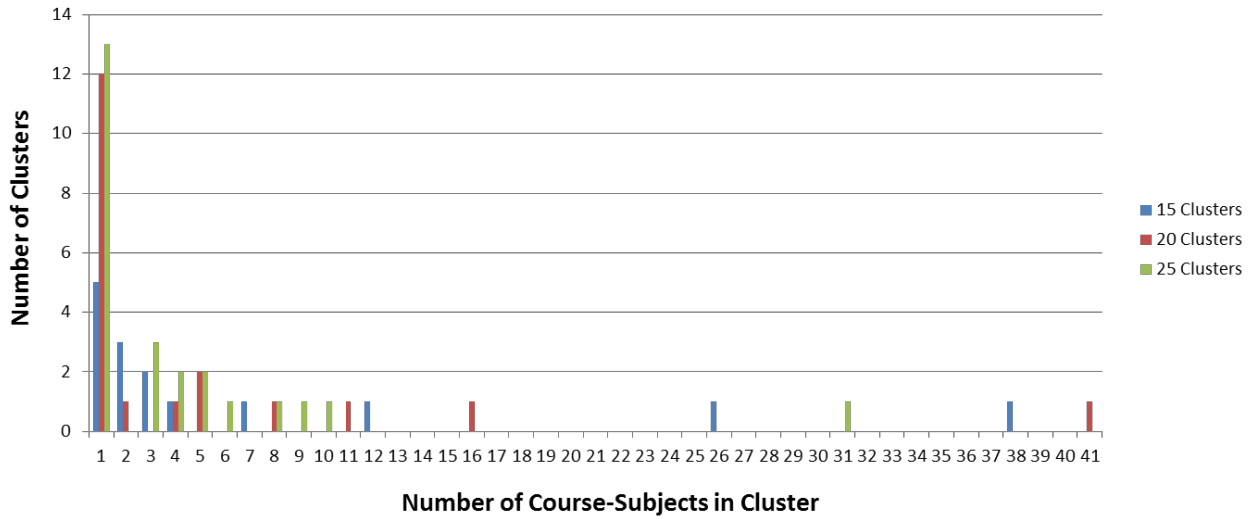


Figure 22: CSCO Distribution of Clusters by Number of Course-Subjects

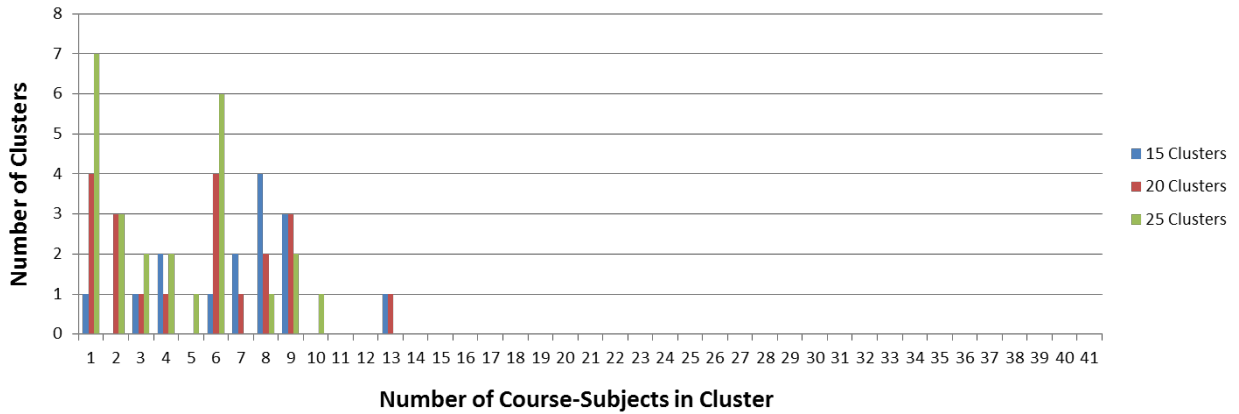


Figure 23: Card Sort Distribution of Clusters by Number of Course-Subjects

Table 44: K-Means Clustering of CSCO Data at 15, 20, and 25 Cluster Solutions

15 Cluster Solution (Convergence in the 7 th Iteration)			20 Cluster Solution (Convergence in the 6 th Iteration)			25 Cluster Solution (Convergence in the 4 th Iteration)			
Cluster Number and Interpreted Name (number of course-subjects in parentheses)	Course- Subjects in Cluster	F Test Value from ANOVA Analysis	Cluster Number and Interpreted Name (number of course-subjects in parentheses)	Course- Subjects in Cluster	F Test Value from ANOVA Analysis	Cluster Number and Interpreted Name (number of course-subjects in parentheses)	Course- Subjects in Cluster	F Test Value from ANOVA Analysis	
1. Taxation (3)	Tax Policy	18.473	5. Taxation (4)	Tax Policy	58.935	19. Tax Policy (1)	Tax Policy	88.437	
	Taxation, Federal	9.869		Taxation, Federal	7.002		Taxation, Federal	6.951	
	Law and Accounting	8.165		Law and Accounting	9.065		Law and Accounting	7.302	
See 2. Uninterpretable Mega-Cluster				Estates and Trusts	10.98	10. Taxation (3)	See 2. Elder Law		
10. Additional Tax Subjects (2)	Taxation, State and Local	24.557	Taxation, State and Local	56.168	Taxation, State and Local		102.022		
	Taxation, Corporate	22.312	19. Taxation, Corporate (1)	Taxation, Corporate	32.844	20. Taxation, Corporate (1)	Taxation, Corporate	23.726	
11. Estate and Gift Tax (1)	Estate and Gift Tax	29.953	12. Estate and Gift Tax (1)	Estate and Gift Tax	87.387	3. Estate and Gift Tax (1)	Estate and Gift Tax	38.926	
15. Estate Planning (1)	Estate Planning	17.02	15. Estate Planning (1)	Estate Planning	21.411	15. Estate Planning (1)	Estate Planning	21.482	
6. Trial Advocacy (2)	Labor Law	21.169	2. Labor Law (1)	Labor Law	17.998	25. Labor Law (1)	Labor Law	19.573	
	Trial Advocacy	34.642		Trial Advocacy	22.632		Trial Advocacy	21.953	
2. Uninterpretable Mega-Cluster (38)	Jurisprudence	1.697		14. Uninterpretable Mega-Cluster (41)	Jurisprudence	1.54	9. Uninterpretable Mega-Cluster (31)	Jurisprudence	1.376
	Judicial Administration	0.62			Judicial Administration	18.945		Judicial Administration	15.654
	Criminal Procedure	1.735			Criminal Procedure	1.236		Criminal Procedure	1.277
	Evidence	23.102			Evidence	13.793		Evidence	13.544
	Legal Research and Writing	1.572			Legal Research and Writing	1.106		Legal Research and Writing	0.907
	Employment Discrimination	3.428			Employment Discrimination	10.159		See 24. Torts	
	Women and the Law	2.3			Women and the Law	9.8		Women and the Law	7.173
	Criminal Law	10.9			Criminal Law	7.801		Criminal Law	6.807

Law Office Management	1.152		Law Office Management	1.172		Law Office Management	1.085
Appellate Practice	1.761		Appellate Practice	1.526		Appellate Practice	1.17
See 13. Environmental Law and Property			Property	4.173		See 22. Property	
Legal History	2.047		Legal History	3.021		Legal History	3.375
See 13. Environmental Law and Property			Real Estate Transactions	2.98		See 22. Property	
Juvenile Law	1.87		Juvenile Law	2.832		Juvenile Law	2.193
Education Law	1.14		Education Law	1.114		Education Law	2.17
Legal Drafting	0.543		Legal Drafting	0.624		Legal Drafting	0.552
Criminal Justice	2.025		Criminal Justice	1.492		Criminal Justice	1.545
Professional Responsibility	3.703		Professional Responsibility	2.652		Professional Responsibility	2.628
Alternative Dispute Resolution	2.596		Alternative Dispute Resolution	2.634		Alternative Dispute Resolution	1.82
Federal Courts	1.018		Federal Courts	1.249		Federal Courts	1.063
Civil Rights	3.587		Civil Rights	2.581		Civil Rights	2.164
Legislation	0.995		Legislation	1.238		Legislation	1.036
Family Law	1.633		Family Law	2.421		Family Law	2.327
Clinical Teaching	2.554		Clinical Teaching	2.256		Clinical Teaching	1.701
Law and Social Science	3.074		Law and Social Science	2.031		Law and Social Science	2.056
Immigration Law	1.694		Immigration Law	2.022		Immigration Law	1.797
Constitutional Law	1.907		Constitutional Law	1.989		Constitutional Law	1.8
Law and Religion	1.994		Law and Religion	1.904		Law and Religion	2.193
Civil Procedure	2.063		Civil Procedure	1.728		Civil Procedure	1.58
Law and Literature	1.823		Law and Literature	1.723		Law and Literature	1.648
See 5. Business and International Law			See 1. International Law			Comparative Law	3.912
See 5. Business and International Law			See 1. International Law			Conflict of Laws	1.594
See 5. Business and International Law			See 20. Regulated Industries			Government Contracts	1.082
See 13. Environmental Law and Property			Native American Law	11.572		See 22. Property	
Critical Race Theory	1.704		Critical Race Theory	19.919	6. Critical Race Theory (5)	Critical Race Theory	20.686
Poverty Law	4.751		Poverty Law	6.671		Poverty Law	5.134
See 13. Environmental Law and Property			Local Government	2.634		Local Government	3.594
See 4. Legal Method			Introduction to Law	2.702		Introduction to Law	2.402
See 4. Legal Method			Legal Method	2.49	Legal Method	2.259	
Community Property	2.19		Community Property	2.735	2. Elder Law (6)	Community Property	1.767
See 12. Medicine and Injury			Elder Law	16.807		Elder Law	13.198
See 12. Medicine and Injury			Disability Law	6.859		Disability Law	5.762
See 5. Business and International Law			See 10. Business			Agency and Partnership	4.047
See 4. Legal Method			Welfare Law	2.705	Welfare Law	2.171	
Estates and Trusts	17.711		See 5. Taxation		Estates and Trusts	15.028	
Human Rights	0.811		See 1. International Law		See 7. International Law		
Remedies	1.626		See 20. Regulated Industries		See 24. Torts		
Feminist Legal Theory	0.997	6. Feminist Legal Theory (1)	Feminist Legal Theory	0.884	17. Feminist Legal Theory (1)	Feminist Legal Theory	0.814
National Security Law	5.614	See 1. International Law		See 7. International Law			
Administrative Law	3.598	See 20. Regulated Industries		See 14. Regulated Industries			
Employee Benefit Plans	3.518	7. Employee Benefit	Employee Benefit Plans	2.911	4. Employee Benefit	Employee Benefit Plans	5.146

			Plans (1)			Plans (1)			
4. Legal Method (4)	Legal Method	2.453	See 14. Uninterpretable Mega-Cluster			See 6. Critical Race Theory			
	Introduction to Law	2.438	See 14. Uninterpretable Mega-Cluster			See 6. Critical Race Theory			
	Welfare Law	1.558	See 14. Uninterpretable Mega-Cluster			See 2. Elder Law			
	Critical Legal Studies	1.155	11. Critical Legal Studies (1)	Critical Legal Studies	1.1	5. Critical Legal Studies (1)	Critical Legal Studies	8.412	
5. Business and International Law (26)	Financial Institutions	4.6	10. Business (11)	Financial Institutions	7.286	21. Business Law (10)	Financial Institutions	8.803	
	Contracts	4.495		Contracts	6.736		Contracts	3.926	
	Corporate Finance	3.126		Corporate Finance	5.674		Corporate Finance	2.894	
	Agency and Partnership	4.685		Agency and Partnership	4.721		See 2. Elder Law		
	Business Associations	3.299		Business Associations	4.454		Business Associations	2.406	
	Commercial Law	2.045		Commercial Law	3.826		Commercial Law	2.924	
	Payment Systems	2.199		Payment Systems	3.687		Payment Systems	3.259	
	Creditors' and Debtors' Rights	1.928		Creditors' and Debtors' Rights	3.492		Creditors' and Debtors' Rights	3.379	
	Consumer Law	2.225		Consumer Law	3.241		Consumer Law	2.949	
	Law and Economics	3.031		Law and Economics	3.217		Law and Economics	2.797	
	Securities Regulation	2.175	Securities Regulation	3.167	Securities Regulation	1.507			
	See Same Cluster			See 1. International Law			International Business Transactions	3.958	
	Regulated Industries	4.35	20. Regulated Industries (16)	Regulated Industries	3.971	14. Regulated Industries (9)	Regulated Industries	4.55	
	Computers and the Law	1.851		Computers and the Law	1.217		Computers and the Law	2.133	
	See 2. Uninterpretable Mega-Cluster				Administrative Law		3.191	Administrative Law	3.149
	Antitrust	2.827		Antitrust	2.315		Antitrust	2.313	
	Government Contracts	1.013		Government Contracts	1.099		See 9. Uninterpretable Mega-Cluster		
	Trade Regulation	4.041		Trade Regulation	2.116		Trade Regulation	3.435	
	Intellectual Property	2.081		Intellectual Property	2.068	Intellectual Property	3.248		
	Communications Law	1.07		Communications Law	1.45	Communications Law	2.704		
	Entertainment Law	1.514		Entertainment Law	1.325	Entertainment Law	0.965		
	See 12. Medicine and Injury				Torts	3.35	24. Torts (8)	Torts	3.342
	See 12. Medicine and Injury				Workers' Compensation	2.152		Workers' Compensation	2.631
	See 12. Medicine and Injury				Products Liability	1.601		Products Liability	2.375
	Sports Law	0.922		Sports Law	1.319	Sports Law		1.254	
	See 12. Medicine and Injury				Insurance Law	1.278		Insurance Law	2.117
	See 12. Medicine and Injury				Equity	1.075		Equity	1.809
	See 2. Uninterpretable Mega-Cluster				Remedies	1.066		Remedies	2.078
	See 2. Uninterpretable Mega-Cluster			14. Uninterpretable Mega-Cluster				Employment Discrimination	8.282
	Comparative Law	2.112	1. International Law (8)	Comparative Law	5.006	See 9. Uninterpretable Mega-Cluster			
	Aviation and Space Law	4.642		Conflict of Laws	2.077	See 9. Uninterpretable Mega-Cluster			
	International Organizations	0.812		International Organizations	6.082	See 12. Military Law			
	International Business Transactions	4.445		International Business Transactions	5.021	See 14. Regulated Industries			

	International Law	1.772		International Law	9.745	7. International Law (4)	International Law	5.553
	Conflict of Laws	1.496		Aviation and Space Law	7.529		Aviation and Space Law	6.366
See 2. Uninterpretable Mega-Cluster				Human Rights	4.349		Human Rights	3.746
See 2. Uninterpretable Mega-Cluster				National Security Law	4.31		National Security Law	2.594
7. Military Law (2)	See 5. Business and International Law		18. Military Law (2)	See 1. International Law		12. Military Law (3)	International Organizations	6.588
	Admiralty	10.609		Admiralty	12.129		Admiralty	8.123
	Military Law	2.792		Military Law	4.728		Military Law	6.415
9. Forensic Medicine (1)	Forensic Medicine	16.244	9. Forensic Medicine (1)	Forensic Medicine	11.762	16. Forensic Medicine (1)	Forensic Medicine	9.066
12. Medicine and Injury (12)	Bioethics	3.47	3. Law and Medicine (5)	Bioethics	6.361	13. Bioethics (1)	Bioethics	11.564
	Law and Medicine	5.559		Law and Medicine	6.491	23. Law and Medicine (4)	Law and Medicine	7.238
	Health Care Law	4.668		Health Care Law	4.224		Health Care Law	10.406
	Law and Psychiatry	3.048		Law and Psychiatry	3.817		Law and Psychiatry	4.719
	Law and Science	1.846		Law and Science	3.061		Law and Science	3.155
	Torts	3.851	See 20. Regulated Industries		See 24. Torts			
	Products Liability	2.92	See 20. Regulated Industries		See 24. Torts			
	Insurance Law	2.908	See 20. Regulated Industries		See 24. Torts			
	Elder Law	1.932	See 14. Uninterpretable Mega-Cluster		See 2. Elder Law			
	Workers' Compensation	1.82	See 20. Regulated Industries		See 24. Torts			
	Disability Law	1.08	See 14. Uninterpretable Mega-Cluster		See 2. Elder Law			
Equity	0.736	See 20. Regulated Industries		See 24. Torts				
13. Environmental Law and Property (7)	Property	8.842	See 14. Uninterpretable Mega-Cluster		22. Property (5)	Property	5.184	
	Local Government	5.104	See 14. Uninterpretable Mega-Cluster					
	Real Estate Transactions	3.788	See 14. Uninterpretable Mega-Cluster			Real Estate Transactions	2.438	
	Native American Law	12.336	See 14. Uninterpretable Mega-Cluster			Native American Law	8.563	
	Land Use Planning	13.528	13. Environmental Law (5)	Land Use Planning		2.358	Land Use Planning	4.745
	Agricultural Law	14.831		Agricultural Law	10.012	Agricultural Law	9.516	
	Environmental Law	35.611		Environmental Law	16.948	Environmental Law	13.078	
3. Natural Resources (3)	Oil and Gas	20.139		Oil and Gas	13.576	11. Environmental Law (3)	Oil and Gas	23.439
	Energy Law	18.279		Energy Law	13.903		Energy Law	16.35
	Natural Resources	38.665	4. Natural Resources (1)	Natural Resources	43.673	18. Natural Resources (1)	Natural Resources	43.745
14. Ocean Resources (1)	Ocean Resources	46.915	16. Ocean Resources (1)	Ocean Resources	15.616	1. Ocean Resources (1)	Ocean Resources	15.38
8. Water Rights (1)	Water Rights	18.687	8. Water Rights (1)	Water Rights	27.824	8. Water Rights (1)	Water Rights	22.715

Table 45: K-Means Clustering of Card Sort Data at 15, 20, and 25 Cluster Solutions

15 Cluster Solution (Convergence in the 3 rd Iteration)			20 Cluster Solution (Convergence in the 3 rd Iteration)			25 Cluster Solution (Convergence in the 3 rd Iteration)		
Cluster Number and Interpreted Name (number of course-subjects in parentheses)	Course- Subjects in Cluster	F Test Value from ANOVA Analysis	Cluster Number and Interpreted Name (number of course-subjects in parentheses)	Course- Subjects in Cluster	F Test Value from ANOVA Analysis	Cluster Number and Interpreted Name (number of course-subjects in parentheses)	Course- Subjects in Cluster	F Test Value from ANOVA Analysis
1. Constitutional and Administrative Law (13)	Native American Law	17.52	1. Constitutional and Administrative Law (13)	Native American Law	12.506	1. Constitutional and Administrative Law (10)	Native American Law	8.505
	Aviation and Space Law	10.141		Aviation and Space Law	7.065		Aviation and Space Law	6.537
	Education Law	8.197		Education Law	6.046		Administrative Law	4.911
	Administrative Law	6.205		Administrative Law	4.343		Military Law	4.305
	Local Government	5.938		Local Government	4.248		Local Government	4.123
	Military Law	5.891		Military Law	4.115		Education Law	4.06
	Regulated Industries	5.468		Regulated Industries	3.897		Regulated Industries	3.514
	Legislation	4.415		Legislation	3.125		Legislation	3.512
	Government Contracts	4.673		Government Contracts	3.291		Government Contracts	2.974
	Constitutional Law	2.124		Constitutional Law	1.61		Constitutional Law	2.126
	Communications Law	5.118		Communications Law	3.642		See 14. (Contracts).	
	Sports Law	1.823		Sports Law	1.269		See 14. (Contracts).	
	Entertainment Law	1.428		Entertainment Law	0.997		See 14. (Contracts).	
2. International (8)	International Business Transactions	14.709	16. International (8)	International Business Transactions	10.26	See 8. (Trade Regulation).		
	Trade Regulation	12.496		Trade Regulation	8.738	See 8. (Trade Regulation).		
	International Law	11.553		International Law	8.058	5. International (6)	International Law	4.394
	International Organizations	11.553		International Organizations	8.058		International Organizations	4.394
	Comparative Law	10.8		Comparative Law	7.539		Comparative Law	3.675
	Human Rights	5.929		Human Rights	4.214		Human Rights	2.994
	National Security Law	5.39		National Security Law	3.793		National Security Law	3.432
	Admiralty	4.857		Admiralty	3.545		Admiralty	2.728
3. Criminal Law (3)	Criminal Law	10.847	19. Criminal Law (3)	Criminal Law	7.554	2. Criminal Law (2)	Criminal Law	8.167
	Criminal Procedure	10.744		Criminal Procedure	7.474		Criminal Procedure	8.044
	Criminal Justice	10.773		Criminal Justice	7.495	25. Criminal Justice (1)	Criminal Justice	62.57
4. Natural Resources / Environmental Law (7)	Agricultural Law	26.673	18. Natural Resources (1)	Natural Resources	46.168	19. Natural Resources (1)	Natural Resources	34.872

	Oil and Gas	23.893	20. Environmental Law (6)	Agricultural Law	18.806	21. Environmental Law (6)	Agricultural Law	13.973	
	Environmental Law	23.39		Ocean Resources	17.69		Ocean Resources	13.631	
	Natural Resources	21.622		Environmental Law	17.519		Environmental Law	13.247	
	Water Rights	20.953		Oil and Gas	17.419		Oil and Gas	12.985	
	Ocean Resources	19.356		Water Rights	17.031		Water Rights	12.814	
	Energy Law	18.061		Energy Law	12.763		Energy Law	9.628	
5. Law of Compassion (9)	Disability Law	15.699	13. Law of Compassion (9)	Disability Law	11.061	24. Law of Compassion (9)	Disability Law	8.551	
	Elder Law	11.489		Elder Law	8.028		Elder Law	5.929	
	Poverty Law	11.179		Poverty Law	7.802		Poverty Law	5.837	
	Welfare Law	10.926		Welfare Law	7.62		Welfare Law	6.009	
	Health Care Law	10.035		Health Care Law	7.009		Health Care Law	4.561	
	Juvenile Law	9.445		Juvenile Law	6.61		Juvenile Law	4.932	
	Immigration Law	9.205		Immigration Law	6.515		Immigration Law	5.236	
	Family Law	5.614		Family Law	3.923		Family Law	2.953	
	Civil Rights	3.804		Civil Rights	2.849		Civil Rights	2.451	
6. Property (6)	Land Use Planning	22.815	4. Property (6)	Land Use Planning	15.881	13. Property (6)	Land Use Planning	11.681	
	Property	17.395		Property	12.136		Property	8.867	
	Real Estate Transactions	14.581		Real Estate Transactions	10.143		Real Estate Transactions	8.425	
	Estates and Trusts	12.041		Estates and Trusts	8.725		Estates and Trusts	6.534	
	Estate Planning	9.941		Estate Planning	7.393		Estate Planning	5.477	
	Community Property	7.14		Community Property	4.986		Community Property	3.71	
7. Professional Skills (9)	Legal Drafting	20.25	7. Professional Skills (9)	Legal Drafting	14.83	7. Legal Drafting (1)	Legal Drafting	24.016	
	Legal Method	21.45		Legal Method	15.415	23. Professional Skills (8)	Legal Method	16.194	
	Legal Research and Writing	20.381		Legal Research and Writing	14.826		Legal Research and Writing	15.378	
	Clinical Teaching	17.14		Clinical Teaching	13.035		Clinical Teaching	12.275	
	Law Office Management	16.572		Law Office Management	11.883		Law Office Management	10.098	
	Appellate Practice	14.463		Appellate Practice	10.564		Appellate Practice	8.648	
	Trial Advocacy	13.802		Trial Advocacy	9.825		Trial Advocacy	7.931	
	Introduction to Law	12.978		Introduction to Law	9.379		Introduction to Law	8.828	
	Professional Responsibility	12.567		Professional Responsibility	8.79		Professional Responsibility	6.919	
	8. Taxation (4)	Taxation, State and Local		181.419	14. Taxation, State and Local (1)		Taxation, State and Local	152.629	18 Taxation, State and Local (1)
Taxation, Federal		23.27	6. Taxation, Federal (1)	Taxation, Federal	152.629	3. Taxation Federal (2)	Taxation, Federal	32.296	
Taxation, Corporate		23.27	2. Taxation, Corporate (2)	Estate and Gift Tax	17.52	6. Taxation, Corporate (1)	Estate and Gift Tax	13.072	
Estate and Gift Tax		18.063		Taxation, Corporate	42.679		Taxation, Corporate	119.623	
15. Tax Policy (1)	Tax Policy	23.27	5. Tax Policy (1)	Tax Policy	152.629	15. Tax Policy (1)	Tax Policy	119.623	
See 14. Jurisprudence			See 15. Jurisprudence			9. Interdisciplinary (8)	Law and Literature	11.49	
9. Interdisciplinary (8)	Law and Psychiatry	22.789	9. Interdisciplinary (8)	Law and Psychiatry	15.848		9. Interdisciplinary (9)	Law and Psychiatry	13.239
	Law and Science	20.849		Law and Science	14.596		Law and Science	13.736	
	Law and Social Science	19.788		Law and Social Science	13.765		Law and Social Science	12.117	

	Law and Economics	17.295		Law and Economics	12.031		Law and Economics	10.132	
	Law and Medicine	15.919		Law and Medicine	11.074		Law and Medicine	8.186	
	Bioethics	13.094		Bioethics	9.108		Bioethics	6.986	
	Computers and the Law	9.747		Computers and the Law	6.867		Computers and the Law	7.8	
	Forensic Medicine	8.242		Forensic Medicine	5.743		Forensic Medicine	3.251	
10. Business (9)	Securities Regulation	17.287	10. Business (9)	Securities Regulation	12.046	10. Business (6)	Securities Regulation	11.254	
	Financial Institutions	14.965		Financial Institutions	10.436		Financial Institutions	10.565	
	Corporate Finance	15.033		Corporate Finance	10.481		Corporate Finance	10.243	
	Creditors' and Debtors' Rights	13.036		Creditors' and Debtors' Rights	9.117		Creditors' and Debtors' Rights	10.2	
	Commercial Law	12.915		Commercial Law	9.013		Commercial Law	9.694	
	Business Associations	12.97		Business Associations	9.033		Business Associations	8.01	
	Payment Systems	9.869		Payment Systems	6.898		Payment Systems	14.904	
	Antitrust	7.214		Antitrust	5.047		Antitrust	7.503	
	Agency and Partnership	7.146		Agency and Partnership	4.972		Agency and Partnership	8.445	
		See 2. International					See 16. International		8. Trade Regulation (6)
	See 2. International			See 16. International			International Business Transactions	7.557	
	See 12. Contracts and Torts			See 3. Contracts and Torts			Insurance Law	8.078	
11. Procedure (8)	Civil Procedure	23.223	17. Procedure (6)	Civil Procedure	16.183	17. Procedure (6)	Civil Procedure	12.159	
	Conflict of Laws	23.088		Conflict of Laws	16.182		Conflict of Laws	12.476	
	Federal Courts	17.747		Federal Courts	12.5		Federal Courts	9.616	
	Evidence	17.3		Evidence	12.039		Evidence	9.017	
	Remedies	7.899		Remedies	10.157		Remedies	7.584	
	Judicial Administration	13.297		Judicial Administration	9.289		Judicial Administration	7.127	
	Alternative Dispute Resolution	21.455	11. Alternative Dispute Resolution (2)	Alternative Dispute Resolution	18.804	11. Alternative Dispute Resolution (2)	Alternative Dispute Resolution	14.786	
	Equity	10.066		Equity	11.432		Equity	8.585	
	See 1. Constitutional and Administrative Law			See 1. Constitutional and Administrative Law		14. Contracts (5)	Communications Law	2.864	
	See 1. Constitutional and Administrative Law			See 1. Constitutional and Administrative Law			Entertainment Law	2.473	
	See 1. Constitutional and Administrative Law			See 1. Constitutional and Administrative Law			Sports Law	2.452	
12. Contracts and Torts (7)	Intellectual Property	5.837	3. Contracts and Torts (7)	Intellectual Property	4.109	16. Torts (4)	Intellectual Property	5.218	
	Contracts	3.895		Contracts	2.713		Contracts	2.104	
	Insurance Law	14.982		Insurance Law	10.548		See 8. (Trade Regulation)		
	Law and Accounting	17.971		Law and Accounting	12.552		Law and Accounting	11.651	
	Consumer Law	9.806		Consumer Law	6.89		Consumer Law	6.743	
	Products Liability	2.731		Products Liability	1.907		Products Liability	2.135	
	Torts	1.746		Torts	1.222		Torts	1.311	
13. Labor and Employment (4)	Employee Benefit Plans	15.538	12. Labor and Employment (4)	Employee Benefit Plans	10.829	4. Labor and Employment (4)	Employee Benefit Plans	8.993	
	Labor Law	14.98		Labor Law	10.445		Labor Law	8.449	
	Workers' Compensation	13.998		Workers' Compensation	9.758		Workers' Compensation	7.86	
	Employment Discrimination	11.439		Employment Discrimination	8.131		Employment Discrimination	6.527	
14. Jurisprudence (8)	Law and Literature	19.993	15. Jurisprudence (6)	Law and Literature	14.414	22. Jurisprudence (3)	See 9. Interdisciplinary.		
	Critical Legal Studies	11.158		Critical Legal Studies	33.328		Critical Legal Studies	10.003	
	Jurisprudence	18.843		Jurisprudence	14.84		Jurisprudence	6.996	

	Legal History	9.187		Legal History	6.396		Legal History	4.354
	Women and the Law	11.49		Women and the Law	10.862	20. Critical Theory (3)	Women and the Law	6.714
	Law and Religion	6.617		Law and Religion	4.739		Law and Religion	3.773
	Critical Race Theory	11.161	8. Critical Theory (2)	Critical Race Theory	7.769		Critical Race Theory	13.737
	Feminist Legal Theory	11.608		Feminist Legal Theory	8.075	12. Feminist Legal Theory (1)	Feminist Legal Theory	8.509

There is at least one instance in which the experts misunderstood a course-subject—Trade Regulation. As revealed by a casebook on the topic of Trade Regulation (Pitofsky et al., 2010), the course-subject deals with the regulation of business to protect consumers. This includes topics such as antitrust, Federal Trade Commission guidelines, consumer protections, lemon laws, etc. It is not about the governance of international trade. (That is the subject matter of International Business Transactions). A preponderance of experts mistakenly grouped Trade Regulation with international themed course-subjects. That is why at the 15 and 20 k-means cluster solutions Trade Regulation is included with the International Law cluster. It is not until the 25 cluster solution that it is situated in its rightful place—a cluster category called Trade Regulation. The CSCO data does not make this mistake. Over all three cluster intervals, it places Trade Regulation with business and regulated entities course-subjects. This is one instance in which the empirical technique of analyzing what faculty members taught was more correct than the human experts.

Furthermore, the grouping of all of the “Law and” course-subjects (Law and Accounting, Law and Economics, Law and Literature, Law and Medicine, Law and Psychiatry, Law and Religion, Law and Science, Law and Social Science) into one or two interdisciplinary categories because they all involve law and one other discipline, is too simplistic. The CSCO data does a better job of revealing how these subjects cluster based on their actual subject matter and not due to the fact that they are simply

interdisciplinary in nature. Similarly, Workers' Compensation is more related to Torts than the other Labor and Employment course-subjects as revealed by the CSCO clustering. The human subjects probably grouped Workers' Compensation with other labor and employment law course-subjects because of worker in the title. Similarly, CSCO cluster analysis reveals that International Business Transactions is better grouped with regulated industries than the other international law subjects.

4.3.3 QAP Analysis

QAP analysis was performed on the two networks relied upon in the above clustering analysis—the normalized CSCO data (association strength (2009) total occurrences method) and the card sort matrix of expert determined related course-subjects. The Pearson correlation value of 0.535 (see **Figure 24**) indicates that the matrixes are halfway between being entirely correlated (1 or -1) and not correlated at all 0. Also, the results are definitely statistically significant well past the 95% confidence interval as none of the 5000 random permutations produced networks that were more highly correlated. This means that CSCO data is about 53% correlated with human subjects' views of the topical relatedness of the course-subjects. The lack of a perfect correlation probably comes from a number of realities. First, teaching assignments (CSCO data) rely on extenuating factors such as shortages, unexpected class enrollment, teachers teaching in more than one general subject area for variety, etc. In other words, the CSCO data contains relationships that exceed mere topical relatedness. Second, as discussed above, there were errors in the human subjects' understanding of the course-subjects (Trade Regulation). Additionally, the human subjects made groupings based on higher level conceptual similarity (see the interdisciplinary cluster) that might not reflect pure topical overlap. These are probably the major reasons that the two matrices are not better correlated.

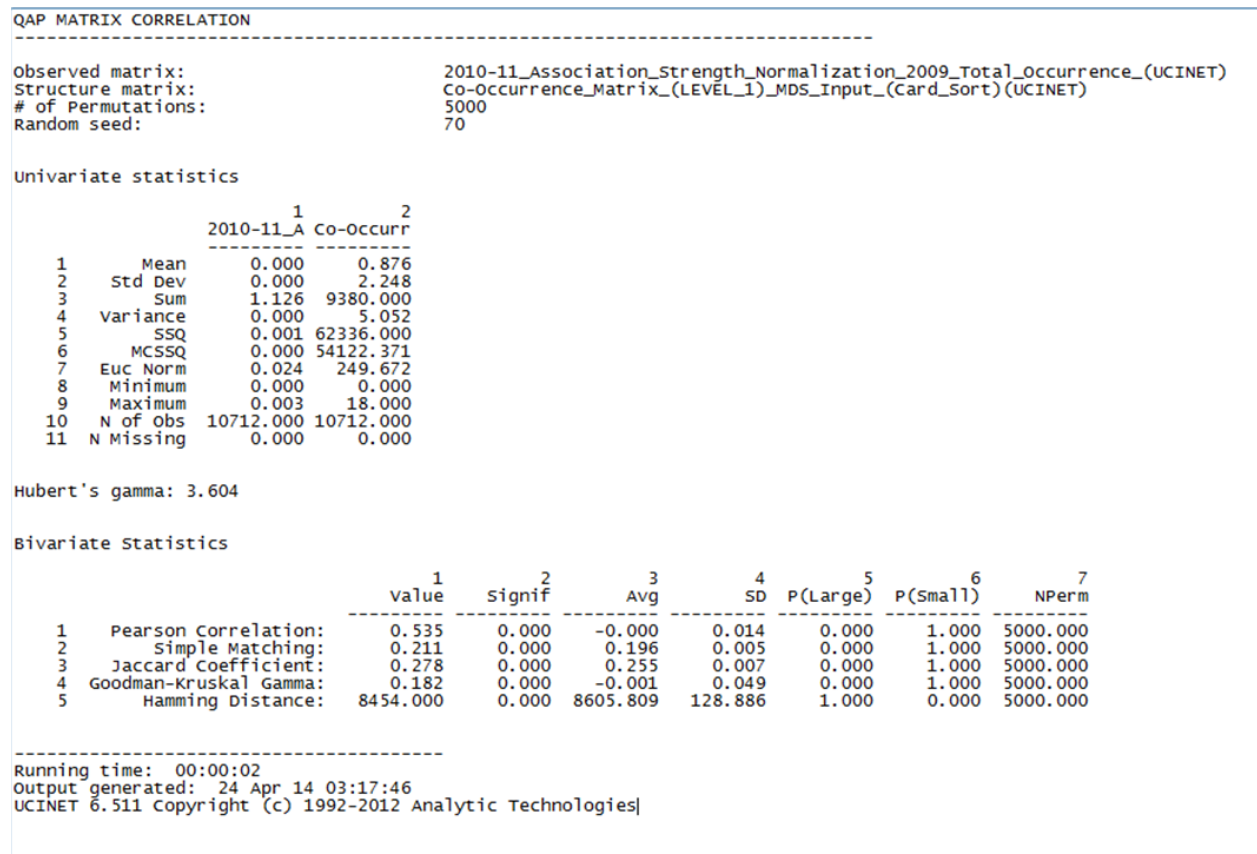


Figure 24: QAP Output from UCINET

4.3.4 Best Clusters

For reasons described in **Section 2.3.3**, clusters are needed for the domain map of CSCO data. The following clusters are distilled from the best of the cluster analysis results from the two techniques above. These will be overlain on the 2010-11 base-map. Selection of the clusters and their membership was informed by the analysis of the grouping labels (*see Section 3.6*) used by the experts. Also, whenever possible, preference was given to CSCO data as clusters on the final CSCO map that are based on the CSCO cluster analysis will be more contiguous than if relying on the card sort cluster data. The seven typical required first year course-subjects were privileged in the labeling of the clusters as law students and American trained lawyers will be accustomed to these labels—(1) Contracts, (2) Civil Procedure, (3) Property, (4) Torts, (5) Criminal Law, (6) Constitutional Law, and (7) Legal Research and Writing (Carpenter, 2012, pp. 50-55). The clusters have all of the characteristics that are desired in a cluster

scheme. Chief among these characteristics are no clusters with only one member (the lowest is two, Entertainment Law) and no disproportionately large clusters (there are two clusters with 9 course subjects each—(1) Taxation / Wealth Preservation, and (2) Jurisprudence. The average amount of course-subjects per cluster is six. *See Table 46.*

Table 46: Best Clusters for 2010-11 CSCO Map

Cluster Number	Cluster Label (Supplied by Dissertation Author)	Number of Course Subjects in the Factor	Constituent Course-Subjects	Source	Notes
1	Torts / Harm Prevention	6	<ul style="list-style-type: none"> • Torts • Workers' Compensation • Products Liability • Insurance Law • Equity • Remedies 	CSCO K-Means 25, Cluster 24	Less the course-subjects: Sports Law and Employment Discrimination
2	Taxation / Wealth Preservation	9	<ul style="list-style-type: none"> • Taxation Federal • Taxation State & Local • Estate Planning • Law and Accounting • Tax Policy • Taxation Corporate • Estates and Trusts • Estate and Gift Tax • Employee Benefit Plans 	CSCO Factor 2	Does a good job of including all tax subjects and those subjects whose primary goal is wealth preservation—principally, through minimizing taxes (Estate Planning & Employee Benefit Plans).
3	Contracts / Commercial Law	5	<ul style="list-style-type: none"> • Creditors' and Debtors' Rights • Commercial Law • Contracts • Consumer Law • Payment Systems 	CSCO Factor 4	
4	Property	5	<ul style="list-style-type: none"> • Property • Real Estate Transactions • Native American Law • Land Use Planning • Local Government 	CSCO K-Means 25, Cluster 22	Native American Law is often about property rights in the federal system as well as the use and control of Natural Resources. This was also seen in the topical adjacencies of cases in the U.S. Supreme Court (Hook, 2007b). Agricultural Law is with Natural Resources / Environmental law
5	Criminal Law	5	<ul style="list-style-type: none"> • Criminal Law • Criminal Procedure • Criminal Justice • Law and Social Science 	CSCO Factor 12	Includes Criminal Law that was previously in CSCO Factor 9, "In the Courtroom."

			<ul style="list-style-type: none"> • Forensic Medicine 		
6	Family Law and Compassion	8	<ul style="list-style-type: none"> • Women and the Law • Disability Law • Family Law • Juvenile Law • Community Property • Elder Law • Poverty Law • Welfare Law 	CSCO Factor 18; Card Sort Factor 4	
7	Constitutional Law	5	<ul style="list-style-type: none"> • Legislation • Constitutional Law • Appellate Practice • Civil Rights • Education Law 	CSCO Factor 18	Evidence for the inclusion of Education Law comes from Card Sort Factor 15, Factor 1.
8	International Law	7	<ul style="list-style-type: none"> • Comparative Law • International Law • Human Rights • International Organizations • Aviation and Space Law • Conflict of Laws • Immigration Law 	CSCO Factor 3	International Business Transactions is with Administrative Law / Regulated Industries.
9	Administrative Law / Regulated Industries	8	<ul style="list-style-type: none"> • Regulated Industries • Computers and the Law • Administrative Law • Antitrust • Trade Regulation • Intellectual Property • Communications Law • International Business Transactions 	CSCO K-Means 25, Cluster 14	
10	Legal Research and Writing / Professional Skills	6	<ul style="list-style-type: none"> • Legal Research and Writing • Legal Drafting • Law Office Management • Clinical Teaching • Professional Responsibility • Trial Advocacy 	CSCO Factor 17 & 21	Might also include Legal Method, Introduction to Law, Appellate Practice, Trial Advocacy, and Alternative Dispute Resolution to be more like Card Sort Factor 2 and Card Sort K-Means 15 Cluster 7.
11	Entertainment Law	2	<ul style="list-style-type: none"> • Entertainment Law • Sports Law 	Card Sort Factor 13	Intellectual Property and Communications Law have been left with Administrative Law / Regulated Industries.
12	Natural Resources / Environmental Law	7	<ul style="list-style-type: none"> • Agricultural Law • Natural Resources • Environmental Law • Oil and Gas • Energy Law • Water Rights • Ocean Resources 	CSCO Factor 1	Less the Property and Administrative Law Course-Subjects
13	Procedural	4	<ul style="list-style-type: none"> • Federal Courts • Civil Procedure • Evidence • Judicial Administration 	CSCO Factor 14	Remedies already with Torts (and more proximate in the CSCO map). The support for the inclusion of Evidence and Judicial Administration comes from Card

					Sort Factor 7.
14	Law and Medicine	5	<ul style="list-style-type: none"> • Health Care Law • Law and Psychiatry • Law and Science • Law and Medicine • Bioethics 	CSCO Factor 5	
15	Jurisprudence	9	<ul style="list-style-type: none"> • Jurisprudence • Critical Race Theory • Critical Legal Studies • Feminist Legal Theory • Legal History • Law and Literature • Law and Religion • Legal Method • Introduction to Law 	Cart Sort Factor 3	
16	Financial Entities	6	<ul style="list-style-type: none"> • Business Associations • Securities Regulation • Corporate Finance • Law and Economics • Financial Institutions • Agency and Partnership 	CSCO Factor 6	
17	Labor and Employment Law	3	<ul style="list-style-type: none"> • Employment Discrimination • Labor Law • Alternative Dispute Resolution 	CSCO Factor 15 and Card Sort Factor 12	
18	Military Law	4	<ul style="list-style-type: none"> • Admiralty • Military Law • Government Contracts • National Security Law 	CSCO Factor 13	

4.3.5 Section Conclusion

While informative, the CSCO k-means cluster treatment created clusters at all three chosen cluster amounts that were unsuited for thematic overlay on a base-map. This was because clusters both had too many constituent course-subjects (38, 41, or 31) and were largely uninterpretable, or there were too many instances of clusters comprised of a single course-subject. The clusters produced by the CSCO factor analysis were more interpretable and more capable of being used for thematic overlay on a base-map than the CSCO k-means analysis. While correlated, the card-sort network of similar course-subjects contains much less multi-dimensional complexity than the CSCO data, and might be considered generally preferable. However, there were instances in which the human subjects were incorrect as to their

understanding of a particular course-subject and the empirical, CSCO, technique was either more correct, or nuanced.

4.3.6 Future Work

In the future, the author would like to conduct a similar performance analysis of factor, k-means, and QAP analysis on the 1931-32 and 1972-73 map year data. Also, the author would like to explore other cluster approaches such as hierarchical clustering and that implemented in the VOSviewer software.

5. Understanding the Structure and Evolution of the Domain of Law

The insights gained from the analysis set out above are used to render CSCO domain maps of the academic discipline of law in the United States for map years 1931-32, 1972-73, and 2010-11. These maps provide a birds-eye view of how the field of law has evolved over almost eighty years. Furthermore, these insights are enhanced by the metric analysis that precedes it.

5.1 Metric Analysis

As discussed above in **Section 3.1.3.3**, the author was able to glean how the course-subjects changed over time. Course-subjects merging together or diverging from a common parent was mostly discernable from the scope notes (“includes statements”) that frequently accompanied a course-subject. Furthermore, the author was aided by cross-references and “see also” statements contained in some of the course-subjects. Finally, the timing of the appearance and disappearance of specific course-subjects and their includes statements were also used to determine which course-subjects continued others after a discontinuance or name change. For a sense of this nesting of course-subjects for years 1931-32, 1972-73, and 2010-11, *see* **Appendix 7: Count and Percentage of Faculty Teaching Each Course-Subject Over all Map Years**. Also, schematic diagrams were used to visualize the mergence and divergence of two particularly troublesome groupings of course-subjects—estate planning and procedural course-subjects, *see* **Figure 25** and **Figure 26**. These diagrams tell 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 than it is today. Similarly, early law school education involved many more, and presumably more complex forms, of pleading than used today. But most importantly, knowing how course-subjects relate to each other over time allows for meaningful metric comparisons across the seventy-nine years of the dataset.

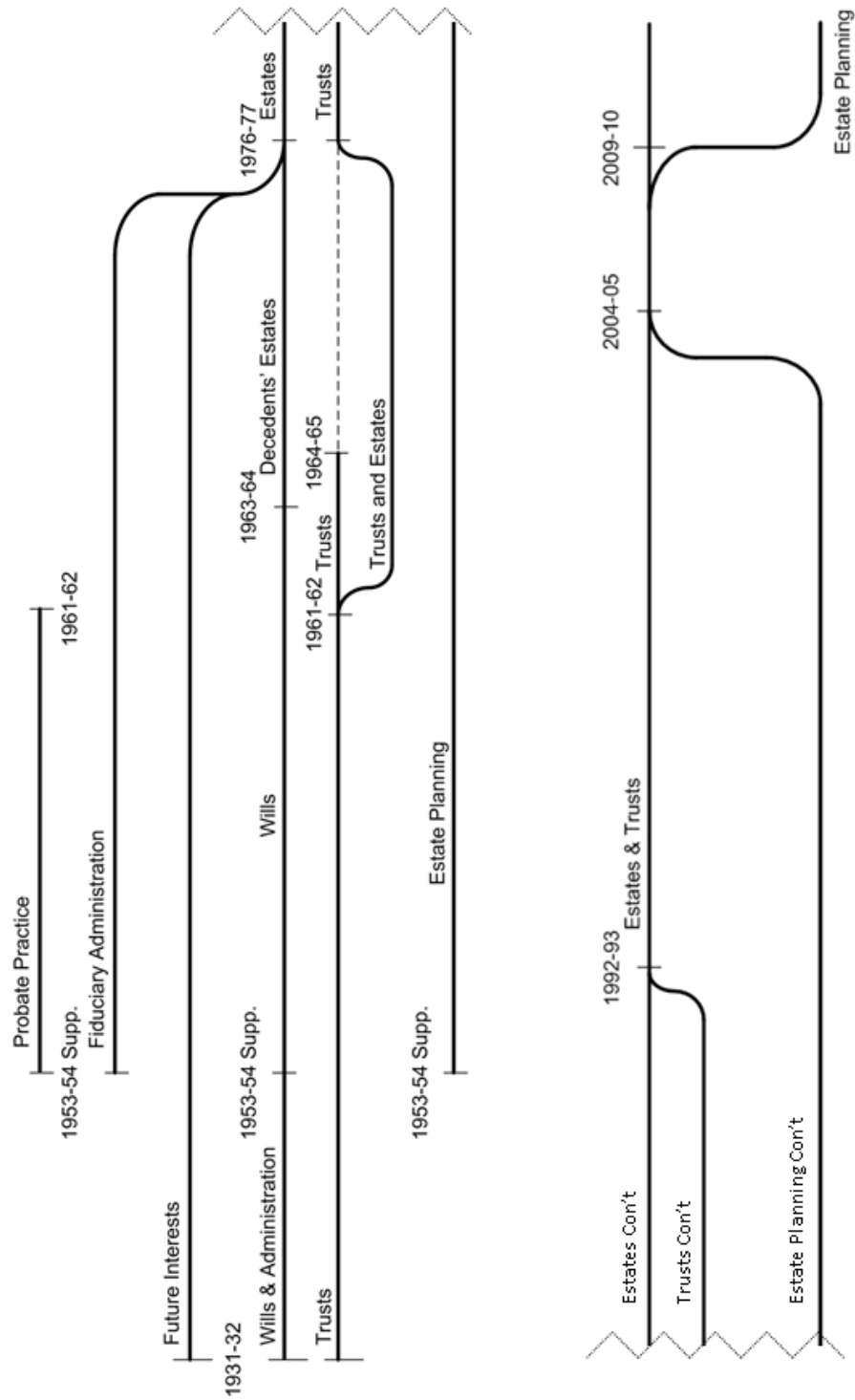


Figure 25: Mergence and Divergence of Estate Planning Course-Subjects

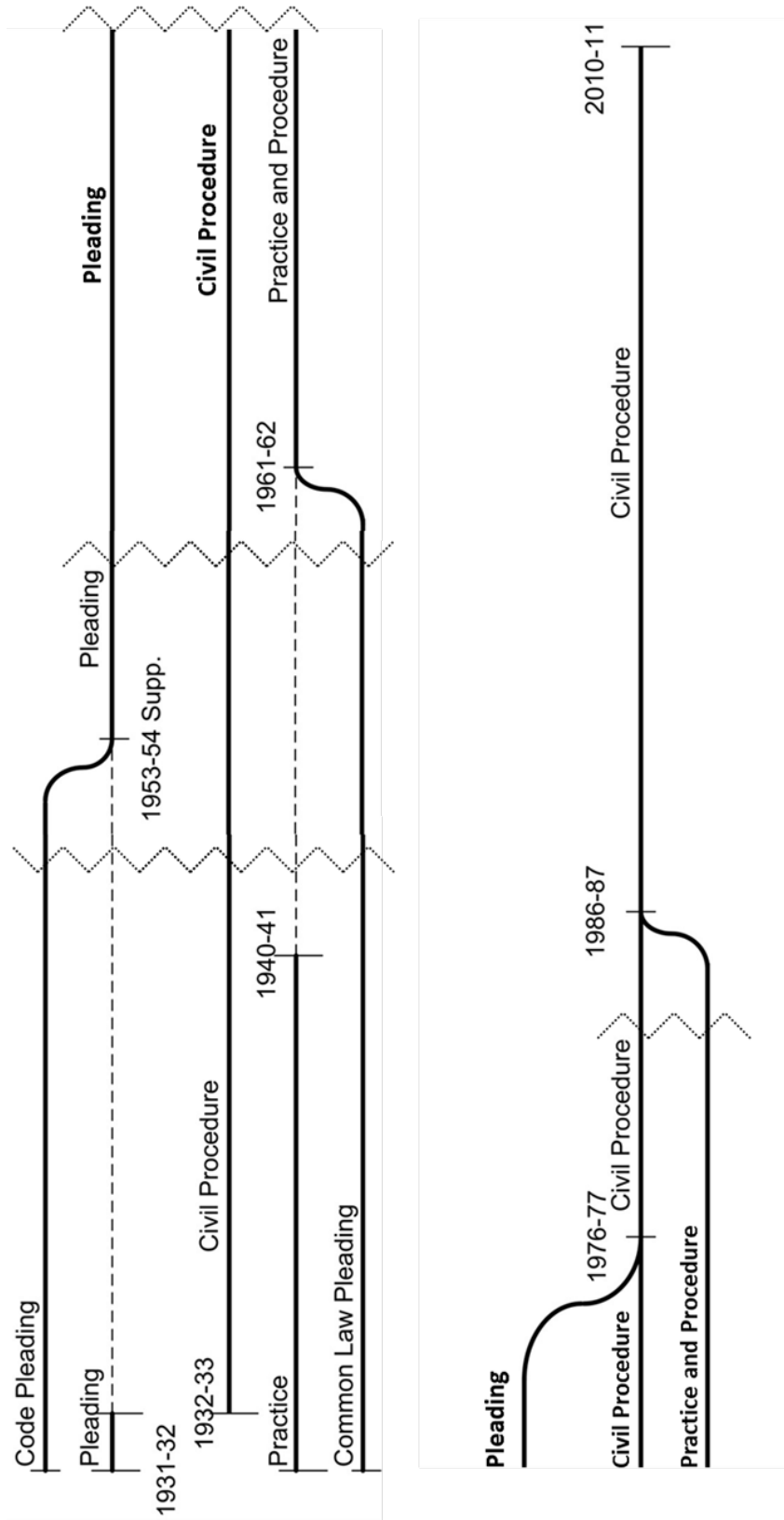


Figure 26: Mergence and Divergence of Procedural Course-Subjects

5.1.1 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 1931-32 to 2010-11—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 American law schools during the 79 years of the dataset. *See Table 47.* 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 Immigration and Human Rights. Constitutional Law is also much more prominent in 2010-11 than it was in 1931-32. This is most likely attributable to the rise in individual rights that has occurred over that same time 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 all increased as to their overall percentage of how many faculty are teaching them.

Table 47: Most Gains in Percentage of Overall Canon 1931-32 to 2010-11

Course-Subjects 1931-32	Total Faculty	% of Total	Course-Subjects 2010-11	Total Faculty	% of Total	Change in % of Total	Rank
International Law	32	0.012	(1) International Business Transactions; (2) Immigration Law; (3) Human Rights; (4) International Law; and (5) International Organizations	2088	0.058	0.046	1
Constitutional Law	89	0.033	(1) Constitutional Law; (2) Civil Rights; and (3) Employment Discrimination	2617	0.072	0.039	2
Legal Bibliography and Research	45	0.017	(1) Legal Drafting; and (2) Legal Research and Writing	1744	0.048	0.031	3
(1) Criminal Law Administration; and (2) Criminal Law and Procedure	111	0.042	(1) Criminal Justice; (2) Criminal Law; (3) Criminal Procedure; and (4) Juvenile Law	2558	0.071	0.029	4
Taxation	36	0.013	(1) Taxation, Corporate; (2) Taxation, State and Local; (3) Estate and Gift Tax; (4) Taxation Federal; and (5) Tax Policy	1149	0.032	0.019	5

5.1.2 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 American law schools from 1931-32 to 2010-11. See **Table 48**. In the past, American law schools were far more concerned about how one inherits property. This topic has greatly diminished in importance in terms of the number of faculty members that presently teach it. At least one scholar has noted that commercial law was “a dying field, and one with few signs of revival” (Garvin, 2007, p. 403).

This is empirically supported by the metric analysis. Contemporary law schools, in order 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 overall canon. 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.

Table 48: Most Losses in Percentage of Overall Canon 1931-32 to 2010-11

Course-Subjects 1931-32	Total Faculty	% of Total	Course-Subjects 2010-11	Total Faculty	% of Total	Change in % of Total	Rank
(1) Wills and Administration; (2) Future Interests; and (3) Trusts	210	0.079	(1) Estate Planning; and (2) Estates and Trusts	633	0.017	-0.062	1
(1) Sales; (2) Credit Transactions; (3) Suretyship; and (4) Mortgages	213	0.080	(1) Commercial Law; and (2) Real Estate Transactions	884	0.024	-0.056	2
(1) Agency; (2) Partnership; (3) Business Organization; (4) Private Corporations; and (5) Corporation Finance	249	0.093	(1) Agency and Partnership; (2) Business Associations; and (3) Corporate Finance	1441	0.040	-0.053	3
(1) Equity; and (2) Equity Pleading and Practice	124	0.046	Equity	51	0.001	-0.045	4
(1) Personal Property; and (2) Real Property	199	0.074	Property	1123	0.031	-0.043	5

5.1.3 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 bin the faculty teaching the various course-subjects by the amount of years they have been teaching—(1) one to five years, (2) six to ten years, and (3) over ten years. See **Appendix 41** through **Appendix 43**. 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: $((1 \times \text{Amount in Category 1 (teaching one to five years)}) + (2 \times \text{Amount in Category 2 (teaching six to ten years)}) + (3 \times \text{Amount in Category 3 (teaching over ten years)})) / \text{Overall amount of faculty teaching that particular course-subject}$. **Table 49** displays the five most aged course-subjects for each of the map years. 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 that “[a]n aging field will tend to produce less scholarship and thus figure less in the minds of prospective law teachers” (2007, pp. 408-409). Similarly, Stadler would likely classify each of these course-subjects as ‘strong sells’ (2006).

Table 49: 5 Most Aged Course-Subjects per Map Year

1931-32 Course-Subjects	Average Length of Time Being Taught	1972-73 Course-Subjects	Average Length of Time Being Taught	2010-11 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

5.2 Global Structure of the Law Domain

The global structure of the academic domain of law in the United States according to CSCO data is visualized below. Three domain maps portray time slices spaced roughly forty years apart—1931-32, 1972-73, and 2010-11. The data would allow for the creation of more domain maps covering additional time slices. However, the three domain maps cover the broad sweep of the overall dataset. Additionally, two-dimensional domain maps were created (as opposed to three-dimensional maps) because they better serve as base-maps for additional thematic overlay, *see* **Section 6**. Each map was created using the best identified normalization and ordination methods from the analysis above—Association Strength (Total Occurrences) and VOS.

5.2.1 1931-32 CSCO Map

The initial rendering of the 1931-32 data is not very helpful given the outlier status of Patent Law, *see* **Figure 27**. In 1931-32, Patent Law was only taught by eight people and is involved in only two course-subject co-occurrences: one with Procedure and one with Sales. This explains its placement from the ordination process far from the more connected whole on the left.

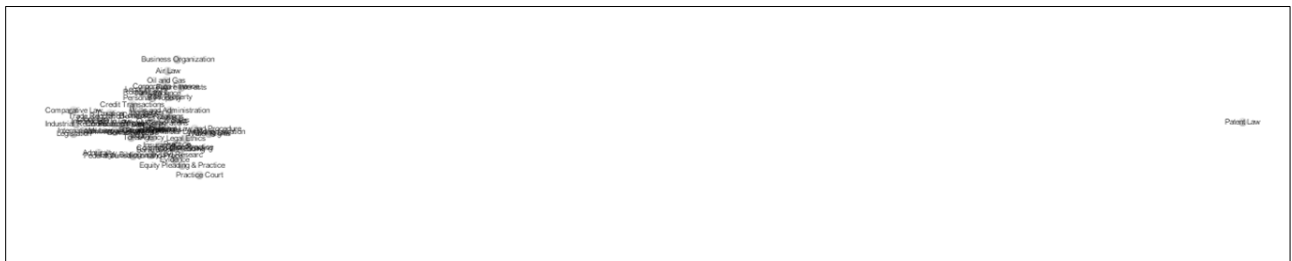


Figure 27: 1931-32 Initial CSCO Map

However, the close-up on the main component of the 1931-32 CSCO domain map is much more interpretable and useful, *see* **Figure 28**. There are numerous satisfactory proximities. Many of these are in the 1931-32 gold-standard. For instance, most of the procedural course-subjects, Practice, Common Law Pleading, Code Pleading, and Equity Pleading & Practice) cluster together on the lower right portion

of the domain map. (However, Pleading, remains by itself in the center of the map.) Additionally, the three estate planning subjects are in near proximity in the middle to upper right of the map: Trusts, Wills and Administration, and Future Interests. As estate planning involves property and wealth preservation, it is appropriate that these three course-subjects are also adjacent to the two property subjects: Personal Property and Real Property. Furthermore, two natural resources topics, Mining Law and Water Rights, almost overlap on the far right of the map. However, they are distant from another natural resource topic, Oil and Gas.

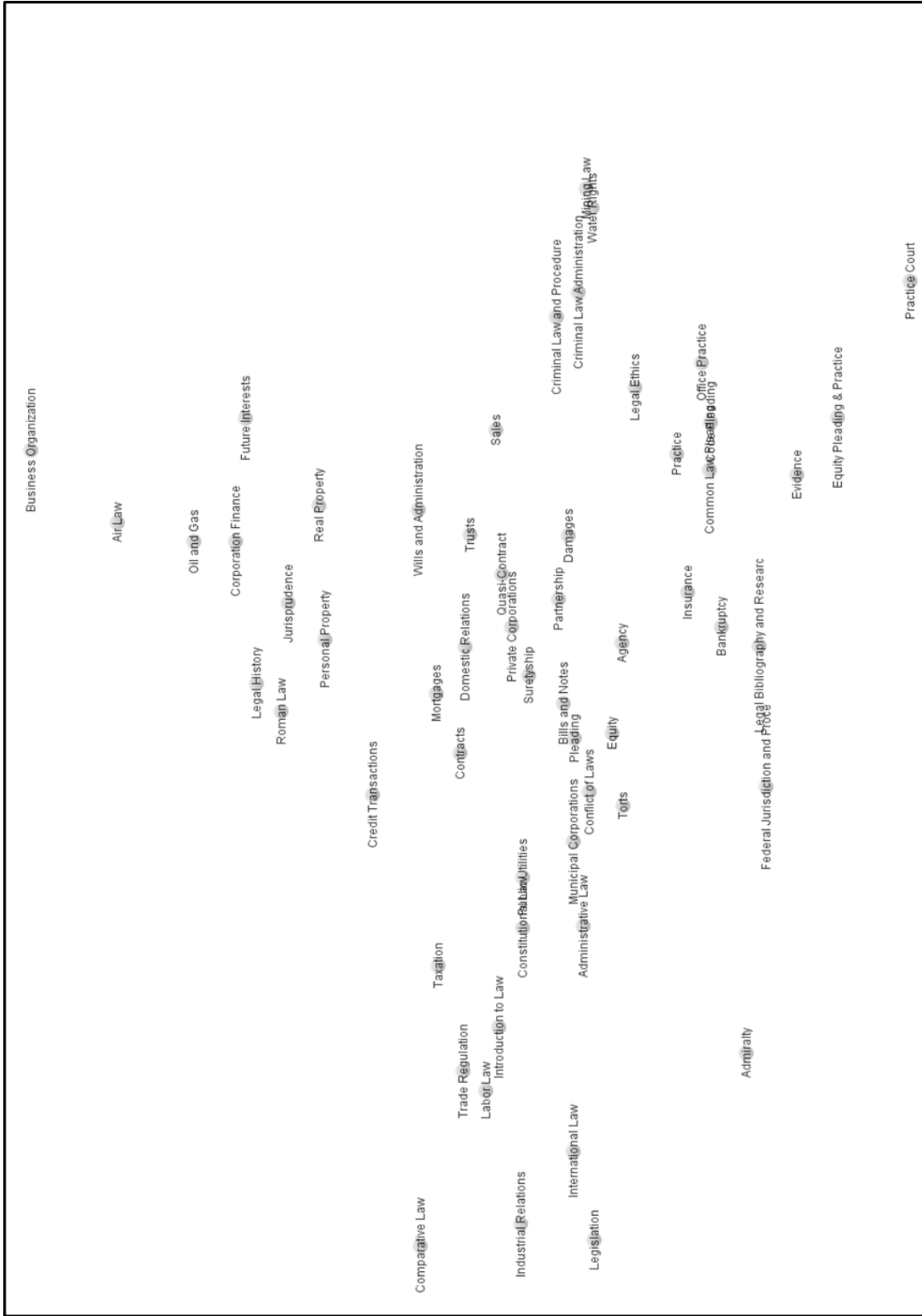


Figure 28: 1931-32 CSCO Map (Without Patent Law)

5.2.2 1972-73 CSCO Map

The 1972-73 domain map does not have any extreme outliers like the 1931-32 map (Patent Law) and the 2010-11 map (Forensic Medicine), *see* **Figure 29**. In order to better comprehend the placement of the course-subjects, it is best to view the several details of the 1972-73 domain map. The inset image shows the map as a whole and the overlain rectangle indicates the area of detail portrayed, *see* **Figure 30, Figure 31, Figure 32, and Figure 33**. Once again there are numerous intuitively satisfying adjacencies that are also in the 1972-73 gold-standard. Criminal Law and Criminal Procedure are proximate in the middle left of the map. Agency, Business Organizations and Corporations are all proximate on the upper right of the map. So are Natural Resources, Environmental Law, Water Rights, and Oil and Gas. Furthermore, the Estate Planning topics are also proximate on the lower right of the map and, similar to 1931-32, are included with the Property subjects: Trusts and Estates, Future Interests, Decedents' Estates, Fiduciary Administration, Real Property, and Personal Property.

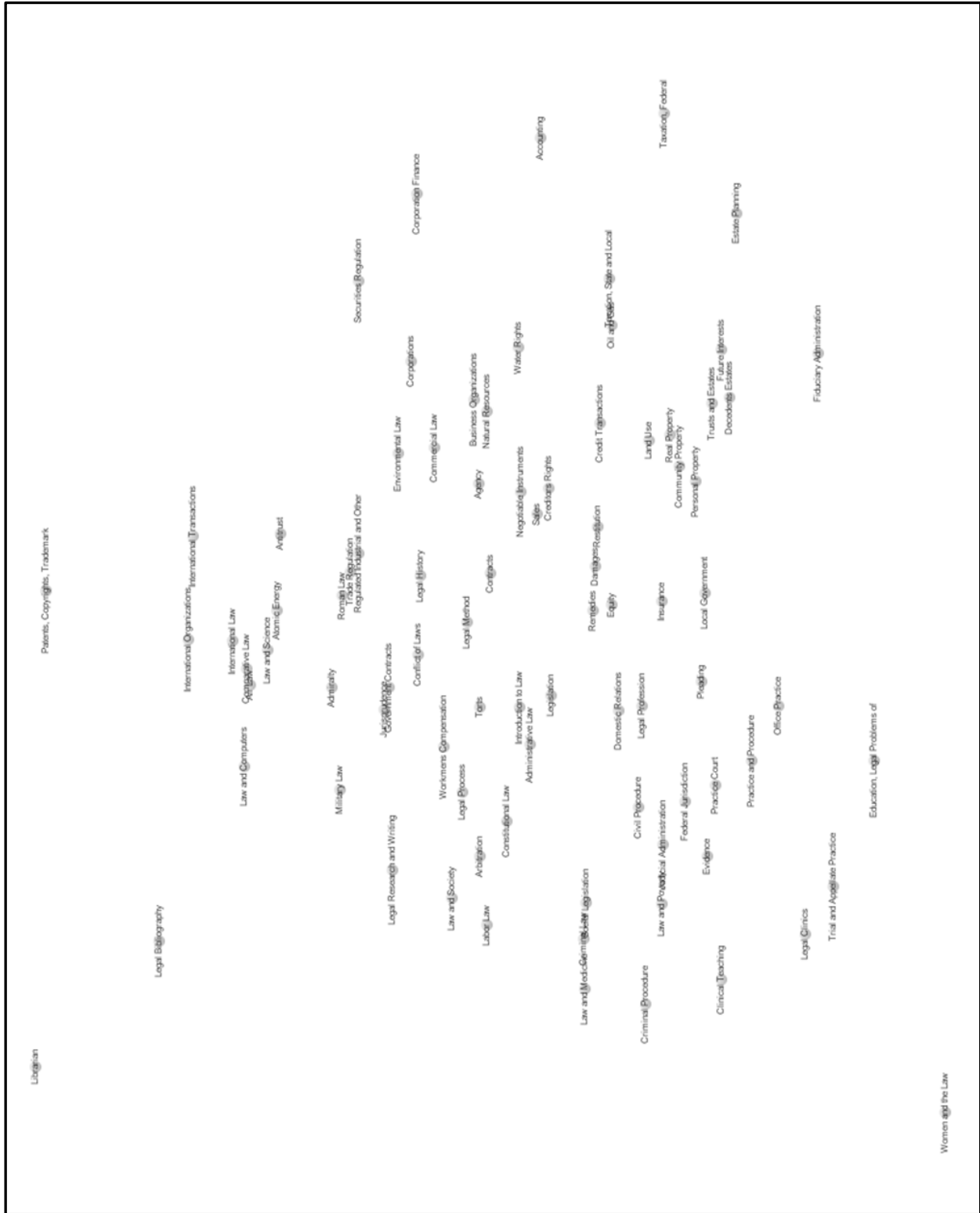


Figure 29: 1972-73 CSCO Map

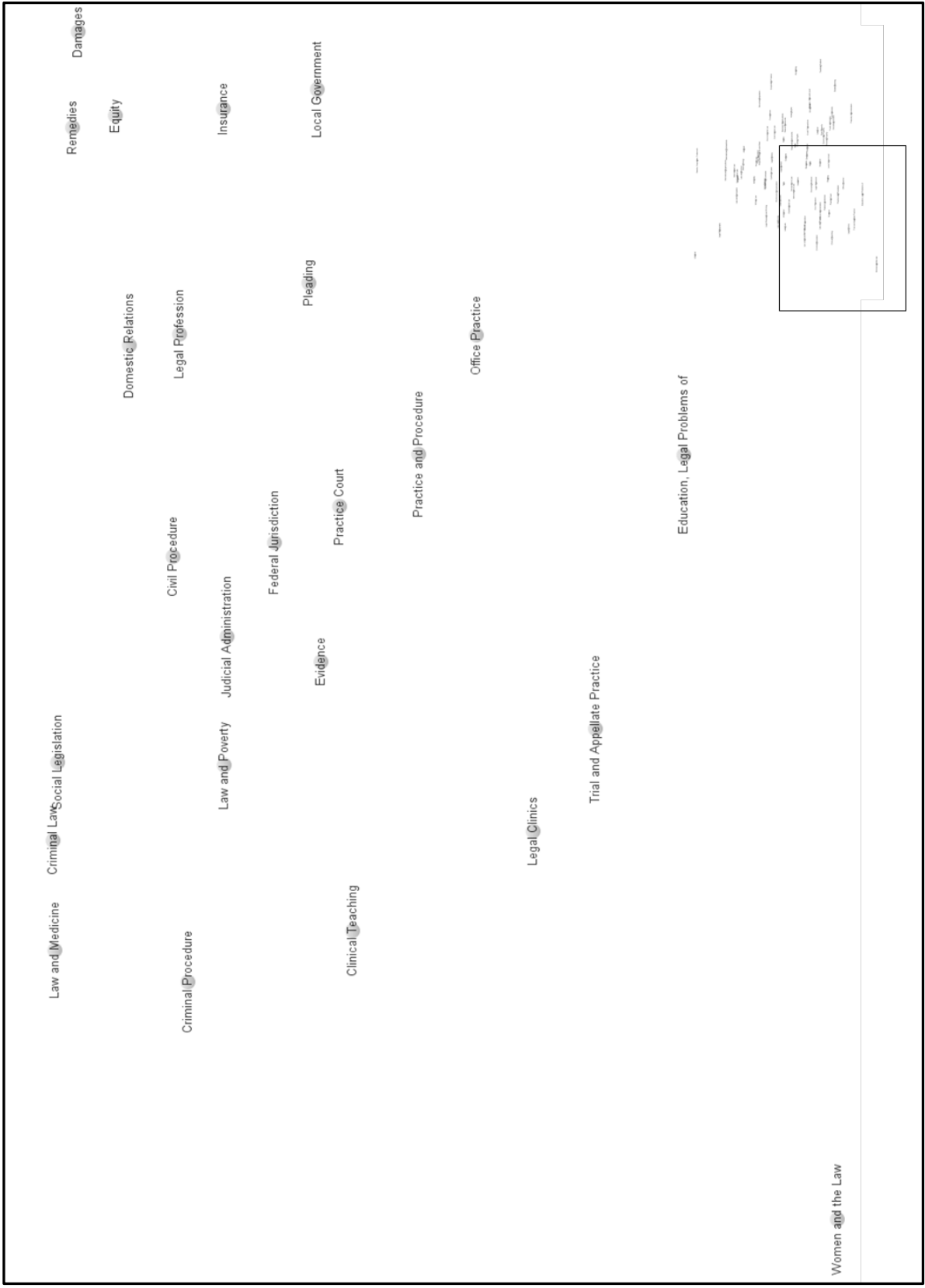


Figure 30: 1972-73 CSCO Map (Detail: Lower Left)

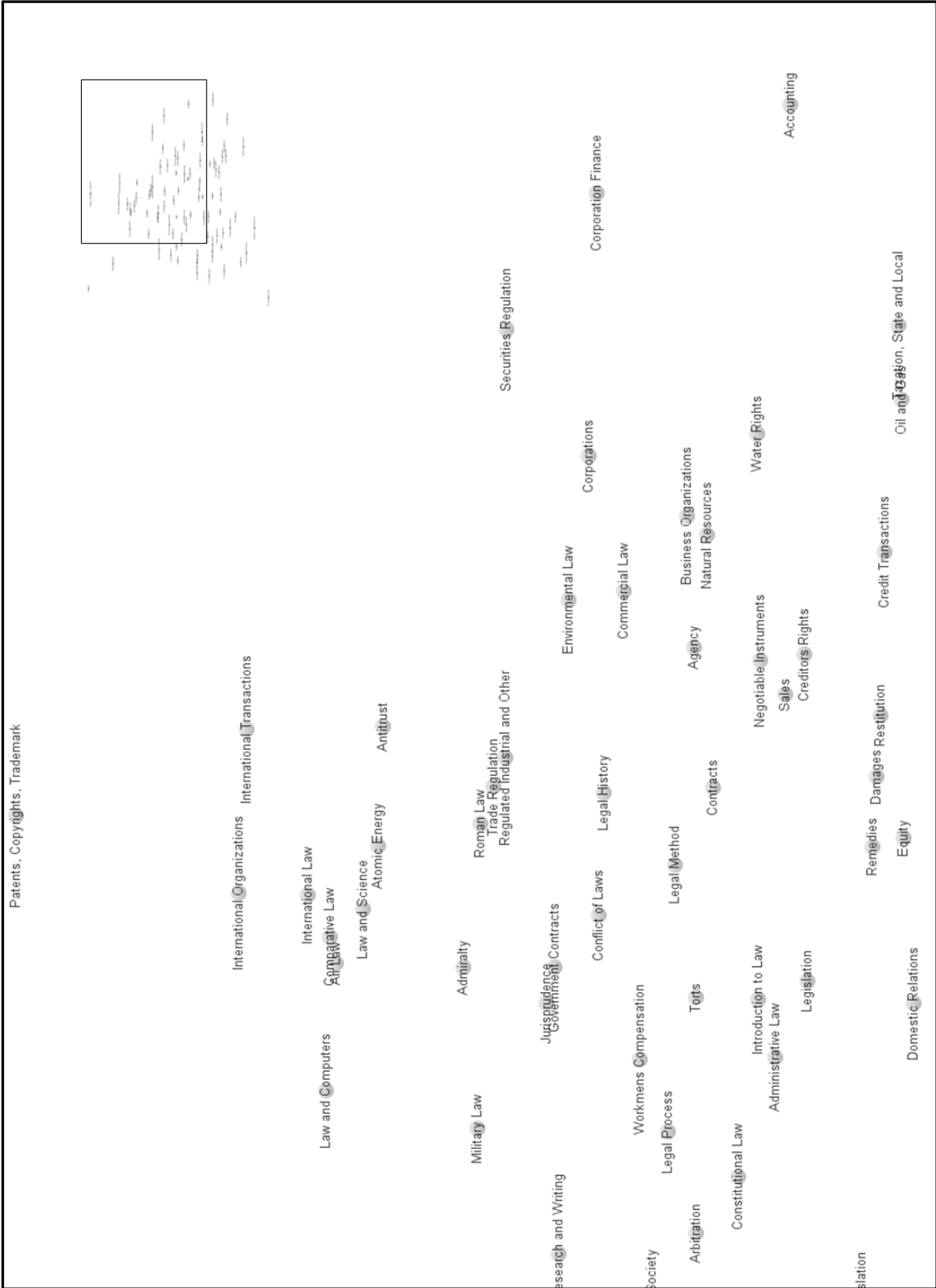


Figure 32: 1972-73 CSCO Map (Detail: Upper Right)

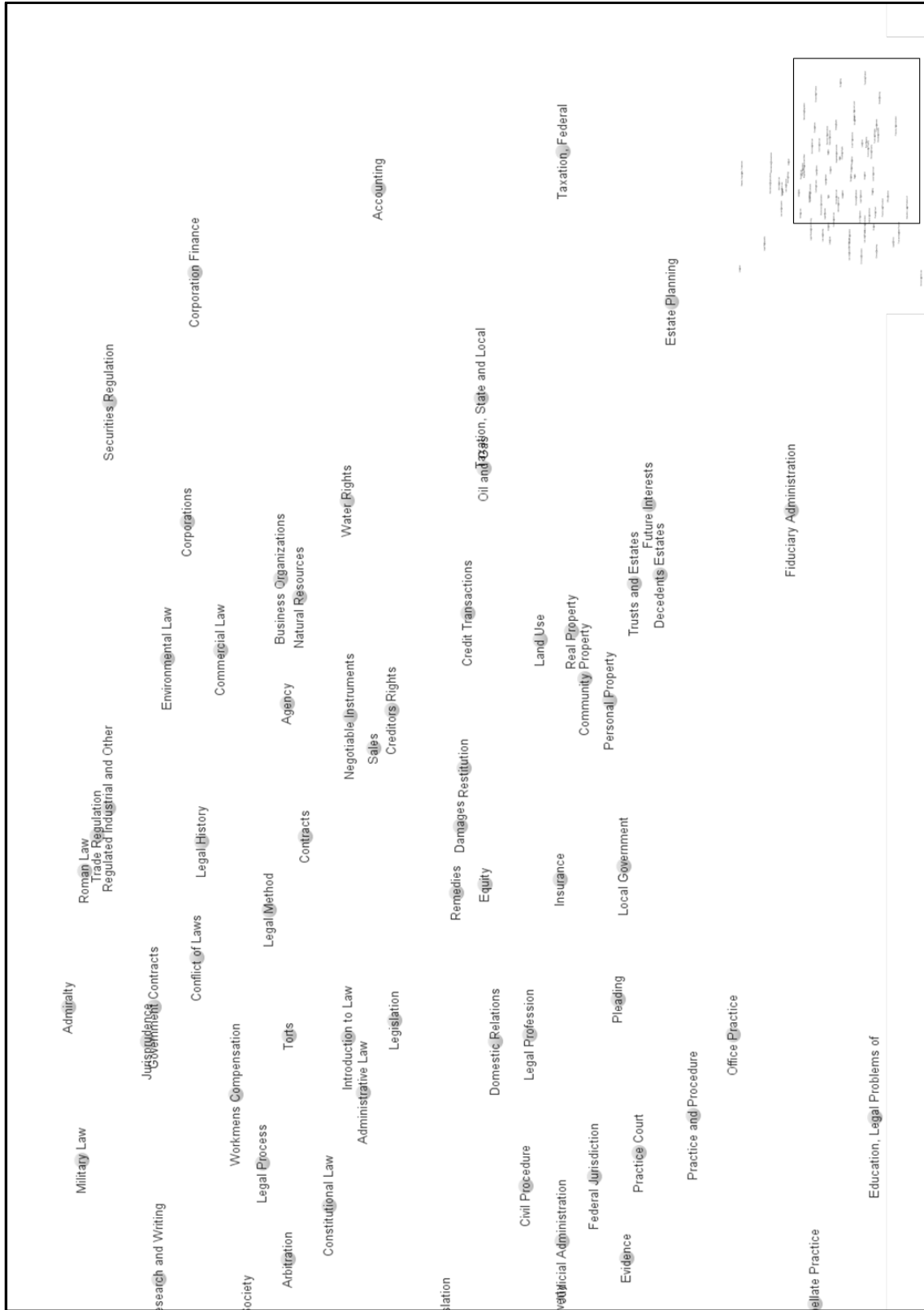


Figure 33: 1972-73 CSCO Map (Detail: Lower Right)

5.2.3 2010-11 CSCO Map

Figure 34 is the entire 2010-11 CSCSO domain map. In order to better comprehend the placement of the course-subjects, it is best to view the several details of the 2010-11 CSCO map, *see* **Figure 35**, **Figure 36**, and **Figure 37**. The success of the adjacencies relative to the 2010-11 gold-standard has been discussed in **Section 4.2**. However, moving clockwise from the lower left one can get a sense of the broad sweep of the general areas of the law—taxation, flowing into business matters, flowing into natural resources and the environment, flowing into international topics, flowing into criminal law topics, flowing into medical topics. With the exception of Criminal Law, the doctrinal first year courses generally occupy the center (Constitutional Law, Property, Torts, Contracts, and Civil Procedure). This is true of the previous map years as well. These are the doctrinal pillars of the common law that Kennedy (1983) describes as central to the schematic of law school education, *see* **Section 2.5**. However, their centrality most likely is a result of the fact that many people are needed to teach the first year curriculum and that those professors also have other, non-topically related teaching interests. Thus, these first year course-subjects are pulled in all directions and are consequently placed in the center by the ordination layout.

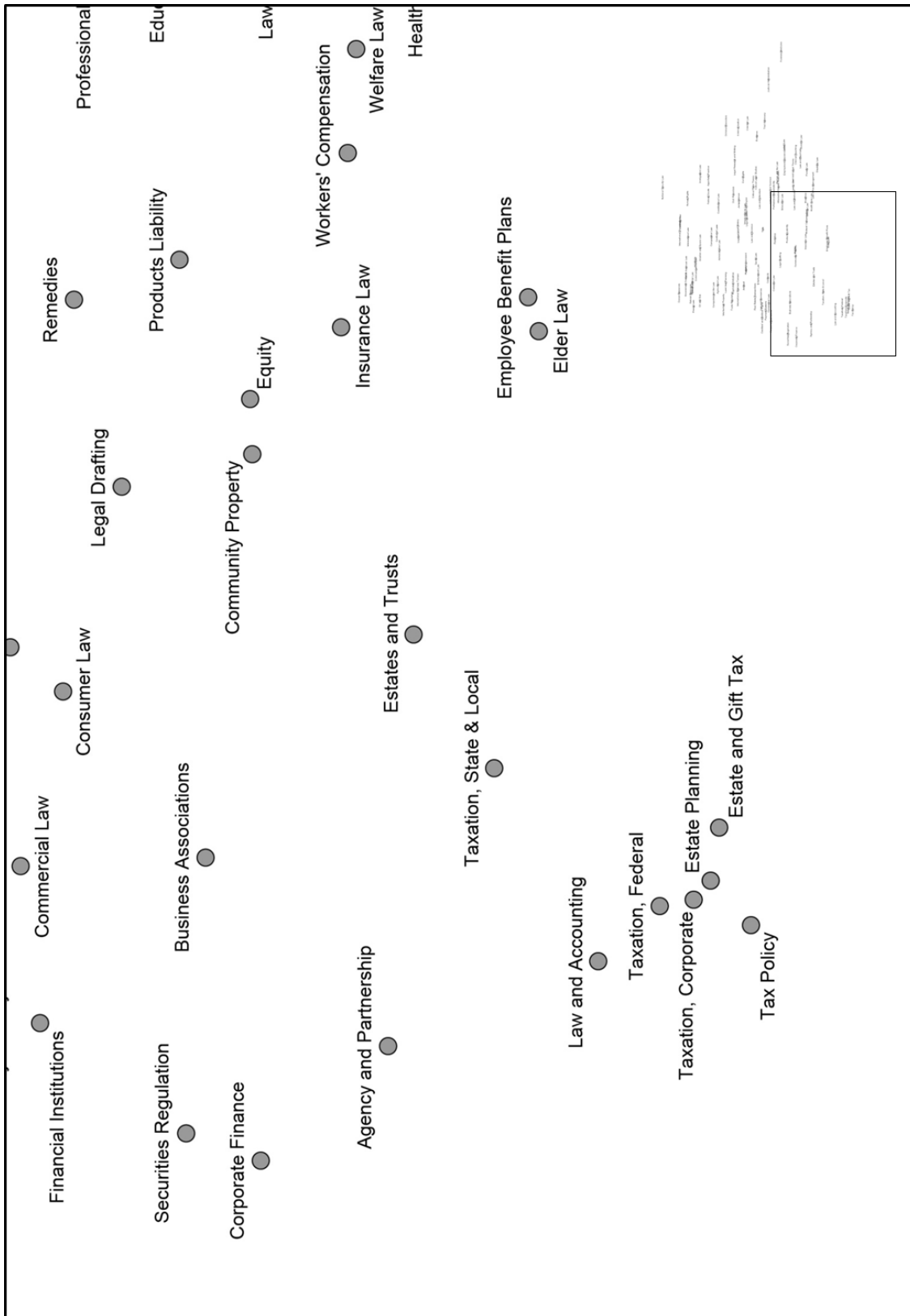


Figure 35: 2010-11 CSCO Map Detail (Taxation and Commercial Law)

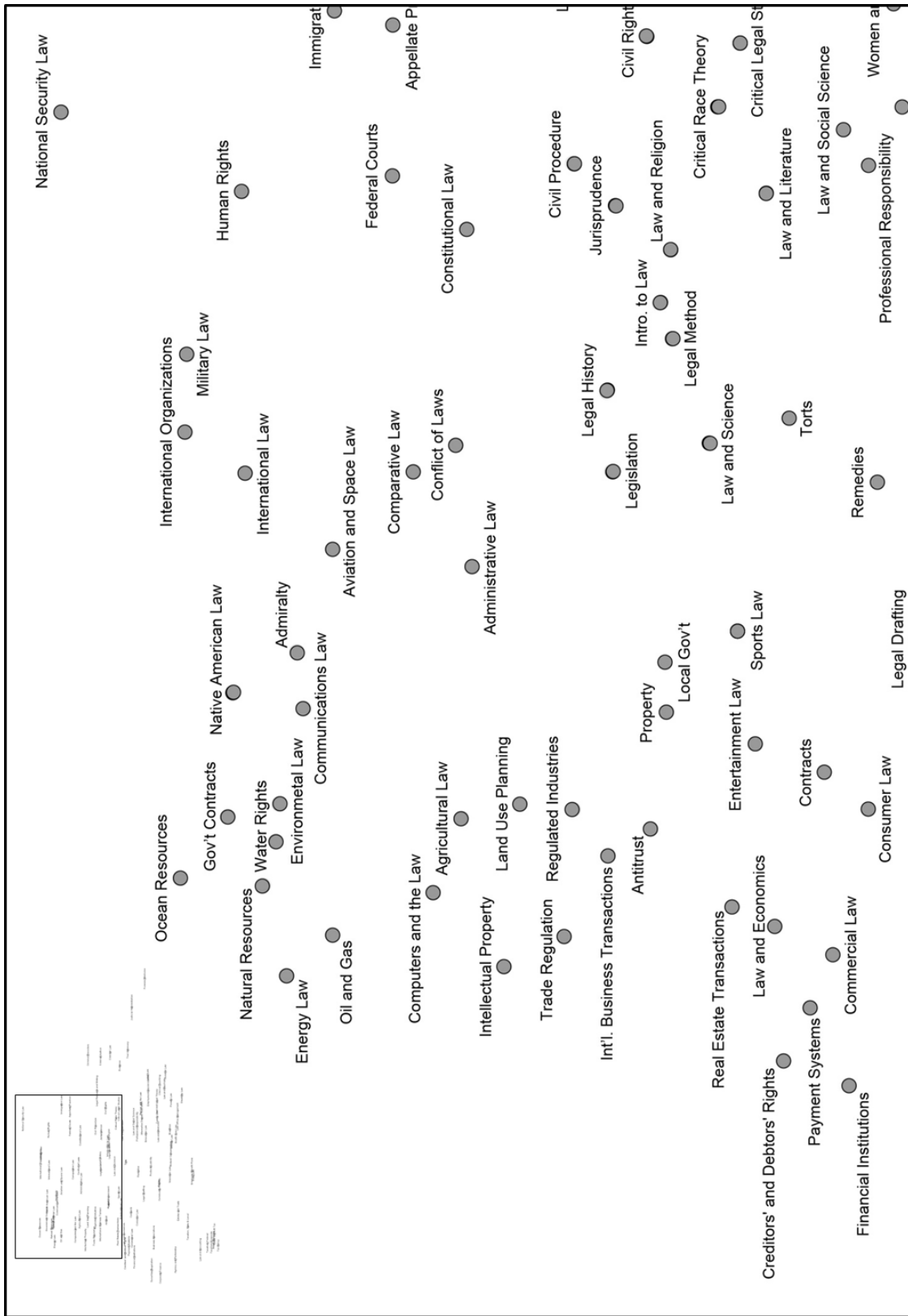


Figure 36: 2010-11 CSCO Map Detail (Natural Resources and Environmental Law)

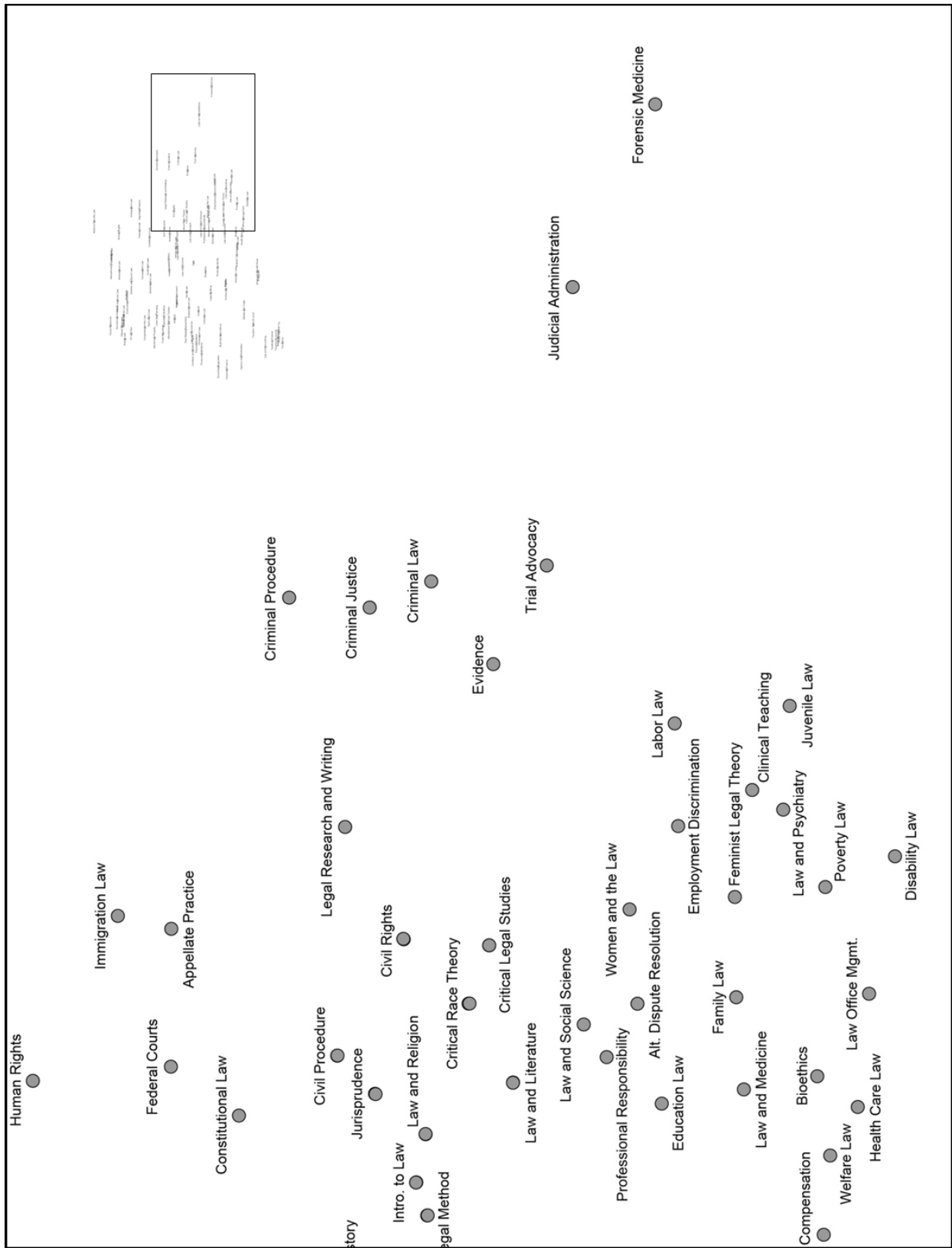


Figure 37: 2010-11 CSCO Map Detail (Criminal Law)

5.2.4 2010-11 Card Sort Map

As a point of comparison, the card sort data was rendered using the same VOS ordination technique. No normalization was used as each of the 104 course-subjects had an equal chance to be paired with all other 103 course-subjects by each of the 18 experts. (However, even when employing the default association strength (Normalization 1) normalization as implemented in VOSviewer, the map looked essentially the same.) Unlike the clustering analysis with the card sort data which produced arguable better cluster results than the CSCO data, the ordination of the card sort data was clumpy and lacked the nuance of the CSCO data. Items were grouped in their most obvious (and sometimes incorrect) clusters and the more sophisticated layout of the CSCO data is not present. Once again, to interpret and use the resultant card sort map at the resolution allowed by 8.5 x 11 inch paper, details are necessary, *see* **Figure 38**, **Figure 39**, **Figure 40**, and **Figure 41**

The card sort map is clumpier with many topics displayed on top of each other. This is a product of the human experts being more united in the pairings of many of the course-subjects such as the International Law course-subjects (International Law and International Organizations). This alone is not a failure in map creation as there are strategies to offset the overlapping course-subjects to make them comprehensible and less visibly jarring. Of greater interest is the lack of nuance that more organically and meaningfully distributes the course subjects in the overall map space. Juvenile law is in reasonably close proximity to Family Law. However, it was originally a criminal law subcategory. The CSCO map better reflects this bridge status of Juvenile Law between Family Law and Criminal Law. Trade Regulation and International Business Transactions is another adjacency that is slightly overstated on the card sort map. Their placement on the CSCO map is a little more true to their topical subject matter and does not stem from the mere similarity of the word ‘trade.’ *See* discussion in **Section 4.3.2**. However, the same general sweep of course-subjects appearing on the CSCO map is also mostly present on the card-sort map—“moving clockwise from the lower left, taxation, flowing into business matters, flowing into natural resources and the environment, flowing into international topics, flowing into criminal law

topics, flowing into medical topics.” This is further evidence that CSCO analysis is a valid technique to make domain maps.

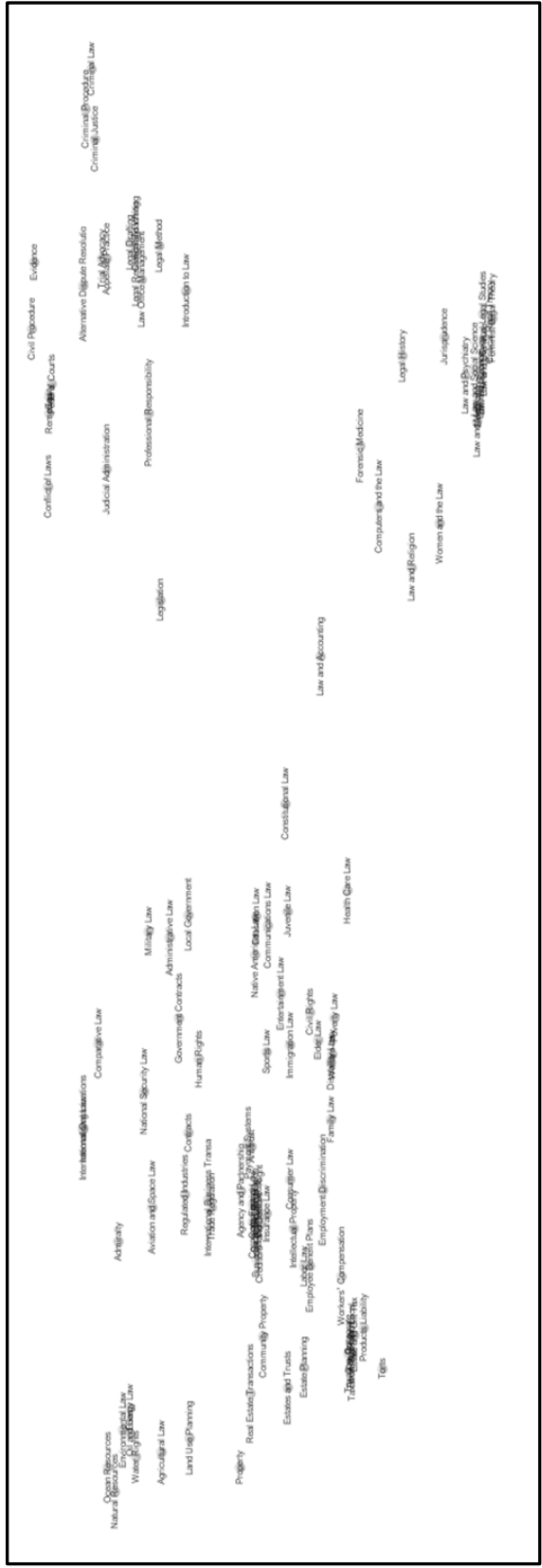


Figure 38: 2010-11 Card Sort Map

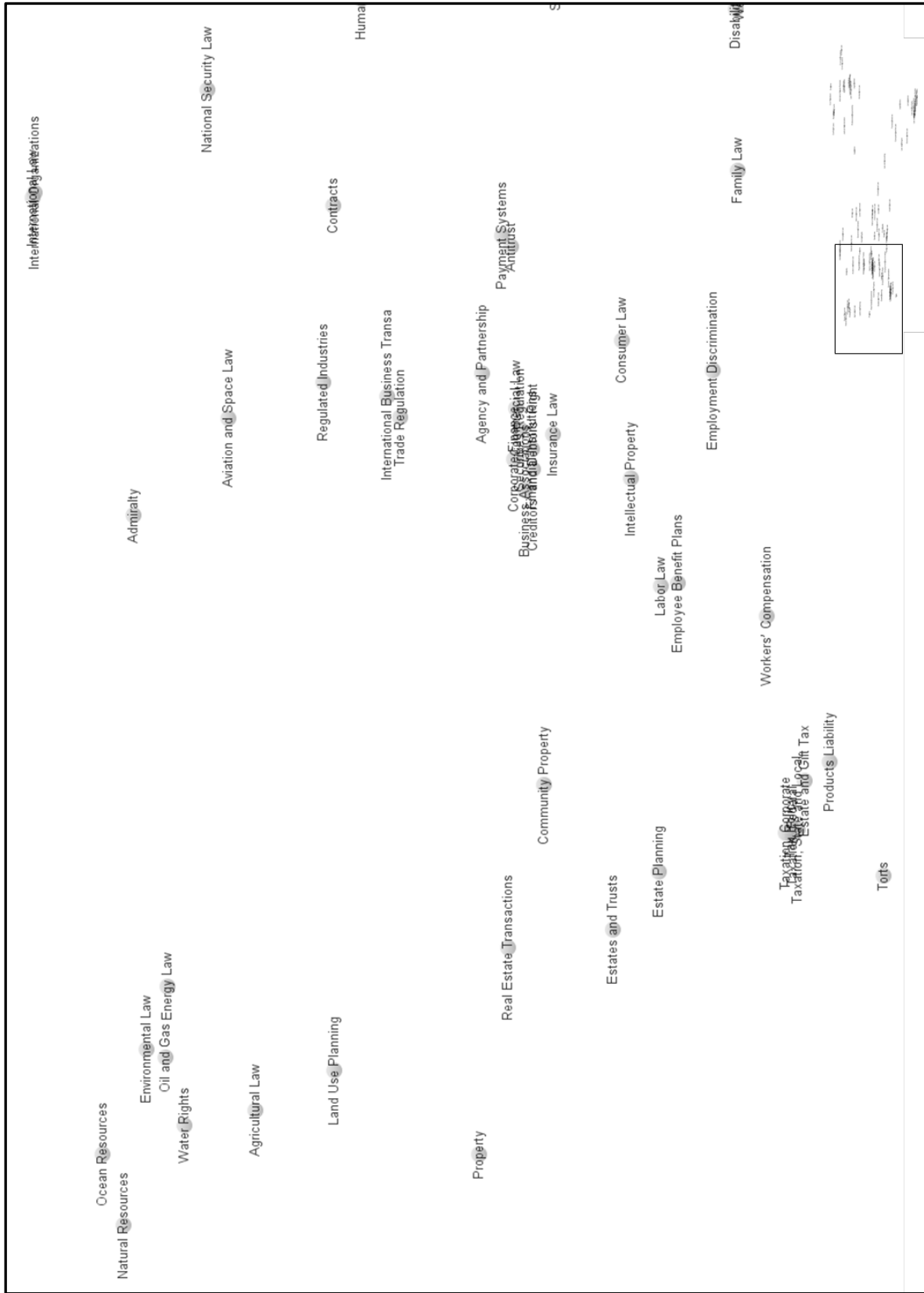


Figure 39: 2010-11 Card Sort Map (Detail: Left Third)

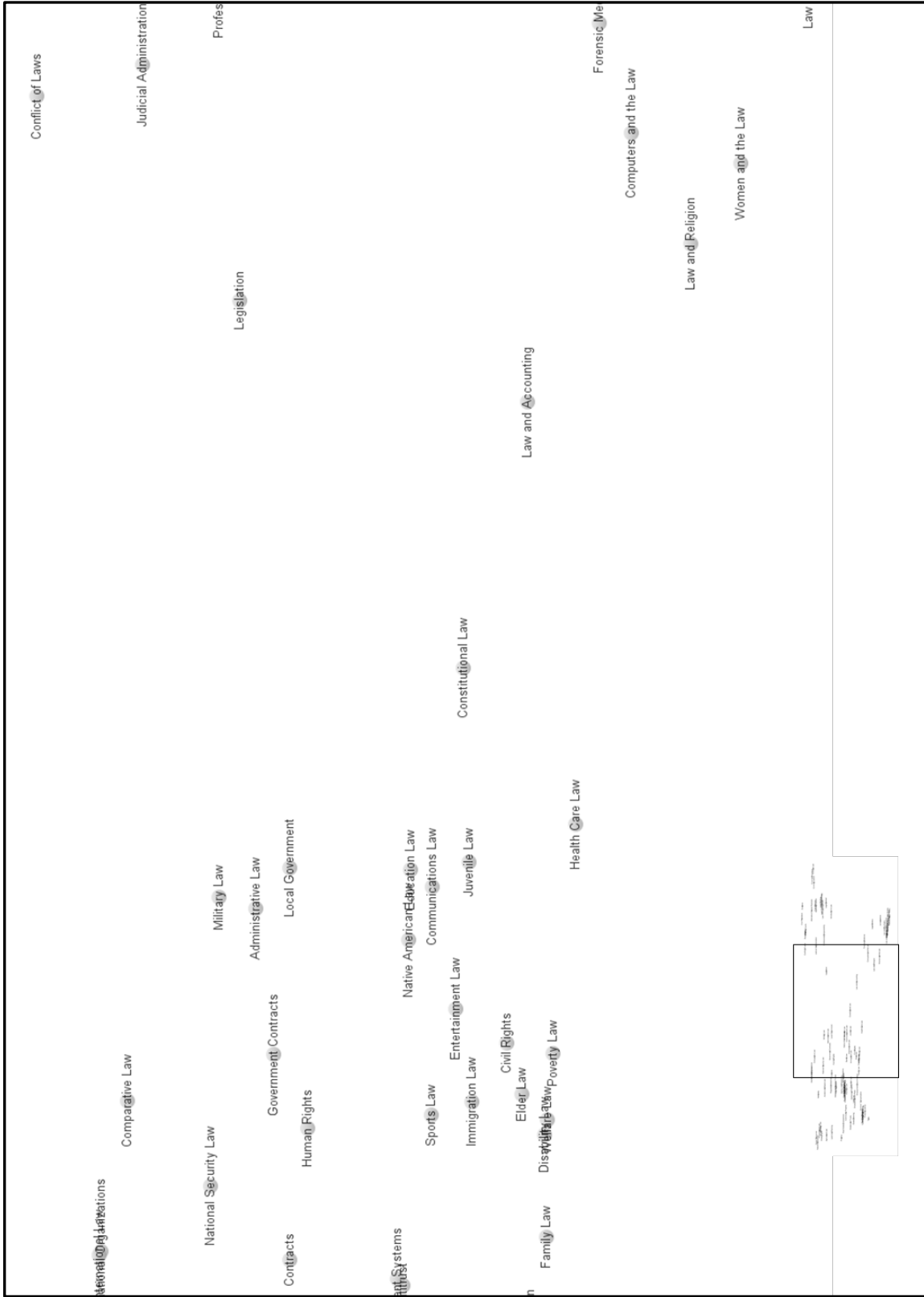


Figure 40: 2010-11 Card Sort Map (Detail: Middle Third)

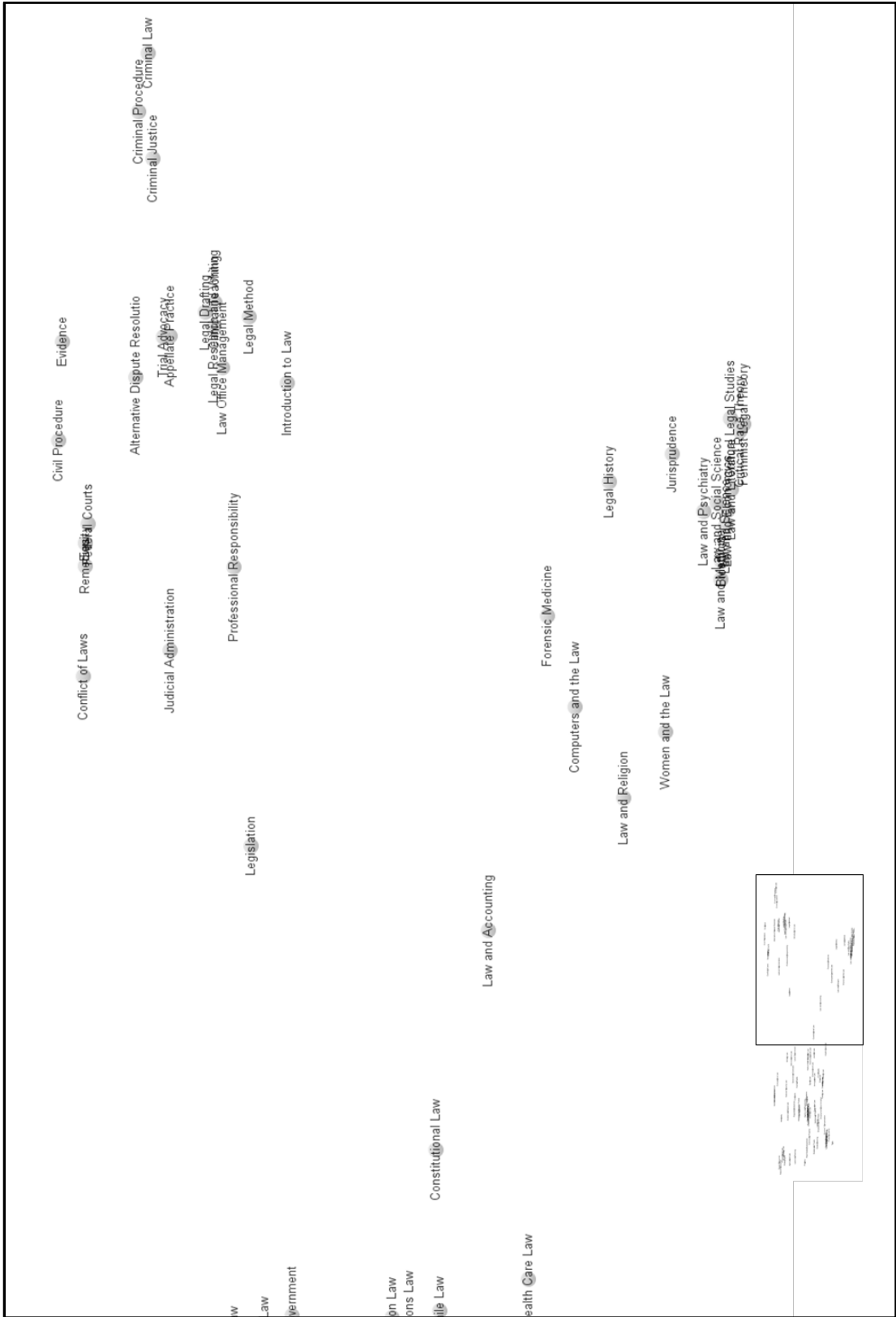


Figure 41: 2010-11 Card Sort Map (Detail: Right Third)

5.2.5 Observations about the CSCO Maps

The domain maps for each of the map years have many intuitively satisfying aspects and illustrate important concepts in legal education. As discussed in the literature review, domain mappers frequently label the horizontal (x) and vertical axes (y) of their two-dimensional domain maps. For map years 1972-73 and 2010-11, commercial, business, and taxation law course-subjects are on one side of the horizontal axis of the map while criminal law courses are on the other. In the broadest terms, this illustrates the private law / public law divide. Private law course-subjects involve legal matters between individuals and/or businesses that do not involve the government. Public law course-subjects, on the other hand, necessarily involve the government as either a participant or a protector. This public law / private law dichotomy is largely absent from the 1931-32 CSCO map. This might be because the legal landscape over 80 years ago was much more focused on private law matters. Private law course-subjects occupy the center of the 1931-32 map while, with few exceptions, public law courses occupy the periphery of the map. This change over 80 years reflects the proliferation of public law course-subjects and interest in law school education in the United States.

Similarly for the 1972-73 and 2010-11 CSCO maps, there is a perceivable continuum on the Y axis in terms of locality of focus. For both maps, generally speaking, more local and geographically specific legal issues appear on the bottom while course-subjects with international aspects appear on the top. Neither horizontal nor vertical continuum discussed in this section is entirely consistent. For instance, Torts is a quintessential private law course-subject as it entails all of the wrongs individuals or corporate entities do to each other. However, in all three map years it is very central. This is probably an artifact of Torts being a core, first year course-subject that is required for all law students. It is probably disproportionately taught by faculty members that teach a diverse range of other course-subjects and is pulled towards the center during ordination.

Additionally, the most recent CSCO domain map may be used by course advisors to inform students as to which courses to take. For instance, sports lawyers provide contract, property, and general business

advice to athletes. Thus, it is potentially illuminating for novices to see that Sports Law is proximate to these types of course-subjects on the 2010-11 CSCO map. (Sports Law came into existence as a course-subject in 1988-89. Thus, it is not present on either the 1931-32 or 1972-73 CSCO maps.) It is not enough to merely enjoy sports. It is advisable for a young attorney interested in sports law to also be both interested in and competent in basic contracts, property, and business issues. Course counselors may use the 2010-11 domain map to point this out to students.

5.2.6 Future Work

As suggested by a domain expert during the card sort, I want to compare and contrast two variant CSCO maps of the legal domain. The first will use CSCO data from the highest tier (top 25%) of law schools according to the U.S. News and World Reports rankings. The second will use course-subject data from the lowest tier (bottom 25%) of law schools according to the U.S. News and World Reports rankings. It is hypothesized that the map from the top fifty ranked law schools will be more topically coherent and accurate. This is because the more prestigious schools have larger budgets and a greater ability to allow their faculty to specialize and teach course-subjects of their choice.

6. Thematic Overlays

One of the greatest uses for domain maps, as well as conventional cartographic maps, is the ability to overlay thematic information for the efficient visual processing and comprehension of the overlaid information (Dent et al., 2009). Domain maps of academic legal course-subjects allow for the efficient conveyance of such data as the amount of teachers teaching a particular subject, the average length of time a subject has been taught by faculty members, the frequency that a course-subject is taught as a seminar, and perhaps most importantly, higher level clusters. Overlays are demonstrated below for the 2010-11 CSCO map. Domain maps may also be used as interactive front-ends to additional online related content as will also be demonstrated.

Domain maps have the potential to serve a pedagogical function as navigable front-ends to additional content. Holley and Dansereau have documented the long history of spatial learning strategies in the field of education (1984). The structure inherent in visual representations of the big picture acts as ‘scaffolding’ which a learner may use to organize the details of a particular subject and to assimilate new knowledge with the learner’s existing knowledge (West et al., 1991). Additionally, “big picture displays make explicit the connections between conceptual subparts and how they are related to the whole” (Hook & Börner, 2005, p. 188).

Domain maps utilize spatial metaphors in order to convey associations between concepts to the viewer (Fabrikant & Skupin, 2005). They are an effort to explicitly convey the underlying structure of a domain to a user so that he or she can internalize the framework presented in the domain map and reconcile it with his or her existing framework. “By seeing where a topic is placed on a [domain map], the user may draw from his or her store of existing knowledge about adjacent topics to begin to understand what an unknown topic is about” (Hook & Börner, 2005, p. 199). Domain maps can also play an important role in academic story telling (Gershon & Page, 2001) such as when they are marshaled to show the evolution of the topic space of legal course-subjects from 1931-32 to 2010-11. Ellingham was

perhaps the first to use a domain map as a front-end to a body of literature (1948). Others have also found domain maps useful in this regard (Börner & Chen, 2002).

6.1 Counts of Teachers by Subject

Not all course-subjects are taught in equal amounts. Some course-subjects, such as the first year curriculum, are taught by a large number of faculty members. Other course-subjects are extremely specialized and are only taught by comparatively few faculty members. **Figure 42** conveys to the viewer that course-subjects such as Constitutional Law, Legal Research and Writing, and Clinical Teaching are course-subjects taught by numerous faculty members.²³ In fact, they are the top three in rank. Conversely, course-subjects such as Employee Benefit Plans, Disability Law, Judicial Administration, and Forensic Medicine are taught by comparatively few faculty members. For complete data, *see Appendix 43: Course-Subject Metrics 2010-11*. 1,630 different faculty members, or 4.5% of all law faculty members, are listed in the AALS Directory as teaching Constitutional Law—the largest amount. Only one faculty member teaches Forensic Medicine—the smallest amount. Domain maps with thematic overlay have the potential of doing a better job of instructing the viewer as to the comparative amount that different course-subjects are taught than the tabular data presented in **Appendix 43**. However, for detailed and specific information, tabular data is important as well.

²³ The scaled image that was produced by VOSviewer was not graphically sufficient to be included herein. There were 3D effects on the nodes that made it difficult to distinguish nodes that are taught by a small number of people and those that appear to be further away from the viewer in the picture plane because of the illusion of the 3D effects. Furthermore, VOSviewer does not permit the option to include a legend and both the VOSviewer Manual (1.5.4) and (Van Eck & Waltman, 2010) are silent as to the mechanics of how the size variation slider works in terms of node size. It is unknown whether the slider scales the input values linearly or logarithmically. The nodes in **Figure 42**, produced by the author using Adobe Illustrator, vary by five sizes that represent the different quintiles of how many faculty members teach a particular course-subject.

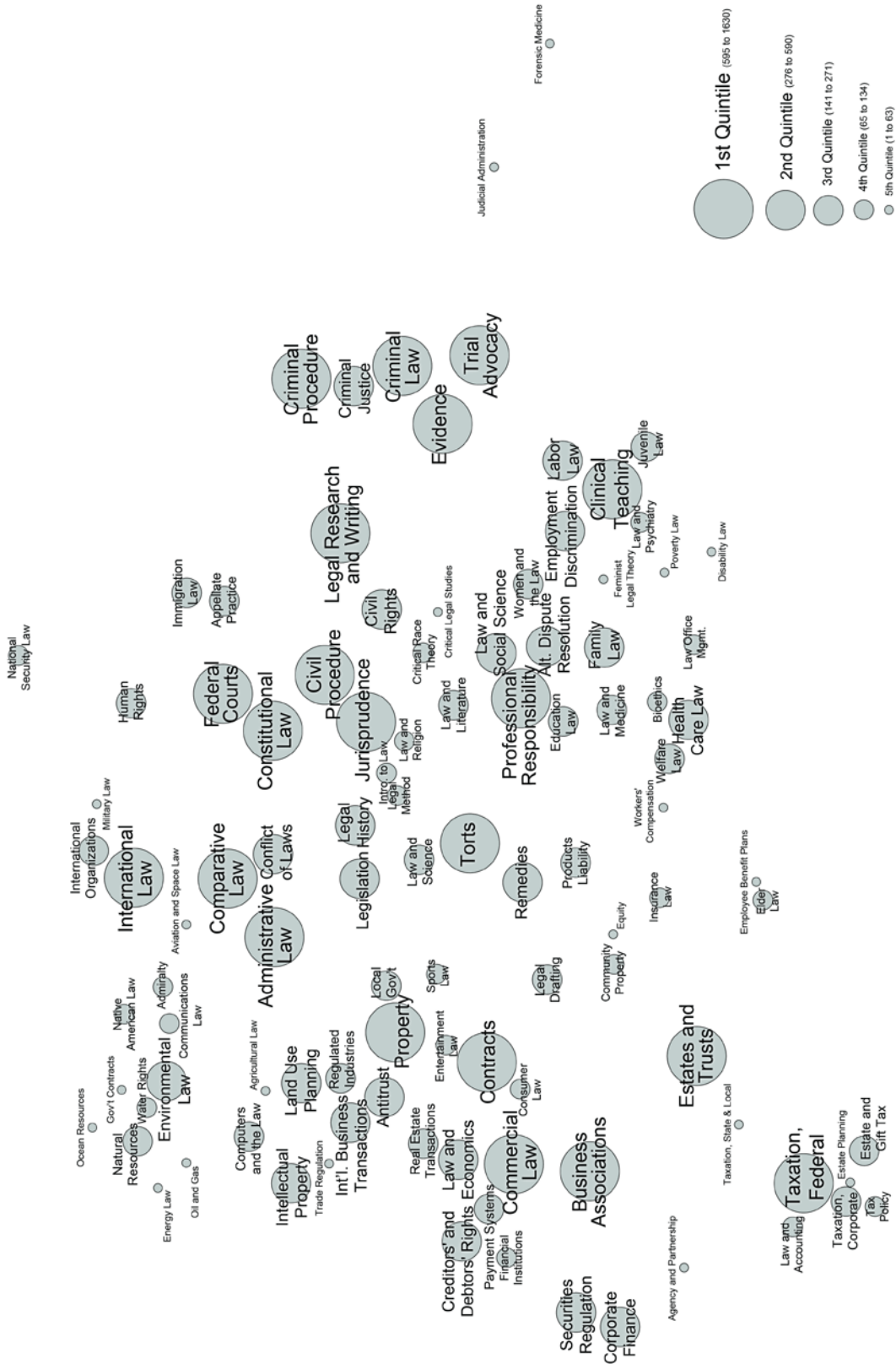


Figure 42: 2010-11 CSCO Map (Faculty Counts)

6.2 Percentage Taught as Seminar

Another piece of information captured in recent AALS Directories is whether or not a course-subject has been offered by an instructor as a seminar. Seminars are readings based courses that frequently do not have a textbook (or casebook), and instead of an exam, the evaluation is based on a final research paper. Discussion is often lead by the students and class participation is usually expected. Here, the thematic overlay quickly conveys a surprising trend. Course-subjects that are only taught by a few faculty members are more likely to have been taught as seminars, see **Figure 43**. Examples include: Tax Policy, Critical Race Theory, Bioethics, National Security Law, and Judicial Administration. When comparing the two maps, **Figure 42**: 2010-11 CSCO Map (Faculty Counts) and **Figure 43**: 2010-11 CSCO Map (Percent Ever Having Taught as a Seminar), this fact soon becomes apparent to the viewer. Additionally, the standard first year course-subjects are seldom taught as seminars. Base-maps with thematic overlay allow for these types of visual discoveries.²⁴

²⁴ The course-subject with the highest percentage of ever having been taught by the instructor as a seminar is Tax Policy (71%). The lowest is Payment Systems (00%). The following are the percentages for the additional course-subjects discussed above: Critical Race Theory (69%), Bioethics (55%), National Security Law (36%), and Judicial Administration (50%).

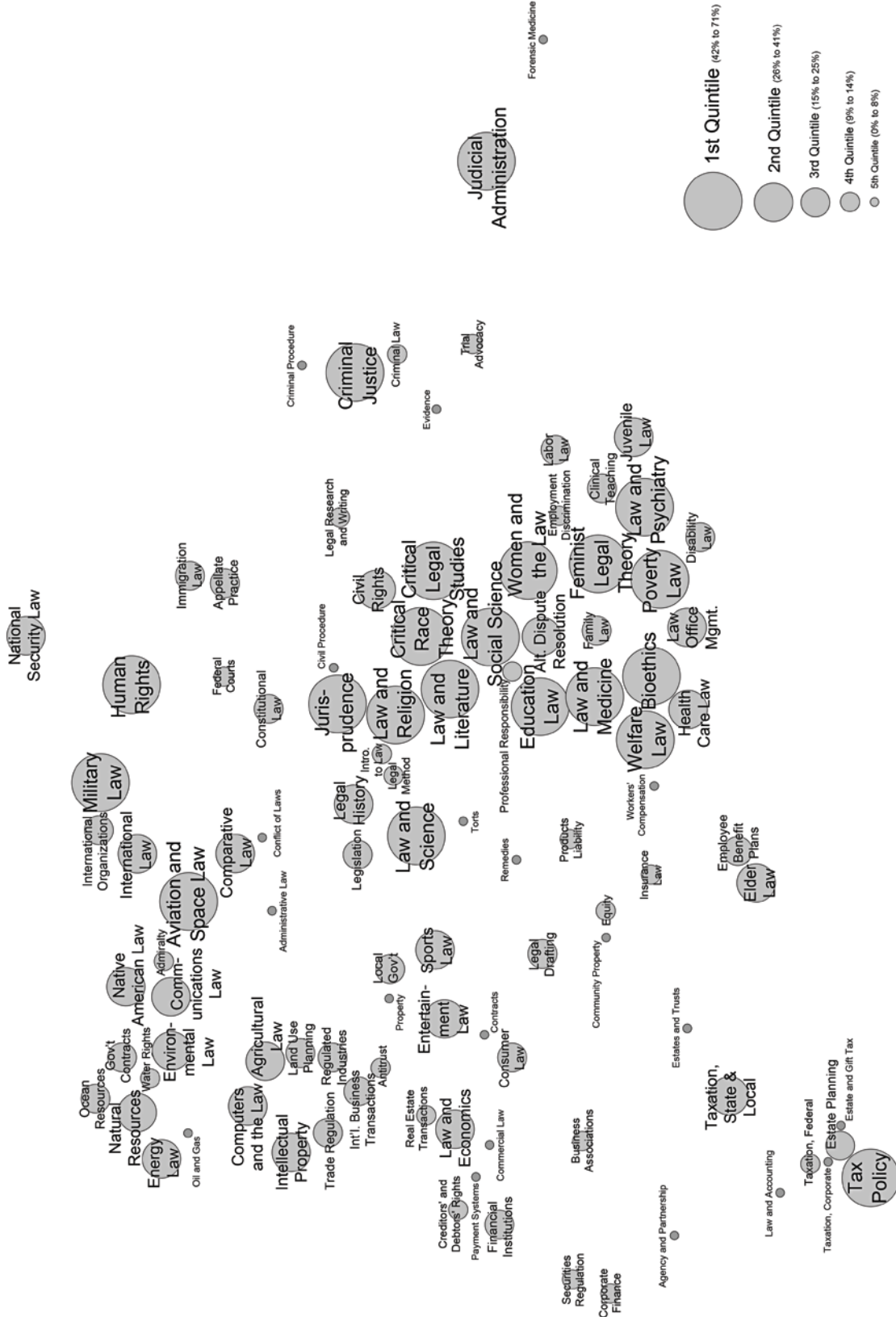


Figure 43: 2010-11 CSCO Map (Percent Ever Having Taught as a Seminar)

6.3 Front Ends to Additional Online Content

Figure 44 is a mockup of the 2010-11 CSCO map being used as a digital front end to additional course content. The modified screenshot is of an actual webpage of a law school at a Midwestern university.²⁵ The presumed intent of the webpage is to provide information about the required first year course-subjects. The author proposes that instead of interacting with an enumerated list of course-subjects, the viewer navigates a domain map (with overlaid thematic content—first year course-subjects). By using hyperlinked nodes, the user will be able to find additional information about the course-subjects clicked upon, just as if s/he were using the non-modified page. However, the user might also explore other areas of the map and learn how the first year course-subjects relate to other courses of which s/he might have little knowledge. In other words, s/he might be able to intuit something about the topical content of unknown course-subjects that are in proximity to known course-subjects. Also, the viewer might be able to begin to internalize the big picture framework of how all of the course-subjects are topically related.

²⁵ <http://law.wayne.edu/courses/> (visited May 10, 2014).

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Co-curricular programs

Courses

Required first-year courses

Required upper level courses

Upper-level elective courses

Seminars

Clinics, internships and co-curriculars

Diverse programs and specializations

Clinics

Dean of Students Office

Fellowships

Forms, expenses and travel information for students

Internships

Records and Registration Office

Reserving space for events

Student Voluntary Pro Bono Program

Figure 44: Mockup of the 2010-11 CSCO Map Being Used as a Front-End to Additional Online Content

6.4 Higher Level Groupings (Clusters)

Higher level groupings, or clusters, are important for breaking the domain map into chunks, or more learnable pieces. The best cluster categories from the cluster analysis in **Section 4.3.4** have been applied to the 2010-11 CSCO map. The map illustrates the utility of using higher ordered groupings to assist a novice in becoming familiar with a domain or an expert to quickly situate him or herself on the domain map, *see* **Figure 45** and **Figure 46**.

One problem commonly faced by domain mappers is clearly conveying many different cluster categories—eighteen for the 2010-11 CSCO map. Here, the clusters have been coded in different colors. However, there are not enough clearly distinguishable colors in the human visual processing spectrum to make eighteen cluster categories readily understood. Thus, the clusters have also been placed in bounded regions in order to make them more discriminable. These bounded regions were created by hand using the pencil tool of Adobe Illustrator and adhering to the cluster categories established by the cluster analysis in **Section 4.3.4**. When the bounded regions could not contain all of the clusters without overlapping, separate topical enclaves were created for the non-contiguous members.

Not all course-subjects fall neatly into contiguous regions. Instead, course-subjects of one cluster intermingle or overlap with course-subjects belonging to another cluster or are entirely surrounded by other clusters (topical enclaves). This is common with the reduction of a highly multidimensional space into two dimensions. With the 2010-11 map, some course-subjects form relatively contiguous and tightly arranged clusters, *see* **Figure 47** and **Figure 48**. However, other course-subjects such as those forming the Professional Skills cluster, *see* **Figure 49**, are pulled in numerous directions and result in four separate topical enclaves. The Professional Skills course-subjects are a bit like methods classes in graduate education—they can be taught by faculty members with numerous different doctrinal specialties. Thus, these course-subjects are pulled apart from being a tightly grouped area and occupy several different regions in the domain map center. The same could also be said about the Civil Procedure course-subjects.

Other individual course-subjects are comprised of topics that strongly relate them to two or more different course-subjects. This also causes stress in the two-dimensional ordination as the course-subject is “pulled” in different directions by the two or more related course-subjects. For instance, Juvenile Law is both related to Family Law (in terms of the well-being and cohesiveness of the family that also includes juveniles) as well as Criminal Procedure (in the context of juvenile delinquency). Similarly, Elder Law is both about the physical well-being of senior citizens (protecting them from harm) as well as making sure that older people have their financial affairs in order. Consequently, Elder Law is pulled both towards the Taxation / Wealth Preservation course-subjects as well as the Family Law and Compassion course-subjects in which it clusters.

Another problem with clustering that also results in topical enclaves is that even though a particular course-subject could be placed in two or more cluster groupings, it has to be placed in its best cluster. For instance, Education Law is most about constitutional issues addressing students and schools. Thus, it best fits in the Constitutional Law cluster. However, Education Law is also about the health and well-being of the students. Consequently, it could have also been included in the Law and Medicine or Family Law and Compassion clusters. Additionally, Education Law also implicates Torts and Harm Prevention issues. Similarly, Law and Social Science, could also be included in numerous different clusters. However, as the course-subject is most often applied to Criminal Law issues, it remains best clustered with the Criminal Law cluster.

One solution to the non-contiguous cluster bounding problem would be to utilize the interactivity of the online environment. Ideally, a user would be able to either click on or mouse-over one cluster category and all of the constituent course-subjects would be highlighted (or alternatively, all of the non-cluster course-subjects would become muted). This would assist the user in identifying course-subjects that are in the same cluster, but not all bounded by the same contiguous region. Also, Klavens and Boyack’s thresholding of the top 15 relationships for any particular entity undergoing ordination might

also help with this problem. This might reduce some of the many different directional ‘tugs’ on a particular course-subject and might result in more contiguous clusters.²⁶

²⁶ It was requested of the author to “explain to a non-expert in easy terms how the visualization in [Figure 45] was created, how one reads such a visualization, and what one can learn from it”: In the image below, law school courses have been arranged by a computer based on how frequently they are taught together. More similar courses appear closer together and less similar courses appear further apart. The clusters have also been determined by a computer. The courses within the same color regions are topically similar. One can learn from the image the major groupings of law school courses, and different practice areas for attorneys as well as areas of focus for law students. Furthermore, a person might be able to infer the topical content of an unknown course based on that course’s spatial proximity to a known course.

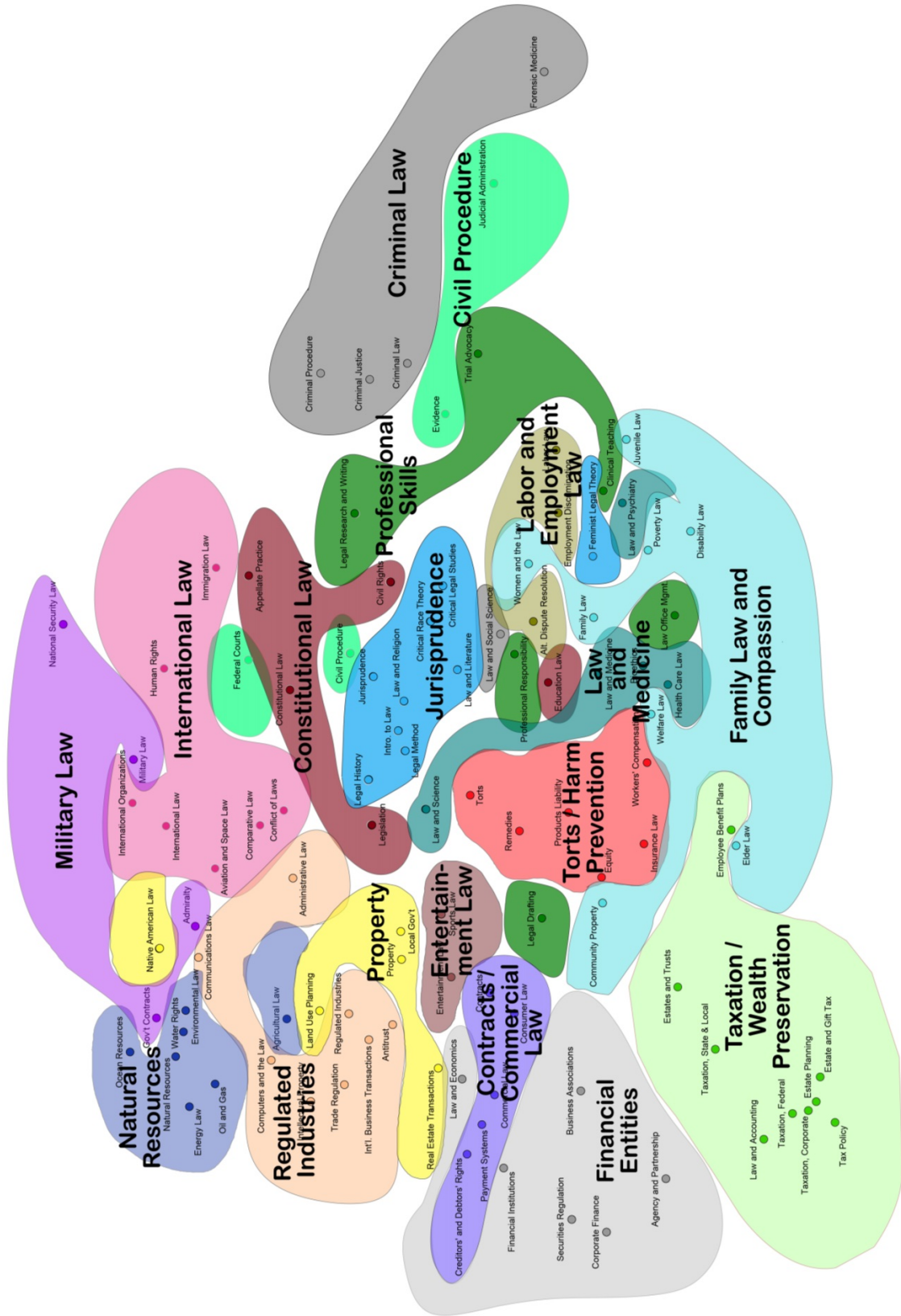


Figure 45: 2010-11 CSCSO Map (with Clusters)

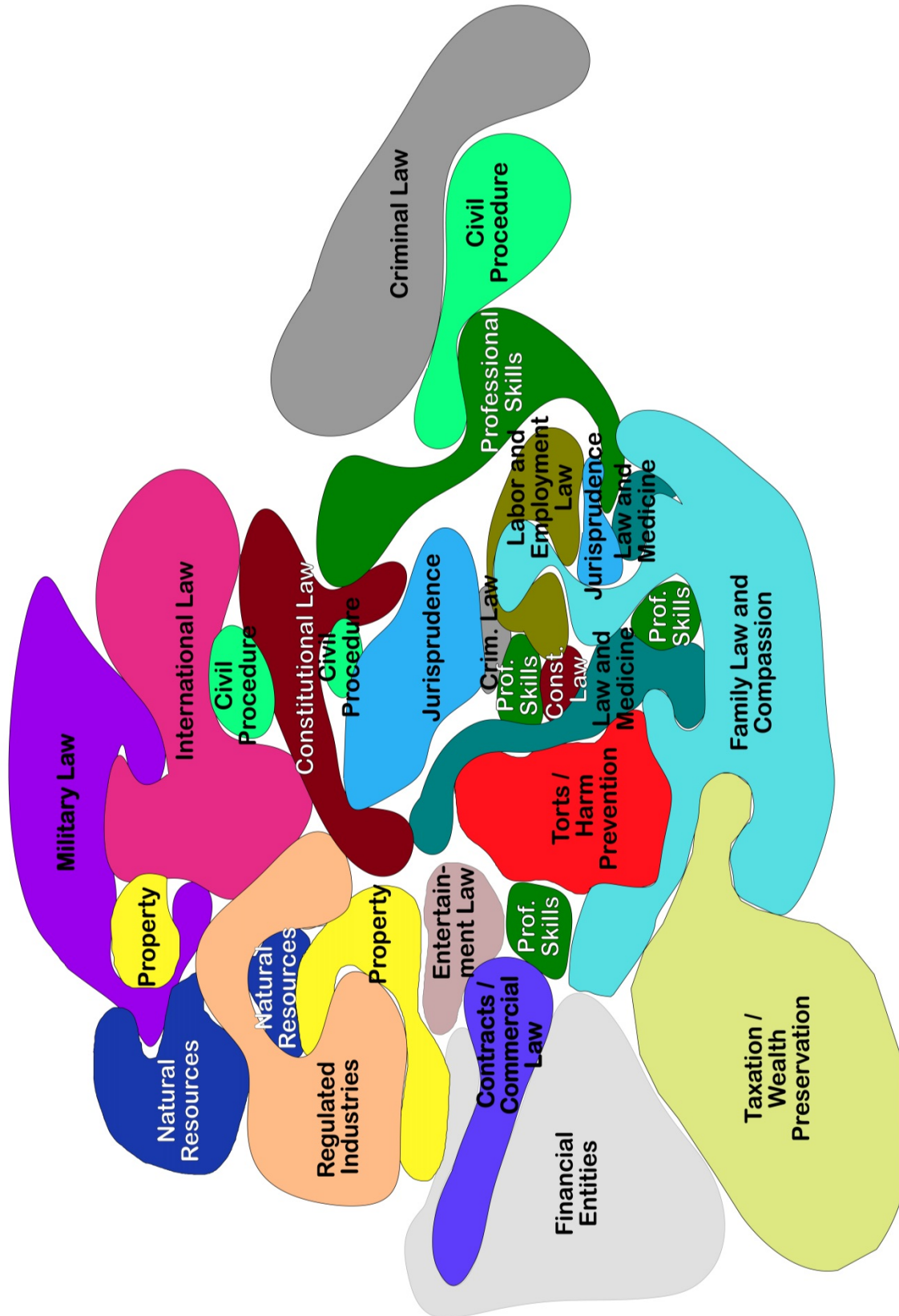


Figure 46: 2010-11 CSCSO Map (Just Cluster Titles without Course-Subject Nodes)

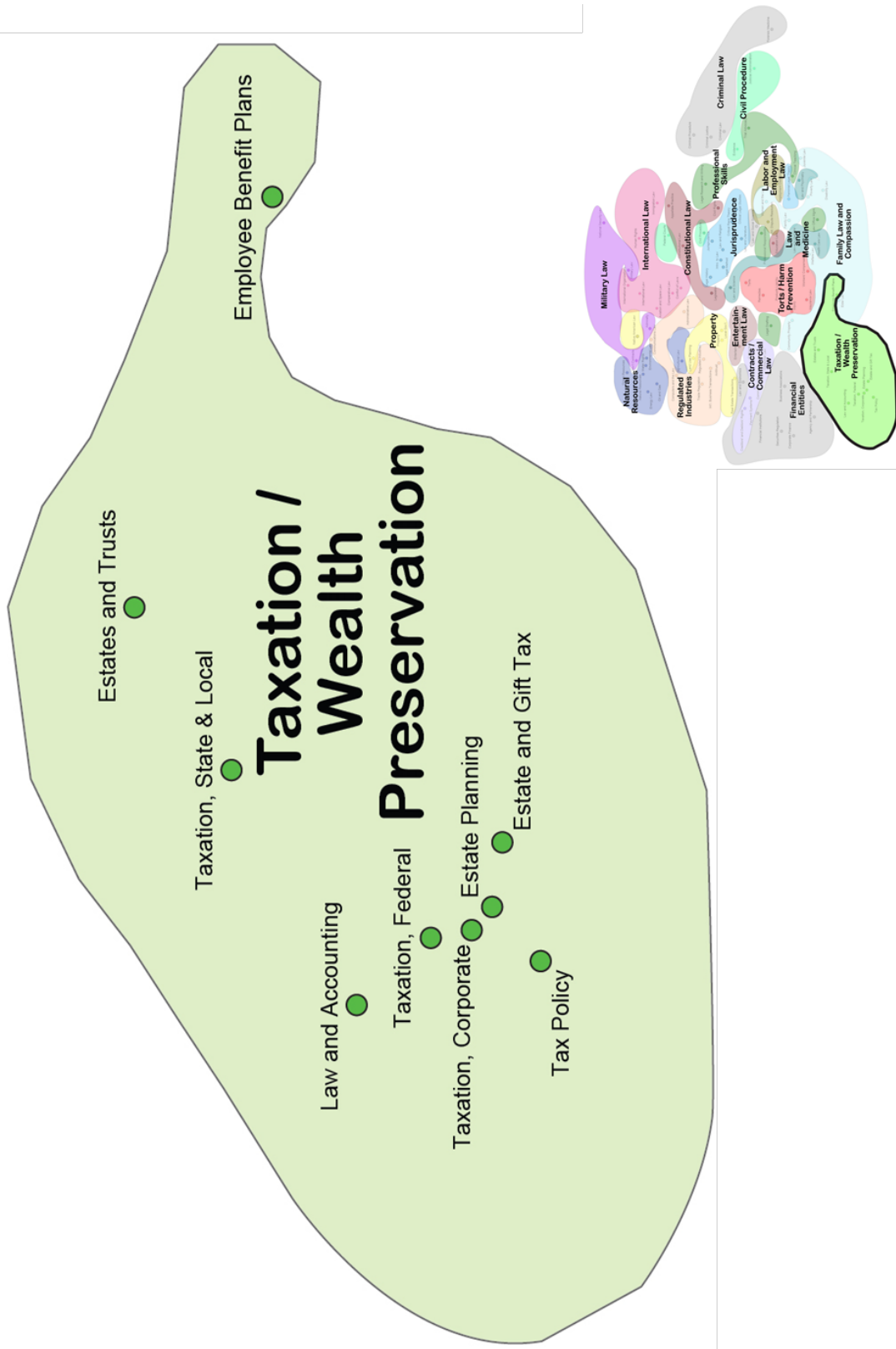


Figure 47: 2010-11 CSCO Map (Taxation / Wealth Preservation Cluster)

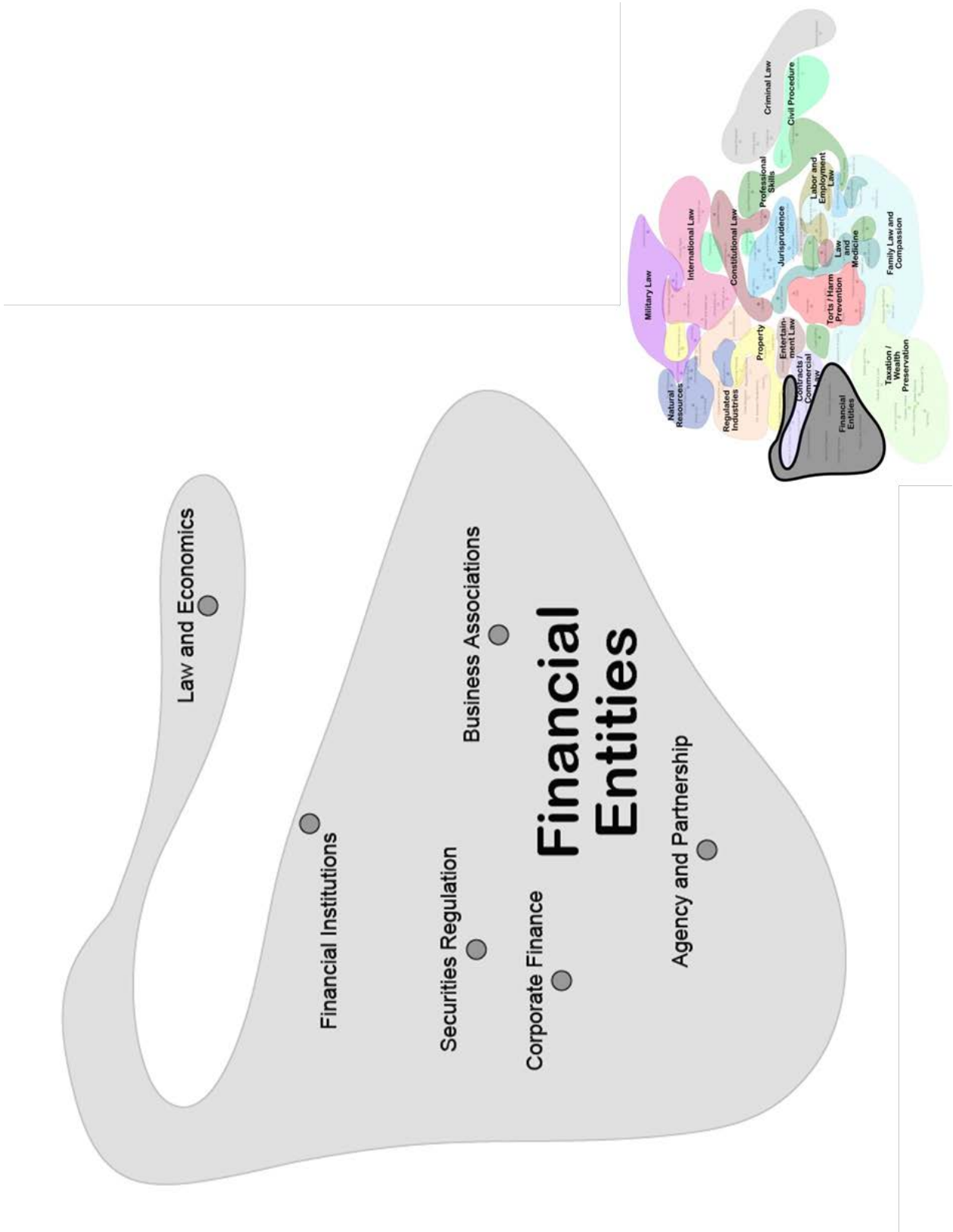


Figure 48: 2010-11 CSCO Map (Financial Entities Cluster)
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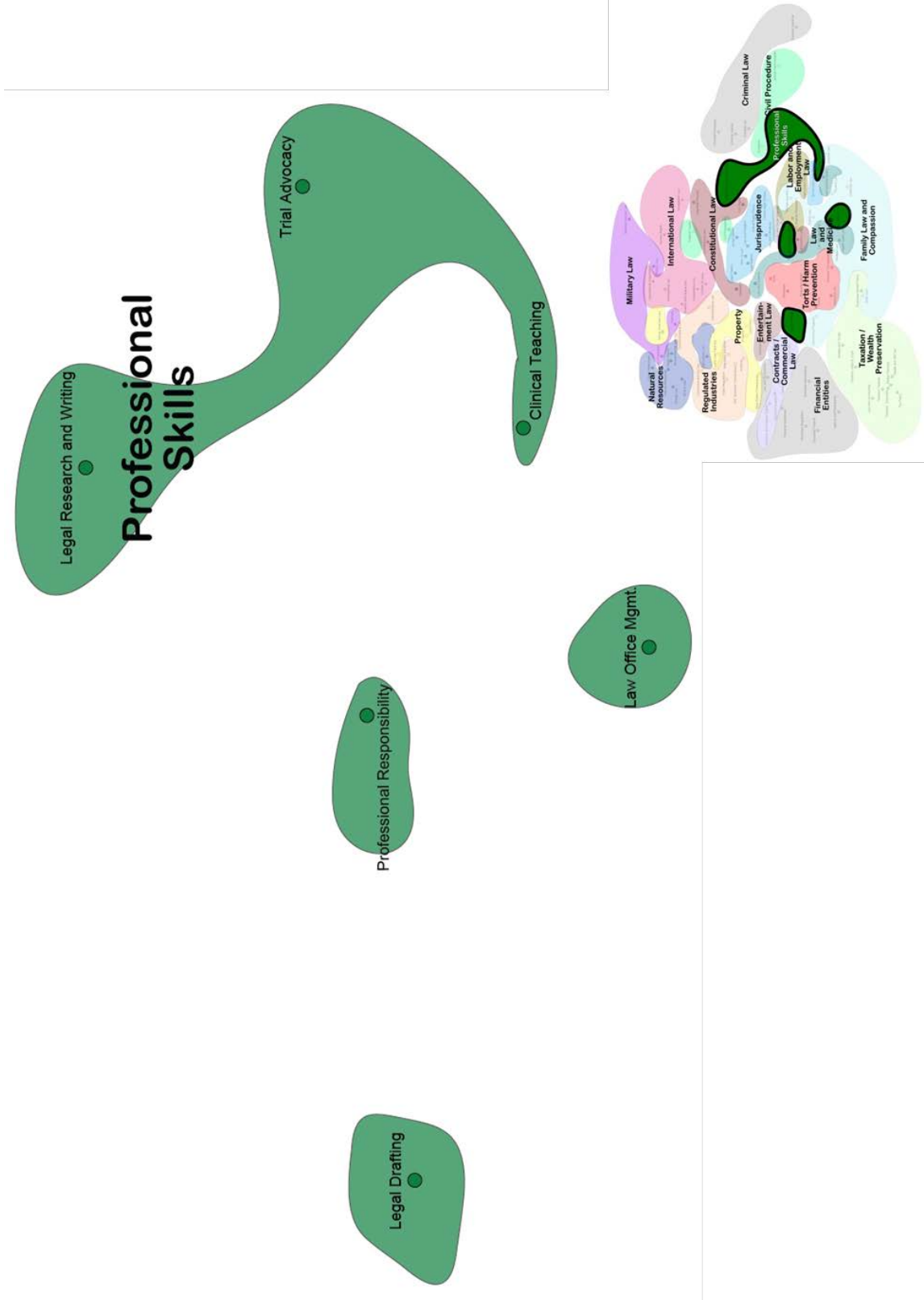


Figure 49: 2010-11 CSCO Map (Professional Skills Cluster)

6.5 Section Conclusion

The examples above illustrate the benefits of using domain maps as a base-map for the overlay of additional thematic content. In this fashion, a large amount of data that would otherwise occupy numerous cells in a spreadsheet can be quickly perceived by the viewer using his or her highly developed visual and cognitive processing system. Furthermore, domain maps serve a pedagogical function by providing scaffolding or big picture conceptual overviews to the user. To this end, it is important to include cluster information to assist in the learning of the domain. Much can be accomplished in terms of thematic overlay on top of a good base-map. For instance, the overwhelming majority of courses that law students take are electives. The choice of these electives could be aided by the use of a domain map. The maps could also be used to illustrate other criteria by third parties. For instance, law firms could quickly convey to new students the course-subjects from the overall legal canon that the firm most values and wants to see taken by its new associates.

Once the utility of CSCO domain maps become known, certain policy issues might arise. For instance, absent from the 2010-11 base-map are widely taught law school course-subjects such as Election Law and Commercial Paper. Conversely there are two course-subjects involving women's issues: Women and the Law and Feminine Jurisprudence. Once CSCO base-maps are used for presenting data and as navigational front-ends to literatures, more faculty members might lobby the AALS for inclusion of their particular course topic in the List of Faculty by Subject. In other words, what is currently included in the annual directory as a convenience to help faculty members locate other faculty members teaching similar courses might assume significantly greater importance in conceptualizing how legal education is organized and presented to the world.

7. Conclusions

Leydesdorff and Rafols note that: “One should not expect a unique map of science, but a number of possible representations Each map contains a projection from a specific perspective” (Leydesdorff & Rafols, 2009, p. 350). This post-modern view might be applicable to the CSCO dataset as well. However, while there are many different and often competing dimensions to be captured and represented by domain maps, if one articulates criteria with sufficient specificity, for any given domain criteria, there is likely to be a best or most accurate domain map representation. This research has striven to obtain the best domain map of topically related legal course-subjects in law school education in the United States. Additionally, the dissertation has produced some evidence of the best practices for the constituent domain mapping steps—normalization and ordination. Domain mapping as a field will not be mature until there have been numerous studies that demonstrate the best techniques for the many different data situations encountered by scientometricians. This dissertation is one step along that path and follows a trail previously marked by others.

Perhaps the most significant contribution of this dissertation is the analytic framework to compare multiple different algorithms, tools, and techniques at each stage of domain map production. Most domain maps involve normalization and ordination. Additionally, clusters are also a desired feature of most domain maps. This work, and the schematic framework set out in **Figure 3**, illustrate how multiple different treatments can be compared with each other at each stage of domain map construction and how their cumulative effects may be compared across stages. The answer to both of these questions—best inner-stage performance, and best cumulative effects across multiple stages, are necessary to identify the best individual and combinations of algorithms, tools and techniques. Future studies can use the framework presented herein to compare existing and novel algorithms, tool, and techniques. In fact, this framework provides a potential standardization for comparing all constituent steps of domain map production against gold-standards.

7.1 Answers to Specific Research Questions

- **Research Question 1:** Do faculty members, on the whole, specialize and focus their energy teaching courses that are topically similar to other courses they teach? This is the threshold question which is also the assumed premise underlying the use of CSCO to create valid domain maps of academic course-subjects.

Yes. The fact that a high percentage (83% to 95% for map years 1972-73 and 2010-11) of gold-standard pairs are in the top quintile of overall ranked values of the CSCO normalized data, provides strong evidence for the hypothesis that generally, faculty members teach course-subjects that are topically similar. *See Section 4.1.1.*

- **Research Question 2:** Can course-subject co-occurrence (CSCO) be used to produce topic maps that are consistent with expert opinion and other indicators of the topical similarity of law school course-subjects?

Yes. The average rank of distances of all CSCO gold-standard identified edges (derived from 5 extrinsic sources of topical similarity) are within the top 15% of all possible 2010-11 edges when using the best normalization (Association Strength Total Occurrences) and ordination (VOS) techniques. *See Section 4.2.4.*

- **Research Question 3:** When using CSCO network data to compare normalization algorithms (association strength, cosine, and no normalization) and spatial ordination and layout techniques (Proxscal MDS, VOSviewer, and spring-force algorithms), which combination of algorithms,

tools, and techniques is best at portraying the overall structure of law school course-subjects as compared to an extrinsic ‘gold-standard’ of similar course-subject pairs?

As the Association Strength normalization technique does a better job than Cosine in data years with widely varying occurrences of course-subjects, and just as good as Cosine in years without a wide variance, the Association Strength is the preferred normalization technique (either variant) to use with co-occurrence data. This confirms the findings of Van Eck and Waltman (2009). *See Section 4.1.7.* This dissertation has also contributed to an understanding of how both normalization techniques and their variants differ in response to different conditions of the data. *See Section 4.1.6.*

As to CSCO data of legal course-subjects and the gold-standard used herein, the VOS ordination algorithm utilizing the Association Strength (2009) Total Occurrences method of normalization produced the best results. This is some evidence of the superiority of the combination. Until shown otherwise, this author will use this combination for all subsequent domain mapping needs. *See Section 4.2.4.*

- **Research Question 4:** How well does cluster analysis of course-subject co-occurrence data capture the higher level groupings of law school course subjects compared with the subject groupings created by experts?

The results in this case were mixed. While the two networks (CSCO and card sort) are more similar than they are dissimilar, they diverge in some important ways. Sometimes the card sort data is a more correct indicator of topical similarity. However, in some instances the CSCO data may be shown to be a more correct indicator of topical similarity. *See Section 4.3.*

- **Research Question 5:** How have law school course-subjects changed over time?

The number of course-subjects has almost doubled—104 in 2010-11 compared to 58 in 1931-32. Topics such as International Law, Constitutional Law, Legal Research and Writing, Criminal Law, and Taxation have come to represent a higher proportion of the legal canon in terms of percentage gains in the amount of all faculty members teaching them. Conversely, based on a decrease in the percentage amount of faculty members teaching the related course-subjects, the legal academy is now less concerned about how one inherits property, conducts commerce, organizes business entities, and holds property. *See Section 5.1.*

- **Research Question 6:** What do thematic overlays reveal about the relative amount certain course-subjects are taught, which course-subjects are taught as a seminar, and other metric evaluations of the law school canon? This question addresses the utility of overlays applied to CSCO network produced domain maps.

Section 6 illustrates the use of domain maps as base-maps on which to layer additional thematic information. The human visual and cognitive processing system is able to quickly perceive and distinguish the most taught course-subjects, the course-subjects most taught as seminars, the first year course-subjects, and how the course-subjects cluster in higher level groupings.

7.2 Significance of the Research

The National Science Foundation (NSF) requires all grant applicants to address the intellectual merit and broader impacts of their proposed grants. The NSF gives guidance as to what is meant by these terms (NSF, 2011). It is helpful to contextualize the significance of the research described in this dissertation using the NSF guidelines for intellectual merit and broader impacts.

7.2.1 Intellectual Merit

This research advances the knowledge and understanding of the legal education domain in the United States by representing the topical relatedness of law school course-subjects for the first time in an efficient, visual manner. The domain maps created, and subsequently validated, utilize the distance similarity metaphor to show the topical relatedness of the course-subjects and their larger groupings. This helps students to become familiar with the law school curriculum. It allows novices to infer something about unknown topics based on their proximity to known topics. Furthermore, the domain maps function as base-maps for the efficient overlay and presentation of thematic information such as statistics about the law school curriculum. This is the first time that the structure of the academic discipline of law in the United States has been revealed through the exploration of large datasets and determined through replicable, empirical means. Additionally, this research is the first to capture and analyze changes in the law school curriculum as reflected by changes in course-subjects and their corresponding CSCO networks. Prior to the collection and assimilation of the data used for this dissertation, such a comprehensive study of the field was not possible. Another potentially transformative aspect of the work will come once the most recent domain map is adopted as a visual front end to online law school course catalogs. This will allow students to learn about specific courses within a global framework as they navigate the online course offerings to identify courses they want to take.

As to the field of information science, this is the first work to use course-subjects data to visualize the teaching space of an academic discipline. Furthermore, while employing well known techniques, algorithms, and software, this work contributes to the field by analyzing which combination of these techniques, algorithms, and software programs works best with the applicable data. The author of the dissertation was well qualified to perform this investigation and to bridge the two domains from which the work is drawn—law and information science. In addition to being a doctoral candidate in information science specializing in data mining, information visualization, and domain mapping, the author is trained in the law and has over ten years of experience working in law schools in the United States. The author

was also well positioned to find, manipulate, and examine the data that was used both to create and validate the domain maps as well as to identify and secure the participation of knowledgeable experts.

7.2.2 Broader Impacts

This work advances discovery and understanding about the law school curriculum by allowing global overviews of the field. Experts have well developed schemas about the interrelatedness of course-subjects in their area of expertise. Administrators, familiar with curricular development, sometimes have a greater sense of the overall relatedness of the 104 controlled course-subjects of the AALS. Domain maps make this local and global knowledge available to novices. Domain maps also accommodate learning by allowing novices to infer subject content about unknown course-subjects from proximity to known course-subjects. Additionally, the higher level clustering categories identified and validated by the research allow for additional cognitive scaffolding and sense-making as students develop their knowledge schemas of the law school domain. Domain maps enhance the infrastructure for research and education by allowing contextualization of the research and efficient overlay of thematic and statistical information. Domain maps have the potential to be used in the classroom to illustrate the diverse areas that frequently arise in the same legal case. Society in general will benefit from the research by having a framework to explain legal information more effectively. This work has created for the first time, and in an empirical manner, the “general map of the law” figuratively contemplated by Blackstone over two hundred years ago (Blackstone, 1783).

The results of this research and the finished domain maps will be disseminated broadly to both the law and information science domains. Publications stemming from this research will target the very different and generally non-overlapping literatures of the two fields. Furthermore, the rich data collected for this research will allow numerous additional studies. For instance, the data collected for this research will allow for studies of the career trajectories of law school faculty and their mobility between institutions. Perhaps the most significant contribution of this work is the analytic framework to compare multiple different algorithms, tools, and techniques at each stage of domain map production. The

research demonstrates how multiple different treatments can be compared with each other at each stage of domain map construction and how their cumulative effects may be compared across stages.

8. Glossary

Note: The following definitions best explain the meaning of the terms as used in this paper and do not exhaustively convey all of the various meanings of the terms as used in the English language.

Bibliographic Coupling – when two works (articles, books, etc.) each cite a common third work (Kessler, 1963).

Co-citation – when two works (articles, books, etc.) are both cited by a third article (Marshakova, 1973; Small, 1973).

Cognitive Scaffolding – a “tool for learners as they construct knowledge” (Driscoll, 2005, p. 257). Cognitive psychologists have coined the term “cognitive scaffolding” as a label for teacher behaviors that help students “solve a problem, carry out a task, or achieve a goal which would be beyond [their] unassisted efforts” (Flick, 2000, p. 109) citing (Wood et al., 1976).

Co-teaching – two or more professors teaching the same course (Cook & Friend, 1995).

Course – is the basic unit of academic study, usually lasting for one semester (or possibly a quarter), comprised of one or more credit hours, and having its own entry on a student’s academic transcript.

Diachronic – “Of or concerned with phenomena ... as they change through time” (Pickett, 2006, p. 499).

Distance-Similarity Metaphor – “elements closer together on information displays will be understood by users to be more similar” (Montello et al., 2003, p. 317). In other words, distance is a proxy for similarity.

Domain – “A sphere of activity, concern, or function; a[n academic] field: *the domain of history* (Pickett, 2006, p. 533).” In terms of domain mapping, the domain being mapped may be as small as a single concept (volcanoes) or as large as all of science or all of knowledge.

Domain Map – the physical or online artifact produced through the process of domain mapping. *See also* ‘Domain Map.’

Domain Mapping – “the graphic rendering of bibliometric [or other] data designed to provide a global view of a particular domain, the structural details of a domain, the salient characteristics of a domain (its dynamics, most cited authors or papers, bursting concepts, etc.) or all three” (Hook & Börner, 2005). *See also* ‘Domain,’ and ‘Knowledge Domain Visualization (KDV).’

Information Science – “Information science is the study of the gathering, organizing, storing, retrieving, and dissemination of information” (Bates, 1999, p. 1044). *See also* (Borko, 1968; Rubin, 1998).

Information Visualization (Info Viz) – (1). “[T]he use of computer-supported, interactive, visual representations of abstract data to amplify cognition” (Card et al., 1999). (2). “[G]raphical representation of data or concepts” (Ware, 2004, p. 2). to “accelerate human thinking with tools that amplify human intelligence” (Shneiderman, 2006, p. vii).

Knowledge Domain Visualization (KDV) – synonym of ‘Domain Map.’

Longitudinal – “concerned with the development of persons or groups [or things or entities] over time” (Pickett, 2006, p. 1031). *See also* diachronic.

Luminance – “[t]he intensity of light per unit of area at its source” (Pickett, 2006).

Map – a representation of relationships with consistent meaning in all of the available directions of either a one, two, or three dimensional, spatial layout.

MDS – *see* Multi-Dimensional Scaling.

Meta-discipline. A discipline that “conduct[s] research and develop[s] theory around the documentary products of other disciplines and activities” (Bates, 1999, p. 1043).

Multi-Dimensional Scaling (MDS) – is a structural modeling technique that takes a multitude of pairwise associations, conceptualized as a scaled unit of distance between the pairings of any two particular concepts, and reduces all such pairings to a finite number of dimensions (Kruskal & Wish, 1978).

Multi-Teaching – the same professor teaching multiple, different courses over some period of time. As used herein, the period of time is one academic year as reflected in the annual directories of the American Association of Law Schools (AALS). Thus, multi-teaching does not necessarily mean that the courses were taught the exact same semester.

Network – a representation of relationships using nodes and links.

Semantic Network Theory – “The semantic network theory of learning states that our memory is organized into networks consisting of interlinked nodes. Nodes are basic pieces of information or individual words. The interlinking of nodes forms knowledge structures or schemas. Learning is the process of building new knowledge structures by acquiring new nodes. These new nodes are interrelated with existing nodes and with each other. When learners form links between new and existing knowledge, the new knowledge is integrated and comprehended” (Hook, 2002, pp. 248-249) *citing* (Jonassen et al., 1993).

Spatial Substrate – A defined, numerically consistent, two or three dimensional organizational space for all items placed on a map. It is the underlying layer that provides a reference system from which to make visual evaluations of the similarity/dissimilarity of any two items. While any spatial layout allows for

nominal or ordinal data inferencing, a rigorous spatial substrate (or spatial reference system) allows for interval and ratio data inferencing.

Spatialization – the use of spatial or geographic metaphors for non-spatial or non-geographic information (Fabrikant & Skupin, 2005, p. 668; Slocum, 2005, p. 459).

Syndetic Structure – “Cross-reference links between descriptors or headings in an indexing system” (Anderson & Pérez-Carballo, 2005) (e.g. ‘related to,’ ‘broader than,’ ‘narrow than,’ ‘use for,’ etc.).

Taxonomy – “division into ordered groups or categories” (Pickett, 2006). Used in this sense, synonymous with categorization. Synonym of ‘Typology.’ *See* ‘Categorization Scheme.’

Topic Map – a spatial distribution of subjects in which the association between topics are expressed using cartographic or network representation elements: the distance-similarity metaphor, links (edges) (either labeled or not), bounded regions, color coding, symbols, etc.

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Appendix 1: Crosswalk between Jackson & Gee Categories and AALS Subjects

Jackson and Gee Categories of Electives		1974-75 (50) and 1975-76 (1975 Supplement) (51) AALS Subjects		Notes
1	Administrative and Constitutional Law	298	Administrative Law (Includes Discretionary Justice, Executive Function, Government Litigation, Selective Service and Transportation (See also Trade Regulation))	
		299	Civil Rights	
		300	Constitutional Law (Includes Church and State, Obscenity and Pornography, Right of Privacy and Sex Discrimination)	
2	Admiralty	171	Admiralty (Includes Maritime Law)	
3	Applied Legal Education (includes externships and other courses with live client contact)	297	Clinical Teaching (Includes those who have taught any law subject by the Clinical Method, or directed a Legal Clinic in a law school, for a period of at least one full term)	
		193	Legal Clinics (Includes Public Defender Clinics)	
4	Basic Property Concepts, Real Estate and Finance	198	Personal Property (Includes Bailments)	
		259	Real Property (Includes Conveyances, Eminent Domain, Landlord and Tenant, Real Estate, Servitudes, Titles and Vendor and Purchaser)	
5	Business and Non-Profit Institutions and Finance	3	Agency	
		209	Business Organizations (Includes Cooperatives, Partnerships and Unincorporated Associations)	
		177	Corporations (Includes Non-Profit Organizations)	
		267	Corporation Finance (Includes Business Planning, Corporate Reorganization, Deferred Compensation and Employee Benefits Plans)	
6	Commercial Law, Debtor-Creditor Rights and Remedies	237	Commercial Law (Includes Commercial Transactions, Uniform Commercial Code and Financial Institutions)	
		309	Consumer Law	
		287	Credit Transactions (Includes Housing Finance and Development, Land Finance, Mortgages, Secured Transactions, Security and Suretyship)	
		286	Creditors' Rights (Includes Bankruptcy and Debtors' Estates and Debtors' Rights)	
		257	Negotiable Instruments (Includes Banking, Bills and Notes and Commercial Paper)	
		52	Sales	
7	Civil Justice, Jurisdiction and Procedure	61	Civil Procedure	
		11	Conflict of Laws	
		44	Pleading	
		200	Practice and Procedure (Includes Common Law Actions, Jurisdiction and Judgments)	
8	Contractual Obligations	13	Contracts	

		270	Government Contracts (Includes Public Employment)	Could also be Federal Practice and Procedure
9	Criminal Justice: Law, Process and Procedure	301	Criminal Law (Includes Corrections and Prisons, Criminal Law Administration, Narcotics, Problems of Policing and Police Internship)	
		269	Criminal Procedure (Includes Juvenile Delinquency and Juveniles)	
10	Discrimination and the Law	308	Women and the Law	
11	Evidence and Proof of Fact	184	Evidence (Includes Facts)	
12	Estates, Trusts, and Future Interests	181	Decedents' Estates (Includes Estates, Wills, and Succession)	
		120	Estate Planning	
		121	Fiduciary Administration	
		25	Future Interests	
		140	Trusts and Estates	
13	Family Law	103	Community Property	
		182	Domestic Relations (Includes Family Law, Marital Property, Persons and Social Work)	
14	Federal Practice and Procedure	241	Federal Jurisdiction (Includes Federal Practice, Federal Procedure, Law of the Federal System and Supreme Court)	
15	Interdisciplinary and Allied Skills (includes courses from other areas of study which are integrated with legal study)	116	Accounting	
		276	Law and Computers (Includes Jurimetrics)	
		249	Law and Medicine (Includes Health Law and Psychiatry and the Law)	
		312	Law and Psychiatry	
		191	Law and Science	
		251	Law and Society (Includes Law and Anthropology and Law and Behavioral Sciences)	
16	International, Foreign and Comparative	265	Comparative Law (Includes American Indian Law, Civil Law, Foreign Law, Law of Emerging Nations and Law of Specific Countries)	
		283	International Law (Includes Consular Law, Human Rights, Immigration, Legal Aspects of American Foreign Relations, Treaties and World Order)	
		243	International Organizations (Includes Regional Organizations and United Nations Law)	
		284	International Transactions (Includes Common Market, Development Law, Foreign Patents, International Business, International Development, International Policies, International Taxation, International Trade, Control of International Aviation and Constitutional Problems of U.S. Foreign Affairs Operations)	
17	Juvenile Law and Process	310	Juvenile Law (Includes Juvenile Delinquency (See also Domestic Relations))	
18	Labor-Management Relations	247	Labor Law (Includes Collective Bargaining)	
19	Land Resources Policy and Planning	311	Land Use (Includes Agricultural Policy, Model Cities, Planning, Zoning and Urban Redevelopment (See also Environmental Law))	
20	Law and Social Issues	302	Education, Legal Problems of (Includes Academic Freedom)	

		250	Law and Poverty (Includes Legal Rights of the Poor)	
		306	Social Legislation (Includes Welfare Law)	
21	Legal Profession, Ethics and Legal Education	158	Legal Method (Includes Decision Process)	
		252	Legal Profession (Includes Law and Public Opinion, Legal Education, Legal Ethics, Preventative Law, Professional Responsibility and the Lawyer as a Negotiator)	
		197	Office Practice (Includes Legal Counseling)	
22	Legal Theory, Philosophy and History	245	Introduction to Law (Includes Adversary System and American Legal System)	
		274	Jurisprudence (Includes Language and Logic, Law and Morality, Legal Philosophy and Legal Theory)	
		194	Legal History (Includes Canon Law and Development of Legal Institutions)	
		126	Legal Process	
		51	Roman Law	
23	Legislation and Legislative Process	254	Legislation (Includes Legislative Drafting)	
24	Natural Resources and the Environment	303	Environmental Law (Includes Population Control (See also Land Use and Regulated Industrial and Other Activities))	
		294	Natural Resources (Includes Mining, Ocean Resources, and Public Resources (See also Oil and Gas))	
		295	Oil and Gas (See also Natural Resources)	
		58	Water Rights	
25	Patent, Copyright, and Trademark	258	Patents, Copyrights, Trademarks (Includes Intellectual Property and Protection of Ideas)	
26	Professional Skills, Training and Functions (includes in-house simulation courses which do not have live client contact)	291	Legal Bibliography (Includes Library Use (See also Legal Research and Writing))	
		292	Legal Research and Writing (Includes Information Retrieval, Legal Drafting, Legal Expression and Research Aims and Methods (See also Legal Bibliography))	
		293	Librarian (Includes those who are of have been Law Librarians, Assistant Law Librarians, etc., and those who teach of have taught librarianship or use of libraries)	
		279	Practice Court (Includes Moot Court and Oral Advocacy)	
		280	Trial and Appellate Practice (Includes Litigation, Trial Advocacy and Trial Practice)	
27	Regulation of Business and Industry	206	Air Law (Includes Space)	Also under Misl.
		236	Antitrust (Includes Competition and Price Administration)	
		305	Regulated Industrial and Other Activities (Includes Air and Water Pollution, Government and Business, Government Control of Business and Law and Control of Economy)	
		296	Securities Regulation (See also Administrative Law)	
		262	Trade Regulation (Includes Business Regulation, Communications, Consumer Protection, Public Utilities, Pure Food and Drugs and Unfair Competition)	
28	Remedies	19	Damages	

		240	Equity (Includes Equitable Remedies and Equity Practice)	
		132	Remedies	
		202	Restitution (Includes Quasi Contracts)	
29	State and Local Government Law, Policy and Relations	304	Local Government (Includes Municipal Corporations, Municipal Legislation, Public Education, School Law, Urban Finance and Urban Problems (See also Education, Legal Problems of))	
		138	Taxation, State and Local	Probably better under taxation
30	State Law, Practices, and Procedures	N/A	NO AALS EQUIVELANTS AS THIS CATEGORY IS STATE SPECIFIC AND NOT BROAD ENOUGH IN SCOPE	
31	Taxation	307	Taxation, Federal (Includes Income, Estate and Gift Taxation and Tax Policy)	
32	Torts and Compensation for Injuries	261	Torts (Includes Injuries to Relations, Products Liability and Statutory Liability)	
		169	Workmen's Compensation	
33	Miscellaneous	173	Arbitration	
		208	Atomic Energy	
		271	Insurance (Includes Pensions and Profit-Sharing Plans)	Insurance Regulation is under 'Regulation of Business and Industry'
		81	Judicial Administration	
		96	Military Law	

Appendix 2: Organization of the Current Index to Legal Periodicals

From: <http://depts.washington.edu/scilp/scilp3.cgi> (Accessed Feb. 14, 2011)

Super Groupings:

1. Banking and Finance Group
2. Bankruptcy Group
3. Corporate and Securities Group
4. Criminal Law and Procedure Group
5. Environmental Law Group
6. Estate Planning and Probate Group
7. Family Law Group
8. Health Care Group
9. International and Comparative Law Group
10. Labor and Employment Group
11. Taxation Group
12. Technology Group

Super Groupings (With Nested Subjects):

Banking and Finance Group

ACCOUNTING
BANKING AND FINANCE
COMMERCIAL LAW
CONTRACTS
CONSUMER PROTECTION LAW
ECONOMICS
ESTATES AND TRUSTS
SECURED TRANSACTIONS
SECURITIES LAW

Bankruptcy Group

BANKRUPTCY LAW
CONSUMER PROTECTION LAW

Corporate and Securities Group

AGENCY
COMMERCIAL LAW
CORPORATIONS
ECONOMICS
ORGANIZATIONS
PARTNERSHIPS
SECURITIES LAW

Criminal Law and Procedure Group

CRIMINAL LAW AND PROCEDURE
EVIDENCE
LAW ENFORCEMENT AND CORRECTIONS

Environmental Law Group

ADMINISTRATIVE LAW
AGRICULTURE LAW
ENVIRONMENTAL LAW
LAND USE PLANNING

NATURAL RESOURCES LAW
OIL, GAS, AND MINERAL LAW
WATER LAW

Estate Planning and Probate Group

ELDER LAW
ESTATES AND TRUSTS
PROPERTY--PERSONAL AND REAL
TAXATION--FEDERAL INCOME

Family Law Group

DOMESTIC RELATIONS
JUVENILES
PROPERTY--PERSONAL AND REAL
SEXUALITY AND THE LAW
WOMEN

Health Care Group

FOOD AND DRUG LAW
HEALTH LAW AND POLICY
INSURANCE LAW
MEDICAL JURISPRUDENCE
PSYCHOLOGY AND PSYCHIATRY

International and Comparative Law Group

AIR AND SPACE LAW
CIVIL LAW
COMPARATIVE AND FOREIGN LAW
HUMAN RIGHTS LAW
INTERNATIONAL LAW
INTERNATIONAL TRADE
LAW OF THE SEA
TAXATION--TRANSNATIONAL

Labor and Employment Group

EMPLOYMENT PRACTICE
LABOR LAW
RETIREMENT SECURITY
WORKERS' COMPENSATION LAW

Taxation Group

ACCOUNTING
TAXATION--FEDERAL INCOME
TAXATION--STATE AND LOCAL
TAXATION--TRANSNATIONAL

Technology Group

AIR AND SPACE LAW
COMMUNICATIONS LAW
INTELLECTUAL PROPERTY LAW
SCIENCE AND TECHNOLOGY
TRADE REGULATION

All Subjects

ACCOUNTING
ADMINISTRATIVE LAW
ADMIRALTY
AGENCY
AGRICULTURE LAW
AIR AND SPACE LAW
ANIMAL LAW
ARTS AND ENTERTAINMENT
BANKING AND FINANCE
BANKRUPTCY LAW
BIOGRAPHY
CIVIL LAW
CIVIL RIGHTS AND DISCRIMINATION
COMMERCIAL LAW
COMMUNICATIONS LAW
COMPARATIVE & FOREIGN LAW
CONFLICT OF LAWS
CONSTITUTIONAL LAW, GENERALLY
CONSUMER PROTECTION LAW
CONTRACTS
CORPORATIONS
COURTS
CRIMINAL LAW AND PROCEDURE
DISPUTE RESOLUTION
DOMESTIC RELATIONS
ECONOMICS
EDUCATION LAW
ELDER LAW
EMPLOYMENT PRACTICE
ENERGY AND UTILITIES LAW
ENVIRONMENTAL LAW
ESTATES AND TRUSTS
EVIDENCE
FIRST AMENDMENT
FOOD AND DRUG LAW
FOURTEENTH AMENDMENT
GAMING
GOVERNMENT CONTRACTS
HEALTH LAW AND POLICY
HOUSING LAW
HUMAN RIGHTS LAW
IMMIGRATION LAW
INDIAN AND ABORIGINAL LAW
INSURANCE LAW
INTELLECTUAL PROPERTY LAW
INTERNATIONAL LAW
INTERNATIONAL TRADE
JUDGES
JURISDICTION
JURISPRUDENCE
JUVENILES
LABOR LAW
LAND USE PLANNING
LAW AND SOCIETY
LAW ENFORCEMENT AND CORRECTIONS
LAW OF THE SEA
LEGAL ANALYSIS AND WRITING
LEGAL EDUCATION
LEGAL HISTORY
LEGAL PROFESSION
LEGAL RESEARCH AND BIBLIOGRAPHY
LEGISLATION
MEDICAL JURISPRUDENCE
MILITARY, WAR AND PEACE
MOTOR VEHICLES
NATURAL RESOURCES LAW
OIL, GAS, AND MINERAL LAW
ORGANIZATIONS
PARTNERSHIPS
POLITICS
PRACTICE AND PROCEDURE
PRESIDENT/EXECUTIVE DEPARTMENT
PRODUCTS LIABILITY
PROFESSIONAL ETHICS
PROPERTY--PERSONAL AND REAL
PSYCHOLOGY AND PSYCHIATRY
RELIGION
REMEDIES
RETIREMENT SECURITY
RICO
SCIENCE AND TECHNOLOGY
SECOND AMENDMENT
SECURED TRANSACTIONS
SECURITIES LAW
SEXUALITY AND THE LAW
SOCIAL WELFARE
SPORTS
STATE & LOCAL GOVERNMENT LAW
TAXATION--FEDERAL ESTATE AND GIFT
TAXATION--FEDERAL INCOME
TAXATION--STATE AND LOCAL
TAXATION--TRANSNATIONAL
TORTS
TRADE REGULATION
TRANSPORTATION LAW
WATER LAW
WOMEN
WORKERS' COMPENSATION LAW

Appendix 3: AALS Directories—Titles, Content, and Notes

Directory Year ID	Academic Year	Citation (See Works Consulted)	Directory Title	Includes “Law Teachers by School”	Amount of Populated ‘Controlled’ Subjects (if any)	Includes Part-time	Notes
1	1922-23	(AALS, 1923)	Directory of Teachers in Member Schools: 1922	Yes		No	
2	1923-24	(AALS, 1924)	Directory of Teachers in Member Schools: 1923.	Yes		No	
3	1924-25	(AALS, 1925a)	Directory of Teachers in Member Schools: 1924	Yes		No	
4	1925-26	(AALS, 1925b)	Directory of Teachers in Member Schools: 1925	Yes		No	
5	1926-27	(AALS, 1926)	Directory of Teachers in Member Schools: 1926	Yes		No	
6	1927-28	(AALS, 1927)	Directory of Teachers in Member Schools: 1927	Yes		No	
7	1928-29	(AALS, 1928)	Directory of Teachers in Member Schools: 1928	Yes		No	
8	1929-30	(AALS, 1929)	Directory of Teachers in Member Schools: 1929	Yes		No	
9	1930-31	(AALS, 1930)	Directory of Teachers in Member Schools: 1930	Yes		No	
10	1931-32	(AALS, 1931)	Directory of Teachers in Member Schools: 1931	Yes	58	No	
11	1932-33	(AALS, 1932)	Directory of Teachers in Member Schools: 1932	Yes	60	No	
12	1933-34	(AALS, 1933)	Directory of Teachers in Member Schools: 1933	Yes	58	No	
13	1934-35	(AALS, 1934)	Directory of Teachers in Member Schools: 1934	Yes	58	No	Philippines College of Law repeats 1933 data as no new data came in for 1934.
14	1935-36	(AALS, 1935)	Directory of Teachers in Member Schools: 1935	Yes	58	No	
15	1936-37	(AALS, 1936)	Directory of Teachers in Member Schools: 1936-1937	Yes	57	No	
16	1937-38	(AALS, 1937)	Directory of Teachers in Member Schools: 1937-1938	Yes	57	No	
17	1938-39	(AALS, 1938)	Directory of Teachers in Member Schools: 1938-1939	Yes	59	No	
18	1939-40	(AALS, 1939)	Directory of Teachers in Member Schools: 1939-1940	Yes	60	No	Librarians, not already faculty members, are included for the first time.
19	1940-41	(AALS, 1940)	Directory of Teachers in Member Schools: 1940-1941	Yes	61	No	
20	1941-42	(AALS, 1941)	Directory of Teachers in Member	Yes	63	No	

			Schools: 1941-1942				
21	1942-43	(AALS, 1942)	Directory of Teachers in Member Schools: 1942-1943	Yes	64	No	
22	1946-47	(AALS, 1947a)	Directory of Teachers in Member Schools: 1946-1947	Yes		No	
23	1947-48	(AALS, 1947b)	Directory of Teachers in Member Schools: 1947-1948	Yes	67	No	
24	1948-49	(AALS, 1948)	Directory of Teachers in Member Schools: 1948-1949	Yes	67	No	
25	1949-50	(AALS, 1949)	Directory of Teachers in Member Schools: 1949-1950	Yes	66	No	
26	1950-51	(AALS, 1950)	Directory of Teachers in Member Schools: 1950-1951	Yes		No	
27	1951-52	(AALS, 1951)	Directory of Teachers in Member Schools: 1951-1952	Yes		No	
28	1952-53	(AALS, 1952)	Directory of Teachers in Member Schools: 1952-1953	Yes		No	
29	1953-54	(AALS, 1953)	Directory of Teachers in Member Schools: 1953-1954	Yes		No	
95	1953-54 Supp	(AALS, 1954b)	List of Law Teachers by Subject: Supplement to Teachers' Directory 1953-1954	No	81	No	Just Teachers by Subject
30	1954-55	(AALS, 1954a)	Directory of Teachers in Member Schools: 1955	Yes		No	
97	1954-55 Supp		List of Law Teachers by Subject: Supplement to Teachers' Directory 1955	No	79	No	Just Teachers by Subject
31	1955-56	(AALS, 1955)	Directory of Teachers in Member Schools: 1956	Yes		No	
32	1956-57	(AALS, 1956)	American Bar Association Approved Law Schools: Directory of Teachers: 1957	Yes		No	
33	1957-58	(AALS, 1957)	Directory of Law Teachers in American Bar Association Approved Law Schools: 1958	Yes		No	
34	1958-59	(AALS, 1958)	Directory of Law Teachers in American Bar Association Approved Law Schools: 1959	Yes		No	
35	1959-60	(AALS, 1959)	Directory of Law Teachers in American Bar Association Approved Law Schools: 1960	Yes		No	
36	1960-61	(AALS, 1960)	Directory of Law Teachers in American Bar Association Approved Law Schools: 1961	Yes		No	
37	1961-62	(AALS, 1961)	Directory of Law Teachers in American Bar Association Approved Law Schools: 1962	Yes	82	No	
38	1962-63	(AALS, 1962)	Directory of Law Teachers in American Bar Association Approved Law Schools: 1963	Yes	82	No	
39	1963-64	(AALS, 1963)	Directory of Law Teachers in American Bar Association Approved Law Schools: 1964	Yes	85	No	
40	1964-65	(AALS, 1964)	Directory of Law Teachers in American Bar Association Approved Law Schools: 1965	Yes	87	Yes	First Year that Full and Part-Time distinction is made. Listed separately.
41	1965-66	(AALS, 1966a)	Directory of Law Teachers in American Bar Association Approved Law Schools: 1966	Yes	78	Yes	

42	1966-67	(AALS, 1966b)	Directory of Law Teachers in American Bar Association Approved Law Schools: 1967	Yes	81	No	Biographical info given in subject tables only.
43	1967-68	(AALS, 1968)	Directory of Law Teachers in Law Schools in the United States: 1967-1968	Yes	81	No	
44	1968-69	(AALS, 1969b)	Directory of Law Teachers in Law Schools in the United States: 1968-1970	Yes	82	No	Includes actual survey instrument for the first time.
46	1969-70	(AALS, 1969a)	Directory of Law Teachers in Law Schools in the United States 1968-70: 1969-1970 Supplement	Yes	80	No	P. 57, List of Changes of Affiliation. Also appears to include non-AALS or provisional accreditation schools' data, as well as an additional non-cumulative, thesaurus of subject terms (p. 111).
45	1970-71	(AALS, 1970)	Directory of Law Teachers: 1970	Yes	83	No	
47	1971-72	(AALS, 1971)	Directory of Law Teachers: 1971	Yes	84	No	
48	1972-73	(AALS, 1972)	Directory of Law Teachers: 1972	Yes	86	No	
49	1973-74	(AALS, 1973)	Directory of Law Teachers: 1973	Yes	87	No	
50	1974-75	(AALS, 1974)	Directory of Law Teachers: 1974	Yes	90	No	
51	1975-76	(AALS, 1975)	Directory of Law Teachers: 1975 Supplement	Yes	90	Yes	Full biographical info. for new people only; part-time distinction at two schools only: Lewis & Clark, and Rutgers—Camden.
52	1976-77	(AALS, 1976)	Directory of Law Teachers: 1976	Yes	79	Yes	part-time distinction at two schools only: Lewis & Clark, and Rutgers—Camden. Dalhousie part-time have not been captured.
53	1976-77	(AALS, 1977a)	Directory of Law Teachers: 1976: Revised List of Law Teachers by Subject	No	79	No	
54	1977-78	(AALS, 1977b)	Directory of Law Teachers: 1977	Yes	79	Yes	
55	1978-79	(AALS, 1979a)	Directory of Law Teachers: 1978-79	Yes	79	Yes	
56	1979-80	(AALS, 1979b)	Directory of Law Teachers: 1979-80	Yes	79	Yes	
57	1980-81	(AALS, 1981a)	Directory of Law Teachers: 1980-81	Yes	79	Yes	
58	1981-82	(AALS, 1981b)	Directory of Law Teachers: 1980-81: (1981-82 Supplement)	Yes	79	Yes	Full biographical info. for new people only.
59	1982-83	(AALS, 1982)	Directory of Law Teachers: 1982-83	Yes	79	Yes	
60	1983-84	(AALS, 1983)	Directory of Law Teachers: 1983-84	Yes	79	Yes	
61	1984-85	(AALS, 1984)	Directory of Law Teachers: 1984-85	Yes	79	Yes	
62	1985-86	(AALS, 1985)	Directory of Law Teachers: 1985-86	Yes	79	Yes	
63	1986-87	(AALS, 1986)	Directory of Law Teachers: 1986-87	Yes	80	Yes	Includes a list of minority faculty members for the first time.
64	1987-88	(AALS, 1987)	Directory of Law Teachers: 1987-88	Yes	85	Yes	Bios. include gender for the first time.
65	1988-89	(AALS, 1988)	The AALS Directory of Law Teachers: 1988-89	Yes	88	Yes	Part-time just Texas.
66	1989-90	(AALS, 1989)	The AALS Directory of Law Teachers: 1989-90	Yes	88	Yes	No explicit copyright date; Part-time just Texas.
67	1990-91	(AALS, 1990)	The AALS Directory of Law Teachers: 1990-91	Yes	88	No	
68	1991-92	(AALS, 1991)	The AALS Directory of Law Teachers: 1991-92	Yes	88	No	

69	1992-93	(AALS, 1992a)	The AALS Directory of Law Teachers: 1992-93	Yes	87	No	
70	1992-93 Supp	(AALS, 1992b)	The AALS Directory of Law Teachers: 1992-93: Supplement	Yes		No	Received in Library Jan. 1993. Appears to have an updated list of Teachers by School
71	1993-94	(AALS, 1993)	The AALS Directory of Law Teachers: 1993-94	Yes	87	No	
72	1994-95	(AALS, 1994a)	The AALS Directory of Law Teachers: 1994-95	Yes	87	No	
73	1994-95 Supp	(AALS, 1994b)	The AALS Directory of Law Teachers: 1994-95: Supplement.	Yes		No	Received in the Library Jan. 1995. Appears to have an updated list of Teachers by School.
74	1995-96	(AALS, 1995)	The AALS Directory of Law Teachers: 1995-96	Yes	88	No	
75	1996-97	(AALS, 1996)	The AALS Directory of Law Teachers: 1996-97	Yes	88	No	
76	1997-98	(AALS, 1997)	The AALS Directory of Law Teachers: 1997-98	Yes	88	No	
77	1998-99	(AALS, 1998)	The AALS Directory of Law Teachers: 1998-99	Yes	88	No	
78	1999-00	(AALS, 1999)	The AALS Directory of Law Teachers: 1999-2000	Yes	88	No	
79	2000-01	(AALS, 2000a)	The AALS Directory of Law Teachers: 2000-2001	Yes	88	No	
80	2000-01 Supp	(AALS, 2000b)	The AALS Directory of Law Teachers: 2000-2001: Supplement	Yes		No	Received in the Library Dec. 2000. Appears to have an updated list of Teachers by School.
81	2001-02	(AALS, 2001a)	The AALS Directory of Law Teachers: 2001-2002	Yes	88	No	
82	2001-02 Supp	(AALS, 2001b)	The AALS Directory of Law Teachers: 2001-2002: Supplement	Yes		No	
83	2002-03	(AALS, 2002a)	The AALS Directory of Law Teachers: 2002-2003	Yes	88	No	
84	2002-03 Supp	(AALS, 2002b)	The AALS Directory of Law Teachers: 2002-2003: Supplement	Yes		No	Received in the Library Jan. 2003. Appears to be an updated list of Teachers by School.
85	2003-04	(AALS, 2003a)	The AALS Directory of Law Teachers: 2003-2004	Yes	88	No	
86	2003-04 Supp	(AALS, 2003b)	The AALS Directory of Law Teachers: 2003-2004: Supplement	Yes		No	Received Feb. 2004. Appears to be an updated list of Teachers by School.
87	2004-05	(AALS, 2004)	The AALS Directory of Law Teachers: 2004-2005	Yes	94	No	
88	2005-06	(AALS, 2005a)	The AALS Directory of Law Teachers: 2005-2006	Yes	96	No	
89	2005-06 Supp	(AALS, 2005b)	The AALS Directory of Law Teachers: 2005-2006: Supplement	Yes		No	
92	2006-07	(AALS, 2006)	The AALS Directory of Law Teachers: 2006-2007	Yes	96	No	
93	2007-08	(AALS, 2007)	The AALS Directory of Law Teachers: 2007-2008	Yes	96	No	
94	2009-10	(AALS, 2009)	The AALS Directory of Law Teachers: 2009-2010	Yes	104	No	
96	2010-11	(AALS, 2010a)	The AALS Directory of Law Teachers: 2010-2011	Yes	104	No	
98	2011-12	(AALS, 2011)	The AALS Directory of Law Teachers: 2011-2012	Yes	105	No	

Appendix 4: Law School Information

Law School ID	Law School	Year First Accredited by the ABA. Source: (ABA & LSAC, 2010).	Year Joined AALS. Source: (AALS, 2009, 2011).	Year of First AALS Directory Appearance (with Faculty Listed)	Directory ID of First Appearance	Last Year AALS Directory Appearance (if applicable)	Law School Ranking According to: (U.S. News & World Report, 2011).	AALS Directory Gaps For a Specific School (Parenthetical is the Directory ID) [Bracketed number = total number of omissions from the Directories]	City (Year of First Appearance)	State (or Province) (Year of First Appearance)	Country (or territory)
136	Akron, Uni. of, C. Blake McDowell Law Center	1961	1974	1961-62	37		127		Akron	OH	USA
67	Alabama, Uni. of, Sch. of Law	1926	1928	1929-30	8		35		University	AL	USA
104	Albany Law Sch., Union Uni.	1930	1947	1948-49	24		113		Albany	NY	USA
177	Alberta, Uni. of, Faculty of Law			1976-77	52		NA		Edmonton	Alberta	Can.
105	American Uni., Washington Col. of Law	1940	1947	1948-49	24		50		Washington, D.C.	DC	USA
157	Antioch Sch. of Law			1972-73	48	1986-87 (63)	NA		Washington, D.C.	DC	USA
211	Appalachian Sch. of Law	2001	Fee Paid				2nd Tier		Grundy	VA	USA
142	Arizona St. Uni., Sandra Day O'Connor Col. of Law	1969	1969	1967-68	43		40		Tempe	AZ	USA
77	Arizona, Uni. of, James E. Rogers Col. of Law	1930	1931	1932-33	11		42		Tucson	AZ	USA
168	Arkansas at Little Rock, Uni. of, William H. Bowen Sch. of Law	1969	1979	1975-76	51		135		Little Rock	AR	USA
66	Arkansas, Fayetteville, Uni. of, Leflar Law Center	1928	1927	1928-29	7		84		Fayetteville	AR	USA
212	Atlanta's John Marshall Law Sch.	2005	Fee Paid				2nd Tier		Atlanta	GA	USA
213	Ave Maria Sch. of	2002	Fee				2nd Tier		Ann Arbor	MI	USA

	Law		Paid								
158	Baltimore, Uni. of, Sch. of Law	1972	1988	1972-73	48		117		Baltimore	MD	USA
214	Barry Uni. Dwayne O. Andreas Sch. of Law	2002	Fee Paid				2nd Tier		Orlando	FL	USA
92	Baylor Uni. Sch. of Law	1931	1938	1939-40	18		56		Waco	TX	USA
87	Boston Col. Law Sch.	1932	1937	1938-39	17		27		Boston	MA	USA
1	Boston Uni. Sch. of Law	1925	1900	1922-23	1		22		Boston	MA	USA
159	Brigham Young Uni., J. Reuben Clark Law School	1974	1982	1972-73	48		42		Provo	UT	USA
178	British Columbia, Uni. of, Faculty of Law			1976-77	52		NA		Vancouver	British Columbia	Can.
113	Brooklyn Law Sch.	1937	1973	1956-57	32		67		Brooklyn	NY	USA
196	Calgary, Uni. of, Faculty of Law			1976-77	52		NA	1977-78 (54); 1980-81 (57); 1981-82 (58) [3]	Calgary	Alberta	Can.
21	California at Berkeley, Uni. of, Sch. of Law	1923	1912	1922-23	1		9		Berkeley	CA	USA
143	California at Davis, Uni. of, Sch. of Law	1968	1968	1967-68	43		23		Davis	CA	USA
234	California at Irvine, Uni. of, Sch. of Law		Fee Paid	2011-12	98		NA		Irvine	CA	USA
112	California at Los Angeles, Uni. of, Sch. of Law	1950	1952	1953-54	29		16		Los Angeles	CA	USA
139	California Western Sch. of Law	1962	1967	1962-63	38		2nd Tier		San Diego	CA	USA
11	California, Uni. of, Hastings Col. of the Law	1939	1900	1922-23	1		42	1928-29 (7) to 1949-50 (25) [19]	San Francisco	CA	USA
175	Campbell Uni., Norman Adrian Wiggins Sch. of Law	1979	Fee Paid	1976-77	52		143	1978-79 (55) [1]	Buies Creek	NC	USA
115	Capital Uni. Law Sch.	1950	1983	1956-57	32		2nd Tier		Columbus	OH	USA
176	Cardozo, Benjamin N. School of Law, Yeshiva Uni.,	1978	1983	1976-77	52		50		New York	NY	USA
179	Carleton Uni., Department of Law			1977-78	54		NA	1982-83 (59) [1]	Ottawa	Ontario	Can.
54	Case Western Reserve Uni. Law Sch.	1923	1900	1922-23	1		61		Cleveland	OH	USA
2	Catholic Uni. of America, Columbus	1925	1921	1922-23	1		79		Washington, D.C.	DC	USA

	Sch. of Law										
144	Catholic Uni. of Puerto Rico Sch. of Law	1967		1967-68	43		NA		Ponce	Puerto Rico	P. R.
215	Chapman Uni. Sch. of Law	1998	2006				104		Orange	CA	USA
208	Charleston Sch. of Law	2006	Fee Paid				Not Ranked		Charleston	SC	USA
232	Charlotte Sch. of Law	2008	Fee Paid				Not Ranked		Charlotte	NC	USA
22	Chicago, Uni. of, Law Sch.	1923	1902	1922-23	1		5		Chicago	IL	USA
110	Chicago-Kent Col. of Law, Illinois Institute of Technology,	1936	1951	1952-53	28		61		Chicago	IL	USA
23	Cincinnati, Uni. of, Col. of Law	1923	1900	1922-23	1		61		Cincinnati	OH	USA
203	City Uni. of New York Law Sch. at Queens Col.	1985		1983-84	60		121		Flushing	NY	USA
131	Cleveland State Uni., Cleveland-Marshall Col. of Law	1957	1970	1957-58	33		132		Cleveland	OH	USA
24	Colorado, Uni. of, Sch. of Law	1923	1900	1922-23	1		47		Boulder	CO	USA
3	Columbia Uni. Sch. of Law	1923	1900	1922-23	1		4		New York	NY	USA
88	Connecticut, Uni. of, Sch. of Law	1933	1946	1938-39	17		56	1946-47 (22) [1]	Hartford	CT	USA
169	Cooley, Thomas M. Law Sch.	1975	Fee Paid	1975-76	51		2nd Tier		Lansing	MI	USA
4	Cornell Law Sch.	1923	1900	1922-23	1		13		Ithaca	NY	USA
5	Creighton Uni. Sch. of Law	1924	1907	1922-23	1		127		Omaha	NE	USA
180	Dalhousie Law Sch.			1976-77	52		NA	1982-83 (59) [1]	Halifax	Nova Scotia	Can.
165	Dayton, Uni. of, Sch. of Law	1975	1984	1974-75	50		2nd Tier		Dayton	OH	USA
59	De Paul Uni. Col. of Law	1925	1924	1925-26	4		84		Chicago	IL	USA
68	Denver, Uni. of, Sturm Col. of Law	1923	1929	1930-31	9		77		Denver	CO	USA
82	Detroit Mercy, Uni. of, Sch. of Law	1933	1934	1935-36	14		2nd Tier		Detroit	MI	USA
157	District of Columbia, Uni. of the,--David A. Clarke Sch. of Law	1991	Fee Paid				2nd Tier		Washington D.C.	DC	USA
7	Drake Uni. Law Sch.	1923	1900	1922-23	1		110		Des Moines	IA	USA
216	Drexel Uni., Earle Mack Sch. of Law	2008	Fee Paid				Not Ranked		Philadelphia	PA	USA
70	Duke Uni. Sch. of Law	1931	1905	1931-32	10		11		Durham	NC	USA
133	Duquesne Uni. Sch. of Law	1960	1964	1959-60	35		2nd Tier		Pittsburgh	PA	USA
217	Elon Uni. Sch. of Law	2008	Fee Paid				Not Ranked		Greensboro	NC	
8	Emory Uni. Sch. of Law	1923	1920	1922-23	1		30		Emory, Univ.	GA	USA

218	Faulkner Uni., Thomas Goode Jones Sch. of Law	2006	Fee Paid				2nd Tier		Montgomery	AL	
114	Florida Agricultural and Mechanical Uni. Col. of Law	2004	Fee Paid	1956-57	32	1967- 68 (43)	2nd Tier		Tallahassee	FL	USA
219	Florida Coastal Sch. of Law	2002	Fee Paid				2nd Tier		Jacksonville	FL	USA
209	Florida International Uni. Col. of Law	2004	2009				132		Miami	FL	
145	Florida State Uni. Col. of Law	1968	1969	1967-68	43		50		Tallahassee	FL	USA
25	Florida, Uni. of, Col. of Law	1925	1920	1922-23	1		47		Gainesville	FL	USA
86	Fordham Uni. Sch. of Law	1936	1936	1937-38	16		30		New York	NY	USA
201	George Mason Uni. Sch. of Law	1980	1990	1980-81	57		40		Arlington	VA	USA
9	George Washington Uni. Law Sch.	1923	1900	1922-23	1		20		Washington, D.C.	DC	USA
65	Georgetown Uni. Law Center	1924	1902	1926-27	5		14		Washington, D.C.	DC	USA
204	Georgia State Uni. Col. of Law	1984	1995	1983-84	60		61		Atlanta	GA	USA
78	Georgia, Uni. of, Sch. of Law	1930	1931	1932-33	11		35		Athens	GA	USA
132	Golden Gate Uni. Sch. of Law	1956	1980	1957-58	33		2nd Tier		San Francisco	CA	USA
116	Gonzaga Uni. Sch. of Law	1951	1977	1956-57	32		121		Spokane	WA	USA
171	Hamline Uni. Sch. of Law	1975	1984	1975-76	51		2nd Tier		St. Paul	MN	USA
10	Harvard Uni. Law Sch.	1923	1900	1922-23	1		2		Cambridge	MA	USA
163	Hawaii, Uni. of, William S. Richardson Sch. of Law	1974	1989	1973-74	49		95		Honolulu	HI	USA
152	Hofstra Uni. Sch. of Law	1971	1972	1968-69	44		84		Hempstead, Long Island	NY	USA
127	Houston, Uni. of, Law Center	1950	1966	1956-57	32		56		Houston	TX	USA
75	Howard Uni. Sch. of Law	1931	1931	1932-33	11		121		Washington, D.C.	DC	USA
26	Idaho, Uni. of, Col. of Law	1925	1914	1922-23	1		127		Moscow	ID	USA
27	Illinois, Uni. of, Col. of Law	1923	1900	1922-23	1		23		Urbana	IL	USA
12	Indiana Uni. at Bloomington, Maurer Sch. of Law	1937	1900	1922-23	1		23		Bloomington	IN	USA
146	Indiana Uni. Law Sch., Indianapolis	1944	1900	1967-68	43		79		Indianapolis	IN	USA
147	Inter American Uni. Sch. of Law ** First appears in 1967-68 , but with no faculty listed.	1969	Fee Paid	1974-75	50		NA		Santurce	Puerto Rico	P.R.
18	Iowa, Uni. of, Col. of Law	1923	1900	1922-23	1		27		Iowa City	IA	USA
117	John Marshall Law Sch.	1951	1979	1956-57	32		140		Chicago	IL	USA

148	Judge Advocate Generals Sch., U.S. Army		Fee Paid	1967-68	43		NA	1989- 90 (66) [1]	Charlottesville	VA	USA
28	Kansas, Uni. of, Sch. of Law	1923	1900	1922-23	1		79		Lawrence	KS	USA
29	Kentucky, Uni. of, Col. of Law	1925	1912	1922-23	1		71		Lexington	KY	USA
225	La Verne, Uni. of, Col. of Law	2006	Fee Paid				Not Ranked		Ontario	CA	USA
181	Laval Uni., Faculty of Law			1976-77	52		NA		Quebec City	Quebec	Can.
149	Lewis and Clark Col., Northwestern Sch. of Law	1970	1973	1967-68	43		67		Portland	OR	USA
220	Liberty Uni. Sch. of Law	2006	Fee Paid				2nd Tier		Lynchburg	VA	USA
95	Lincoln Uni. Sch. of Law			1942-43	21	1954- 55 (30)	NA		St. Louis	MO	USA
150	Long Island Uni. Law Centre			1967-68	43	1967- 68 (43)	NA		Greenvale	NY	USA
60	Louisiana State Uni. Law Center	1926	1924	1925-26	4		84		Baton Rouge	LA	USA
80	Louisville, Uni. of, Louis D. Brandeis Sch. of Law	1931	1933	1934-35	13		100		Louisville	KY	USA
89	Loyola Law Sch.	1935	1937	1938-39	17		54		Los Angeles	CA	USA
61	Loyola Uni. Sch. of Law, Chicago	1925	1924	1925-26	4		71		Chicago	IL	USA
81	Loyola Uni. Sch. of Law, New Orleans	1931	1934	1935-36	14		143		New Orleans	LA	USA
140	Maine, Uni. of, Sch. of Law	1962	1900	1964-65	40		121		Portland	ME	USA
182	Manitoba, Uni. of, Faculty of Law			1976-77	52		NA	1982- 83 (59) [1]	Winnipeg	Manitoba	Can.
14	Marquette Uni. Law Sch.	1925	1912	1922-23	1		95		Milwaukee	WI	USA
72	Maryland, Uni. of, Sch. of Law	1930	1930	1931-32	10		42		Baltimore	MD	USA
153	McGeorge Sch. of Law, Uni. of the Pacific	1969	1974	1968-69	44		100		Sacramento	CA	USA
13	McGill Uni. Faculty of Law			1922-23	1		NA	1933- 34 (12) to 1975- 76 (51); 1982- 83 (59) [41]	Montreal	Quebec	Can.
141	Memphis, Uni. of, Cecil C. Humphreys Sch. of Law	1965	2001	1965-66	41		140		Memphis	TN	USA
56	Mercer Uni. Law Sch.	1925	1923	1923-24	2		127		Macon	GA	USA

101	Miami, Uni. of, Sch. of Law	1941	1946	1947-48	23		77		Coral Gables	FL	USA
99	Michigan State Uni. Col. of Law (formerly Detroit Col. of Law)	1941	1946	1947-48	23		95		Detroit	MI	USA
30	Michigan, Uni. of, Law Sch.	1923	1900	1922-23	1		7		Ann Arbor	MI	USA
31	Minnesota, Uni. of, Law Sch.	1923	1900	1922-23	1		20		Minneapolis	MN	USA
202	Mississippi Col. Sch. of Law	1980	1990	1981-82	58		2nd Tier		Clinton	MS	USA
57	Mississippi, Uni. of, Sch. of Law	1930	1929	1923-24	2		107	1927-28 (6) to 1929-30 (8); 1931-32 (10); 1932-33 (11) [5]	University	MS	USA
32	Missouri-Columbia, Uni. of, Sch. of Law	1923	1900	1922-23	1		107		Columbia	MO	USA
93	Missouri-Kansas City, Uni. of, Sch. of Law	1936	1938	1939-40	18		113		Kansas City	MO	USA
199	Moncton, Uni. of, Law Sch.			1979-80	56		NA		Moncton	New Brunswick	Can.
33	Montana, Uni. of, Sch. of Law	1923	1914	1922-23	1		132		Missoula	MT	USA
183	Montreal, Uni. of, Faculty of Law			1976-77	52		NA	1982-83 (59) [1]	Montreal	Quebec	Can.
34	Nebraska, Uni. of, Col. of Law	1923	1905	1922-23	1		84		Lincoln	NE	USA
226	Nevada, Las Vegas, Uni. of, William S. Boyd Sch. of Law	2000	2004				71		Las Vegas	NV	USA
184	New Brunswick, Uni. of, Faculty of Law			1976-77	52		NA		Fredericton	New Brunswick	Can.
154	New England Law-Boston	1969	1998	1969-70	46		2nd Tier		Boston	MA	USA
162	New Hampshire, Uni. of, (formerly Franklin Pierce Law Center)	1974	Fee Paid	1973-74	49		143		Concord	NH	USA
106	New Mexico, Uni. of, Sch. of Law	1948	1948	1949-50	25		79		Albuquerque	NM	USA
118	New York Law Sch.	1954	1974	1956-57	32		135		New York	NY	USA
79	New York Uni. Sch. of Law	1930	1900	1933-34	12		6		New York	NY	USA
119	North Carolina Central Uni., Sch. of Law	1950	Fee Paid	1956-57	32		2nd Tier		Durham	NC	USA
35	North Carolina, Uni. of, Sch. of Law	1923	1920	1922-23	1		30		Chapel Hill	NC	USA
36	North Dakota, Uni. of, Sch. of Law	1923	1910	1922-23	1		2nd Tier		Grand Forks	ND	USA
98	Northeastern Uni. Sch. of Law	1969	1945	1946-47	22		71	1956-57 (32)	Boston	MA	USA

								to 1966- 67 (42) [11]			
166	Northern Illinois Uni. Col. of Law ** First appears in 1974-75 as Lewis University, but with no faculty listed.	1978	1985	1975-76	51		2nd Tier	1976-77 (52); 1977-78 (54) [2]	Glen Ellyn	IL	USA
121	Northern Kentucky Uni., Salmon P. Chase College of Law	1954	1984	1956-57	32		2nd Tier		Cincinnati	OH	USA
15	Northwestern Uni. Sch. of Law	1923	1900	1922-23	1		12		Chicago	IL	USA
63	Notre Dame Law Sch.	1925	1924	1925-26	4		23		Notre Dame	IN	USA
167	Nova Southeastern Uni., Shepard Broad Law Center	1975	1989	1974-75	50		2nd Tier		Fort Lauderdale	FL	USA
120	Ohio Northern Uni., Pettit Col. of Law	1948	1965	1956-57	32		135		Ada	OH	USA
16	Ohio State Uni., Michael E. Moritz Col. of Law	1923	1900	1922-23	1		35		Columbus	OH	USA
135	Oklahoma City Uni. Sch. of Law	1960	2003	1960-61	36		2nd Tier		Oklahoma City	OK	USA
37	Oklahoma, Uni. of, Law Center	1923	1911	1922-23	1		71		Norman	OK	USA
198	Oral Roberts Uni.			1979-80	56	1985-86 (62)	NA	1980-81 (57); 1981-82 (58) [2]	Tulsa	OK	USA
38	Oregon, Uni. of, Sch. of Law	1923	1919	1922-23	1		79		Eugene	OR	USA
185	Osgoode Hall Law Sch., York Uni.			1976-77	52		NA	1982-83 (59) [1]	Downsview	Ontario	Can.
186	Ottawa, Uni. of, Civil Law Section			1976-77	52		NA		Ottawa	Ontario	Can.
187	Ottawa, Uni. of, Common Law Section			1976-77	52		NA		Ottawa	Ontario	Can.
172	Pace Uni. Sch. of Law ** First appears in 1975-76, but with no faculty listed.	1978	1982	1976-77	52		117		Pleasantville	NY	USA
6	Pennsylvania State Uni., Dickinson Sch. of Law	1931	1912	1922-23	1		60	1925-26 (4) to 1934-35 (13) [10]	Carlisle	PA	USA
39	Pennsylvania, Uni. of, Law Sch.	1923	1900	1922-23	1		7		Philadelphia	PA	USA
160	Pepperdine Uni. Sch. of Law	1972	1980	1972-73	48		54		Santa Ana	CA	USA

40	Philippines, Uni. of the, Col. of Law			1922-23	1	1956-57 (32)	NA		Quezon City	Phil.	Phil.
221	Phoenix Sch. of Law	2007	Fee Paid				2nd Tier		Phoenix	AZ	USA
41	Pittsburgh, Uni. of, Sch. of Law	1923	1900	1922-23	1		71		Pittsburgh	PA	USA
107	Puerto Rico, Uni. of, Sch. of Law	1945	1948	1949-50	25		NA	1966-67 (42) [1]	Rio Piedras	Puerto Rico	P.R.
200	Quebec at Montreal, Uni. of, Faculty of Political Science & Law			1979-80	56		NA	1982-83 (59) [1]	Montreal	Quebec	Can.
188	Queen's Uni., Faculty of Law			1976-77	52		NA		Kingston	Ontario	Can.
197	Quinnipiac Uni. Sch. of Law. (formerly the University of Bridgeport Law School)	1992	1985	1979-80	56		107		Bridgeport	CT	USA
207	Regent Uni. Sch. of Law	1989	Fee Paid	1989-90	66		2nd Tier		Virginia Beach	VA	USA
73	Richmond, Uni. of	1928	1920	1931-32	10		67		Richmond	VA	USA
222	Roger Williams Uni. Sch. of Law	1995	2006				2nd Tier		Bristol	RI	USA
109	Rutgers Sch. of Law - Camden	1950	1946	1951-52	27		84		Camden	NJ	USA
96	Rutgers Sch. of Law - Newark	1941	1946	1942-43	21		84		Newark	NJ	USA
62	Saint Louis Uni. Sch. of Law	1924	1924	1925-26	4		104		St. Louis	MO	USA
111	Samford Uni. Cumberland Sch. of Law	1949	1952	1953-54	29		127		Lebanon	TN	USA
138	San Diego, Uni. of, Sch. of Law	1961	1966	1961-62	37		67		San Diego	CA	USA
91	San Francisco, Uni. of, Sch. of Law	1935	1937	1938-39	17		100		San Francisco	CA	USA
94	Santa Clara Uni. Sch. of Law	1937	1940	1941-42	20		84		Santa Clara	CA	USA
189	Saskatchewan, Uni. of, Col. of Law			1976-77	52		NA		Saskatoon	Saskatchewan	Can.
161	Seattle Uni. Sch. of Law (formerly Uni. Of Puget Sound Sch. of Law)	1994	1974	1972-73	48		84		Tacoma	WA	USA
122	Seton Hall Uni. Sch. of Law	1951	1959	1956-57	32		61		Newark	NJ	USA
190	Sherbrooke, Uni. of, Faculty of Law			1976-77	52		NA	1979-80 (56) [1]	Sherbrooke	Quebec	Can.
123	South Carolina State Col. Sch. of Law			1956-57	32	1965-66 (41)	NA		Orangeburg	SC	USA
64	South Carolina, Uni. of, Sch. of Law	1925	1924	1925-26	4		104		Columbia	SC	USA
42	South Dakota, Uni. of, Sch. of Law	1923	1907	1922-23	1		2nd Tier		Vermillion	SD	USA
134	South Texas Col. of Law	1959	1998	1959-60	35		2nd Tier		Houston	TX	USA

43	Southern California, Uni. of, Gould Sch. of Law	1924	1907	1922-23	1		18		Los Angeles	CA	USA
164	Southern Illinois Univ. Sch. of Law	1974	1982	1973-74	49		2nd Tier		Carbondale	IL	USA
71	Southern Methodist Uni., Dedman Sch. of Law	1927	1929	1930-31	9		50		Dallas	TX	USA
124	Southern Uni. Law Center	1953	2011	1956-57	32		2nd Tier		Baton Rouge	LA	USA
156	Southwestern Uni. Sch. of Law	1970	1974	1971-72	47		121		Los Angeles	CA	USA
100	St. John's Uni. Sch. of Law	1937	1946	1947-48	23		95		Brooklyn	NY	USA
108	St. Mary's Uni. of San Antonio Sch. of Law	1948	1949	1950-51	26		2nd Tier		San Antonio	TX	USA
205	St. Thomas Uni. Sch. of Law	1988	2001	1984-85	61		2nd Tier		Miami	FL	USA
233	St. Thomas, Uni. of, —Minneapolis, Sch. of Law	2003	Fee Paid				135		Minneapolis	MN	USA
17	Stanford Law Sch.	1923	1900	1922-23	1		3		Stanford Univ.	CA	USA
90	State Uni. of New York at Buffalo Law Sch.	1936	1937	1938-39	17		84		Buffalo	NY	USA
76	Stetson Uni. Col. of Law	1930	1931	1932-33	11		110		Deland	FL	USA
125	Suffolk Uni. Law Sch.	1953	1977	1956-57	32		2nd Tier		Boston	MA	USA
19	Syracuse Uni. Col. of Law	1923	1900	1922-23	1		100		Syracuse	NY	USA
83	Temple Uni. Sch. of Law	1933	1935	1936-37	15		61		Philadelphia	PA	USA
44	Tennessee, Uni. of, Col. of Law	1925	1900	1922-23	1		56		Knoxville	TN	USA
126	Texas Southern Uni., Thurgood Marshall School of Law	1949	Fee Paid	1956-57	32		2nd Tier		Houston	TX	USA
151	Texas Tech Uni. Sch. of Law	1969	1969	1967-68	43		117		Lubbock	TX	USA
223	Texas Wesleyan Uni. Sch. of Law	1994	Fee Paid				2nd Tier		Fort Worth	TX	USA
45	Texas, Uni. of, Sch. of Law	1923	1907	1922-23	1		14		Austin	TX	USA
224	Thomas Jefferson Sch. of Law	1996	2008				2nd Tier		San Diego	CA	USA
97	Toledo, Uni. of, Col. of Law	1939	1941	1942-43	21		2nd Tier		Toledo	OH	USA
191	Toronto, Uni. of, Faculty of Law			1976-77	52		NA		Toronto	Ontario	Can.
173	Touro Col., Jacob D. Fuchsberg Law Center ** First appears in 1975-76, but with no faculty listed.	1983	1994	1984-85	61		2nd Tier		New York	NY	USA
20	Tulane Uni. Sch. of Law	1925	1909	1922-23	1		47		New Orleans	LA	USA
128	Tulsa, Uni. of, Col. of Law	1950	1966	1956-57	32		110		Tulsa	OK	USA
69	Utah, Uni. of, S. J. Quinney Col. of Law	1927	1929	1930-31	9		42		Salt Lake City	UT	USA

74	Valparaiso Uni. Sch. of Law	1929	1930	1931-32	10		2nd Tier		Valparaiso	IN	USA
49	Vanderbilt Uni. Sch. of Law	1925	1910	1922-23	1		16	1927-28 (6) to 1929-30 (8) [3]	Nashville	TN	USA
174	Vermont Law Sch.	1975	1982	1975-76	51		117		South Royalton	VT	USA
192	Victoria, Uni. of, Faculty of Law			1976-77	52		NA		Victoria	British Columbia	Can.
129	Villanova Uni. Sch. of Law	1954	1957	1956-57	32		84		Villanova	PA	USA
46	Virginia, Uni. of, Sch. of Law	1923	1916	1922-23	1		9		Charlottesville	VA	USA
84	Wake Forest Uni. Sch. of Law	1936	1935	1936-37	15		39		Wake Forest	NC	USA
50	Washburn Uni. Sch. of Law	1923	1905	1922-23	1		140		Topeka	KS	USA
51	Washington and Lee Uni. Sch. of Law	1923	1920	1922-23	1		30		Lexington	VA	USA
52	Washington Uni. Sch. of Law	1923	1900	1922-23	1		18		St. Louis	MO	USA
47	Washington, Uni. of, Sch. of Law	1924	1909	1922-23	1		30		Seattle	WA	USA
102	Wayne State Uni. Law Sch.	1937	1946	1947-48	23		121		Detroit	MI	USA
53	West Virginia Uni. Col. of Law	1923	1914	1922-23	1		95		Morgantown	WV	USA
155	Western New England Col. Sch. of Law	1974	1981	1969-70	46		2nd Tier		Springfield	MA	USA
193	Western Ontario, Uni. of, Faculty of Law			1976-77	52		NA		London	Ontario	Can.
210	Western State Uni.-- Col. of Law	2006	Fee Paid				2nd Tier		Fullerton	CA	USA
195	Whittier Col. Sch. of Law	1978	1987	1978-79	55		2nd Tier		Los Angeles	CA	USA
170	Widener Uni. Sch. of Law (formerly Delaware Law Sch.) ** First appears in 1975-76, but with no faculty listed.	1975	1987	1976-77	52		2nd Tier		Wilmington	DE	USA
103	Willamette Uni. Col. of Law	1938	1946	1947-48	23		113		Salem	OR	USA
85	William and Mary, Col. of, Marshall-Wythe Sch. of Law	1932	1936	1937-38	16		27		Williamsburg	VA	USA
130	William Mitchell Col. of Law	1938	1982	1956-57	32		135		St. Paul / Minneapolis	MN	USA
194	Windsor, Uni. of, Faculty of Law			1976-77	52		NA		Windsor	Ontario	Can.
48	Wisconsin, Uni. of, Law Sch.	1923	1900	1922-23	1		35		Madison	WI	USA
58	Wyoming, Uni. of, Col. of Law	1923	1923	1923-24	2		113		Laramie	WY	USA
55	Yale Law Sch.	1923	1900	1922-23	1		1		New Haven	CT	USA

Appendix 5: Subjects in AALS Lists of Teachers by Subject

Subjects ID	Subject	Compound?	Node Type
565	Academic Freedom	s	Includes
116	Accounting	s	Subject
1	Administrative Law	s	Subject
415	Administrative Law (Cross-referenced under Regulated Industries)	r	Subject
223	Administrative Law (Includes Communications, Executive Function and Transportation)	c	Subject
298	Administrative Law (Includes Discretionary Justice, Executive Function, Government Litigation, Selective Service and Transportation (See also Trade Regulation))	c	Subject
263	Administrative Law (Includes Executive Function, Government Litigation, Selective Service and Transportation)	c	Subject
170	Administrative Law (Includes Transportation and Executive Function)	c	Subject
285	Administrative Law (Includes Transportation, Government Litigation, Selective Service and Executive Function (see also Trade Regulation))	c	Subject
281	Administrative Law (Includes Transportation, Government Litigation, Selective Service and Executive Function)	c	Subject
313	Administrative Law (see also Trade Regulation and Regulated Industries)	r	Subject
2	Admiralty	s	Subject
171	Admiralty (Includes Maritime Law)	c	Subject
579	Adversary System	s	Includes
3	Agency	s	Subject
79	Agency (See also Business Organizations.)	r	Subject
314	Agency and Partnership	s	Subject
407	Aging and the Law	s	Subject
315	Agricultural Law	s	Subject
583	Agricultural Policy	s	Includes
622	Air and Water Pollution	s	Includes
4	Air Law	s	Subject
206	Air Law (Includes Space)	c	Subject
363	Alternate Dispute Resolution (Includes Arbitration, Mediation and Negotiation)	c	Subject
408	Alternative Dispute Resolution (Includes Arbitration, Mediation and Negotiation)	c	Subject
316	American Indian Law	s	Subject
580	American Legal System	s	Includes
117	Antitrust	s	Subject
236	Antitrust (Includes Competition and Price Administration)	c	Subject
172	Antitrust (Includes Competition and Unfair Competition)	c	Subject
207	Antitrust (Includes Competition)	c	Subject
317	Antitrust (Includes Unfair Competition (see also Regulated Industries and Trade Regulation))	c	Subject
142	Antitrust (Includes Unfair Competition)	c	Subject
416	Antitrust (Includes Unfair competition; Cross-referenced under Trade Regulation)	c	Subject
476	Appellate Advocacy	s	Includes
417	Appellate Practice (Includes Appellate Advocacy)	c	Subject
173	Arbitration	s	Subject

208	Atomic Energy	s	Subject
118	Atomic Energy Regulation	s	Subject
364	Aviation and Space Law	s	Subject
616	Bailments	s	Includes
392	Banking (see also Regulated Industries)	r	Subject
5	Bankruptcy	s	Subject
174	Bankruptcy (Includes Debtors Estates)	c	Subject
86	Bankruptcy (See also Creditors Rights and Debtors Estates)	r	Subject
6	Bills and Notes	s	Subject
418	Bioethics	s	Subject
419	Business Associations (Includes Agency and Partnership; Corporations, Business Planning)	c	Subject
60	Business Law	s	Subject
7	Business Organization	s	Subject
83	Business Organizations	s	Subject
143	Business Organizations (Includes Cooperatives)	c	Subject
209	Business Organizations (Includes Cooperatives, Partnerships and Unincorporated Associations)	c	Subject
93	Business Organizations (See also Agency, Partnership, and Corporations)	c	Subject
365	Business Planning	s	Subject
102	Business Regulation	s	Subject
595	Canon Law	s	Includes
488	Church and State	s	Includes
485	Civil Law	s	Includes
61	Civil Procedure	s	Subject
366	Civil Procedure (Includes Common Law Actions, Judgments and Pleading)	c	Subject
299	Civil Rights	s	Subject
318	Civil Rights (Includes Employment Discrimination, Fair Housing, Race Relations (see also Constitutional Law))	c	Subject
367	Civil Rights (Includes Fair Housing and Race Relations (see also Constitutional Law))	c	Subject
420	Civil Rights (Includes Fair Housing; Race Relations; Cross-referenced under Constitutional Law)	c	Subject
482	Clinical Method, those who teach by	s	Includes
368	Clinical Teaching (Includes Counseling and those who have taught any law subject by the Clinical Method, or directed a Legal Clinic in a law school for a period of at least one full term.)	c	Subject
319	Clinical Teaching (Includes Legal Clinics, Public Defender Clinics, and those who have taught any law subject by the Clinical Method, or directed a Legal Clinic in a law school for a period of at least one full term.	c	Subject
297	Clinical Teaching (Includes those who have taught any law subject by the Clinical Method, or directed a Legal Clinic in a law school, for a period of at least one full term)	c	Subject
62	Code Pleading	s	Subject
8	Code Pleading (See also Pleading)	r	Subject
521	Collective Bargaining	s	Includes
494	College and University Law	s	Includes
119	Commercial Law	s	Subject
175	Commercial Law (Includes Commercial Transactions and Uniform Commercial Code)	c	Subject
264	Commercial Law (Includes Commercial Transactions, Financial Institutions and Uniform Commercial Code)	c	Subject
237	Commercial Law (Includes Commercial Transactions, Uniform Commercial Code and Financial Institutions)	c	Subject
320	Commercial Law (Includes Sales and Secured Transactions)	c	Subject
369	Commercial Paper	s	Subject
321	Commercial Paper (Includes Negotiable Instruments)	c	Subject
540	Commercial Transactions	s	Includes
477	Common Law Actions	s	Includes
63	Common Law Pleading	s	Subject

9	Common Law Pleading (See also Pleading)	r	Subject
506	Common Market	s	Includes
421	Communications Law	s	Subject
103	Community Property	s	Subject
10	Comparative Law	s	Subject
265	Comparative Law (Includes American Indian Law, Civil Law, Foreign Law, Law of Emerging Nations and Law of Specific Countries)	c	Subject
210	Comparative Law (Includes Civil Law, Foreign Law and Law of Specific Countries)	c	Subject
282	Comparative Law (Includes Civil Law, Foreign Law, Law of Emerging Nations and Law of Specific Countries (also American Indian Law))	c	Subject
370	Comparative Law (Includes Civil Law, Foreign Law, Law of Emerging Nations, and Roman Law)	c	Subject
144	Comparative Law (Includes Foreign Law and Law of Specific Countries)	c	Subject
535	Competition	s	Includes
591	Computers	s	Includes
644	Computers and the Law (Cross-referenced under Law and Science)	r	Subject
393	Computers and the Law (see also Law and Science)	r	Subject
11	Conflict of Laws	s	Subject
12	Constitutional Law	s	Subject
371	Constitutional Law (Includes Church and State)	c	Subject
266	Constitutional Law (Includes Church and State, Civil Rights, and Right of Privacy)	c	Subject
322	Constitutional Law (Includes Church and State, First Amendment)	c	Subject
300	Constitutional Law (Includes Church and State, Obscenity and Pornography, Right of Privacy and Sex Discrimination)	c	Subject
422	Constitutional Law (Includes Church and State; Cross-referenced under Civil Rights)	c	Subject
145	Constitutional Law (Includes Civil Rights and Right of Privacy)	c	Subject
176	Constitutional Law (Includes Civil Rights, Church and State, and Right of Privacy)	c	Subject
576	Constitutional Problems of U. S. Foreign Affairs Operations	s	Includes
574	Consular Law	s	Includes
309	Consumer Law	s	Subject
423	Consumer Law (Cross-referenced under Trade Regulation)	r	Subject
526	Consumer Product Safety	s	Includes
632	Consumer Protection	s	Includes
13	Contracts	s	Subject
577	Control of International Aviation	s	Includes
104	Conveyances	s	Subject
80	Conveyances (Includes Titles)	c	Subject
537	Cooperatives	s	Includes
504	Copyrights	s	Includes
323	Corporate Finance (Includes Business Planning, Corporate Reorganization)	c	Subject
372	Corporate Finance (Includes Corporate Reorganization)	c	Subject
489	Corporate Reorganization	s	Includes
15	Corporation Finance	s	Subject
146	Corporation Finance (Includes Business Planning and Deferred Compensation)	c	Subject
178	Corporation Finance (Includes Business Planning, Corporate Reorganization and Deferred Compensation)	c	Subject
267	Corporation Finance (Includes Business Planning, Corporate Reorganization, Deferred Compensation and Employee Benefits Plans)	c	Subject
105	Corporations	s	Subject
177	Corporations (Includes Non-Profit Organizations)	c	Subject
69	Corporations (See also Business Organizations)	r	Subject
14	Corporations (See Private Corporations and Municipal Corporations)	r	Subject

490	Corrections	s	Includes
554	Corrections and Prisons	s	Includes
481	Counseling	s	Includes
16	Credit Transactions	s	Subject
268	Credit Transactions (Includes Housing Finance and Development, Land Finance, Mortgages, Secured Transactions and Security and Suretyship)	c	Subject
287	Credit Transactions (Includes Housing Finance and Development, Land Finance, Mortgages, Secured Transactions, Security and Suretyship)	c	Subject
238	Credit Transactions (Includes Housing Finance and Development, Mortgages, Secured Transactions, Security and Suretyship)	c	Subject
212	Credit Transactions (Includes Mortgages, Secured Transactions, Security and Suretyship)	c	Subject
84	Credit Transactions (See also Securities)	r	Subject
66	Credit Transactions (See also Security)	r	Subject
361	Creditors and Debtors Rights (Includes Bankruptcy and Debtors Estates)	c	Subject
424	Creditors and Debtors Rights (Includes Bankruptcy)	c	Subject
64	Creditors' Rights	s	Subject
286	Creditors Rights (Includes Bankruptcy and Debtors Estates and Debtors Rights)	c	Subject
211	Creditors Rights (Includes Bankruptcy and Debtors Estates)	c	Subject
324	Creditors Rights (Includes Bankruptcy, Debtors Estates and Debtors Rights)	c	Subject
471	Creditors Rights (Includes Credit Transactions)	c	Subject
179	Creditors Rights (Includes Credit Transactions, Secured and Security Transactions)	c	Subject
77	Creditors Rights and Debtors Estates	s	Subject
373	Criminal Justice (Includes Corrections, Criminal Law Administration and Sentencing)	c	Subject
87	Criminal Law	s	Subject
325	Criminal Law (Includes Corrections and Prisons, Criminal Law Administration)	c	Subject
301	Criminal Law (Includes Corrections and Prisons, Criminal Law Administration, Narcotics, Problems of Policing and Police Internship)	c	Subject
180	Criminal Law (Includes Criminal Law Administration)	c	Subject
239	Criminal Law (Includes Criminal Law Administration, Problems in Policing and Police Internship)	c	Subject
288	Criminal Law (Includes Criminal Law Administration, Problems of Policing and Police Internship)	c	Subject
17	Criminal Law Administration	s	Subject
18	Criminal Law and Procedure	s	Subject
88	Criminal Procedure	s	Subject
269	Criminal Procedure (Includes Juvenile Delinquency and Juveniles)	c	Subject
224	Criminal Procedure (Includes Juveniles and Police Administration)	c	Subject
147	Criminal Procedure (Includes Juveniles)	c	Subject
425	Critical Legal Studies	s	Subject
426	Critical Race Theory	s	Subject
19	Damages	s	Subject
70	Debtors Estates (See Bankruptcy and Creditors Rights)	r	Subject
552	Debtors Estates and Debtors Rights	s	Includes
181	Decedents Estates (Includes Estates, Wills, and Succession)	c	Subject
148	Decedents Estates (Includes Wills and Succession)	c	Subject
597	Decision Process	s	Includes
547	Deferred Compensation	s	Includes
507	Development Law	s	Includes
596	Development of Legal Institutions	s	Includes
634	Disability Law	s	Subject
533	Discretionary Justice	s	Includes
20	Domestic Relations	s	Subject

326	Domestic Relations (Includes Family Law, Marital Property (see also Juvenile Law))	c	Subject
182	Domestic Relations (Includes Family Law, Marital Property, Persons and Social Work)	c	Subject
225	Domestic Relations (Includes Family Law, Marital Property, Persons, Social Work)	c	Subject
149	Domestic Relations (Includes Social Work and Persons)	c	Subject
327	Education Law (Includes Public Education and School Law)	c	Subject
374	Education Law (Includes Public Education, School Law and College and University Law)	c	Subject
302	Education, Legal Problems of (Includes Academic Freedom)	c	Subject
427	Elder Law	s	Subject
620	Eminent Domain	s	Includes
402	Employee Benefit Plans	s	Subject
428	Employee Benefit Plans (Cross-Referenced under Labor Law)	r	Subject
414	Employee Benefit Plans (see also Labor Law)	r	Subject
375	Employment Discrimination	s	Subject
409	Employment Law (Includes Employment Discrimination)	c	Subject
467	Energy Law	s	Subject
623	Energy Policy	s	Includes
403	Entertainment Law	s	Subject
429	Environmental Law (Cross-referenced under Land Use Planning; Natural Resources; Regulated Industries)	r	Subject
303	Environmental Law (Includes Population Control (See also Land Use and Regulated Industrial and Other Activities))	c	Subject
289	Environmental Law (See also Land Use and Regulated Industries and Other Activities)	r	Subject
328	Environmental Law (See also Land Use Planning and Regulated Industries)	r	Subject
495	Equitable Remedies	s	Includes
21	Equity	s	Subject
329	Equity (Includes Equitable Remedies and Equity Practice (see also Remedies))	c	Subject
240	Equity (Includes Equitable Remedies and Equity Practice)	c	Subject
183	Equity (Includes Equitable Remedies)	c	Subject
213	Equity (Includes Equitable Remedies, Equity Practice)	c	Subject
430	Equity (Includes Equitable Remedies; Equity Practice; Cross referenced under Remedies)	c	Subject
22	Equity Pleading & Practice	s	Subject
496	Equity Practice	s	Includes
431	Estate and Gift Tax	s	Subject
376	Estate and Gift Taxation	s	Subject
120	Estate Planning	s	Subject
330	Estate Planning (see also Taxation, Federal)	r	Subject
377	Estates (Includes Decedents Estates, Wills, Fiduciary Administration, and Future Interests)	c	Subject
331	Estates (Includes Estates, Wills, Fiduciary Administration, and Future Interests)	c	Subject
410	Estates and Trusts (Includes Decedents Estates, Fiduciary Administration, Future Interests, Gratuitous Transfers, Trusts and Wills (see also Estate and Gift Taxation and Estate Planning))	c	Subject
405	Estates and Trusts (Includes Decedents Estates, Wills, Fiduciary Administration, and Future Interests)	c	Subject
432	Estates and Trusts (Includes Decedents Estates; Estate Planning; Future Interests; Trusts and Wills; Cross-referenced under Estate and Gift Tax)	c	Subject
23	Evidence	s	Subject
184	Evidence (Includes Facts)	c	Subject
530	Executive Function	s	Includes
568	Facts	s	Includes
479	Fair Housing	s	Includes
362	Family Law (Includes Domestic Relations, Marital Property (see also Juvenile Law))	c	Subject
433	Family Law (Includes Domestic Relations; Marital Property; Cross-referenced under Juvenile Law)	c	Subject

608	Federal and State Relations	s	Includes
378	Federal Courts (Includes Federal Jurisdiction, Federal Practice, Federal Procedure, Law of the Federal System and Supreme Court)	c	Subject
106	Federal Jurisdiction	s	Subject
214	Federal Jurisdiction (Includes Federal Practice and Federal Procedure)	c	Subject
185	Federal Jurisdiction (Includes Federal Practice)	c	Subject
241	Federal Jurisdiction (Includes Federal Practice, Federal Procedure, Law of the Federal System and Supreme Court)	c	Subject
24	Federal Jurisdiction and Procedure	s	Subject
499	Federal Practice	s	Includes
500	Federal Procedure	s	Includes
107	Federal Taxation	s	Subject
434	Feminist Legal Theory	s	Subject
121	Fiduciary Administration	s	Subject
435	Financial Institutions (Cross-referenced under Regulated Industries)	r	Subject
406	Financial Institutions (see also Regulated Industries)	r	Subject
544	First Amendment	s	Includes
486	Foreign Law	s	Includes
508	Foreign Patents	s	Includes
468	Forensic Medicine	s	Subject
25	Future Interests	s	Subject
94	Future Interests (See also Real Property)	c	Subject
571	Government and Business	s	Includes
150	Government Contracts	s	Subject
186	Government Contracts (Includes Government Control of Business, Law and Control of Economy, Government and Business)	c	Subject
270	Government Contracts (Includes Public Employment)	c	Subject
569	Government Control of Business	s	Includes
531	Government Litigation	s	Includes
567	Gratuitous Transfers	s	Includes
436	Health Care Law (Cross-Referenced under Law and Medicine)	r	Subject
394	Health Care Law (see also Law and Medicine)	r	Subject
588	Health Law	s	Includes
549	Housing Finance and Development	s	Includes
437	Human Rights	s	Subject
379	Immigration Law	s	Subject
528	Income Tax	s	Includes
26	Industrial Relations (See also Labor Law)	r	Subject
71	Industrial Relations (See Labor Law and Trade Regulation)	r	Subject
602	Information Retrieval	s	Includes
629	Injuries to Relations	s	Includes
27	Insurance	s	Subject
271	Insurance (Includes Pensions and Profit-Sharing Plans)	c	Subject
438	Insurance Law	s	Subject
380	Intellectual Property (Includes Patents, Copyrights, Trademarks)	c	Subject
509	International Business	s	Includes
439	International Business Transactions (Includes Common Market; Development Law; Foreign Patents; International Business; International Development, International Taxation; International Trade)	c	Subject
510	International Development	s	Includes
28	International Law	s	Subject

272	International Law (Includes Consular Law, Human Rights, Immigration, Legal Aspects of American Foreign Relations and Treaties and World Order)	c	Subject
283	International Law (Includes Consular Law, Human Rights, Immigration, Legal Aspects of American Foreign Relations, Treaties and World Order)	c	Subject
242	International Law (Includes Consular Law, Immigration, Legal Aspects of American Foreign Relations, Treaties and World Order)	c	Subject
381	International Law (Includes Human Rights, Legal Aspects of American Foreign Relations, Law of the Sea, Treaties and World Order)	c	Subject
226	International Law (Includes Immigration, Consular Law, Treaties, and World Order)	c	Subject
187	International Law (Includes Immigration, Treaties, and World Order)	c	Subject
440	International Law (Includes Legal Aspects of American Foreign Relations; Law of the Sea; Treaties; World Order)	c	Subject
188	International Organizations (Includes International Development and United Nations Law)	c	Subject
243	International Organizations (Includes Regional Organizations and United Nations Law)	c	Subject
215	International Organizations (Includes United Nations Law and Regional Organizations)	c	Subject
151	International Organizations (Includes United Nations Law)	c	Subject
578	International Policies	s	Includes
511	International Taxation	s	Includes
512	International Trade	s	Includes
273	International Transactions (Includes Common Market, Constitutional Problems of U. S. Foreign Affairs Operations, Control of International Aviation, Development Law, Foreign Patents, International Business, International Development, International Policies, International Taxation and International Trade)	c	Subject
244	International Transactions (Includes Common Market, Development Law, Foreign Patents, International Business, International Development, International Policies, International Taxation, International Trade and Constitutional Problems of U. S. Foreign Affairs Operations)	c	Subject
332	International Transactions (Includes Common Market, Development Law, Foreign Patents, International Business, International Development, International Policies, International Taxation, International Trade)	c	Subject
284	International Transactions (Includes Common Market, Development Law, Foreign Patents, International Business, International Development, International Policies, International Taxation, International Trade, Control of International Aviation and Constitutional Problems of U.S. Foreign Affairs Operations)	c	Subject
395	International Transactions (Includes Common Market, Development Law, Foreign Patents, International Business, International Development, International Taxation and International Trade)	c	Subject
216	International Transactions (Includes Common Market, Foreign Patents, International Development, International Trade, International Business, International Policies, and International Taxation)	c	Subject
152	International Transactions (Includes Common Market, Foreign Patents, International Policies, International Taxation and Regional Organizations)	c	Subject
189	International Transactions (Includes Common Market, Foreign Patents, International Trade, International Business, International Policies, International Taxation and Regional Organizations)	c	Subject
609	Interstate Relations	s	Includes
29	Introduction to Law	s	Subject
245	Introduction to Law (Includes Adversary System and American Legal System)	c	Subject
153	Introductions to Law (Includes American Legal System)	c	Subject
618	Judgments	s	Includes
478	Judgments and Pleading	s	Includes
81	Judicial Administration	s	Subject
636	Judicial Remedies	s	Subject
587	Jurimetrics	s	Includes
617	Jurisdiction	s	Includes
30	Jurisprudence	s	Subject
382	Jurisprudence (Includes Language and Logic and Legal Philosophy)	c	Subject
274	Jurisprudence (Includes Language and Logic, Law and Morality, Legal Philosophy and Legal Theory)	c	Subject
411	Jurisprudence (Includes Language and Logic, Legal Philosophy and Law and Literature)	c	Subject
246	Jurisprudence (Includes Language and Logic, Legal Philosophy and Legal Theory)	c	Subject

217	Jurisprudence (Includes Legal Philosophy)	c	Subject
559	Juvenile Delinquency	s	Includes
441	Juvenile Law (Cross-referenced under Family Law)	r	Subject
310	Juvenile Law (Includes Juvenile Delinquency (See also Domestic Relations))	c	Subject
383	Juvenile Law (Includes Juvenile Delinquency (see also Family Law))	c	Subject
558	Juveniles	s	Includes
65	Labor Law	s	Subject
247	Labor Law (Includes Collective Bargaining)	c	Subject
333	Labor Law (Includes Collective Bargaining, Employee Benefit Plans, and Public Employment)	c	Subject
442	Labor Law (Includes Collective Bargaining; Public Employment; Cross-referenced under Employee Benefit Plans)	c	Subject
31	Labor Law (See also Industrial Relations)	r	Subject
550	Land Finance	s	Includes
122	Land Use	s	Subject
311	Land Use (Includes Agricultural Policy, Model Cities, Planning, Zoning and Urban Redevelopment (See also Environmental Law))	c	Subject
290	Land Use (Includes Agriculture Policy, Planning, Zoning and Urban Redevelopment (See also Environmental Law))	c	Subject
275	Land Use (Includes Agriculture Policy, Planning, Zoning and Urban Redevelopment)	c	Subject
218	Land Use (Includes Planning, Zoning and Urban Redevelopment)	c	Subject
154	Land Use (Includes Zoning and Urban Redevelopment)	c	Subject
334	Land Use Planning (Includes Zoning (see also Environmental Law and Local Government))	c	Subject
443	Land Use Planning (Includes Zoning; Cross-referenced under Environmental Law; Local Government)	c	Subject
95	Landlord and Tenant	s	Subject
101	Landlord and Tenant (See Real Property)	r	Subject
519	Language and Logic	s	Includes
444	Law and Accounting	s	Subject
524	Law and Anthropology	s	Includes
525	Law and Behavioral Sciences	s	Includes
248	Law and Computers	s	Subject
276	Law and Computers (Includes Jurimetrics)	c	Subject
570	Law and Control of Economy	s	Includes
396	Law and Economics	s	Subject
445	Law and Literature	s	Subject
123	Law and Medicine	s	Subject
397	Law and Medicine (Includes Bioethics and Forensic Medicine (see also Health Care Law and Law and Psychiatry))	c	Subject
384	Law and Medicine (Includes Bioethics, Health Care Law and Forensic Medicine (see also Law and Psychiatry))	c	Subject
446	Law and Medicine (Includes Forensic Medicine; Cross-referenced under Health Care Law; Law and Psychiatry)	c	Subject
335	Law and Medicine (Includes Health Law and Forensic Medicine (see also Law and Psychiatry))	c	Subject
249	Law and Medicine (Includes Health Law and Psychiatry and the Law)	c	Subject
190	Law and Medicine (Includes Health Law, Psychiatry and the Law)	c	Subject
155	Law and Medicine (Includes Psychiatry and the Law)	c	Subject
581	Law and Morality	s	Includes
227	Law and Poverty	s	Subject
250	Law and Poverty (Includes Legal Rights of the Poor)	c	Subject
312	Law and Psychiatry	s	Subject
447	Law and Psychiatry (Cross-referenced under Law and Medicine)	r	Subject

598	Law and Public Opinion	s	Includes
448	Law and Religion	s	Subject
191	Law and Science	s	Subject
449	Law and Science (Cross-referenced under Computers and the Law)	r	Subject
336	Law and Science (Includes Computers, Technology Assessment, Jurimetrics)	c	Subject
398	Law and Science (Includes Technology Assessment and Jurimetrics (see also Computers and the Law))	c	Subject
337	Law and Social Science (Includes Law and Anthropology and Law and Behavioral Sciences)	c	Subject
124	Law and Society	s	Subject
251	Law and Society (Includes Law and Anthropology and Law and Behavioral Sciences)	c	Subject
192	Law and Society (Includes Law and Anthropology)	c	Subject
624	Law and the Elderly	s	Includes
89	Law Librarian	s	Subject
115	Law Librarians	s	Subject
487	Law of Emerging Nations	s	Includes
542	Law of Specific Countries	s	Includes
501	Law of the Federal System	s	Includes
514	Law of the Sea	s	Includes
450	Law Office Management	s	Subject
385	Law Office Management (Includes Legal Counseling and Office Practice)	c	Subject
601	Lawyer as a Negotiator	s	Includes
90	Legal Accounting	s	Subject
125	Legal Aid Clinics	s	Subject
513	Legal Aspects of American Foreign Relations	s	Includes
108	Legal Bibliography	s	Subject
291	Legal Bibliography (Includes Library Use (See also Legal Research and Writing))	c	Subject
32	Legal Bibliography and Research	s	Subject
483	Legal Clinic Directors	s	Includes
156	Legal Clinics	s	Subject
193	Legal Clinics (Includes Public Defender Clinics)	c	Subject
593	Legal Counseling	s	Includes
451	Legal Drafting	s	Subject
599	Legal Education	s	Includes
33	Legal Ethics	s	Subject
604	Legal Expression	s	Includes
34	Legal History	s	Subject
194	Legal History (Includes Canon Law and Development of Legal Institutions)	c	Subject
157	Legal History (Includes Canon Law)	c	Subject
109	Legal Method	s	Subject
158	Legal Method (Includes Decision Process)	c	Subject
338	Legal Method (Includes Legal Process)	c	Subject
520	Legal Philosophy	s	Includes
126	Legal Process	s	Subject
127	Legal Profession	s	Subject
339	Legal Profession (Includes Law and Public Opinion, Legal Education, Legal Ethics, and Professional Responsibility)	c	Subject
252	Legal Profession (Includes Law and Public Opinion, Legal Education, Legal Ethics, Preventative Law, Professional Responsibility and the Lawyer as a Negotiator)	c	Subject
159	Legal Profession (Includes Legal Education and Professional Responsibility)	c	Subject
195	Legal Profession (Includes Legal Education, Legal Ethics and Professional Responsibility)	c	Subject

399	Legal Profession (Includes Legal Ethics and Professional Responsibility)	c	Subject
128	Legal Research and Writing	s	Subject
196	Legal Research and Writing (Includes Information Retrieval and Legal Drafting)	c	Subject
253	Legal Research and Writing (Includes Information Retrieval, Legal Drafting and Research Aims and Methods)	c	Subject
292	Legal Research and Writing (Includes Information Retrieval, Legal Drafting, Legal Expression and Research Aims and Methods (See also Legal Bibliography))	c	Subject
277	Legal Research and Writing (Includes Information Retrieval, Legal Drafting, Legal Expression and Research Aims and Methods)	c	Subject
386	Legal Research and Writing (Includes Legal Bibliography)	c	Subject
340	Legal Research and Writing (Includes Legal Drafting and Legal Bibliography)	c	Subject
590	Legal Rights of the Poor	s	Includes
582	Legal Theory	s	Includes
110	Legal Writing	s	Subject
35	Legislation	s	Subject
387	Legislation (Includes Legal Drafting)	c	Subject
341	Legislation (Includes Legislative Drafting and Process)	c	Subject
254	Legislation (Includes Legislative Drafting)	c	Subject
228	Legislation (Includes Legislative Process)	c	Subject
606	Legislative Drafting	s	Includes
605	Legislative Drafting and Process	s	Includes
607	Legislative Process	s	Includes
85	Librarian	s	Subject
229	Librarian (Includes Associate and Assistant Librarian)	c	Subject
293	Librarian (Includes those who are of have been Law Librarians, Assistant Law Librarians, etc., and those who teach of have taught librarianship or use of libraries)	c	Subject
342	Librarian (Includes those who are of have been Law Librarians, Assistant Law Librarians, etc., and those who teach of have taught librarianship)	c	Subject
594	Library Use	s	Includes
633	Litigation	s	Includes
452	Local Government (Cross-referenced under Land Use Planning; Taxation, State and Local)	r	Subject
230	Local Government (Includes Federal and State Relations, Interstate Relations and Municipal Corporations)	c	Subject
343	Local Government (Includes Municipal Corporations and Urban Problems (see also Land Use Planning and Taxation, State and Local))	c	Subject
160	Local Government (Includes Municipal Corporations)	c	Subject
304	Local Government (Includes Municipal Corporations, Municipal Legislation, Public Education, School Law, Urban Finance and Urban Problems (See also Education, Legal Problems of))	c	Subject
255	Local Government (Includes Municipal Corporations, Public Education and Urban Problems)	c	Subject
278	Local Government (Includes Municipal Corporations, Public Education, Urban Finance and Urban Problems)	c	Subject
388	Local Government (Includes Urban Problems (see also Land Use Planning and Taxation, State and Local))	c	Subject
498	Marital Property	s	Includes
472	Maritime Law	s	Includes
400	Mass Communications Law	s	Subject
473	Mediation	s	Includes
637	Medical Jurisprudence	s	Subject
96	Military Law	s	Subject
219	Mining (Includes Natural Resources and Public Resources)	c	Subject
256	Mining (Includes Natural Resources, Ocean Resources and Public Resources)	c	Subject
129	Mining and Water Rights	s	Subject
161	Mining and Water Rights (Includes Natural Resources and Public Resources)	c	Subject
36	Mining Law	s	Subject

638	Mining, Irrigation, Water Law	s	Subject
584	Model Cities	s	Includes
619	Moot Court	s	Includes
37	Mortgages	s	Subject
162	Mortgages (Includes Land Finance and Property Security)	c	Subject
72	Mortgages (See also Securities)	r	Subject
38	Municipal Corporations	s	Subject
611	Municipal Legislation	s	Includes
555	Narcotics	s	Includes
635	National Security Law	s	Subject
360	Native American Law	s	Subject
453	Natural Resources (Cross Referenced under Environmental Law; Oil and Gas)	r	Subject
344	Natural Resources (Includes Mining and Ocean Resources (see also Environmental Law and Oil and Gas))	c	Subject
294	Natural Resources (Includes Mining, Ocean Resources, and Public Resources (See also Oil and Gas))	c	Subject
257	Negotiable Instruments (Includes Banking, Bills and Notes and Commercial Paper)	c	Subject
163	Negotiable Instruments (Includes Bills and Notes and Commercial Paper)	c	Subject
474	Negotiation	s	Includes
548	Non-Profit Organizations	s	Includes
545	Obscenity and Pornography	s	Includes
454	Ocean Resources	s	Subject
39	Office Practice	s	Subject
345	Office Practice (Includes Legal Counseling and Negotiation)	c	Subject
197	Office Practice (Includes Legal Counseling)	c	Subject
40	Oil and Gas	s	Subject
455	Oil and Gas (Cross-referenced under Natural Resources)	r	Subject
295	Oil and Gas (See also Natural Resources)	r	Subject
529	Oral Advocacy	s	Includes
41	Partnership	s	Subject
73	Partnership (See also Business Organizations)	r	Subject
42	Patent Law	s	Subject
503	Patents	s	Includes
130	Patents, Copyrights, Trademarks	s	Subject
258	Patents, Copyrights, Trademarks (Includes Intellectual Property and Protection of Ideas)	c	Subject
164	Patents, Copyrights, Trademarks (Includes Intellectual Property)	c	Subject
456	Payment Systems	s	Subject
626	Pension and Deferred Compensation	s	Includes
572	Pensions	s	Includes
43	Personal Property	s	Subject
198	Personal Property (Includes Bailments)	c	Subject
563	Persons	s	Includes
562	Persons and Social Work	s	Includes
585	Planning	s	Includes
44	Pleading	s	Subject
470	Pleading (See also Code Pleading and Common Law Pleading)	r	Subject
560	Police Administration	s	Includes
557	Police Internship	s	Includes
566	Population Control	s	Includes
389	Poverty Law	s	Subject

45	Practice	s	Subject
131	Practice and Procedure	s	Subject
346	Practice and Procedure (Includes Common Law Actions, Judgments and Pleading)	c	Subject
200	Practice and Procedure (Includes Common Law Actions, Jurisdiction and Judgments)	c	Subject
165	Practice and Procedure (Includes Jurisdiction and Judgments)	c	Subject
46	Practice Court	s	Subject
279	Practice Court (Includes Moot Court and Oral Advocacy)	c	Subject
199	Practice Court (Includes Moot Court)	c	Subject
97	Practice Court (See also Trial Practice)	r	Subject
600	Preventative Law	s	Includes
536	Price Administration	s	Includes
67	Private Corporations	s	Subject
47	Private Corporations (See also Municipal Corporations)	r	Subject
74	Private Corporations (See Corporations)	r	Subject
639	Probate Practice	s	Subject
556	Problems of Policing	s	Includes
347	Products Liability (Includes Consumer Product Safety)	c	Subject
457	Professional Responsibility	s	Subject
573	Profit-Sharing Plans	s	Includes
166	Property	s	Subject
390	Property (Includes Conveyances, Landlord and Tenant, Personal Property, Real Property, and Vendor and Purchaser)	c	Subject
458	Property (Includes Landlord and Tenant; Personal Property; Real Property)	c	Subject
614	Property Security	s	Includes
615	Protection of Ideas	s	Includes
589	Psychiatry and the Law	s	Includes
539	Public Defender Clinic	s	Includes
492	Public Education	s	Includes
522	Public Employment	s	Includes
613	Public Resources	s	Includes
48	Public Utilities	s	Subject
631	Pure Food and Drugs	s	Includes
49	Quasi-Contract	s	Subject
91	Quasi-Contracts	s	Subject
98	Quasi-Contracts and Restitution	s	Subject
480	Race Relations	s	Includes
358	Real Estate Transactions (Includes Mortgages)	c	Subject
111	Real Property	s	Subject
231	Real Property (Includes Agricultural Law, Conveyance, Landlord and Tenant, Real Estate, Titles, and Vendor and Purchaser)	c	Subject
259	Real Property (Includes Conveyances, Eminent Domain, Landlord and Tenant, Real Estate, Servitudes, Titles and Vendor and Purchaser)	c	Subject
348	Real Property (Includes Conveyances, Landlord and Tenant, and Vendor and Purchaser)	c	Subject
220	Real Property (Includes Conveyances, Landlord and Tenant, Real Estate, Titles, and Vendor and Purchaser)	c	Subject
201	Real Property (Includes Landlord and Tenant, Real Estates, Titles, and Vendor and Purchaser)	c	Subject
99	Real Property (Includes Landlord and Tenant, Vendor and Purchaser, etc.) (See also Conveyances and Future Interests)	c	Subject
75	Real Property (Includes Landlord and Tenant, Vendor and Purchaser, etc.) (See also Future Interests)	c	Subject
167	Real Property (Includes Titles)	c	Subject
50	Real Property (See also Future Interests)	r	Subject

517	Regional Organizations	s	Includes
305	Regulated Industrial and Other Activities (Includes Air and Water Pollution, Government and Business, Government Control of Business and Law and Control of Economy)	c	Subject
260	Regulated Industries (Includes Air and Water Pollution, Government and Business, Government Control of Business and Law and Control of Economy)	c	Subject
349	Regulated Industries (Includes Banking, Communications, Energy Policy, Public Utilities, and Transportation (see also Administrative Law))	c	Subject
401	Regulated Industries (Includes Communications, Energy Policy, Public Utilities and Transportation (See also Administrative Law and Banking))	c	Subject
232	Regulated Industries (Includes Government Control of Business, Law and Control of Economy and Government and Business)	c	Subject
459	Regulated Industries (Includes Public Utilities; Transportation; Cross-referenced under Administrative Law; Environmental Law; Financial Institutions; Trade Regulation)	c	Subject
132	Remedies	s	Subject
350	Remedies (Includes Damages and Restitution)	c	Subject
460	Remedies (Includes Damages; Restitution; Cross-referenced under Equity)	c	Subject
603	Research Aims and Methods	s	Includes
112	Restitution	s	Subject
202	Restitution (Includes Quasi Contracts)	c	Subject
543	Right of Privacy	s	Includes
51	Roman Law	s	Subject
52	Sales	s	Subject
493	School Law	s	Includes
553	Secured and Security Transactions	s	Includes
484	Secured Transactions	s	Includes
113	Securities	s	Subject
76	Securities (See also Credit Transactions)	r	Subject
134	Securities Regulation	s	Subject
296	Securities Regulation (See also Administrative Law)	r	Subject
133	Security	s	Subject
68	Security (See also Credit Transactions)	r	Subject
551	Security and Suretyship	s	Includes
532	Selective Service	s	Includes
491	Sentencing	s	Includes
621	Servitudes	s	Includes
546	Sex Discrimination	s	Includes
135	Social Legislation	s	Subject
412	Social Legislation (Includes Law and the Elderly and Welfare Law)	c	Subject
233	Social Legislation (Includes Unemployment Compensation)	c	Subject
351	Social Legislation (Includes Welfare Law and Social Work)	c	Subject
306	Social Legislation (Includes Welfare Law)	c	Subject
564	Social Work	s	Includes
534	Space	s	Includes
404	Sports Law	s	Subject
630	Statutory Liability	s	Includes
561	Succession	s	Includes
502	Supreme Court	s	Includes
53	Suretyship	s	Subject
78	Suretyship (See also Securities)	r	Subject
461	Tax Policy	s	Subject

627	Tax Practice Policy	s	Includes
54	Taxation	s	Subject
203	Taxation (Includes Pension and Deferred Compensation, Tax Practice Policy and Taxation in Special Areas)	c	Subject
628	Taxation in Special Areas	s	Includes
462	Taxation, Corporate	s	Subject
136	Taxation, Estate and Gift	s	Subject
234	Taxation, Federal (Includes Income and Estate and Gift Taxation)	c	Subject
221	Taxation, Federal (Includes Income and Estate and Gift)	c	Subject
391	Taxation, Federal (Includes Income Tax and Tax Policy)	c	Subject
469	Taxation, Federal (Includes Income Tax)	c	Subject
352	Taxation, Federal (Includes Income, Employee Benefit Plans, Estate and Gift Taxation, and Tax Policy)	c	Subject
307	Taxation, Federal (Includes Income, Estate and Gift Taxation and Tax Policy)	c	Subject
137	Taxation, Income	s	Subject
138	Taxation, State and Local	s	Subject
463	Taxation, State and Local (Cross-referenced under Local Government)	r	Subject
353	Taxation, State and Local (see also Local Government)	r	Subject
592	Technology Assessment	s	Includes
643	Those who have taught any law subject by the Clinical Method, or directed a Legal Clinic in a law school for a period of at least one full term.	s	Includes
114	Titles	s	Subject
82	Titles (See Conveyances)	r	Subject
55	Torts	s	Subject
204	Torts (Includes Injuries to Relations and Products Liability)	c	Subject
354	Torts (Includes Injuries to Relations)	c	Subject
261	Torts (Includes Injuries to Relations, Products Liability and Statutory Liability)	c	Subject
56	Trade Regulation	s	Subject
464	Trade Regulation (Cross-referenced under Antitrust; Consumer Law; Regulated Industries)	r	Subject
168	Trade Regulation (Includes Business Regulation, Communications and Pure Food and Drug)	c	Subject
262	Trade Regulation (Includes Business Regulation, Communications, Consumer Protection, Public Utilities, Pure Food and Drugs and Unfair Competition)	c	Subject
222	Trade Regulation (Includes Business Regulation, Communications, Pure Food and Drugs, Public Utilities and Unfair Competition)	c	Subject
355	Trade Regulation (see also Antitrust, Consumer Law and Regulated Industries)	r	Subject
505	Trademarks	s	Includes
527	Transportation	s	Includes
515	Treaties	s	Includes
575	Treaties and World Order	s	Includes
465	Trial Advocacy (Includes Oral Advocacy)	c	Subject
413	Trial and Appellate Advocacy (Includes Appellate Practice and Oral Advocacy)	c	Subject
356	Trial and Appellate Advocacy (Includes Oral Advocacy)	c	Subject
139	Trial and Appellate Practice	s	Subject
235	Trial and Appellate Practice (Includes Litigation and Trial Practice)	c	Subject
205	Trial and Appellate Practice (Includes Litigation)	c	Subject
280	Trial and Appellate Practice (Includes Litigation, Trial Advocacy and Trial Practice)	c	Subject
92	Trial Practice	s	Subject
57	Trusts	s	Subject
357	Trusts (Includes Gratuitous Transfers (see also Estates))	c	Subject
140	Trusts and Estates	s	Subject
497	Trusts and Wills	s	Includes

625	Unemployment Compensation	s	Includes
475	Unfair Competition	s	Includes
541	Uniform Commercial Code	s	Includes
538	Unincorporated Associations	s	Includes
518	United Nations Law	s	Includes
612	Urban Finance	s	Includes
610	Urban Problems	s	Includes
586	Urban Redevelopment	s	Includes
100	Vendor and Purchaser (See Real Property)	r	Subject
58	Water Rights	s	Subject
466	Welfare Law	s	Subject
141	Wills	s	Subject
59	Wills and Administration	s	Subject
308	Women and the Law	s	Subject
359	Workers Compensation	s	Subject
169	Workmens Compensation	s	Subject
516	World Order	s	Includes
523	Zoning	s	Includes

Appendix 6: AALS Subject Changes, Year by Year

ACADEMIC YEAR OR RANGE OF YEARS	COURSE-SUBJECT CANON ITERATION NUMBER	SYNDETIC STRUCTURE ITERATION NUMBER	TOTAL AALS SUBJECTS (with listed teachers) [Parentheses = Total Number of Arcs]	CATEGORY	TOPIC
1922-23 to 1930-21	NA	NA	NA	No list of 'Teachers by Subject'	
1931-32	1	1	58 [10]	Original: 58	<ul style="list-style-type: none"> • Administrative Law • Admiralty • Agency • Air Law • Bankruptcy • Bills and Notes • Business Organization • Code Pleading (See also Pleading) • Common Law Pleading (See also Pleading) • Comparative Law • Conflict of Laws • Constitutional Law • Contracts • Corporation Finance • Credit Transactions • Criminal Law Administration • Criminal Law and Procedure • Damages • Domestic Relations • Equity • Equity Pleading & Practice • Evidence • Federal Jurisdiction and Procedure • Future Interests • Industrial Relations (See also Labor Law) • Insurance • International Law • Introduction to Law • Jurisprudence • Labor Law (See also Industrial Relations) • Legal Bibliography and Research • Legal Ethics • Legal History • Legislation • Mining Law • Mortgages • Municipal Corporations • Office Practice • Oil and Gas • Partnership • Patent Law • Personal Property • Pleading (See also Code Pleading and Common Law Pleading) • Practice • Practice Court • Private Corporations (See also Municipal Corporations) • Public Utilities • Quasi-Contract • Real Property (See also Future Interests) • Roman Law • Sales • Suretyship • Taxation • Torts • Trade Regulation • Trusts • Water Rights • Wills and Administration
				'See' [Entry Vocabulary]: 1	<ul style="list-style-type: none"> • Corporations (See Private Corporations and Municipal Corporations)
1932-33	2	2	60 [4]	New: 3	<ul style="list-style-type: none"> • Business Law • Civil Procedure • Creditors' Rights
				Discontinued: 1	<ul style="list-style-type: none"> • Pleading (See also Code Pleading and Common Law Pleading)
				Discontinued See: 1	<ul style="list-style-type: none"> • Corporations (See Private Corporations and Municipal Corporations)
1933-34	3	3	58	Changed Syndetic Structure: 2	<ul style="list-style-type: none"> • Code Pleading From: Code Pleading (See also Pleading) • Common Law Pleading From: Common Law Pleading (See also Pleading)
				Discontinued: 2	<ul style="list-style-type: none"> • Business Law

			[2]		<ul style="list-style-type: none"> • Industrial Relations (See also Labor Law)
				Changed Syndetic Structure: 1	<ul style="list-style-type: none"> • Labor Law From: Labor Law (See also Industrial Relations)
1934-35	4	4	58 [3]	New: 1	<ul style="list-style-type: none"> • Security (See also Credit Transactions)
				Discontinued: 1	<ul style="list-style-type: none"> • Mining Law
				Renamed: 1	<ul style="list-style-type: none"> • Business Organizations From: Business Organization
				Changed Syndetic Structure:	<ul style="list-style-type: none"> • Private Corporations From: Private Corporations (See also Municipal Corporations) • Credit Transactions (See also Security) From: Credit Transactions
				Renamed: 3	<ul style="list-style-type: none"> • Corporations (See also Business Organizations) From: Private Corporations • Creditors' Rights and Debtors' Estates From: Creditors' Rights • Securities (See also Credit Transactions) From: Security (See also Credit Transactions)
1935-36	5	5	58 [15]	New 'See' [Entry Vocabulary]: 3	<ul style="list-style-type: none"> • Debtors' Estates (See Bankruptcy and Creditors' Rights) • Private Corporations (See Corporations) • Industrial Relations (See Labor Law and Trade Regulation)
				Changed Syndetic Structure: 5	<ul style="list-style-type: none"> • Agency (See also Business Organizations.) From: Agency • Mortgages (See also Securities) From: Mortgages • Partnership (See also Business Organizations) From: Partnership • Real Property (Includes Landlord and Tenant, Vendor and Purchaser, etc.) (See also Future Interests) From: Real Property (See also Future Interests) • Suretyship (See also Securities) From: Suretyship
1936-37 and 1937-38	6	6	57 [14]	Discontinued: 1	<ul style="list-style-type: none"> • Air Law
				Discontinued 'See' [Entry Vocabulary]: 1	<ul style="list-style-type: none"> • Private Corporations (See Corporations)
1938-39	7	7	59 [16]	New: 2	<ul style="list-style-type: none"> • Conveyances (Includes Titles) • Judicial Administration
				New 'See' [Entry Vocabulary]: 1	<ul style="list-style-type: none"> • Titles (See Conveyances)
1939-40	8	7	60 [16]	New: 1	<ul style="list-style-type: none"> • Librarian
				New: 3	<ul style="list-style-type: none"> • Criminal Procedure • Legal Accounting • Trial Practice
1940-41	9	8	61 [17]	Discontinued: 2	<ul style="list-style-type: none"> • Criminal Law Administration • Practice
				Renamed: 2	<ul style="list-style-type: none"> • Criminal Law From: Criminal Law and Procedure • Law Librarian From: Librarian
				Changed Syndetic Structure: 1	<ul style="list-style-type: none"> • Bankruptcy (See also Creditors' Rights and Debtors' Estates) From: Bankruptcy
				New: 2	<ul style="list-style-type: none"> • Military Law • Mining Law
				Renamed: 1	<ul style="list-style-type: none"> • Quasi-Contracts and Restitution From: Quasi-Contracts
1941-42	10	9	63 [25]	New 'See' [Entry Vocabulary]: 2	<ul style="list-style-type: none"> • Landlord and Tenant (See Real Property) • Vendor and Purchaser (See Real Property)
				Changed Syndetic Structure: 4	<ul style="list-style-type: none"> • Business Organizations (See also Agency, Partnership, and Corporations) From: Business Organizations • Future Interests (See also Real Property) From: Future Interests • Practice Court (See also Trial Practice) From: Practice Court • Real Property (Includes Landlord and Tenant, Vendor and Purchaser, etc.) (See also Conveyances and Future Interests) From: Real Property (Includes Landlord and Tenant, Vendor and Purchaser, etc.) (See also Future Interests)
1942-43	11	9	64 [25]	New: 1	<ul style="list-style-type: none"> • Air Law
1943-44	NA	NA		No AALS Directories Published	

to 1945-46					
1946-47	NA	NA	0	No list of 'Teachers by Subject'	
1947-48	12	NA	67 [0]	New: 6	<ul style="list-style-type: none"> • Business Regulation • Community Property • Federal Taxation • Legal Method • Legal Writing • Titles
				Discontinued: 3	<ul style="list-style-type: none"> • Military Law • Mining Law • Water Rights
				Renamed: 4	<ul style="list-style-type: none"> • Creditors' Rights From: Creditors' Rights and Debtors' Estates • Federal Jurisdiction From: Federal Jurisdiction and Procedure • Legal Bibliography From: Legal Bibliography and Research • Restitution From: Quasi-Contracts and Restitution
				Changed Syndetic Structure: All Previous	<ul style="list-style-type: none"> • No Syndetic Structure from 1947-48 through 1962-63
1948-49	13	NA	67 [0]	Renamed: 1	<ul style="list-style-type: none"> • Law Librarians (from: Law Librarian)
1949-50	14	NA	66 [0]	Discontinued: 1	<ul style="list-style-type: none"> • Business Regulation
1950-51 to 1952-53	NA	NA	0	No list of 'Teachers by Subject'	
1953-54	15	NA	81 [0]	New: 16	<ul style="list-style-type: none"> • Business Regulation • Commercial Transactions • Corporate Reorganization • Estate and Gift Taxation • Estate Planning • Fiduciary Administration • Judicial Remedies • Landlord and Tenant • Legal Aid Clinics • Medical Jurisprudence • Military Law • Mining, Irrigation, Water Law • Pleading • Probate Practice • Remedies • Social Legislation
				Discontinued: 1	<ul style="list-style-type: none"> • Code Pleading
				Renamed: 3	<ul style="list-style-type: none"> • Accounting From: Legal Accounting • Trial and Appellate Practice From: Trial Practice • Wills From: Wills and Administration
1954-55	16	NA	79 [0]	New: 1	<ul style="list-style-type: none"> • Food, Drug and Cosmetic Law
				Discontinued: 3	<ul style="list-style-type: none"> • Estate and Gift Taxation • Federal Taxation • Roman Law
1955-56 to 1960-61	NA	NA	0	No list of 'Teachers by Subject'	
1961-62 and 1962-63	17	NA	82 [0]	New: 11	<ul style="list-style-type: none"> • Antitrust • Atomic Energy Regulation • Land Use • Law and Society • Legal Process • Practice & Procedure • Securities Regulation

					<ul style="list-style-type: none"> • Taxation, Estate and Gift • Taxation, Income • Taxation, State & Local • Trusts & Estates
				Discontinued: 8	<ul style="list-style-type: none"> • Common Law Pleading • Corporate Reorganization • Equity Pleading & Practice • Food, Drug and Cosmetic Law • Judicial Remedies • Landlord and Tenant • Law Librarians • Probate Practice
				Renamed: 7	<ul style="list-style-type: none"> • Commercial Law From: Commercial Transactions • Law and Medicine From: Medical Jurisprudence • Legal Profession From: Legal Ethics • Legal Research and Writing From: Legal Writing • Mining and Water Rights From: Mining, Irrigation, Water Law • Patents, Copyrights, Trademarks From: Patent Law • Security From: Securities
1963-64	18	10	85 [42 all 'includes']	New: 5	<ul style="list-style-type: none"> • Government Contracts • International Organizations (Includes United Nations Law) • International Transactions (Includes Common Market, Foreign Patents, International Policies, International Taxation and Regional Organizations) • Property • Workmen's Compensation
				Discontinued: 2	<ul style="list-style-type: none"> • Business Regulation • Credit Transactions
				Renamed: 4	<ul style="list-style-type: none"> • Decedent's Estates (Includes Wills and Succession) From: Wills • Legal Clinics From: Legal Aid Clinics • Local Government (Includes Municipal Corporations) From: Municipal Corporations • Negotiable Instruments (Includes Bills and Notes and Commercial Paper) From: Bills and Notes (Includes Bills and Notes and Commercial Paper)
				Changed Synthetic Structure: 20	<ul style="list-style-type: none"> • Antitrust (Includes Unfair Competition) From: Antitrust • Business Organizations (Includes Cooperatives) From: Business Organizations • Comparative Law (Includes Foreign Law and Law of Specific Countries) From: Comparative Law • Constitutional Law (Includes Civil Rights and Right of Privacy) From: Constitutional Law • Corporation Finance (Includes Business Planning and Deferred Compensation) From: Corporation Finance • Creditors' Rights (Includes Credit Transactions) From: Creditors' Rights • Criminal Procedure (Includes Juveniles) From: Criminal Procedure • Domestic Relations (Includes Social Work and Persons) From: Domestic Relations • Introductions to Law (Includes American Legal System) From: Introduction to Law • Land Use (Includes Zoning and Urban Redevelopment) From: Land Use • Law and Medicine (Includes Psychiatry and the Law) From: Law and Medicine • Legal History (Includes Canon Law) From: Legal History • Legal Method (Includes Decision Process) From: Legal Method • Legal Profession (Includes Legal Education and Professional Responsibility) From: Legal Profession • Mining and Water Rights (Includes Natural Resources and Public Resources) From: Mining and Water Rights • Mortgages (Includes Land Finance and Property Security) From:

					<ul style="list-style-type: none"> Mortgages Patents, Copyrights, Trademarks (Includes Intellectual Property) From: Patents, Copyrights, Trademarks Practice and Procedure (Includes Jurisdiction and Judgments) From: Practice and Procedure Real Property (Includes Titles) From: Real Property Trade Regulation (Includes Business Regulation, Communications and Pure Food and Drug) From: Trade Regulation
1964-65	19	11	87 [88 all 'includes']	New: 3	<ul style="list-style-type: none"> Arbitration Law and Science Roman Law
				Discontinued: 1	<ul style="list-style-type: none"> Titles
				Changed Syndetic Structure:	<ul style="list-style-type: none"> Administrative Law (Includes Transportation and Executive Function) From: Administrative Law Admiralty (Includes Maritime Law) From: Admiralty Antitrust (Includes Competition and Unfair Competition) From: Antitrust (Includes Unfair Competition) Bankruptcy (Includes Debtors Estates) From: Bankruptcy
1965-66	20	12	78 [New: 2	<ul style="list-style-type: none"> Credit Transactions Water Rights
				Discontinued: 11	<ul style="list-style-type: none"> Bankruptcy Conveyances Mortgages Partnership Property Public Utilities Security Suretyship Taxation Taxation, Estate & Gift Trusts
				Renamed: 3	<ul style="list-style-type: none"> Atomic Energy (from: Atomic Energy Regulation) Mining (from: Mining and Water Rights) Taxation, Federal (from: Taxation, Income)
1966-67	21		81	New: 3	<ul style="list-style-type: none"> Law and Poverty Librarian Regulated Industries
1967-68	22		81	New: 1	<ul style="list-style-type: none"> Law and Computers
				Discontinued: 1	<ul style="list-style-type: none"> Future Interests
1968-69	23		82	New: 1	<ul style="list-style-type: none"> Future Interests
1969-70	24		80	Discontinued: 2	<ul style="list-style-type: none"> Atomic Energy Sales
1970-71	25		83	New: 3	<ul style="list-style-type: none"> Atomic Energy Environmental Law Sales
				Renamed: 1	<ul style="list-style-type: none"> Natural Resources (from: Mining)
1971-72	26		84	New: 1	<ul style="list-style-type: none"> Clinical Teaching
1972-73	27		86	New: 2	<ul style="list-style-type: none"> Education, Legal Problems of Women and the Law
1973-74	28		87	New: 1	<ul style="list-style-type: none"> Civil Rights
1974-75 and 1975-76	29		90	New: 3	<ul style="list-style-type: none"> Consumer Law Juvenile Law Law and Psychiatry
1976-77 to 1984- 85	30		79	New: 1	<ul style="list-style-type: none"> Agricultural Law American Indian Law Products Liability Real Estate Transactions Trusts
				Discontinued: 16	<ul style="list-style-type: none"> Atomic Energy Business Organizations Credit Transactions

					<ul style="list-style-type: none"> • Damages • Fiduciary Administration • Future Interests • Law and Computers • Legal Bibliography • Legal Clinics • Legal Process • Pleading • Practice Court • Restitution • Roman Law • Sales • Trusts and Estates
				Renamed: 6	<ul style="list-style-type: none"> • Agency and Partnership (from: Agency) • Commercial Paper (from: Negotiable Instruments) • Education Law (from: Education, Legal Problems of) • Estates (from: Decedents' Estates) • Law and Social Science (from: Law and Society) • Worker's Compensation (from: Workmen's Compensation)
1985-86	31		79	Renamed: 3	<ul style="list-style-type: none"> • Creditors' and Debtors' Rights (from: Creditors' Rights) • Family Law (from: Domestic Relations) • Native American Law (from: American Indian Law)
1986-87	32		80	New: 5	<ul style="list-style-type: none"> • Business Planning • Employment Discrimination • Estate and Gift Taxation • Immigration Law • Property
				Discontinued: 4	<ul style="list-style-type: none"> • Librarian • Personal Property • Practice and Procedure • Real Property
				Renamed: 7	<ul style="list-style-type: none"> • Alternative Dispute Resolution (from: Arbitration) • Aviation and Space Law (from: Air Law) • Criminal Justice (from: Criminal Law) • Federal Courts (from: Federal Jurisdiction) • Intellectual Property (from: Patents, Copyrights, Trademarks) • Law Office Management (from: Office Practice) • Poverty Law (from: Law and Poverty)
1987-88	33		85	New: 5	<ul style="list-style-type: none"> • Banking • Computers and the Law • Health Care Law • Law and Economics • Mass Communications Law
1988-89 to 1991- 92	34		88	New: 3	<ul style="list-style-type: none"> • Employee Benefit Plans • Entertainment Law • Sports Law
1992-93	35		87	Discontinued: 1	• Trusts
				Renamed: 1	• Estates and Trusts (from: Estates)
1993-94 and 1994-95	36		87	Renamed: 1	• Financial Institutions (from: Banking)
1995-96	37		88	New: 1	• Aging and the Law
1996-97 to 2003- 04	38		88	Renamed: 1	• Employment Law (from: Employment Discrimination)
2004-05	39		94	New: 14	<ul style="list-style-type: none"> • Appellate Practice • Bioethics • Business Associations • Criminal Justice • Critical Legal Studies • Critical Race Theory

					<ul style="list-style-type: none"> • Feminist Legal Theory • Human Rights • Law and Literature • Law and Religion • Legal Drafting • Ocean Resources • Tax Policy • Taxation, Corporate
				Discontinued: 8	<ul style="list-style-type: none"> • Agency and Partnership • Business Planning • Corporations • Estate Planning • Introduction to Law • Judicial Administration • Legal method • Social Legislation
				Renamed: 9	<ul style="list-style-type: none"> • Communications Law (from: Mass Communications Law) • Criminal Law (from: Criminal Justice) • Elder Law (from: Aging and the Law) • Employment Discrimination (from: Employment Law) • Law and Accounting (from: Accounting) • Payment Systems (from: Commercial Paper) • Professional Responsibility (from: Legal Profession) • Trial Advocacy (from: Trial and Appellate Advocacy) • Welfare Law (from: Poverty Law)
2005-06 to 2007- 08	40		96	New: 2	<ul style="list-style-type: none"> • Energy Law • Forensic Medicine
2009-10	41		104	New: 9	<ul style="list-style-type: none"> • Agency and Partnership • Commercial Paper • Disability Law • Estate Planning • Introduction to Law • Judicial Administration • Legal Method • National Security Law • Poverty Law
				Discontinued: 1	<ul style="list-style-type: none"> • Forensic Medicine
2010-11	42		104	New: 1	<ul style="list-style-type: none"> • Forensic Medicine
				Discontinued: 1	<ul style="list-style-type: none"> • Commercial Paper

Appendix 7: Count and Percentage of Faculty Teaching Each Course-Subject Over all Map Years

1931-32 Course-Subject ID	1931-32 Course-Subject	Total Faculty	% of Total	1972-73 Course-Subject ID	1972-73 Course-Subject	Total Faculty	% of Total	2010-11 Course-Subject ID	2010-11 Course-Subjects	Total Faculty	% of 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	209	Business Organizations	237	0.012	419	Business Associations	1087	0.030
7	Business Organization	10	0.004								
47	Private Corporations	92	0.034								
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	44	Pleading	80	0.004				
470	Pleading	12	0.004								
45	Practice	86	0.032								
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	320	Commercial Law	659	0.018
				237	Commercial Law	333	0.018				
52	Sales	86	0.032	52	Sales	152	0.008				
16	Credit Transactions	17	0.006	287	Credit Transactions	279	0.015	358	Real Estate Transactions	225	0.006
53	Suretyship	54	0.020								
37	Mortgages	56	0.021								
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
10	Comparative Law	10	0.004	265	Comparative Law	243	0.013	360	Native American Law	131	0.004
51	Roman Law	13	0.005	51	Roman Law	20	0.001	370	Comparative Law	676	0.019
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
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
				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
				289	Environmental Law	181	0.010	429	Environmental Law	513	0.014
21	Equity	104	0.039	240	Equity	261	0.014	430	Equity	51	0.001
22	Equity Pleading & Practice	20	0.007								
				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				
57	Trusts	89	0.033	140	Trusts and Estates	371	0.020				
23	Evidence	88	0.033	184	Evidence	435	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
				270	Government Contracts	56	0.003	150	Government Contracts	23	0.001
26	Industrial Relations	6	0.002								
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
				243	International Organizations	94	0.005	243	International Organizations	155	0.004
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				
				126	Legal Process	163	0.009	109	Legal Method	126	0.003
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
				291	Legal Bibliography	134	0.007	386	Legal Research and Writing	1601	0.044
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
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				
19	Damages	43	0.016	19	Damages	77	0.004	460	Remedies	371	0.010
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
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
								427	Elder Law	73	0.002
				135	Social Legislation	112	0.006	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

Appendix 8: 1931-32 Cross-References

Beginning Academic Year	Ending Academic Year	1st Subject	2nd Subject	Count of Directory Years Persisting	Years Distant from 1931-32	Strength of Indicator of Similarity
1931-32	1931-32	Code Pleading	Pleading	1	0	Weak
1931-32	1931-32	Common Law Pleading	Pleading	1	0	Weak
1931-32	1942-43	Industrial Relations	Labor Law	10	0	Strong
1931-32	1932-33	Labor Law	Industrial Relations	2	0	Strong
1931-32	1931-32	Pleading	Code Pleading	1	0	Weak
1931-32	1931-32	Pleading	Common Law Pleading	1	0	Weak
1931-32	1933-34	Private Corporations	Municipal Corporations	3	0	Mid
1931-32	1942-43	Real Property	Future Interests	12	0	Strong
1935-36	1942-43	Agency	Business Organization	8	4	Mid
1935-36	1942-43	Corporations	Business Organization	8	4	Mid
1935-36	1942-43	Industrial Relations	Trade Regulation	8	4	Mid
1935-36	1942-43	Partnership	Business Organization	8	4	Mid
1941-42	1942-43	Business Organization	Agency	2	10	Mid
1941-42	1942-43	Business Organization	Corporations	2	10	Mid
1941-42	1942-43	Business Organization	Partnership	2	10	Mid
1941-42	1942-43	Future Interests	Real Property	2	10	Strong
1970-71	2003-04	Administrative Law	Trade Regulation	35	39	Strong

Appendix 9: 1972-73 Cross-References

Beginning Academic Year	Ending Academic Year	1st Subject (Earliest Iteration of Course-Subject Name)	1st Subject (1972-73 Iteration of Course-Subject Name)	2nd Subject (Earliest Iteration of Course-Subject Name)	2 nd Subject (1972-73 Iteration of Course-Subject Name)	Count of Directory Years Persisting	Years Distant from 1972-73	Strength as Indicia of Similarity
1931-32	1931-32	Common Law Pleading	Practice and Procedure	Pleading	Pleading	1	41	Weak
1931-32	1931-32	Pleading	Pleading	Common Law Pleading	Practice and Procedure	1	41	Weak
1931-32	1933-34	Private Corporations	Corporations	Municipal Corporations	Local Government	3	39	Mid
1931-32	1942-43	Real Property	Real Property	Future Interests	Future Interests	12	30	Strong
1935-36	1942-43	Agency	Agency	Business Organization	Business Organizations	8	30	Mid
1935-36	1942-43	Corporations	Corporations	Business Organization	Business Organizations	8	30	Mid
1941-42	1942-43	Business Organization	Business Organizations	Agency	Agency	2	30	Mid
1941-42	1942-43	Business Organization	Business Organizations	Corporations	Corporations	2	30	Mid
1941-42	1942-43	Future Interests	Future Interests	Real Property	Real Property	2	30	Strong
1941-42	1942-43	Practice Court	Practice Court	Trial Practice	Trial and Appellate Practice	2	30	Weak
1970-71	2003-04	Administrative Law	Administrative Law	Trade Regulation	Trade Regulation	35	0	Strong
1970-71	2011-12	Environmental Law	Environmental Law	Land Use	Land Use	42	0	Strong
1970-71	2011-12	Environmental Law	Environmental Law	Regulated Industries	Regulated Industrial and Other Activities	42	0	Strong
1970-71	2011-12	Land Use	Land Use	Environmental Law	Environmental Law	42	0	Strong
1970-71	1975-76	Legal Bibliography	Legal Bibliography	Legal Research and Writing	Legal Research and Writing	6	0	Mid
1970-71	1975-76	Legal Research and Writing	Legal Research and Writing	Legal Bibliography	Legal Bibliography	6	0	Mid
1970-71	2011-12	Natural Resources	Natural Resources	Oil and Gas	Oil and Gas	42	0	Strong
1970-71	2011-12	Oil and Gas	Oil and Gas	Natural Resources	Natural Resources	42	0	Strong
1970-71	2003-04	Securities Regulation	Securities Regulation	Administrative Law	Administrative Law	35	0	Strong
1973-74	1975-76	Local Government	Local Government	Education, Legal Problems of	Education, Legal Problems of	3	1	Mid
1974-75	2011-12	Juvenile Law	Criminal Procedure	Domestic Relations	Domestic Relations	38	2	Strong
1976-77	2011-12	Administrative Law	Administrative Law	Regulated Industries	Regulated Industrial and Other Activities	36	4	Strong
1976-77	2003-04	Antitrust	Antitrust	Regulated Industries	Regulated Industrial and Other Activities	29	4	Strong
1976-77	2011-12	Antitrust	Antitrust	Trade Regulation	Trade Regulation	36	4	Strong
1976-77	2011-12	Domestic Relations	Domestic Relations	Juvenile Law	Criminal Procedure	36	4	Strong

1976-77	2011-12	Equity	Equity	Remedies	Remedies	36	4	Strong
1976-77	2003-04	Estate Planning	Estate Planning	Taxation, Federal	Taxation, Federal	29	4	Strong
1976-77	2011-12	Land Use	Land Use	Local Government	Local Government	36	4	Strong
1976-77	2011-12	Local Government	Local Government	Land Use	Land Use	36	4	Strong
1976-77	2011-12	Local Government	Local Government	Taxation, State and Local	Taxation, State and Local	36	4	Strong
1976-77	2011-12	Natural Resources	Natural Resources	Environmental Law	Environmental Law	36	4	Strong
1976-77	2011-12	Regulated Industries	Regulated Industrial and Other Activities	Administrative Law	Administrative Law	36	4	Strong
1976-77	2011-12	Taxation, State and Local	Taxation, State and Local	Local Government	Local Government	36	4	Strong
1976-77	2011-12	Trade Regulation	Trade Regulation	Antitrust	Antitrust	36	4	Strong
1976-77	2011-12	Trade Regulation	Trade Regulation	Regulated Industries	Regulated Industrial and Other Activities	36	4	Strong
1987-88	2011-12	Banking	Negotiable Instruments	Regulated Industries	Regulated Industrial and Other Activities	24	15	Strong
1987-88	2011-12	Computers and the Law	Law and Computers	Law and Science	Law and Science	24	15	Strong
1987-88	2011-12	Law and Science	Law and Science	Computers and the Law	Law and Computers	24	15	Strong
1987-88	2011-12	Regulated Industries	Regulated Industrial and Other Activities	Banking	Negotiable Instruments	24	15	Strong
1998-99	2011-12	Estates and Trusts	Trusts and Estates	Estate and Gift Taxation	Taxation, Federal	13	26	Strong
1998-99	2003-04	Estates and Trusts	Trusts and Estates	Estate Planning	Estate Planning	6	26	Mid
2004-05	2011-12	Environmental Law	Environmental Law	Natural Resources	Natural Resources	7	32	Strong
2004-05	2011-12	Regulated Industries	Regulated Industrial and Other Activities	Environmental Law	Environmental Law	7	32	Strong
2004-05	2011-12	Regulated Industries	Regulated Industrial and Other Activities	Trade Regulation	Trade Regulation	7	32	Strong
2004-05	2011-12	Remedies	Remedies	Equity	Equity	7	32	Strong

Appendix 10: 2010-11 Cross-References

Beginning Academic Year	Ending Academic Year	1st Subject (Earliest Iteration of Course-Subject Name)	1st Subject (2010-11 Iteration of Course-Subject Name)	2nd Subject (Earliest Iteration of Course-Subject Name)	2 nd Subject (2010-11 Iteration of Course-Subject Name)	Count of Directory Years Persisting	Years Distant from 2010-11	Strength as Indicia of Similarity
1931-32	1933-34	Private Corporations	Business Associations	Municipal Corporations	Local Government	3	79	Mid
1931-32	1942-43	Real Property	Property	Future Interests	Estates and Trusts	12	68	Strong
1935-36	1942-43	Agency	Agency and Partnership	Business Organization	Business Associations	8	68	Mid
1935-36	1942-43	Mortgages	Real Estate Transactions	Security	Commercial Law	8	68	Mid
1941-42	1942-43	Business Organization	Business Associations	Agency	Agency and Partnership	2	68	Mid
1941-42	1942-43	Future Interests	Estates and Trusts	Real Property	Property	2	68	Strong
1970-71	2003-04	Administrative Law	Administrative Law	Trade Regulation	Trade Regulation	35	7	Strong
1970-71	2011-12	Environmental Law	Environmental Law	Land Use	Land Use Planning	42	0	Strong
1970-71	2011-12	Environmental Law	Environmental Law	Regulated Industries	Regulated Industries	42	0	Strong
1970-71	2011-12	Land Use	Land Use Planning	Environmental Law	Environmental Law	42	0	Strong
1970-71	2011-12	Natural Resources	Natural Resources	Oil and Gas	Oil and Gas	42	0	Strong
1970-71	2011-12	Oil and Gas	Oil and Gas	Natural Resources	Natural Resources	42	0	Strong
1970-71	2003-04	Securities Regulation	Securities Regulation	Administrative Law	Administrative Law	35	7	Strong
1973-74	1975-76	Local Government	Local Government	Education, Legal Problems of	Education Law	3	35	Mid
1974-75	2011-12	Juvenile Law	Juvenile Law	Domestic Relations	Family Law	38	0	Strong
1976-77	2011-12	Administrative Law	Administrative Law	Regulated Industries	Regulated Industries	36	0	Strong
1976-77	2003-04	Antitrust	Antitrust	Regulated Industries	Regulated Industries	29	7	Strong
1976-77	2011-12	Antitrust	Antitrust	Trade Regulation	Trade Regulation	36	0	Strong
1976-77	2011-12	Civil Rights	Civil Rights	Constitutional Law	Constitutional Law	36	0	Strong
1976-77	2011-12	Domestic Relations	Family Law	Juvenile Law	Juvenile Law	36	0	Strong
1976-77	2011-12	Equity	Equity	Remedies	Remedies	36	0	Strong
1976-77	2003-04	Estate Planning	Estate Planning	Taxation, Federal	Taxation, Federal	29	7	Strong
1976-77	2011-12	Land Use	Land Use Planning	Local Government	Local Government	36	0	Strong
1976-77	2011-12	Law and Medicine	Law and Medicine	Law and Psychiatry	Law and Psychiatry	36	0	Strong
1976-77	2011-12	Local Government	Local Government	Land Use	Land Use Planning	36	0	Strong
1976-77	2011-12	Local Government	Local Government	Taxation, State and Local	Taxation, State and Local	36	0	Strong
1976-77	2011-12	Natural Resources	Natural Resources	Environmental Law	Environmental Law	36	0	Strong
1976-77	2011-12	Regulated Industries	Regulated Industries	Administrative Law	Administrative Law	36	0	Strong
1976-77	2011-12	Taxation, State and Local	Taxation, State and Local	Local Government	Local Government	36	0	Strong
1976-77	2011-12	Trade Regulation	Trade Regulation	Antitrust	Antitrust	36	0	Strong
1976-77	2011-12	Trade Regulation	Trade Regulation	Consumer Law	Consumer Law	36	0	Strong
1976-77	2011-12	Trade Regulation	Trade Regulation	Regulated	Regulated	36	0	Strong

				Industries	Industries			
1987-88	2011-12	Banking	Financial Institutions	Regulated Industries	Regulated Industries	24	0	Strong
1987-88	2011-12	Computers and the Law	Computers and the Law	Law and Science	Law and Science	24	0	Strong
1987-88	2011-12	Health Care Law	Health Care Law	Law and Medicine	Law and Medicine	24	0	Strong
1987-88	2011-12	Law and Medicine	Law and Medicine	Health Care Law	Health Care Law	24	0	Strong
1987-88	2011-12	Law and Science	Law and Science	Computers and the Law	Computers and the Law	24	0	Strong
1987-88	2011-12	Regulated Industries	Regulated Industries	Banking	Financial Institutions	24	0	Strong
1998-99	2011-12	Estates and Trusts	Estates and Trusts	Estate and Gift Taxation	Estate and Gift Tax	13	0	Strong
1998-99	2003-04	Estates and Trusts	Estates and Trusts	Estate Planning	Estate Planning	6	7	Mid
1999-2000	2011-12	Employee Benefit Plans	Employee Benefit Plans	Labor Law	Labor Law	12	0	Strong
2004-05	2011-12	Constitutional Law	Constitutional Law	Civil Rights	Civil Rights	7	0	Strong
2004-05	2011-12	Consumer Law	Consumer Law	Trade Regulation	Trade Regulation	7	0	Strong
2004-05	2011-12	Environmental Law	Environmental Law	Natural Resources	Natural Resources	7	0	Strong
2004-05	2011-12	Labor Law	Labor Law	Employee Benefit Plans	Employee Benefit Plans	7	0	Strong
2004-05	2011-12	Law and Psychiatry	Law and Psychiatry	Law and Medicine	Law and Medicine	7	0	Strong
2004-05	2011-12	Regulated Industries	Regulated Industries	Environmental Law	Environmental Law	7	0	Strong
2004-05	2011-12	Regulated Industries	Regulated Industries	Trade Regulation	Trade Regulation	7	0	Strong
2004-05	2011-12	Remedies	Remedies	Equity	Equity	7	0	Strong

Appendix 11: 1931-32 Subsequently Merged Topics That Indicate Similarity

Serial Number	Type of Event	Subject A	Subject B	Directory Year ID of Merger	Year of Merger	Years Distant from 1931-32	Proof of Mergence
1	mergence	Agency	Partnership	52	1976-77	45	Name of the subsequent course-subject.
2	mergence	Partnership	Business Organizations	41	1965-66	34	Includes statement.
3	mergence	Business Organizations	Agency	52	1976-77	45	Inferred from timing and subsequent includes statements.
4	mergence	Business Organizations	Private Corporations	87	2004-05	73	Inferred from timing and subsequent includes statements.
5	mergence	Private Corporations	Agency	87	2004-05	73	Includes statement.
6	mergence	Private Corporations	Partnership	87	2004-05	73	Includes statement.
7	mergence	Code Pleading	Pleading	95	1953-54	22	Inferred from timing and subsequent includes statements.
8	mergence	Practice	Common Law Pleading	37	1961-62	30	Inferred from timing and subsequent includes statements.
9	mergence	Code Pleading	Common Law Pleading	63	1986-87	55	Inferred from timing and subsequent includes statements.
10	mergence	Code Pleading	Practice	63	1986-87	55	Inferred from timing and subsequent includes statements.
11	mergence	Common Law Pleading	Pleading	63	1986-87	55	Inferred from timing and subsequent includes statements.
12	mergence	Practice	Pleading	63	1986-87	55	Inferred from timing and subsequent includes statements.
13	mergence	Sales	Suretyship	52	1976-77	45	Inferred from timing and subsequent includes statements.
14	mergence	Sales	Credit Transactions	52	1976-77	45	Inferred from timing and subsequent includes statements.
15	mergence	Credit Transactions	Suretyship	41	1965-66	34	Includes statement.
16	mergence	Credit Transactions	Mortgages	41	1965-66	34	Includes statement.
17	mergence	Suretyship	Mortgages	41	1965-66	34	Includes statement.
18	mergence	Comparative Law	Roman Law	52	1976-77	45	Includes statement.
19	mergence	Criminal Law Administration	Criminal Law and Procedure	19	1940-41	9	Inferred from timing and subsequent includes statements.
20	mergence	Equity	Equity Pleading and Practice	37	1961-62	30	Inferred from timing and subsequent includes statements.
21	mergence	Wills and Administration	Future Interests	52	1976-77	45	Includes statement.
22	mergence	Wills and Administration	Trusts	69	1992-93	61	Name of the subsequent course-subject.
23	mergence	Future Interests	Trusts	69	1992-93	61	Includes statements.
24	mergence	Mining Law	Water Rights	95	1953-54	22	Name of the subsequent course-subject.
25	mergence	Personal Property	Real Property	63	1986-87	55	Includes statements.
26	mergence	Damages	Quasi-Contract	52	1976-77	45	Includes statements.

Appendix 12: 1972-73 Mergence and Divergence that Indicate Similarity

Serial Number	Type of Event	Subject A	Subject B	Directory Year ID of Mergence or Divergence	Year of Mergence / Divergence	Years Distant from 1972-73	Proof of Mergence / Divergence
1	mergence	Business Organizations	Agency	52	1976-77	4	Inferred from timing and subsequent includes statements.
2	mergence	Business Organizations	Corporations	87	2004-05	32	Inferred from timing and subsequent includes statements.
3	mergence	Corporations	Agency	87	2004-05	32	Includes statement.
4	mergence	Civil Procedure	Pleading	52	1976-77	4	Inferred from timing and subsequent includes statements.
5	mergence	Civil Procedure	Practice and Procedure	87	2004-05	32	Inferred from timing and subsequent includes statements.
6	mergence	Pleading	Practice and Procedure	87	2004-05	32	Inferred from timing and subsequent includes statements.
7	divergence & mergence	Clinical Teaching	Legal Clinics	45	1970-71	2	Inferred from timing and subsequent includes statements.
8	mergence	Commercial Law	Sales	52	1976-77	4	Includes statement.
9	partial mergence	Commercial Law	Credit Transactions	52	1976-77	4	Includes statements.
10	partial mergence	Sales	Credit Transactions	52	1976-77	4	Includes statements.
11	mergence	Comparative Law	Roman Law	52	1976-77	4	Includes statement.
12	divergence	Criminal Law	Criminal Procedure	18	1939-40	33	Name of the previous course-subject.
13	mergence	Estate Planning	Decedents' Estates	87	2004-05	32	Includes statement.
14	mergence	Estate Planning	Fiduciary Administration	87	2004-05	32	Inferred from timing and subsequent includes statements.
15	mergence	Estate Planning	Future Interests	87	2004-05	32	Includes statement.
16	mergence	Estate Planning	Trust and Estates	87	2004-05	32	Includes statement.
17	mergence	Decedents' Estates	Fiduciary Administration	52	1976-77	4	Includes statement.
18	mergence	Decedents' Estates	Future Interests	52	1976-77	4	Includes statement.
19	mergence	Decedents' Estates	Trust and Estates	69	1992-93	20	Name of the subsequent course-subject.
20	mergence	Fiduciary Administration	Future Interests	52	1976-77	4	Includes statement.
21	mergence	Fiduciary Administration	Trust and Estates	69	1992-93	20	Includes statement
22	mergence	Future Interests	Trust and Estates	69	1992-93	20	Inferred from timing and subsequent includes statements.
23	divergence & mergence	Legal Research and Writing	Legal Bibliography	52	1976-77	4	Includes statement.
24	divergence	Natural Resources	Water Rights	40	1964-65	8	Name of the previous course-subject.

25	mergence	Personal Property	Real Property	63	1986-87	14	Includes statements.
26	mergence	Damages	Restitution	52	1976-77	4	Includes statements.
27	mergence	Remedies	Damages	52	1976-77	4	Includes statements.
28	mergence	Remedies	Restitution	52	1976-77	4	Includes statements.
29	divergence	Taxation, State and Local	Taxation, Federal	97	1954-55	18	Implicit in the name of the previous course-subject.
30	divergence & mergence	Practice Court	Trial and Appellate Practice	52	1976-77	4	Inferred from timing and subsequent includes statements.

Appendix 13: 2010-11 Divergence that Indicate Similarity

Serial Number	Type of Event	Subject A	Subject B	Directory Year ID of Merger or Divergence	Year of Merger / Divergence	Years Distant from 2010-11	Proof of Merger / Divergence
1	mergence & divergence	Business Organizations	Agency	93	2007-08	3	Includes statements.
2	divergence	Constitutional Law	Civil Rights	48	1972-73	38	Includes statement.
3	divergence	Civil Rights	Employment Discrimination	62	1985-86	25	Includes statement.
4	divergence	Constitutional Law	Employment Discrimination	48	1972-73	38	Inferred from timing and previous includes statements.
5	divergence	Criminal Justice	Criminal Law	85	2003-04	7	Includes statement.
6	divergence	Criminal Law	Criminal Procedure	18	1939-40	71	Name of the previous course-subject.
7	divergence	Criminal Procedure	Juvenile Law	49	1973-74	37	Includes statement.
8	divergence	Criminal Law	Juvenile Law	18	1939-40	71	Includes statement.
9	divergence	Estate Planning	Estates and Trusts	93	2007-08	3	Includes statement and mistake. Estate and Trusts states that it includes "Estate Planning" even though it exists as a separate course-subject.
10	divergence	International Law	Immigration Law	63	1986-87	24	Includes statement.
11	divergence	International Law	Human Rights	87	2004-05	6	Includes statement.
12	divergence	Immigration Law	Human Rights	63	1986-87	24	Inferred from timing and previous includes statements.
13	divergence	Jurisprudence	Law and Literature	87	2004-05	6	Includes statement.
14	divergence	Labor Law	Employee Benefit Plans	65	1988-89	22	Includes statement.
15	divergence	Law and Medicine	Law and Psychiatry	50	1974-75	36	Includes statement.
16	divergence	Law and Medicine	Health Care Law	64	1987-88	23	Includes statement.
17	divergence	Law and Medicine	Bioethics	87	2004-05	6	Includes statement.
18	divergence	Law and Medicine	Forensic Medicine	96	2010-11	0	Includes statement and mistake. Law and Medicine states that it includes "Forensic Medicine" even though it exists as a separate course-subject.
19	divergence	Law and Psychiatry	Health Care Law	50	1974-75	36	Inferred from timing and previous includes statements.
20	divergence	Health Care Law	Bioethics	64	1987-88	23	Inferred from timing and previous includes statements.
21	divergence	Health Care Law	Forensic Medicine	64	1987-88	23	Inferred from timing and previous includes statements.
22	divergence	Law and Psychiatry	Bioethics	50	1974-75	36	Inferred from timing and previous includes statements.
23	divergence	Law and Psychiatry	Forensic Medicine	50	1974-75	36	Inferred from timing and previous includes

							statements.
24	divergence	Bioethics	Forensic Medicine	87	2004-05	6	Inferred from timing and previous includes statements.
25	divergence	Legislation	Legal Drafting	87	2004-05	6	Includes statement.
26	divergence	Natural Resources	Ocean Resources	87	2004-05	6	Includes statement.
27	divergence	Natural Resources	Water Rights	41	1965-66	45	Name of the previous course-subject.
28	divergence	Water Rights	Ocean Resources	41	1965-66	45	Inferred from timing and previous includes statements.
29	divergence	Financial Institutions	Communications Law	64	1987-88	23	Inferred from timing and previous includes statements.
30	divergence	Regulated Industries	Financial Institutions	64	1987-88	23	Includes statement.
31	divergence	Regulated Industries	Communications Law	64	1987-88	23	Includes statement.
32	divergence	Taxation, State and Local	Taxation, Federal	97	1954-55	56	Implicit in the name of the previous course-subject.
33	divergence	Taxation, Federal	Tax Policy	87	2004-05	6	Includes statement.
34	divergence	Taxation, Federal	Estate and Gift Tax	63	1986-87	24	Includes statement.
35	divergence	Taxation, State and Local	Estate and Gift Tax	37	1961-62	49	Implicit in the name of the previous, mother, course-subject.
36	divergence	Taxation, State and Local	Tax Policy	37	1961-62	49	Implicit in the name of the previous, mother, course-subject.
37	divergence	Estate and Gift Tax	Tax Policy	63	1986-87	24	Inferred from timing and previous includes statements.
38	divergence	Torts	Products Liability	52	1976-77	34	Includes statement.
39	divergence	Trial Advocacy	Appellate Practice	87	2004-05	6	Inferred from timing and previous includes statements.
40	divergence	Elder Law	Welfare Law	74	1995-96	15	Inferred from timing and previous includes statements.

Appendix 14: 1931-32 Jackson and Gee Indicated Similar Course-Subjects

Jackson and Gee Group Number	Jackson and Gee Course Category	1931-32 AALS Course-Subject 1	1931-32 AALS Course-Subject 2
1	Administrative and Constitutional Law	Administrative Law	Constitutional Law
4	Basic Property Concepts, Real Estate and Finance	Mortgages	Personal Property
4	Basic Property Concepts, Real Estate and Finance	Mortgages	Real Property
4	Basic Property Concepts, Real Estate and Finance	Personal Property	Real Property
5	Business and Non-Profit Institutions and Finance	Agency	Business Organization
5	Business and Non-Profit Institutions and Finance	Agency	Private Corporations
5	Business and Non-Profit Institutions and Finance	Agency	Corporation Finance
5	Business and Non-Profit Institutions and Finance	Business Organization	Private Corporations
5	Business and Non-Profit Institutions and Finance	Business Organization	Corporation Finance
5	Business and Non-Profit Institutions and Finance	Partnership	Agency
5	Business and Non-Profit Institutions and Finance	Partnership	Business Organization
5	Business and Non-Profit Institutions and Finance	Partnership	Private Corporations
5	Business and Non-Profit Institutions and Finance	Partnership	Corporation Finance
5	Business and Non-Profit Institutions and Finance	Private Corporations	Corporation Finance
6	Commercial Law, Debtor-Creditor Rights and Remedies	Bankruptcy	Bills and Notes
6	Commercial Law, Debtor-Creditor Rights and Remedies	Bankruptcy	Sales
6	Commercial Law, Debtor-Creditor Rights and Remedies	Bills and Notes	Sales
6	Commercial Law, Debtor-Creditor Rights and Remedies	Credit Transactions	Bankruptcy
6	Commercial Law, Debtor-Creditor Rights and Remedies	Credit Transactions	Bills and Notes
6	Commercial Law, Debtor-Creditor Rights and Remedies	Credit Transactions	Sales
6	Commercial Law, Debtor-Creditor Rights and Remedies	Suretyship	Credit Transactions
6	Commercial Law, Debtor-Creditor Rights and Remedies	Suretyship	Bankruptcy
6	Commercial Law, Debtor-Creditor Rights and Remedies	Suretyship	Bills and Notes
6	Commercial Law, Debtor-Creditor Rights and Remedies	Suretyship	Sales
7	Civil Justice, Jurisdiction and Procedure	Code Pleading	Conflict of Laws
7	Civil Justice, Jurisdiction and Procedure	Code Pleading	Pleading
7	Civil Justice, Jurisdiction and Procedure	Code Pleading	Practice
7	Civil Justice, Jurisdiction and Procedure	Conflict of Laws	Pleading
7	Civil Justice, Jurisdiction and Procedure	Conflict of Laws	Practice
7	Civil Justice, Jurisdiction and Procedure	Pleading	Practice
9	Criminal Justice: Law, Process and Procedure	Criminal Law and Procedure	Criminal Law Administration
12	Estates, Trusts, and Future Interests	Future Interests	Trusts
12	Estates, Trusts, and Future Interests	Wills and Administration	Future Interests
12	Estates, Trusts, and Future Interests	Wills and Administration	Trusts
16	International, Foreign and Comparative	Comparative Law	International Law
21	Legal Profession, Ethics and Legal Education	Legal Ethics	Office Practice
22	Legal Theory, Philosophy and History	Introduction to Law	Jurisprudence
22	Legal Theory, Philosophy and History	Introduction to Law	Legal History
22	Legal Theory, Philosophy and History	Introduction to Law	Roman Law
22	Legal Theory, Philosophy and History	Jurisprudence	Legal History
22	Legal Theory, Philosophy and History	Jurisprudence	Roman Law
22	Legal Theory, Philosophy and History	Legal History	Roman Law
24	Natural Resources and the Environment	Mining Law	Oil and Gas
24	Natural Resources and the Environment	Mining Law	Water Rights
24	Natural Resources and the Environment	Oil and Gas	Water Rights
26	Professional Skills, Training and Functions	Legal Bibliography and Research	Practice Court
27	Regulation of Business and Industry	Air Law	Public Utilities
27	Regulation of Business and Industry	Air Law	Trade Regulation
27	Regulation of Business and Industry	Public Utilities	Trade Regulation
28	Remedies	Damages	Equity
28	Remedies	Damages	Quasi-Contract
28	Remedies	Equity	Quasi-Contract

Appendix 15: 1972-73 Jackson and Gee Indicated Similar Course-Subjects

Jackson and Gee Group Number	Jackson and Gee Course Category	1972-73 AALS Course-Subject 1	1972-73 AALS Course-Subject 2
1	Administrative and Constitutional Law	Administrative Law	Constitutional Law
3	Applied Legal Education	Clinical Teaching	Legal Clinics
4	Basic Property Concepts, Real Estate and Finance	Personal Property	Real Property
5	Business and Non-Profit Institutions and Finance	Agency	Business Organizations
5	Business and Non-Profit Institutions and Finance	Agency	Corporations
5	Business and Non-Profit Institutions and Finance	Agency	Corporation Finance
5	Business and Non-Profit Institutions and Finance	Business Organizations	Corporations
5	Business and Non-Profit Institutions and Finance	Business Organizations	Corporation Finance
5	Business and Non-Profit Institutions and Finance	Corporations	Corporation Finance
6	Commercial Law, Debtor-Creditor Rights and Remedies	Commercial Law	Credit Transactions
6	Commercial Law, Debtor-Creditor Rights and Remedies	Commercial Law	Creditors' Rights
6	Commercial Law, Debtor-Creditor Rights and Remedies	Commercial Law	Negotiable Instruments
6	Commercial Law, Debtor-Creditor Rights and Remedies	Commercial Law	Sales
6	Commercial Law, Debtor-Creditor Rights and Remedies	Credit Transactions	Creditors' Rights
6	Commercial Law, Debtor-Creditor Rights and Remedies	Credit Transactions	Negotiable Instruments
6	Commercial Law, Debtor-Creditor Rights and Remedies	Credit Transactions	Sales
6	Commercial Law, Debtor-Creditor Rights and Remedies	Creditors' Rights	Negotiable Instruments
6	Commercial Law, Debtor-Creditor Rights and Remedies	Creditors' Rights	Sales
6	Commercial Law, Debtor-Creditor Rights and Remedies	Negotiable Instruments	Sales
7	Civil Justice, Jurisdiction and Procedure	Civil Procedure	Conflict of Laws
7	Civil Justice, Jurisdiction and Procedure	Civil Procedure	Pleading
7	Civil Justice, Jurisdiction and Procedure	Civil Procedure	Practice and Procedure
7	Civil Justice, Jurisdiction and Procedure	Conflict of Laws	Pleading
7	Civil Justice, Jurisdiction and Procedure	Conflict of Laws	Practice and Procedure
7	Civil Justice, Jurisdiction and Procedure	Pleading	Practice and Procedure
8	Contractual Obligations	Contracts	Government Contracts
9	Criminal Justice: Law, Process and Procedure	Criminal Law	Criminal Procedure
12	Estates, Trusts, and Future Interests	Decedents' Estates	Estate Planning
12	Estates, Trusts, and Future Interests	Decedents' Estates	Fiduciary Administration
12	Estates, Trusts, and Future Interests	Decedents' Estates	Future Interests
12	Estates, Trusts, and Future Interests	Decedents' Estates	Trusts and Estates
12	Estates, Trusts, and Future Interests	Estate Planning	Fiduciary Administration
12	Estates, Trusts, and Future Interests	Estate Planning	Future Interests
12	Estates, Trusts, and Future Interests	Estate Planning	Trusts and Estates
12	Estates, Trusts, and Future Interests	Fiduciary Administration	Future Interests
12	Estates, Trusts, and Future Interests	Fiduciary Administration	Trusts and Estates
12	Estates, Trusts, and Future Interests	Future Interests	Trusts and Estates
13	Family Law	Domestic Relations	Community Property
15	Interdisciplinary and Allied Skills	Accounting	Law and Computers
15	Interdisciplinary and Allied Skills	Accounting	Law and Medicine
15	Interdisciplinary and Allied Skills	Accounting	Law and Science
15	Interdisciplinary and Allied Skills	Accounting	Law and Society
15	Interdisciplinary and Allied Skills	Law and Computers	Law and Medicine
15	Interdisciplinary and Allied Skills	Law and Computers	Law and Science
15	Interdisciplinary and Allied Skills	Law and Computers	Law and Society
15	Interdisciplinary and Allied Skills	Law and Medicine	Law and Science
15	Interdisciplinary and Allied Skills	Law and Medicine	Law and Society
15	Interdisciplinary and Allied Skills	Law and Science	Law and Society

16	International, Foreign and Comparative	Comparative Law	International Law
16	International, Foreign and Comparative	Comparative Law	International Organizations
16	International, Foreign and Comparative	Comparative Law	International Transactions
16	International, Foreign and Comparative	International Law	International Organizations
16	International, Foreign and Comparative	International Law	International Transactions
16	International, Foreign and Comparative	International Organizations	International Transactions
20	Law and Social Issues	Education, Legal Problems of	Law and Poverty
20	Law and Social Issues	Education, Legal Problems of	Social Legislation
20	Law and Social Issues	Law and Poverty	Social Legislation
21	Legal Profession, Ethics and Legal Education	Legal Method	Legal Profession
21	Legal Profession, Ethics and Legal Education	Legal Method	Office Practice
21	Legal Profession, Ethics and Legal Education	Legal Profession	Office Practice
22	Legal Theory, Philosophy and History	Introduction to Law	Jurisprudence
22	Legal Theory, Philosophy and History	Introduction to Law	Legal History
22	Legal Theory, Philosophy and History	Introduction to Law	Legal Process
22	Legal Theory, Philosophy and History	Introduction to Law	Roman Law
22	Legal Theory, Philosophy and History	Jurisprudence	Legal History
22	Legal Theory, Philosophy and History	Jurisprudence	Legal Process
22	Legal Theory, Philosophy and History	Jurisprudence	Roman Law
22	Legal Theory, Philosophy and History	Legal History	Legal Process
22	Legal Theory, Philosophy and History	Legal History	Roman Law
22	Legal Theory, Philosophy and History	Legal Process	Roman Law
24	Natural Resources and the Environment	Environmental Law	Natural Resources
24	Natural Resources and the Environment	Environmental Law	Oil and Gas
24	Natural Resources and the Environment	Environmental Law	Water Rights
24	Natural Resources and the Environment	Natural Resources	Oil and Gas
24	Natural Resources and the Environment	Natural Resources	Water Rights
24	Natural Resources and the Environment	Oil and Gas	Water Rights
26	Professional Skills, Training and Functions	Legal Bibliography	Legal Research and Writing
26	Professional Skills, Training and Functions	Legal Bibliography	Librarian
26	Professional Skills, Training and Functions	Legal Bibliography	Practice Court
26	Professional Skills, Training and Functions	Legal Bibliography	Trial and Appellate Practice
26	Professional Skills, Training and Functions	Legal Research and Writing	Librarian
26	Professional Skills, Training and Functions	Legal Research and Writing	Practice Court
26	Professional Skills, Training and Functions	Legal Research and Writing	Trial and Appellate Practice
26	Professional Skills, Training and Functions	Librarian	Practice Court
26	Professional Skills, Training and Functions	Librarian	Trial and Appellate Practice
26	Professional Skills, Training and Functions	Practice Court	Trial and Appellate Practice
27	Regulation of Business and Industry	Air Law	Antitrust
27	Regulation of Business and Industry	Air Law	Regulated Industrial and Other Activities
27	Regulation of Business and Industry	Air Law	Securities Regulation
27	Regulation of Business and Industry	Air Law	Trade Regulation
27	Regulation of Business and Industry	Antitrust	Regulated Industrial and Other Activities
27	Regulation of Business and Industry	Antitrust	Securities Regulation
27	Regulation of Business and Industry	Antitrust	Trade Regulation
27	Regulation of Business and Industry	Regulated Industrial and Other Activities	Securities Regulation
27	Regulation of Business and Industry	Regulated Industrial and Other Activities	Trade Regulation
27	Regulation of Business and Industry	Securities Regulation	Trade Regulation
28	Remedies	Damages	Equity
28	Remedies	Damages	Remedies
28	Remedies	Damages	Restitution
28	Remedies	Equity	Remedies
28	Remedies	Equity	Restitution
28	Remedies	Remedies	Restitution
29	State and Local Government Law, Policy and Relations	Local Government	Taxation, State and Local
32	Torts and Compensation for Injuries	Torts	Workmen's Compensation

Appendix 16: 2010-11 Jackson and Gee Indicated Similar Course-Subjects

Jackson and Gee Group Number	Jackson and Gee Course Category	2010-11 AALS Course-Subject 1	2010-11 AALS Course-Subject 2
1	Administrative and Constitutional Law	Administrative Law	Constitutional Law
1	Administrative and Constitutional Law	Administrative Law	Civil Rights
1	Administrative and Constitutional Law	Civil Rights	Constitutional Law
1	Administrative and Constitutional Law	Law and Religion	Administrative Law
1	Administrative and Constitutional Law	Law and Religion	Civil Rights
4	Basic Property Concepts, Real Estate and Finance	Property	Real Estate Transactions
5	Business and Non-Profit Institutions and Finance	Agency and Partnership	Business Associations
5	Business and Non-Profit Institutions and Finance	Agency and Partnership	Corporate Finance
5	Business and Non-Profit Institutions and Finance	Business Associations	Corporate Finance
5	Business and Non-Profit Institutions and Finance	Financial Institutions	Agency and Partnership
5	Business and Non-Profit Institutions and Finance	Financial Institutions	Business Associations
5	Business and Non-Profit Institutions and Finance	Financial Institutions	Corporate Finance
6	Commercial Law, Debtor-Creditor Rights and Remedies	Commercial Law	Consumer Law
6	Commercial Law, Debtor-Creditor Rights and Remedies	Commercial Law	Creditors' and Debtors' Rights
6	Commercial Law, Debtor-Creditor Rights and Remedies	Consumer Law	Creditors' and Debtors' Rights
7	Civil Justice, Jurisdiction and Procedure	Civil Procedure	Conflict of Laws
8	Contractual Obligations	Contracts	Government Contracts
9	Criminal Justice: Law, Process and Procedure	Criminal Law	Criminal Procedure
9	Criminal Justice: Law, Process and Procedure	Criminal Law	Criminal Justice
9	Criminal Justice: Law, Process and Procedure	Criminal Procedure	Criminal Justice
10	Discrimination and the Law	Employment Discrimination	Women and the Law
12	Estates, Trusts, and Future Interests	Estates and Trusts	Estate Planning
13	Family Law	Family Law	Community Property
15	Interdisciplinary and Allied Skills	Bioethics	Law and Accounting
15	Interdisciplinary and Allied Skills	Bioethics	Computers and the Law
15	Interdisciplinary and Allied Skills	Bioethics	Law and Medicine
15	Interdisciplinary and Allied Skills	Bioethics	Law and Psychiatry
15	Interdisciplinary and Allied Skills	Bioethics	Law and Science
15	Interdisciplinary and Allied Skills	Bioethics	Law and Social Science
15	Interdisciplinary and Allied Skills	Bioethics	Law and Economics
15	Interdisciplinary and Allied Skills	Bioethics	Forensic Medicine
15	Interdisciplinary and Allied Skills	Computers and the Law	Law and Medicine
15	Interdisciplinary and Allied Skills	Computers and the Law	Law and Psychiatry
15	Interdisciplinary and Allied Skills	Computers and the Law	Law and Science
15	Interdisciplinary and Allied Skills	Computers and the Law	Law and Social Science
15	Interdisciplinary and Allied Skills	Forensic Medicine	Law and Accounting
15	Interdisciplinary and Allied Skills	Forensic Medicine	Computers and the Law
15	Interdisciplinary and Allied Skills	Forensic Medicine	Law and Medicine
15	Interdisciplinary and Allied Skills	Forensic Medicine	Law and Psychiatry
15	Interdisciplinary and Allied Skills	Forensic Medicine	Law and Science
15	Interdisciplinary and Allied Skills	Forensic Medicine	Law and Social Science
15	Interdisciplinary and Allied Skills	Forensic Medicine	Law and Economics
15	Interdisciplinary and Allied Skills	Law and Accounting	Computers and the Law
15	Interdisciplinary and Allied Skills	Law and Accounting	Law and Medicine
15	Interdisciplinary and Allied Skills	Law and Accounting	Law and Psychiatry
15	Interdisciplinary and Allied Skills	Law and Accounting	Law and Science
15	Interdisciplinary and Allied Skills	Law and Accounting	Law and Social Science
15	Interdisciplinary and Allied Skills	Law and Economics	Law and Accounting
15	Interdisciplinary and Allied Skills	Law and Economics	Computers and the Law
15	Interdisciplinary and Allied Skills	Law and Economics	Law and Medicine
15	Interdisciplinary and Allied Skills	Law and Economics	Law and Psychiatry
15	Interdisciplinary and Allied Skills	Law and Economics	Law and Science

15	Interdisciplinary and Allied Skills	Law and Economics	Law and Social Science
15	Interdisciplinary and Allied Skills	Law and Literature	Bioethics
15	Interdisciplinary and Allied Skills	Law and Literature	Law and Accounting
15	Interdisciplinary and Allied Skills	Law and Literature	Computers and the Law
15	Interdisciplinary and Allied Skills	Law and Literature	Law and Medicine
15	Interdisciplinary and Allied Skills	Law and Literature	Law and Psychiatry
15	Interdisciplinary and Allied Skills	Law and Literature	Law and Science
15	Interdisciplinary and Allied Skills	Law and Literature	Law and Social Science
15	Interdisciplinary and Allied Skills	Law and Literature	Law and Economics
15	Interdisciplinary and Allied Skills	Law and Literature	Forensic Medicine
15	Interdisciplinary and Allied Skills	Law and Medicine	Law and Psychiatry
15	Interdisciplinary and Allied Skills	Law and Medicine	Law and Science
15	Interdisciplinary and Allied Skills	Law and Medicine	Law and Social Science
15	Interdisciplinary and Allied Skills	Law and Psychiatry	Law and Science
15	Interdisciplinary and Allied Skills	Law and Psychiatry	Law and Social Science
15	Interdisciplinary and Allied Skills	Law and Science	Law and Social Science
16	International, Foreign and Comparative	Comparative Law	International Law
16	International, Foreign and Comparative	Comparative Law	International Organizations
16	International, Foreign and Comparative	Comparative Law	International Business Transactions
16	International, Foreign and Comparative	Human Rights	Comparative Law
16	International, Foreign and Comparative	Human Rights	International Law
16	International, Foreign and Comparative	Human Rights	International Organizations
16	International, Foreign and Comparative	Human Rights	International Business Transactions
16	International, Foreign and Comparative	International Law	International Organizations
16	International, Foreign and Comparative	International Law	International Business Transactions
16	International, Foreign and Comparative	International Organizations	International Business Transactions
18	Labor-Management Relations	Labor Law	Employee Benefit Plans
20	Law and Social Issues	Critical Race Theory	Health Care Law
20	Law and Social Issues	Critical Race Theory	Elder Law
20	Law and Social Issues	Critical Race Theory	Education Law
20	Law and Social Issues	Critical Race Theory	Poverty Law
20	Law and Social Issues	Critical Race Theory	Welfare Law
20	Law and Social Issues	Education Law	Poverty Law
20	Law and Social Issues	Education Law	Welfare Law
20	Law and Social Issues	Elder Law	Education Law
20	Law and Social Issues	Elder Law	Poverty Law
20	Law and Social Issues	Elder Law	Welfare Law
20	Law and Social Issues	Health Care Law	Elder Law
20	Law and Social Issues	Health Care Law	Education Law
20	Law and Social Issues	Health Care Law	Poverty Law
20	Law and Social Issues	Health Care Law	Welfare Law
20	Law and Social Issues	Poverty Law	Welfare Law
21	Legal Profession, Ethics and Legal Education	Legal Method	Professional Responsibility
21	Legal Profession, Ethics and Legal Education	Legal Method	Law Office Management
21	Legal Profession, Ethics and Legal Education	Professional Responsibility	Law Office Management
22	Legal Theory, Philosophy and History	Introduction to Law	Jurisprudence
22	Legal Theory, Philosophy and History	Introduction to Law	Legal History
22	Legal Theory, Philosophy and History	Jurisprudence	Legal History
24	Natural Resources and the Environment	Energy Law	Ocean Resources
24	Natural Resources and the Environment	Energy Law	Environmental Law
24	Natural Resources and the Environment	Energy Law	Natural Resources
24	Natural Resources and the Environment	Energy Law	Oil and Gas
24	Natural Resources and the Environment	Energy Law	Water Rights
24	Natural Resources and the Environment	Environmental Law	Natural Resources
24	Natural Resources and the Environment	Environmental Law	Oil and Gas
24	Natural Resources and the Environment	Environmental Law	Water Rights
24	Natural Resources and the Environment	Natural Resources	Oil and Gas

24	Natural Resources and the Environment	Natural Resources	Water Rights
24	Natural Resources and the Environment	Ocean Resources	Environmental Law
24	Natural Resources and the Environment	Ocean Resources	Natural Resources
24	Natural Resources and the Environment	Ocean Resources	Oil and Gas
24	Natural Resources and the Environment	Ocean Resources	Water Rights
24	Natural Resources and the Environment	Oil and Gas	Water Rights
26	Professional Skills, Training and Functions	Legal Drafting	Trial Advocacy
26	Professional Skills, Training and Functions	Legal Drafting	Appellate Practice
26	Professional Skills, Training and Functions	Legal Research and Writing	Legal Drafting
26	Professional Skills, Training and Functions	Legal Research and Writing	Trial Advocacy
26	Professional Skills, Training and Functions	Legal Research and Writing	Appellate Practice
26	Professional Skills, Training and Functions	Trial Advocacy	Appellate Practice
27	Regulation of Business and Industry	Antitrust	Regulated Industries
27	Regulation of Business and Industry	Antitrust	Securities Regulation
27	Regulation of Business and Industry	Antitrust	Trade Regulation
27	Regulation of Business and Industry	Aviation and Space Law	Antitrust
27	Regulation of Business and Industry	Aviation and Space Law	Regulated Industries
27	Regulation of Business and Industry	Aviation and Space Law	Securities Regulation
27	Regulation of Business and Industry	Aviation and Space Law	Trade Regulation
27	Regulation of Business and Industry	Communications Law	Aviation and Space Law
27	Regulation of Business and Industry	Communications Law	Antitrust
27	Regulation of Business and Industry	Communications Law	Regulated Industries
27	Regulation of Business and Industry	Communications Law	Securities Regulation
27	Regulation of Business and Industry	Communications Law	Trade Regulation
27	Regulation of Business and Industry	Regulated Industries	Securities Regulation
27	Regulation of Business and Industry	Regulated Industries	Trade Regulation
27	Regulation of Business and Industry	Securities Regulation	Trade Regulation
28	Remedies	Equity	Remedies
29	State and Local Government Law, Policy and Relations	Local Government	Taxation, State and Local
31	Taxation	Estate and Gift Tax	Taxation, Federal
31	Taxation	Estate and Gift Tax	Tax Policy
31	Taxation	Taxation, Corporate	Estate and Gift Tax
31	Taxation	Taxation, Corporate	Taxation, Federal
31	Taxation	Taxation, Corporate	Tax Policy
31	Taxation	Taxation, Federal	Tax Policy
32	Torts and Compensation for Injuries	Torts	Workers' Compensation
32	Torts and Compensation for Injuries	Torts	Products Liability
32	Torts and Compensation for Injuries	Workers' Compensation	Products Liability

Appendix 17: CILP Topic, Member Subjects, and AALS Equivalents

CILP Topic Category Serial Number	CILP Topic Category	CILP Subject Serial Number	CILP Subject	2010-11 AALS Equivalent Subject	1972-73 AALS Equivalent Subject	1931-32 AALS Equivalent Subject
1	Banking and Finance Group	1	ACCOUNTING	Law and Accounting	Accounting	NA
1	Banking and Finance Group	9	BANKING AND FINANCE	Financial Institutions	NA	NA
1	Banking and Finance Group	14	COMMERCIAL LAW	Commercial Law	Commercial Law	NA
1	Banking and Finance Group	19	CONSUMER PROTECTION LAW	Consumer Law	NA	NA
1	Banking and Finance Group	20	CONTRACTS	Contracts	Contracts	Contracts
1	Banking and Finance Group	26	ECONOMICS	Law and Economics	NA	NA
1	Banking and Finance Group	32	ESTATES AND TRUSTS	Estates and Trusts	Trusts and Estates	Trusts
1	Banking and Finance Group	83	SECURED TRANSACTIONS	Commercial Law	Credit Transactions	Suretyship
1	Banking and Finance Group	84	SECURITIES LAW	Securities Regulation	Securities Regulation	NA
2	Bankruptcy Group	10	BANKRUPTCY LAW	Creditors' and Debtors' Rights	Creditors' Rights	Bankruptcy
2	Bankruptcy Group	19	CONSUMER PROTECTION LAW	Consumer Law	NA	NA
3	Corporate and Securities Group	4	AGENCY	Agency and Partnership	Agency	Agency
3	Corporate and Securities Group	14	COMMERCIAL LAW	Commercial Law	Commercial Law	NA
3	Corporate and Securities Group	21	CORPORATIONS	Business Associations	Corporations	Private Corporations
3	Corporate and Securities Group	26	ECONOMICS	Law and Economics	NA	NA
3	Corporate and Securities Group	68	ORGANIZATIONS	Business Associations	Business Organizations	Business Organization
3	Corporate and Securities Group	69	PARTNERSHIPS	Agency and Partnership	Business Organizations	Partnership
3	Corporate and Securities Group	84	SECURITIES LAW	Securities Regulation	Securities Regulation	NA
4	Criminal Law and Procedure Group	23	CRIMINAL LAW AND PROCEDURE	Criminal Law	Criminal Law	Criminal Law and Procedure
4	Criminal Law and Procedure Group	23	CRIMINAL LAW AND PROCEDURE	Criminal Procedure	Criminal Procedure	Criminal Law and Procedure
4	Criminal Law and Procedure Group	33	EVIDENCE	Evidence	Evidence	Evidence
4	Criminal Law and Procedure Group	55	LAW ENFORCEMENT AND CORRECTIONS	Criminal Justice	Criminal Law	Criminal Law Administration
5	Environmental Law Group	2	ADMINISTRATIVE LAW	Administrative Law	Administrative Law	Administrative Law
5	Environmental Law Group	5	AGRICULTURE LAW	Agricultural Law	NA	NA
5	Environmental Law Group	31	ENVIRONMENTAL LAW	Environmental Law	Environmental Law	NA
5	Environmental Law Group	53	LAND USE PLANNING	Land Use Planning	Land Use	NA
5	Environmental Law Group	66	NATURAL RESOURCES LAW	Natural Resources	Natural Resources	Mining Law
5	Environmental Law	67	OIL, GAS, AND	Oil and Gas	Oil and Gas	Oil and Gas

	Group		MINERAL LAW			
5	Environmental Law Group	96	WATER LAW	Water Rights	Water Rights	Water Rights
6	Estate Planning and Probate Group	28	ELDER LAW	Elder Law	NA	NA
6	Estate Planning and Probate Group	32	ESTATES AND TRUSTS	Estates and Trusts	Trusts and Estates	Trusts
6	Estate Planning and Probate Group	32	ESTATES AND TRUSTS	Estates and Trusts	Trusts and Estates	Wills and Administration
6	Estate Planning and Probate Group	75	PROPERTY--PERSONAL AND REAL	Property	Personal Property	Personal Property
6	Estate Planning and Probate Group	75	PROPERTY--PERSONAL AND REAL	Property	Real Property	Real Property
6	Estate Planning and Probate Group	90	TAXATION--FEDERAL INCOME	Taxation, Federal	Taxation, Federal	Taxation
7	Family Law Group	25	DOMESTIC RELATIONS	Family Law	Domestic Relations	Domestic Relations
7	Family Law Group	51	JUVENILES	Juvenile Law	Criminal Procedure	NA
7	Family Law Group	75	PROPERTY--PERSONAL AND REAL	Property	Personal Property	Personal Property
7	Family Law Group	75	PROPERTY--PERSONAL AND REAL	Property	Real Property	Real Property
7	Family Law Group	85	SEXUALITY AND THE LAW	NA	NA	NA
7	Family Law Group	97	WOMEN	Women and the Law	Women and the Law	NA
8	Health Care Group	35	FOOD AND DRUG LAW	Trade Regulation	Trade Regulation	Trade Regulation
8	Health Care Group	39	HEALTH LAW AND POLICY	Health Care Law	NA	NA
8	Health Care Group	44	INSURANCE LAW	Insurance Law	Insurance	Insurance
8	Health Care Group	63	MEDICAL JURISPRUDENCE	Law and Medicine	Law and Medicine	NA
8	Health Care Group	76	PSYCHOLOGY AND PSYCHIATRY	Law and Psychiatry	NA	NA
9	International and Comparative Law Group	6	AIR AND SPACE LAW	Aviation and Space Law	Air Law	Air Law
9	International and Comparative Law Group	12	CIVIL LAW	Comparative Law	Comparative Law	Comparative Law
9	International and Comparative Law Group	16	COMPARATIVE & FOREIGN LAW	Comparative Law	Comparative Law	Comparative Law
9	International and Comparative Law Group	41	HUMAN RIGHTS LAW	Human Rights	International Law	International Law
9	International and Comparative Law Group	46	INTERNATIONAL LAW	International Law	International Law	International Law
9	International and Comparative Law Group	47	INTERNATIONAL TRADE	International Business Transactions	International Transactions	NA
9	International and Comparative Law Group	56	LAW OF THE SEA	Admiralty	Admiralty	Admiralty
9	International and Comparative Law Group	92	TAXATION--TRANSNATIONAL	International Business Transactions	International Transactions	NA
10	Labor and Employment Group	29	EMPLOYMENT PRACTICE	Employment Discrimination	NA	NA
10	Labor and Employment Group	52	LABOR LAW	Labor Law	Labor Law	Labor Law
10	Labor and Employment Group	79	RETIREMENT SECURITY	Employee Benefit Plans	NA	NA
10	Labor and Employment Group	98	WORKERS' COMPENSATION LAW	Workers' Compensation	Workmen's Compensation	NA
11	Taxation Group	1	ACCOUNTING	Law and Accounting	Accounting	NA
11	Taxation Group	90	TAXATION--FEDERAL INCOME	Taxation, Federal	Taxation, Federal	Taxation

11	Taxation Group	91	TAXATION--STATE AND LOCAL	Taxation, State and Local	Taxation, State and Local	Taxation
11	Taxation Group	92	TAXATION--TRANSNATIONAL	International Business Transactions	International Transactions	NA
12	Technology Group	6	AIR AND SPACE LAW	Aviation and Space Law	Air Law	Air Law
12	Technology Group	15	COMMUNICATIONS LAW	Communications Law	NA	NA
12	Technology Group	45	INTELLECTUAL PROPERTY LAW	Intellectual Property	Patents, Copyrights, Trademarks	Patent Law
12	Technology Group	81	SCIENCE AND TECHNOLOGY	Law and Science	Law and Science	NA
12	Technology Group	94	TRADE REGULATION	Trade Regulation	Trade Regulation	Trade Regulation

Appendix 18: 1931-32 CILP Indicated Similar Course-Subjects

Serial Number	CILP Super Grouping Serial Number	CILP Super Grouping	1931-32 Subject A	1931-32 Subject B
1	5	Environmental Law Group	Administrative Law	Mining Law
2	5	Environmental Law Group	Administrative Law	Oil and Gas
3	5	Environmental Law Group	Administrative Law	Water Rights
4	9	International and Comparative Law Group	Admiralty	Air Law
5	9	International and Comparative Law Group	Admiralty	Comparative Law
6	9	International and Comparative Law Group	Admiralty	International Law
7	3	Corporate and Securities Group	Agency	Business Organization
8	3	Corporate and Securities Group	Agency	Partnership
9	3	Corporate and Securities Group	Agency	Private Corporations
10	9	International and Comparative Law Group	Air Law	Comparative Law
11	9	International and Comparative Law Group	Air Law	International Law
12	12	Technology Group	Air Law	Patent Law
13	12	Technology Group	Air Law	Trade Regulation
14	3	Corporate and Securities Group	Business Organization	Private Corporations
15	9	International and Comparative Law Group	Comparative Law	International Law
16	1	Banking and Finance Group	Contracts	Suretyship
17	1	Banking and Finance Group	Contracts	Trusts
18	4	Criminal Law and Procedure Group	Criminal Law Administration	Criminal Law and Procedure
19	4	Criminal Law and Procedure Group	Criminal Law Administration	Evidence
20	4	Criminal Law and Procedure Group	Criminal Law and Procedure	Evidence
21	7	Family Law Group	Domestic Relations	Personal Property
22	7	Family Law Group	Domestic Relations	Real Property
23	8	Health Care Group	Insurance	Trade Regulation
24	5	Environmental Law Group	Mining Law	Oil and Gas
25	5	Environmental Law Group	Mining Law	Water Rights
26	5	Environmental Law Group	Oil and Gas	Water Rights
27	3	Corporate and Securities Group	Partnership	Business Organization
28	3	Corporate and Securities Group	Partnership	Private Corporations
29	12	Technology Group	Patent Law	Trade Regulation
30	6 & 7	Estate Planning and Probate Group & Family Law Group	Personal Property	Real Property
31	6	Estate Planning and Probate Group	Personal Property	Taxation
32	6	Estate Planning and Probate Group	Personal Property	Trusts
33	6	Estate Planning and Probate Group	Personal Property	Wills and Administration
34	6	Estate Planning and Probate Group	Real Property	Taxation
35	6	Estate Planning and Probate Group	Real Property	Trusts
36	6	Estate Planning and Probate Group	Real Property	Wills and Administration
37	1	Banking and Finance Group	Suretyship	Trusts
38	6	Estate Planning and Probate Group	Taxation	Trusts
39	6	Estate Planning and Probate Group	Taxation	Wills and Administration
40	6	Estate Planning and Probate Group	Trusts	Wills and Administration

Appendix 19: 1972-73 CILP Indicated Similar Course-Subjects

Serial Number	CILP Super Grouping Serial Number	CILP Super Grouping	1972-73 Subject A	1972-73 Subject B
1	1	Banking and Finance Group	Accounting	Commercial Law
2	1	Banking and Finance Group	Accounting	Contracts
3	1	Banking and Finance Group	Accounting	Credit Transactions
4	11	Taxation Group	Accounting	International Transactions
5	1	Banking and Finance Group	Accounting	Securities Regulation
6	11	Taxation Group	Accounting	Taxation, Federal
7	11	Taxation Group	Accounting	Taxation, State and Local
8	1	Banking and Finance Group	Accounting	Trusts and Estates
9	5	Environmental Law Group	Administrative Law	Environmental Law
10	5	Environmental Law Group	Administrative Law	Land Use
11	5	Environmental Law Group	Administrative Law	Natural Resources
12	5	Environmental Law Group	Administrative Law	Oil and Gas
13	5	Environmental Law Group	Administrative Law	Water Rights
14	9	International and Comparative Law Group	Admiralty	Air Law
15	9	International and Comparative Law Group	Admiralty	Comparative Law
16	9	International and Comparative Law Group	Admiralty	International Law
17	9	International and Comparative Law Group	Admiralty	International Transactions
18	3	Corporate and Securities Group	Agency	Business Organizations
19	3	Corporate and Securities Group	Agency	Commercial Law
20	3	Corporate and Securities Group	Agency	Corporations
21	3	Corporate and Securities Group	Agency	Securities Regulation
22	9	International and Comparative Law Group	Air Law	Comparative Law
23	9	International and Comparative Law Group	Air Law	International Law
24	9	International and Comparative Law Group	Air Law	International Transactions
25	12	Technology Group	Air Law	Law and Science
26	12	Technology Group	Air Law	Patents, Copyrights, Trademarks
27	12	Technology Group	Air Law	Trade Regulation
28	3	Corporate and Securities Group	Business Organizations	Commercial Law
29	3	Corporate and Securities Group	Business Organizations	Corporations
30	3	Corporate and Securities Group	Business Organizations	Securities Regulation
31	1	Banking and Finance Group	Commercial Law	Contracts
32	3	Corporate and Securities Group	Commercial Law	Corporations
33	1	Banking and Finance Group	Commercial Law	Credit Transactions
34	1 & 3	Banking and Finance Group & Corporate and Securities Group	Commercial Law	Securities Regulation
35	1	Banking and Finance Group	Commercial Law	Trusts and Estates
36	9	International and Comparative Law Group	Comparative Law	International Law
37	9	International and Comparative Law Group	Comparative Law	International Transactions
38	1	Banking and Finance Group	Contracts	Credit Transactions
39	1	Banking and Finance Group	Contracts	Securities Regulation
40	1	Banking and Finance Group	Contracts	Trusts and Estates
41	3	Corporate and Securities Group	Corporations	Securities Regulation
42	1	Banking and Finance Group	Credit Transactions	Securities Regulation
43	1	Banking and Finance Group	Credit Transactions	Trusts and Estates
44	4	Criminal Law and Procedure Group	Criminal Law	Criminal Procedure
45	4	Criminal Law and Procedure Group	Criminal Law	Evidence
46	7	Family Law Group	Criminal Procedure	Domestic Relations
47	4	Criminal Law and Procedure Group	Criminal Procedure	Evidence
48	7	Family Law Group	Criminal Procedure	Personal Property
49	7	Family Law Group	Criminal Procedure	Real Property
50	7	Family Law Group	Criminal Procedure	Women and the Law
51	7	Family Law Group	Domestic Relations	Personal Property
52	7	Family Law Group	Domestic Relations	Real Property

53	7	Family Law Group	Domestic Relations	Women and the Law
54	5	Environmental Law Group	Environmental Law	Land Use
55	5	Environmental Law Group	Environmental Law	Natural Resources
56	5	Environmental Law Group	Environmental Law	Oil and Gas
57	5	Environmental Law Group	Environmental Law	Water Rights
58	8	Health Care Group	Insurance	Law and Medicine
59	8	Health Care Group	Insurance	Trade Regulation
60	9	International and Comparative Law Group	International Law	International Transactions
61	11	Taxation Group	International Transactions	Taxation, Federal
62	11	Taxation Group	International Transactions	Taxation, State and Local
63	10	Labor and Employment Group	Labor Law	Workmen's Compensation
64	5	Environmental Law Group	Land Use	Natural Resources
65	5	Environmental Law Group	Land Use	Oil and Gas
66	5	Environmental Law Group	Land Use	Water Rights
67	8	Health Care Group	Law and Medicine	Trade Regulation
68	12	Technology Group	Law and Science	Patents, Copyrights, Trademarks
69	12	Technology Group	Law and Science	Trade Regulation
70	5	Environmental Law Group	Natural Resources	Oil and Gas
71	5	Environmental Law Group	Natural Resources	Water Rights
72	5	Environmental Law Group	Oil and Gas	Water Rights
73	12	Technology Group	Patents, Copyrights, Trademarks	Trade Regulation
74	6 & 7	Estate Planning and Probate Group & Family Law Group	Personal Property	Real Property
75	6	Estate Planning and Probate Group	Personal Property	Taxation, Federal
76	6	Estate Planning and Probate Group	Personal Property	Trusts and Estates
77	7	Family Law Group	Personal Property	Women and the Law
78	6	Estate Planning and Probate Group	Real Property	Taxation, Federal
79	6	Estate Planning and Probate Group	Real Property	Trusts and Estates
80	7	Family Law Group	Real Property	Women and the Law
81	1	Banking and Finance Group	Securities Regulation	Trusts and Estates
82	11	Taxation Group	Taxation, Federal	Taxation, State and Local
83	6	Estate Planning and Probate Group	Taxation, Federal	Trusts and Estates

Appendix 20: 2010-11 CILP Indicated Similar Course-Subjects

Serial Number	CILP Super Grouping Serial Number	CILP Super Grouping	2010-11 Subject A	2010-11 Subject B
1	5	Environmental Law Group	Administrative Law	Agricultural Law
2	5	Environmental Law Group	Administrative Law	Environmental Law
3	5	Environmental Law Group	Administrative Law	Land Use Planning
4	5	Environmental Law Group	Administrative Law	Natural Resources
5	5	Environmental Law Group	Administrative Law	Oil and Gas
6	5	Environmental Law Group	Administrative Law	Water Rights
7	9	International and Comparative Law Group	Admiralty	Aviation and Space Law
8	9	International and Comparative Law Group	Admiralty	Comparative Law
9	9	International and Comparative Law Group	Admiralty	Human Rights
10	9	International and Comparative Law Group	Admiralty	International Business Transactions
11	9	International and Comparative Law Group	Admiralty	International Law
12	3	Corporate and Securities Group	Agency and Partnership	Business Associations
13	3	Corporate and Securities Group	Agency and Partnership	Commercial Law
14	3	Corporate and Securities Group	Agency and Partnership	Law and Economics
15	3	Corporate and Securities Group	Agency and Partnership	Securities Regulation
16	5	Environmental Law Group	Agricultural Law	Environmental Law
17	5	Environmental Law Group	Agricultural Law	Land Use Planning
18	5	Environmental Law Group	Agricultural Law	Natural Resources
19	5	Environmental Law Group	Agricultural Law	Oil and Gas
20	5	Environmental Law Group	Agricultural Law	Water Rights
21	12	Technology Group	Aviation and Space Law	Communications Law
22	9	International and Comparative Law Group	Aviation and Space Law	Comparative Law
23	9	International and Comparative Law Group	Aviation and Space Law	Human Rights
24	12	Technology Group	Aviation and Space Law	Intellectual Property
25	9	International and Comparative Law Group	Aviation and Space Law	International Business Transactions
26	9	International and Comparative Law Group	Aviation and Space Law	International Law
27	12	Technology Group	Aviation and Space Law	Law and Science
28	12	Technology Group	Aviation and Space Law	Trade Regulation
29	3	Corporate and Securities Group	Business Associations	Commercial Law
30	3	Corporate and Securities Group	Business Associations	Law and Economics
31	3	Corporate and Securities Group	Business Associations	Securities Regulation
32	1	Banking and Finance Group	Commercial Law	Consumer Law
33	1	Banking and Finance Group	Commercial Law	Contracts
34	1	Banking and Finance Group	Commercial Law	Estates and Trusts
35	1	Banking and Finance Group	Commercial Law	Financial Institutions
36	1	Banking and Finance Group	Commercial Law	Law and Accounting
37	1 & 3	Banking and Finance Group & Corporate and Securities Group	Commercial Law	Law and Economics
38	1 & 3	Banking and Finance Group & Corporate and Securities Group	Commercial Law	Securities Regulation
39	12	Technology Group	Communications Law	Intellectual Property
40	12	Technology Group	Communications Law	Law and Science
41	12	Technology Group	Communications Law	Trade Regulation
42	9	International and Comparative Law Group	Comparative Law	Human Rights
43	9	International and Comparative Law Group	Comparative Law	International Business Transactions
44	9	International and Comparative Law Group	Comparative Law	International Law
45	1	Banking and Finance Group	Consumer Law	Contracts
46	2	Bankruptcy Group	Consumer Law	Creditors' and Debtors' Rights
47	1	Banking and Finance Group	Consumer Law	Estates and Trusts
48	1	Banking and Finance Group	Consumer Law	Financial Institutions
49	1	Banking and Finance Group	Consumer Law	Law and Accounting
50	1	Banking and Finance Group	Consumer Law	Law and Economics
51	1	Banking and Finance Group	Consumer Law	Securities Regulation

52	1	Banking and Finance Group	Contracts	Estates and Trusts
53	1	Banking and Finance Group	Contracts	Financial Institutions
54	1	Banking and Finance Group	Contracts	Law and Accounting
55	1	Banking and Finance Group	Contracts	Law and Economics
56	1	Banking and Finance Group	Contracts	Securities Regulation
57	4	Criminal Law and Procedure Group	Criminal Justice	Criminal Law
58	4	Criminal Law and Procedure Group	Criminal Justice	Criminal Procedure
59	4	Criminal Law and Procedure Group	Criminal Justice	Evidence
60	4	Criminal Law and Procedure Group	Criminal Law	Criminal Procedure
61	4	Criminal Law and Procedure Group	Criminal Law	Evidence
62	4	Criminal Law and Procedure Group	Criminal Procedure	Evidence
63	6	Estate Planning and Probate Group	Elder Law	Estates and Trusts
64	6	Estate Planning and Probate Group	Elder Law	Property
65	6	Estate Planning and Probate Group	Elder Law	Taxation, Federal
66	10	Labor and Employment Group	Employee Benefit Plans	Employment Discrimination
67	10	Labor and Employment Group	Employee Benefit Plans	Labor Law
68	10	Labor and Employment Group	Employee Benefit Plans	Workers' Compensation
69	10	Labor and Employment Group	Employment Discrimination	Labor Law
70	10	Labor and Employment Group	Employment Discrimination	Workers' Compensation
71	5	Environmental Law Group	Environmental Law	Land Use Planning
72	5	Environmental Law Group	Environmental Law	Natural Resources
73	5	Environmental Law Group	Environmental Law	Oil and Gas
74	5	Environmental Law Group	Environmental Law	Water Rights
75	1	Banking and Finance Group	Estates and Trusts	Financial Institutions
76	1	Banking and Finance Group	Estates and Trusts	Law and Accounting
77	1	Banking and Finance Group	Estates and Trusts	Law and Economics
78	6	Estate Planning and Probate Group	Estates and Trusts	Property
79	1	Banking and Finance Group	Estates and Trusts	Securities Regulation
80	6	Estate Planning and Probate Group	Estates and Trusts	Taxation, Federal
81	7	Family Law Group	Family Law	Juvenile Law
82	7	Family Law Group	Family Law	Property
83	7	Family Law Group	Family Law	Women and the Law
84	1	Banking and Finance Group	Financial Institutions	Law and Accounting
85	1	Banking and Finance Group	Financial Institutions	Law and Economics
86	1	Banking and Finance Group	Financial Institutions	Securities Regulation
87	8	Health Care Group	Health Care Law	Insurance Law
88	8	Health Care Group	Health Care Law	Law and Medicine
89	8	Health Care Group	Health Care Law	Law and Psychiatry
90	8	Health Care Group	Health Care Law	Trade Regulation
91	9	International and Comparative Law Group	Human Rights	International Business Transactions
92	9	International and Comparative Law Group	Human Rights	International Law
93	8	Health Care Group	Insurance Law	Law and Medicine
94	8	Health Care Group	Insurance Law	Law and Psychiatry
95	8	Health Care Group	Insurance Law	Trade Regulation
96	12	Technology Group	Intellectual Property	Law and Science
97	12	Technology Group	Intellectual Property	Trade Regulation
98	9	International and Comparative Law Group	International Business Transactions	International Law
99	11	Taxation Group	International Business Transactions	Law and Accounting
100	11	Taxation Group	International Business Transactions	Taxation, Federal
101	11	Taxation Group	International Business Transactions	Taxation, State and Local
102	7	Family Law Group	Juvenile Law	Property
103	7	Family Law Group	Juvenile Law	Women and the Law
104	10	Labor and Employment Group	Labor Law	Workers' Compensation
105	5	Environmental Law Group	Land Use Planning	Natural Resources
106	5	Environmental Law Group	Land Use Planning	Oil and Gas
107	5	Environmental Law Group	Land Use Planning	Water Rights
108	1	Banking and Finance Group	Law and Accounting	Law and Economics

109	1	Banking and Finance Group	Law and Accounting	Securities Regulation
110	11	Taxation Group	Law and Accounting	Taxation, Federal
111	11	Taxation Group	Law and Accounting	Taxation, State and Local
112	1 & 3	Banking and Finance Group & Corporate and Securities Group	Law and Economics	Securities Regulation
113	8	Health Care Group	Law and Medicine	Law and Psychiatry
114	8	Health Care Group	Law and Medicine	Trade Regulation
115	8	Health Care Group	Law and Psychiatry	Trade Regulation
116	12	Technology Group	Law and Science	Trade Regulation
117	5	Environmental Law Group	Natural Resources	Oil and Gas
118	5	Environmental Law Group	Natural Resources	Water Rights
119	5	Environmental Law Group	Oil and Gas	Water Rights
120	6	Estate Planning and Probate Group	Property	Taxation, Federal
121	7	Family Law Group	Property	Women and the Law
122	11	Taxation Group	Taxation, Federal	Taxation, State and Local

Appendix 21: 1931-32 Card Sort Indicated Similar Course-Subjects

Serial Number	1931-32 Course-Subject ID	1931-32 AALS Course-Subject 1	1931-32 Course-Subject ID	1931-32 AALS Course-Subject 2
1	1	Administrative Law	48	Public Utilities
2	3	Agency	6	Bills and Notes
3	3	Agency	7	Business Organization
4	3	Agency	15	Corporation Finance
5	5	Bankruptcy	6	Bills and Notes
6	5	Bankruptcy	7	Business Organization
7	5	Bankruptcy	15	Corporation Finance
8	6	Bills and Notes	7	Business Organization
9	6	Bills and Notes	15	Corporation Finance
10	6	Bills and Notes	41	Partnership
11	7	Business Organization	15	Corporation Finance
12	7	Business Organization	41	Partnership
13	8	Code Pleading	11	Conflict of Laws
14	8	Code Pleading	23	Evidence
15	9	Common Law Pleading	11	Conflict of Laws
16	9	Common Law Pleading	23	Evidence
17	10	Comparative Law	28	International Law
18	11	Conflict of Laws	470	Pleading
19	12	Constitutional Law	31	Labor Law
20	15	Corporation Finance	41	Partnership
21	17	Criminal Law Administration	18	Criminal Law and Procedure
22	18	Criminal Law and Procedure	20	Domestic Relations
23	21	Equity	49	Quasi-Contract
24	22	Equity Pleading & Practice	49	Quasi-Contract
25	23	Evidence	470	Pleading
26	30	Jurisprudence	34	Legal History
27	32	Legal Bibliography and Research	46	Practice Court
28	33	Legal Ethics	39	Office Practice
29	35	Legislation	38	Municipal Corporations
30	36	Mining Law	40	Oil and Gas
31	36	Mining Law	58	Water Rights
32	37	Mortgages	50	Real Property
33	37	Mortgages	57	Trusts
34	37	Mortgages	59	Wills and Administration
35	39	Office Practice	46	Practice Court
36	40	Oil and Gas	58	Water Rights
37	43	Personal Property	37	Mortgages
38	43	Personal Property	57	Trusts
39	43	Personal Property	59	Wills and Administration
40	50	Real Property	57	Trusts
41	50	Real Property	59	Wills and Administration
42	57	Trusts	59	Wills and Administration

Appendix 22: 1972-73 Card Sort Indicated Similar Course-Subjects

Serial Number	1972-73 Course-Subject ID	1972-73 AALS Course-Subject 1	1972-73 Course-Subject ID	1972-73 AALS Course-Subject 2
1	285	Administrative Law	305	Regulated Industrial and Other Activities
2	3	Agency	209	Business Organizations
3	3	Agency	237	Commercial Law
4	3	Agency	267	Corporation Finance
5	3	Agency	257	Negotiable Instruments
6	3	Agency	296	Securities Regulation
7	236	Antitrust	267	Corporation Finance
8	236	Antitrust	296	Securities Regulation
9	173	Arbitration	61	Civil Procedure
10	173	Arbitration	280	Trial and Appellate Practice
11	209	Business Organizations	237	Commercial Law
12	209	Business Organizations	267	Corporation Finance
13	209	Business Organizations	286	Creditors' Rights
14	209	Business Organizations	257	Negotiable Instruments
15	209	Business Organizations	296	Securities Regulation
16	61	Civil Procedure	11	Conflict of Laws
17	61	Civil Procedure	184	Evidence
18	61	Civil Procedure	241	Federal Jurisdiction
19	297	Clinical Teaching	158	Legal Method
20	297	Clinical Teaching	292	Legal Research and Writing
21	297	Clinical Teaching	254	Legislation
22	297	Clinical Teaching	280	Trial and Appellate Practice
23	237	Commercial Law	267	Corporation Finance
24	237	Commercial Law	286	Creditors' Rights
25	237	Commercial Law	257	Negotiable Instruments
26	237	Commercial Law	296	Securities Regulation
27	103	Community Property	181	Decedents' Estates
28	103	Community Property	182	Domestic Relations
29	103	Community Property	140	Trusts and Estates
30	265	Comparative Law	283	International Law
31	265	Comparative Law	243	International Organizations
32	265	Comparative Law	284	International Transactions
33	176	Constitutional Law	247	Labor Law
34	176	Constitutional Law	169	Workmen's Compensation
35	267	Corporation Finance	286	Creditors' Rights
36	267	Corporation Finance	247	Labor Law
37	267	Corporation Finance	257	Negotiable Instruments
38	267	Corporation Finance	296	Securities Regulation
39	286	Creditors' Rights	257	Negotiable Instruments
40	286	Creditors' Rights	296	Securities Regulation
41	288	Criminal Law	269	Criminal Procedure
42	269	Criminal Procedure	182	Domestic Relations
43	181	Decedents' Estates	120	Estate Planning
44	181	Decedents' Estates	198	Personal Property
45	181	Decedents' Estates	259	Real Property
46	289	Environmental Law	294	Natural Resources
47	289	Environmental Law	295	Oil and Gas
48	289	Environmental Law	58	Water Rights
49	240	Equity	132	Remedies
50	120	Estate Planning	198	Personal Property
51	120	Estate Planning	259	Real Property
52	120	Estate Planning	140	Trusts and Estates
53	241	Federal Jurisdiction	81	Judicial Administration
54	283	International Law	243	International Organizations

55	283	International Law	284	International Transactions
56	243	International Organizations	284	International Transactions
57	284	International Transactions	262	Trade Regulation
58	81	Judicial Administration	280	Trial and Appellate Practice
59	274	Jurisprudence	191	Law and Science
60	274	Jurisprudence	251	Law and Society
61	274	Jurisprudence	194	Legal History
62	247	Labor Law	169	Workmen's Compensation
63	290	Land Use	259	Real Property
64	290	Land Use	58	Water Rights
65	249	Law and Medicine	191	Law and Science
66	249	Law and Medicine	251	Law and Society
67	250	Law and Poverty	135	Social Legislation
68	191	Law and Science	251	Law and Society
69	158	Legal Method	292	Legal Research and Writing
70	158	Legal Method	254	Legislation
71	252	Legal Profession	197	Office Practice
72	292	Legal Research and Writing	254	Legislation
73	292	Legal Research and Writing	280	Trial and Appellate Practice
74	254	Legislation	278	Local Government
75	254	Legislation	197	Office Practice
76	254	Legislation	280	Trial and Appellate Practice
77	294	Natural Resources	295	Oil and Gas
78	294	Natural Resources	58	Water Rights
79	257	Negotiable Instruments	296	Securities Regulation
80	197	Office Practice	280	Trial and Appellate Practice
81	295	Oil and Gas	58	Water Rights
82	198	Personal Property	140	Trusts and Estates
83	259	Real Property	140	Trusts and Estates
84	234	Taxation, Federal	138	Taxation, State and Local

Appendix 23: 2010-11 Card Sort Indicated Similar Course-Subjects

Serial Number	2010-11 Course-Subject ID	Card Sort Course-Subject ID	2010-11 AALS Course-Subject 1	2010-11 Course-Subject ID	Card Sort Course-Subject ID	2010-11 AALS Course-Subject 2	Number of Human Subjects Making Association (out of 18 possible)
1	417	7	Appellate Practice	408	5	Alternative Dispute Resolution	11
2	419	10	Business Associations	314	3	Agency and Partnership	15
3	366	11	Civil Procedure	408	5	Alternative Dispute Resolution	10
4	368	13	Clinical Teaching	417	7	Appellate Practice	10
5	320	14	Commercial Law	314	3	Agency and Partnership	10
6	320	14	Commercial Law	419	10	Business Associations	12
7	11	19	Conflict of Laws	366	11	Civil Procedure	10
8	372	23	Corporate Finance	314	3	Agency and Partnership	14
9	372	23	Corporate Finance	416	6	Antitrust	10
10	372	23	Corporate Finance	419	10	Business Associations	17
11	372	23	Corporate Finance	320	14	Commercial Law	13
12	424	24	Creditors' and Debtors' Rights	419	10	Business Associations	10
13	424	24	Creditors' and Debtors' Rights	320	14	Commercial Law	14
14	424	24	Creditors' and Debtors' Rights	372	23	Corporate Finance	10
15	87	26	Criminal Law	373	25	Criminal Justice	16
16	88	27	Criminal Procedure	373	25	Criminal Justice	17
17	88	27	Criminal Procedure	87	26	Criminal Law	17
18	426	29	Critical Race Theory	425	28	Critical Legal Studies	17
19	427	32	Elder Law	634	30	Disability Law	12
20	375	34	Employment Discrimination	428	33	Employee Benefit Plans	12
21	467	35	Energy Law	315	4	Agricultural Law	10
22	429	37	Environmental Law	315	4	Agricultural Law	12
23	429	37	Environmental Law	467	35	Energy Law	16
24	432	41	Estates and Trusts	103	16	Community Property	10
25	432	41	Estates and Trusts	120	40	Estate Planning	15
26	23	42	Evidence	366	11	Civil Procedure	13
27	433	43	Family Law	103	16	Community Property	11
28	378	44	Federal Courts	366	11	Civil Procedure	10
29	434	45	Feminist Legal Theory	425	28	Critical Legal Studies	17
30	434	45	Feminist Legal Theory	426	29	Critical Race Theory	17
31	435	46	Financial Institutions	314	3	Agency and Partnership	10
32	435	46	Financial Institutions	419	10	Business Associations	13
33	435	46	Financial Institutions	320	14	Commercial Law	13
34	435	46	Financial Institutions	372	23	Corporate Finance	13
35	435	46	Financial Institutions	424	24	Creditors' and Debtors' Rights	11
36	468	47	Forensic Medicine	418	9	Bioethics	13
37	439	54	International Business Transactions	370	17	Comparative Law	11
38	440	55	International Law	370	17	Comparative Law	15
39	440	55	International Law	439	54	International Business Transactions	10
40	243	56	International Organizations	370	17	Comparative Law	15
41	243	56	International Organizations	439	54	International Business Transactions	10
42	243	56	International Organizations	440	55	International Law	18
43	81	58	Judicial Administration	417	7	Appellate Practice	10
44	81	58	Judicial Administration	378	44	Federal Courts	11
45	382	59	Jurisprudence	425	28	Critical Legal Studies	11
46	382	59	Jurisprudence	426	29	Critical Race Theory	11
47	382	59	Jurisprudence	434	45	Feminist Legal Theory	11
48	441	60	Juvenile Law	433	43	Family Law	12

49	442	61	Labor Law	428	33	Employee Benefit Plans	16
50	442	61	Labor Law	375	34	Employment Discrimination	14
51	445	65	Law and Literature	425	28	Critical Legal Studies	10
52	445	65	Law and Literature	426	29	Critical Race Theory	10
53	445	65	Law and Literature	434	45	Feminist Legal Theory	10
54	445	65	Law and Literature	396	64	Law and Economics	14
55	446	66	Law and Medicine	418	9	Bioethics	16
56	446	66	Law and Medicine	468	47	Forensic Medicine	12
57	447	67	Law and Psychiatry	418	9	Bioethics	15
58	447	67	Law and Psychiatry	468	47	Forensic Medicine	12
59	447	67	Law and Psychiatry	396	64	Law and Economics	10
60	447	67	Law and Psychiatry	446	66	Law and Medicine	16
61	449	69	Law and Science	418	9	Bioethics	12
62	449	69	Law and Science	396	64	Law and Economics	13
63	449	69	Law and Science	445	65	Law and Literature	12
64	449	69	Law and Science	446	66	Law and Medicine	13
65	449	69	Law and Science	447	67	Law and Psychiatry	14
66	337	70	Law and Social Science	418	9	Bioethics	10
67	337	70	Law and Social Science	396	64	Law and Economics	14
68	337	70	Law and Social Science	445	65	Law and Literature	13
69	337	70	Law and Social Science	446	66	Law and Medicine	11
70	337	70	Law and Social Science	447	67	Law and Psychiatry	12
71	337	70	Law and Social Science	449	69	Law and Science	16
72	450	71	Law Office Management	417	7	Appellate Practice	10
73	451	72	Legal Drafting	417	7	Appellate Practice	12
74	451	72	Legal Drafting	368	13	Clinical Teaching	13
75	451	72	Legal Drafting	450	71	Law Office Management	10
76	34	73	Legal History	382	59	Jurisprudence	12
77	109	74	Legal Method	368	13	Clinical Teaching	11
78	109	74	Legal Method	451	72	Legal Drafting	15
79	386	75	Legal Research and Writing	417	7	Appellate Practice	11
80	386	75	Legal Research and Writing	368	13	Clinical Teaching	13
81	386	75	Legal Research and Writing	451	72	Legal Drafting	16
82	386	75	Legal Research and Writing	451	74	Legal Method	15
83	452	77	Local Government	35	76	Legislation	10
84	635	79	National Security Law	96	78	Military Law	12
85	453	81	Natural Resources	315	4	Agricultural Law	13
86	453	81	Natural Resources	467	35	Energy Law	14
87	453	81	Natural Resources	429	37	Environmental Law	16
88	454	82	Ocean Resources	315	4	Agricultural Law	12
89	454	82	Ocean Resources	467	35	Energy Law	13
90	454	82	Ocean Resources	429	37	Environmental Law	15
91	454	82	Ocean Resources	453	81	Natural Resources	17
92	455	83	Oil and Gas	315	4	Agricultural Law	12
93	455	83	Oil and Gas	467	35	Energy Law	13
94	455	83	Oil and Gas	429	37	Environmental Law	13
95	455	83	Oil and Gas	453	81	Natural Resources	15
96	455	83	Oil and Gas	454	82	Ocean Resources	14
97	456	84	Payment Systems	424	24	Creditors' and Debtors' Rights	10
98	456	84	Payment Systems	435	46	Financial Institutions	10
99	389	85	Poverty Law	634	30	Disability Law	11
100	389	85	Poverty Law	427	32	Elder Law	13
101	457	87	Professional Responsibility	450	71	Law Office Management	14
102	458	88	Property	120	40	Estate Planning	10
103	458	88	Property	432	41	Estates and Trusts	13
104	458	88	Property	443	62	Land Use Planning	12
105	358	89	Real Estate Transactions	432	41	Estates and Trusts	12
106	358	89	Real Estate Transactions	443	62	Land Use Planning	11
107	358	89	Real Estate Transactions	458	88	Property	16
108	459	90	Regulated Industries	415	1	Administrative Law	11

109	459	90	Regulated Industries	467	35	Energy Law	10
110	460	91	Remedies	430	38	Equity	17
111	134	92	Securities Regulation	314	3	Agency and Partnership	12
112	134	92	Securities Regulation	416	6	Antitrust	10
113	134	92	Securities Regulation	419	10	Business Associations	15
114	134	92	Securities Regulation	320	14	Commercial Law	12
115	134	92	Securities Regulation	372	23	Corporate Finance	15
116	134	92	Securities Regulation	424	24	Creditors' and Debtors' Rights	10
117	134	92	Securities Regulation	435	46	Financial Institutions	15
118	404	93	Sports Law	403	36	Entertainment Law	14
119	461	94	Tax Policy	431	39	Estate and Gift Tax	14
120	462	95	Taxation, Corporate	431	39	Estate and Gift Tax	14
121	462	95	Taxation, Corporate	461	94	Tax Policy	18
122	469	96	Taxation, Federal	431	39	Estate and Gift Tax	14
123	469	96	Taxation, Federal	461	94	Tax Policy	18
124	469	96	Taxation, Federal	462	95	Taxation, Corporate	18
125	463	97	Taxation, State and Local	431	39	Estate and Gift Tax	14
126	463	97	Taxation, State and Local	461	94	Tax Policy	18
127	463	97	Taxation, State and Local	462	95	Taxation, Corporate	18
128	463	97	Taxation, State and Local	469	96	Taxation, Federal	18
129	55	98	Torts	347	86	Products Liability	15
130	464	99	Trade Regulation	439	54	International Business Transactions	12
131	465	100	Trial Advocacy	408	5	Alternative Dispute Resolution	10
132	465	100	Trial Advocacy	417	7	Appellate Practice	17
133	465	100	Trial Advocacy	81	58	Judicial Administration	10
134	465	100	Trial Advocacy	450	71	Law Office Management	10
135	465	100	Trial Advocacy	451	72	Legal Drafting	11
136	465	100	Trial Advocacy	386	75	Legal Research and Writing	10
137	58	101	Water Rights	315	4	Agricultural Law	14
138	58	101	Water Rights	467	35	Energy Law	12
139	58	101	Water Rights	429	37	Environmental Law	14
140	58	101	Water Rights	443	62	Land Use Planning	10
141	58	101	Water Rights	453	81	Natural Resources	16
142	58	101	Water Rights	454	82	Ocean Resources	15
143	58	101	Water Rights	455	83	Oil and Gas	16
144	466	102	Welfare Law	634	30	Disability Law	12
145	466	102	Welfare Law	427	32	Elder Law	11
146	466	102	Welfare Law	389	85	Poverty Law	15
147	359	104	Workers' Compensation	428	33	Employee Benefit Plans	13
148	359	104	Workers' Compensation	375	34	Employment Discrimination	11
149	359	104	Workers' Compensation	442	61	Labor Law	14

Appendix 24: 1931-32 Combined Pair-wise Similar Course-Subjects

Serial Number	1931-32 Course-Subject ID	1931-32 Course-Subject 1	1931-32 Course-Subject ID	1931-32 Course-Subject 2	Number of Similarity Types (1-5)	Cross Reference	Mergence / Divergence	Jackson & Gee	CILP	Card Sort
1	3	Agency	7	Business Organization	5	1	1	1	1	1
2	7	Business Organization	41	Partnership	5	1	1	1	1	1
3	7	Business Organization	47	Private Corporations	4	1	1	1	1	
4	17	Criminal Law Administration	18	Criminal Law and Procedure	4		1	1	1	1
5	36	Mining Law	58	Water Rights	4		1	1	1	1
6	57	Trusts	59	Wills and Administration	4		1	1	1	1
7	3	Agency	41	Partnership	3		1	1	1	
8	3	Agency	47	Private Corporations	3		1	1	1	
9	8	Code Pleading	470	Pleading	3	1	1	1		
10	10	Comparative Law	28	International Law	3			1	1	1
11	36	Mining Law	40	Oil and Gas	3			1	1	1
12	40	Oil and Gas	58	Water Rights	3			1	1	1
13	41	Partnership	47	Private Corporations	3		1	1	1	
14	43	Personal Property	50	Real Property	3		1	1	1	
15	3	Agency	15	Corporation Finance	2			1		1
16	4	Air Law	56	Trade Regulation	2			1	1	
17	5	Bankruptcy	6	Bills and Notes	2			1		1
18	7	Business Organization	15	Corporation Finance	2			1		1
19	8	Code Pleading	11	Conflict of Laws	2			1		1
20	8	Code Pleading	45	Practice	2		1	1		
21	9	Common Law Pleading	470	Pleading	2	1	1			
22	11	Conflict of Laws	470	Pleading	2			1		1
23	15	Corporation Finance	41	Partnership	2			1		1
24	16	Credit Transactions	52	Sales	2		1	1		
25	16	Credit Transactions	53	Suretyship	2		1	1		
26	19	Damages	49	Quasi-Contract	2		1	1		
27	21	Equity	49	Quasi-Contract	2			1		1
28	25	Future Interests	57	Trusts	2		1	1		
29	25	Future Interests	59	Wills and Administration	2		1	1		
30	30	Jurisprudence	34	Legal History	2			1		1
31	32	Legal Bibliography and Research	46	Practice Court	2			1		1
32	33	Legal Ethics	39	Office Practice	2			1		1
33	37	Mortgages	43	Personal Property	2			1		1
34	37	Mortgages	50	Real Property	2			1		1
35	43	Personal Property	57	Trusts	2				1	1
36	43	Personal Property	59	Wills and Administration	2				1	1
37	470	Pleading	45	Practice	2		1	1		
38	50	Real Property	57	Trusts	2				1	1
39	50	Real Property	59	Wills and Administration	2				1	1
40	52	Sales	53	Suretyship	2		1	1		
41	1	Administrative Law	12	Constitutional Law	1			1		
42	1	Administrative Law	36	Mining Law	1				1	
43	1	Administrative Law	40	Oil and Gas	1				1	
44	1	Administrative Law	48	Public Utilities	1					1
45	1	Administrative Law	56	Trade Regulation	1	1				
46	1	Administrative Law	58	Water Rights	1				1	
47	2	Admiralty	4	Air Law	1				1	

48	2	Admiralty	10	Comparative Law	1			1	
49	2	Admiralty	28	International Law	1			1	
50	3	Agency	6	Bills and Notes	1				1
51	4	Air Law	10	Comparative Law	1			1	
52	4	Air Law	28	International Law	1			1	
53	4	Air Law	42	Patent Law	1			1	
54	4	Air Law	48	Public Utilities	1		1		
55	5	Bankruptcy	7	Business Organization	1				1
56	5	Bankruptcy	15	Corporation Finance	1				1
57	5	Bankruptcy	16	Credit Transactions	1		1		
58	5	Bankruptcy	52	Sales	1		1		
59	5	Bankruptcy	53	Suretyship	1		1		
60	6	Bills and Notes	7	Business Organization	1				1
61	6	Bills and Notes	15	Corporation Finance	1				1
62	6	Bills and Notes	16	Credit Transactions	1		1		
63	6	Bills and Notes	41	Partnership	1				1
64	6	Bills and Notes	52	Sales	1		1		
65	6	Bills and Notes	53	Suretyship	1		1		
66	8	Code Pleading	9	Common Law Pleading	1		1		
67	8	Code Pleading	23	Evidence	1				1
68	9	Common Law Pleading	11	Conflict of Laws	1				1
69	9	Common Law Pleading	23	Evidence	1				1
70	9	Common Law Pleading	45	Practice	1		1		
71	10	Comparative Law	51	Roman Law	1		1		
72	11	Conflict of Laws	45	Practice	1		1		
73	12	Constitutional Law	31	Labor Law	1				1
74	13	Contracts	53	Suretyship	1			1	
75	13	Contracts	57	Trusts	1			1	
76	15	Corporation Finance	47	Private Corporations	1		1		
77	16	Credit Transactions	37	Mortgages	1		1		
78	17	Criminal Law Administration	23	Evidence	1			1	
79	18	Criminal Law and Procedure	20	Domestic Relations	1				1
80	18	Criminal Law and Procedure	23	Evidence	1			1	
81	19	Damages	21	Equity	1		1		
82	20	Domestic Relations	43	Personal Property	1			1	
83	20	Domestic Relations	50	Real Property	1			1	
84	21	Equity	22	Equity Pleading and Practice	1		1		
85	22	Equity Pleading & Practice	49	Quasi-Contract	1				1
86	23	Evidence	470	Pleading	1				1
87	25	Future Interests	50	Real Property	1	1			
88	26	Industrial Relations	31	Labor Law	1	1			
89	26	Industrial Relations	56	Trade Regulation	1	1			
90	27	Insurance	56	Trade Regulation	1			1	
91	29	Introduction to Law	30	Jurisprudence	1			1	
92	29	Introduction to Law	34	Legal History	1			1	
93	29	Introduction to Law	51	Roman Law	1			1	
94	30	Jurisprudence	51	Roman Law	1			1	
95	34	Legal History	51	Roman Law	1			1	
96	35	Legislation	38	Municipal Corporations	1				1
97	37	Mortgages	53	Suretyship	1		1		
98	37	Mortgages	57	Trusts	1				1
99	37	Mortgages	59	Wills and Administration	1				1
100	38	Municipal Corporations	47	Private Corporations	1	1			
101	39	Office Practice	46	Practice Court	1				1
102	42	Patent Law	56	Trade Regulation	1			1	
103	43	Personal Property	54	Taxation	1			1	
104	48	Public Utilities	56	Trade Regulation	1			1	

105	50	Real Property	54	Taxation	1				1	
106	53	Suretyship	57	Trusts	1				1	
107	54	Taxation	57	Trusts	1				1	
108	54	Taxation	59	Wills and Administration	1				1	

Appendix 25: 1972-73 Combined Pair-wise Similar Course-Subjects

Serial Number	1972-73 Course-Subject ID	1972-73 Course-Subject 1	1972-73 Course-Subject ID	1972-73 Course-Subject 2	Number of Similarity Types (1-5)	Cross Reference	Miurgence / Divergence	Jackson & Gee	CILP	Card Sort
1	3	Agency	209	Business Organizations	5	1	1	1	1	1
2	209	Business Organizations	177	Corporations	4	1	1	1	1	
3	288	Criminal Law	269	Criminal Procedure	4		1	1	1	1
4	289	Environmental Law	294	Natural Resources	4	1		1	1	1
5	120	Estate Planning	140	Trusts and Estates	4	1	1	1		1
6	294	Natural Resources	295	Oil and Gas	4	1		1	1	1
7	294	Natural Resources	58	Water Rights	4		1	1	1	1
8	3	Agency	177	Corporations	3		1	1	1	
9	237	Commercial Law	287	Credit Transactions	3		1	1	1	
10	265	Comparative Law	283	International Law	3			1	1	1
11	265	Comparative Law	284	International Transactions	3			1	1	1
12	269	Criminal Procedure	182	Domestic Relations	3	1			1	1
13	181	Decedents' Estates	120	Estate Planning	3		1	1		1
14	289	Environmental Law	295	Oil and Gas	3			1	1	1
15	289	Environmental Law	58	Water Rights	3			1	1	1
16	240	Equity	132	Remedies	3	1		1		1
17	283	International Law	284	International Transactions	3			1	1	1
18	291	Legal Bibliography	292	Legal Research and Writing	3	1	1	1		
19	295	Oil and Gas	58	Water Rights	3			1	1	1
20	198	Personal Property	259	Real Property	3		1	1	1	
21	44	Pleading	200	Practice and Procedure	3	1	1	1		
22	279	Practice Court	280	Trial and Appellate Practice	3	1	1	1		
23	234	Taxation, Federal	138	Taxation, State and Local	3		1		1	1
24	285	Administrative Law	305	Regulated Industrial and Other Activities	2	1				1
25	3	Agency	237	Commercial Law	2				1	1
26	3	Agency	267	Corporation Finance	2			1		1
27	3	Agency	296	Securities Regulation	2				1	1
28	206	Air Law	262	Trade Regulation	2			1	1	
29	236	Antitrust	305	Regulated Industrial and Other Activities	2	1		1		
30	236	Antitrust	296	Securities Regulation	2			1		1
31	236	Antitrust	262	Trade Regulation	2	1		1		
32	209	Business Organizations	237	Commercial Law	2				1	1
33	209	Business Organizations	267	Corporation Finance	2			1		1
34	209	Business Organizations	296	Securities Regulation	2				1	1
35	61	Civil Procedure	11	Conflict of Laws	2			1		1
36	61	Civil Procedure	44	Pleading	2		1	1		
37	61	Civil Procedure	200	Practice and Procedure	2		1	1		
38	297	Clinical Teaching	193	Legal Clinics	2		1	1		
39	237	Commercial Law	286	Creditors' Rights	2			1		1
40	237	Commercial Law	257	Negotiable Instruments	2			1		1
41	237	Commercial Law	52	Sales	2		1	1		
42	237	Commercial Law	296	Securities Regulation	2				1	1
43	103	Community Property	182	Domestic Relations	2			1		1
44	265	Comparative Law	243	International Organizations	2			1		1

45	287	Credit Transactions	52	Sales	2		1	1		
46	286	Creditors' Rights	257	Negotiable Instruments	2			1		1
47	19	Damages	132	Remedies	2		1	1		
48	19	Damages	202	Restitution	2		1	1		
49	181	Decedents' Estates	121	Fiduciary Administration	2		1	1		
50	181	Decedents' Estates	25	Future Interests	2		1	1		
51	181	Decedents' Estates	140	Trusts and Estates	2		1	1		
52	289	Environmental Law	290	Land Use	2	1			1	
53	120	Estate Planning	121	Fiduciary Administration	2		1	1		
54	120	Estate Planning	25	Future Interests	2		1	1		
55	121	Fiduciary Administration	25	Future Interests	2		1	1		
56	121	Fiduciary Administration	140	Trusts and Estates	2		1	1		
57	25	Future Interests	140	Trusts and Estates	2		1	1		
58	283	International Law	243	International Organizations	2			1		1
59	243	International Organizations	284	International Transactions	2			1		1
60	274	Jurisprudence	194	Legal History	2			1		1
61	247	Labor Law	169	Workmen's Compensation	2				1	1
62	290	Land Use	58	Water Rights	2				1	1
63	276	Law and Computers	191	Law and Science	2	1		1		
64	249	Law and Medicine	191	Law and Science	2			1		1
65	249	Law and Medicine	251	Law and Society	2			1		1
66	250	Law and Poverty	135	Social Legislation	2			1		1
67	191	Law and Science	251	Law and Society	2			1		1
68	252	Legal Profession	197	Office Practice	2			1		1
69	292	Legal Research and Writing	280	Trial and Appellate Practice	2			1		1
70	278	Local Government	138	Taxation, State and Local	2	1		1		
71	198	Personal Property	140	Trusts and Estates	2				1	1
72	259	Real Property	140	Trusts and Estates	2				1	1
73	305	Regulated Industrial and Other Activities	262	Trade Regulation	2	1		1		
74	132	Remedies	202	Restitution	2		1	1		
75	234	Taxation, Federal	140	Trusts and Estates	2	1			1	
76	116	Accounting	237	Commercial Law	1				1	
77	116	Accounting	13	Contracts	1				1	
78	116	Accounting	287	Credit Transactions	1				1	
79	116	Accounting	284	International Transactions	1				1	
80	116	Accounting	276	Law and Computers	1			1		
81	116	Accounting	249	Law and Medicine	1			1		
82	116	Accounting	191	Law and Science	1			1		
83	116	Accounting	251	Law and Society	1			1		
84	116	Accounting	296	Securities Regulation	1				1	
85	116	Accounting	234	Taxation, Federal	1				1	
86	116	Accounting	138	Taxation, State and Local	1				1	
87	116	Accounting	140	Trusts and Estates	1				1	
88	285	Administrative Law	176	Constitutional Law	1			1		
89	285	Administrative Law	289	Environmental Law	1				1	
90	285	Administrative Law	290	Land Use	1				1	
91	285	Administrative Law	294	Natural Resources	1				1	
92	285	Administrative Law	295	Oil and Gas	1				1	
93	285	Administrative Law	296	Securities Regulation	1	1				
94	285	Administrative Law	262	Trade Regulation	1	1				
95	285	Administrative Law	58	Water Rights	1				1	
96	171	Admiralty	206	Air Law	1				1	
97	171	Admiralty	265	Comparative Law	1				1	
98	171	Admiralty	283	International Law	1				1	
99	171	Admiralty	284	International Transactions	1				1	
100	3	Agency	257	Negotiable Instruments	1					1
101	206	Air Law	236	Antitrust	1			1		

102	206	Air Law	265	Comparative Law	1				1	
103	206	Air Law	283	International Law	1				1	
104	206	Air Law	284	International Transactions	1				1	
105	206	Air Law	191	Law and Science	1				1	
106	206	Air Law	258	Patents, Copyrights, Trademarks	1				1	
107	206	Air Law	305	Regulated Industrial and Other Activities	1			1		
108	206	Air Law	296	Securities Regulation	1			1		
109	236	Antitrust	267	Corporation Finance	1					1
110	173	Arbitration	61	Civil Procedure	1					1
111	173	Arbitration	280	Trial and Appellate Practice	1					1
112	209	Business Organizations	286	Creditors' Rights	1					1
113	209	Business Organizations	257	Negotiable Instruments	1					1
114	61	Civil Procedure	184	Evidence	1					1
115	61	Civil Procedure	241	Federal Jurisdiction	1					1
116	297	Clinical Teaching	158	Legal Method	1					1
117	297	Clinical Teaching	292	Legal Research and Writing	1					1
118	297	Clinical Teaching	254	Legislation	1					1
119	297	Clinical Teaching	280	Trial and Appellate Practice	1					1
120	237	Commercial Law	13	Contracts	1				1	
121	237	Commercial Law	267	Corporation Finance	1					1
122	237	Commercial Law	177	Corporations	1				1	
123	237	Commercial Law	140	Trusts and Estates	1				1	
124	103	Community Property	181	Decedents' Estates	1					1
125	103	Community Property	140	Trusts and Estates	1					1
126	265	Comparative Law	51	Roman Law	1		1			
127	11	Conflict of Laws	44	Pleading	1			1		
128	11	Conflict of Laws	200	Practice and Procedure	1			1		
129	176	Constitutional Law	247	Labor Law	1					1
130	176	Constitutional Law	169	Workmen's Compensation	1					1
131	13	Contracts	287	Credit Transactions	1				1	
132	13	Contracts	270	Government Contracts	1			1		
133	13	Contracts	296	Securities Regulation	1				1	
134	13	Contracts	140	Trusts and Estates	1				1	
135	267	Corporation Finance	177	Corporations	1			1		
136	267	Corporation Finance	286	Creditors' Rights	1					1
137	267	Corporation Finance	247	Labor Law	1					1
138	267	Corporation Finance	257	Negotiable Instruments	1					1
139	267	Corporation Finance	296	Securities Regulation	1					1
140	177	Corporations	278	Local Government	1	1				
141	177	Corporations	296	Securities Regulation	1				1	
142	287	Credit Transactions	286	Creditors' Rights	1			1		
143	287	Credit Transactions	257	Negotiable Instruments	1			1		
144	287	Credit Transactions	296	Securities Regulation	1				1	
145	287	Credit Transactions	140	Trusts and Estates	1				1	
146	286	Creditors' Rights	52	Sales	1			1		
147	286	Creditors' Rights	296	Securities Regulation	1					1
148	288	Criminal Law	184	Evidence	1				1	
149	269	Criminal Procedure	184	Evidence	1				1	
150	269	Criminal Procedure	198	Personal Property	1				1	
151	269	Criminal Procedure	259	Real Property	1				1	
152	269	Criminal Procedure	308	Women and the Law	1				1	
153	19	Damages	240	Equity	1			1		
154	181	Decedents' Estates	198	Personal Property	1					1
155	181	Decedents' Estates	259	Real Property	1					1
156	182	Domestic Relations	198	Personal Property	1				1	
157	182	Domestic Relations	259	Real Property	1				1	

158	182	Domestic Relations	308	Women and the Law	1				1	
159	302	Education, Legal Problems of	250	Law and Poverty	1			1		
160	302	Education, Legal Problems of	278	Local Government	1	1				
161	302	Education, Legal Problems of	135	Social Legislation	1			1		
162	289	Environmental Law	305	Regulated Industrial and Other Activities	1	1				
163	240	Equity	202	Restitution	1			1		
164	120	Estate Planning	198	Personal Property	1					1
165	120	Estate Planning	259	Real Property	1					1
166	120	Estate Planning	234	Taxation, Federal	1	1				
167	241	Federal Jurisdiction	81	Judicial Administration	1					1
168	25	Future Interests	259	Real Property	1	1				
169	271	Insurance	249	Law and Medicine	1				1	
170	271	Insurance	262	Trade Regulation	1				1	
171	284	International Transactions	234	Taxation, Federal	1				1	
172	284	International Transactions	138	Taxation, State and Local	1				1	
173	284	International Transactions	262	Trade Regulation	1					1
174	245	Introduction to Law	274	Jurisprudence	1			1		
175	245	Introduction to Law	194	Legal History	1			1		
176	245	Introduction to Law	126	Legal Process	1			1		
177	245	Introduction to Law	51	Roman Law	1			1		
178	81	Judicial Administration	280	Trial and Appellate Practice	1					1
179	274	Jurisprudence	191	Law and Science	1					1
180	274	Jurisprudence	251	Law and Society	1					1
181	274	Jurisprudence	126	Legal Process	1			1		
182	274	Jurisprudence	51	Roman Law	1			1		
183	290	Land Use	278	Local Government	1	1				
184	290	Land Use	294	Natural Resources	1				1	
185	290	Land Use	295	Oil and Gas	1				1	
186	290	Land Use	259	Real Property	1					1
187	276	Law and Computers	249	Law and Medicine	1			1		
188	276	Law and Computers	251	Law and Society	1			1		
189	249	Law and Medicine	262	Trade Regulation	1				1	
190	191	Law and Science	258	Patents, Copyrights, Trademarks	1				1	
191	191	Law and Science	262	Trade Regulation	1				1	
192	291	Legal Bibliography	293	Librarian	1			1		
193	291	Legal Bibliography	279	Practice Court	1			1		
194	291	Legal Bibliography	280	Trial and Appellate Practice	1			1		
195	194	Legal History	126	Legal Process	1			1		
196	194	Legal History	51	Roman Law	1			1		
197	158	Legal Method	252	Legal Profession	1			1		
198	158	Legal Method	292	Legal Research and Writing	1					1
199	158	Legal Method	254	Legislation	1					1
200	158	Legal Method	197	Office Practice	1			1		
201	126	Legal Process	51	Roman Law	1			1		
202	292	Legal Research and Writing	254	Legislation	1					1
203	292	Legal Research and Writing	293	Librarian	1			1		
204	292	Legal Research and Writing	279	Practice Court	1			1		
205	254	Legislation	278	Local Government	1					1
206	254	Legislation	197	Office Practice	1					1
207	254	Legislation	280	Trial and Appellate	1					1

				Practice					
208	293	Librarian	279	Practice Court	1			1	
209	293	Librarian	280	Trial and Appellate Practice	1			1	
210	257	Negotiable Instruments	305	Regulated Industrial and Other Activities	1	1			
211	257	Negotiable Instruments	52	Sales	1			1	
212	257	Negotiable Instruments	296	Securities Regulation	1				1
213	197	Office Practice	280	Trial and Appellate Practice	1				1
214	258	Patents, Copyrights, Trademarks	262	Trade Regulation	1			1	
215	198	Personal Property	234	Taxation, Federal	1			1	
216	198	Personal Property	308	Women and the Law	1			1	
217	259	Real Property	234	Taxation, Federal	1			1	
218	259	Real Property	308	Women and the Law	1			1	
219	305	Regulated Industrial and Other Activities	296	Securities Regulation	1			1	
220	296	Securities Regulation	262	Trade Regulation	1			1	
221	296	Securities Regulation	140	Trusts and Estates	1			1	
222	261	Torts	169	Workmen's Compensation	1			1	

Appendix 26: 2010-11 Combined Pair-wise Similar Course-Subjects

Serial Number	2010-11 Course-Subject ID	Card Sort Course-Subject ID	2010-11 Course-Subject 1	2010-11 Course-Subject ID	Card Sort Course-Subject ID	2010-11 Course-Subject 2	Number of Similarity Types (1-5)	Cross Reference	Mergence / Divergence	Jackson & Gee	CILP	Card Sort
1	314	3	Agency and Partnership	419	10	Business Associations	5	1	1	1	1	1
2	428	33	Employee Benefit Plans	442	61	Labor Law	5	1	1	1	1	1
3	446	66	Law and Medicine	447	67	Law and Psychiatry	5	1	1	1	1	1
4	373	25	Criminal Justice	87	26	Criminal Law	4		1	1	1	1
5	87	26	Criminal Law	88	27	Criminal Procedure	4		1	1	1	1
6	429	37	Environmental Law	453	81	Natural Resources	4	1		1	1	1
7	120	40	Estate Planning	432	41	Estates and Trusts	4	1	1	1		1
8	453	81	Natural Resources	455	83	Oil and Gas	4	1		1	1	1
9	453	81	Natural Resources	58	101	Water Rights	4		1	1	1	1
10	417	7	Appellate Practice	465	100	Trial Advocacy	3		1	1		1
11	418	9	Bioethics	468	47	Forensic Medicine	3		1	1		1
12	418	9	Bioethics	446	66	Law and Medicine	3		1	1		1
13	418	9	Bioethics	447	67	Law and Psychiatry	3		1	1		1
14	420	12	Civil Rights	422	20	Constitutional Law	3	1	1	1		
15	370	17	Comparative Law	439	54	International Business Transactions	3			1	1	1
16	370	17	Comparative Law	440	55	International Law	3			1	1	1
17	373	25	Criminal Justice	88	27	Criminal Procedure	3			1	1	1
18	427	32	Elder Law	466	102	Welfare Law	3		1	1		1
19	429	37	Environmental Law	455	83	Oil and Gas	3			1	1	1
20	429	37	Environmental Law	58	101	Water Rights	3			1	1	1
21	430	38	Equity	460	91	Remedies	3	1		1		1
22	431	39	Estate and Gift Tax	461	94	Tax Policy	3		1	1		1
23	431	39	Estate and Gift Tax	469	96	Taxation, Federal	3		1	1		1
24	432	41	Estates and Trusts	458	88	Property	3	1			1	1
25	433	43	Family Law	441	60	Juvenile Law	3	1			1	1
26	468	47	Forensic Medicine	446	66	Law and Medicine	3		1	1		1
27	468	47	Forensic Medicine	447	67	Law and Psychiatry	3		1	1		1
28	436	49	Health Care Law	446	66	Law and Medicine	3	1	1		1	
29	437	50	Human Rights	440	55	International Law	3		1	1	1	
30	439	54	International Business Transactions	440	55	International Law	3			1	1	1
31	453	81	Natural Resources	454	82	Ocean Resources	3		1	1		1
32	454	82	Ocean Resources	58	101	Water Rights	3		1	1		1
33	455	83	Oil and Gas	58	101	Water Rights	3			1	1	1
34	347	86	Products Liability	55	98	Torts	3		1	1		1
35	461	94	Tax Policy	469	96	Taxation, Federal	3		1	1		1
36	469	96	Taxation, Federal	463	97	Taxation, State and Local	3		1		1	1
37	415	1	Administrative Law	459	90	Regulated Industries	2	1				1
38	314	3	Agency and Partnership	320	14	Commercial Law	2				1	1
39	314	3	Agency and Partnership	372	23	Corporate Finance	2			1		1
40	314	3	Agency and Partnership	435	46	Financial Institutions	2			1		1
41	314	3	Agency and Partnership	134	92	Securities Regulation	2				1	1
42	315	4	Agricultural Law	429	37	Environmental Law	2				1	1
43	315	4	Agricultural Law	453	81	Natural Resources	2				1	1
44	315	4	Agricultural Law	455	83	Oil and Gas	2				1	1
45	315	4	Agricultural Law	58	101	Water Rights	2				1	1
46	416	6	Antitrust	459	90	Regulated Industries	2	1		1		
47	416	6	Antitrust	134	92	Securities Regulation	2			1		1

48	416	6	Antitrust	464	99	Trade Regulation	2	1		1		
49	417	7	Appellate Practice	451	72	Legal Drafting	2			1		1
50	417	7	Appellate Practice	386	75	Legal Research and Writing	2			1		1
51	364	8	Aviation and Space Law	421	15	Communications Law	2			1	1	
52	364	8	Aviation and Space Law	464	99	Trade Regulation	2			1	1	
53	418	9	Bioethics	449	69	Law and Science	2			1		1
54	418	9	Bioethics	337	70	Law and Social Science	2			1		1
55	419	10	Business Associations	320	14	Commercial Law	2				1	1
56	419	10	Business Associations	372	23	Corporate Finance	2			1		1
57	419	10	Business Associations	435	46	Financial Institutions	2			1		1
58	419	10	Business Associations	134	92	Securities Regulation	2				1	1
59	366	11	Civil Procedure	11	19	Conflict of Laws	2			1		1
60	320	14	Commercial Law	423	21	Consumer Law	2			1	1	
61	320	14	Commercial Law	424	24	Creditors' and Debtors' Rights	2			1		1
62	320	14	Commercial Law	435	46	Financial Institutions	2				1	1
63	320	14	Commercial Law	134	92	Securities Regulation	2				1	1
64	421	15	Communications Law	459	90	Regulated Industries	2		1	1		
65	421	15	Communications Law	464	99	Trade Regulation	2			1	1	
66	103	16	Community Property	433	43	Family Law	2			1		1
67	370	17	Comparative Law	437	50	Human Rights	2			1	1	
68	370	17	Comparative Law	243	56	International Organizations	2			1		1
69	644	18	Computers and the Law	449	69	Law and Science	2	1		1		
70	423	21	Consumer Law	424	24	Creditors' and Debtors' Rights	2			1	1	
71	372	23	Corporate Finance	435	46	Financial Institutions	2			1		1
72	427	32	Elder Law	389	85	Poverty Law	2			1		1
73	428	33	Employee Benefit Plans	375	34	Employment Discrimination	2				1	1
74	428	33	Employee Benefit Plans	359	104	Workers' Compensation	2				1	1
75	375	34	Employment Discrimination	442	61	Labor Law	2				1	1
76	375	34	Employment Discrimination	359	104	Workers' Compensation	2				1	1
77	467	35	Energy Law	429	37	Environmental Law	2			1		1
78	467	35	Energy Law	453	81	Natural Resources	2			1		1
79	467	35	Energy Law	454	82	Ocean Resources	2			1		1
80	467	35	Energy Law	455	83	Oil and Gas	2			1		1
81	467	35	Energy Law	58	101	Water Rights	2			1		1
82	429	37	Environmental Law	443	62	Land Use Planning	2	1			1	
83	429	37	Environmental Law	454	82	Ocean Resources	2			1		1
84	431	39	Estate and Gift Tax	462	95	Taxation, Corporate	2			1		1
85	431	39	Estate and Gift Tax	463	97	Taxation, State and Local	2		1			1
86	435	46	Financial Institutions	459	90	Regulated Industries	2	1	1			
87	435	46	Financial Institutions	134	92	Securities Regulation	2				1	1
88	436	49	Health Care Law	447	67	Law and Psychiatry	2		1		1	
89	437	50	Human Rights	439	54	International Business Transactions	2			1	1	
90	439	54	International Business Transactions	243	56	International Organizations	2			1		1
91	440	55	International Law	243	56	International Organizations	2			1		1
92	382	59	Jurisprudence	34	73	Legal History	2			1		1
93	442	61	Labor Law	359	104	Workers' Compensation	2				1	1
94	443	62	Land Use Planning	58	101	Water Rights	2				1	1
95	444	63	Law and Accounting	396	64	Law and Economics	2			1	1	
96	396	64	Law and Economics	445	65	Law and Literature	2			1		1
97	396	64	Law and Economics	447	67	Law and Psychiatry	2			1		1
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99	396	64	Law and Economics	337	70	Law and Social Science	2			1		1
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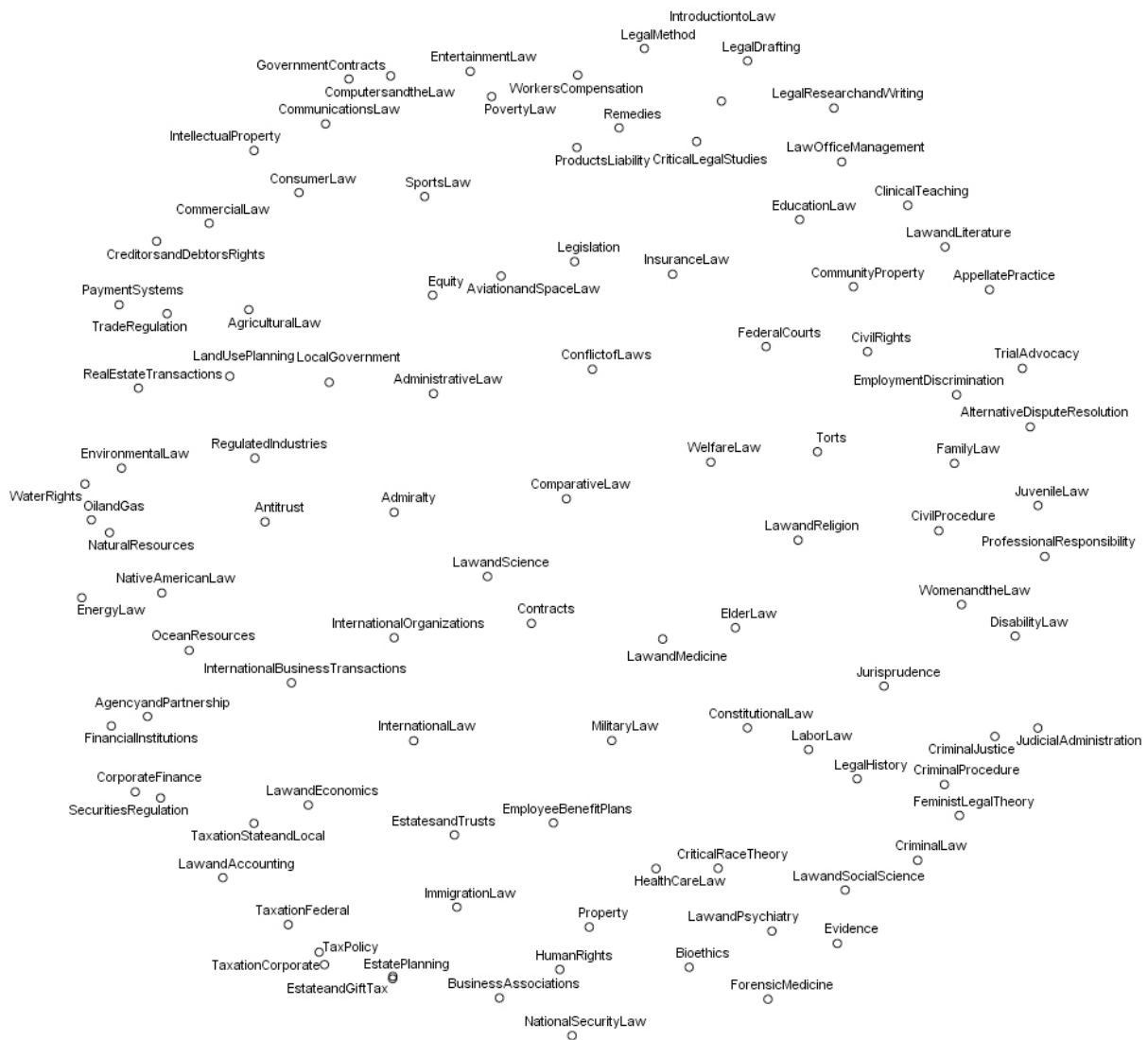
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112	454	82	Ocean Resources	455	83	Oil and Gas	2			1		1
113	389	85	Poverty Law	466	102	Welfare Law	2			1		1
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115	459	90	Regulated Industries	464	99	Trade Regulation	2	1		1		
116	461	94	Tax Policy	462	95	Taxation, Corporate	2			1		1
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137	315	4	Agricultural Law	443	62	Land Use Planning	1				1	
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144	416	6	Antitrust	372	23	Corporate Finance	1					1
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146	417	7	Appellate Practice	81	58	Judicial Administration	1					1
147	417	7	Appellate Practice	450	71	Law Office Management	1					1
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157	418	9	Bioethics	436	49	Health Care Law	1		1			

158	418	9	Bioethics	444	63	Law and Accounting	1			1		
159	418	9	Bioethics	396	64	Law and Economics	1			1		
160	418	9	Bioethics	445	65	Law and Literature	1			1		
161	419	10	Business Associations	424	24	Creditors' and Debtors' Rights	1					1
162	419	10	Business Associations	396	64	Law and Economics	1				1	
163	419	10	Business Associations	452	77	Local Government	1	1				
164	366	11	Civil Procedure	23	42	Evidence	1					1
165	366	11	Civil Procedure	378	44	Federal Courts	1					1
166	420	12	Civil Rights	375	34	Employment Discrimination	1		1			
167	420	12	Civil Rights	448	68	Law and Religion	1			1		
168	368	13	Clinical Teaching	451	72	Legal Drafting	1					1
169	368	13	Clinical Teaching	109	74	Legal Method	1					1
170	368	13	Clinical Teaching	386	75	Legal Research and Writing	1					1
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172	320	14	Commercial Law	372	23	Corporate Finance	1					1
173	320	14	Commercial Law	432	41	Estates and Trusts	1				1	
174	320	14	Commercial Law	444	63	Law and Accounting	1				1	
175	320	14	Commercial Law	396	64	Law and Economics	1				1	
176	320	14	Commercial Law	358	89	Real Estate Transactions	1	1				
177	421	15	Communications Law	435	46	Financial Institutions	1		1			
178	421	15	Communications Law	380	53	Intellectual Property	1				1	
179	421	15	Communications Law	449	69	Law and Science	1				1	
180	421	15	Communications Law	134	92	Securities Regulation	1			1		
181	103	16	Community Property	432	41	Estates and Trusts	1					1
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184	644	18	Computers and the Law	396	64	Law and Economics	1			1		
185	644	18	Computers and the Law	445	65	Law and Literature	1			1		
186	644	18	Computers and the Law	446	66	Law and Medicine	1			1		
187	644	18	Computers and the Law	447	67	Law and Psychiatry	1			1		
188	644	18	Computers and the Law	337	70	Law and Social Science	1			1		
189	422	20	Constitutional Law	375	34	Employment Discrimination	1		1			
190	423	21	Consumer Law	13	22	Contracts	1				1	
191	423	21	Consumer Law	432	41	Estates and Trusts	1				1	
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193	423	21	Consumer Law	444	63	Law and Accounting	1				1	
194	423	21	Consumer Law	396	64	Law and Economics	1				1	
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199	13	22	Contracts	150	48	Government Contracts	1			1		
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201	13	22	Contracts	396	64	Law and Economics	1				1	
202	13	22	Contracts	134	92	Securities Regulation	1				1	
203	372	23	Corporate Finance	424	24	Creditors' and Debtors' Rights	1					1
204	372	23	Corporate Finance	134	92	Securities Regulation	1					1
205	424	24	Creditors' and Debtors' Rights	435	46	Financial Institutions	1					1
206	424	24	Creditors' and Debtors' Rights	456	84	Payment Systems	1					1
207	424	24	Creditors' and Debtors' Rights	134	92	Securities Regulation	1					1
208	373	25	Criminal Justice	23	42	Evidence	1				1	
209	87	26	Criminal Law	23	42	Evidence	1				1	
210	87	26	Criminal Law	441	60	Juvenile Law	1		1			
211	88	27	Criminal Procedure	23	42	Evidence	1				1	
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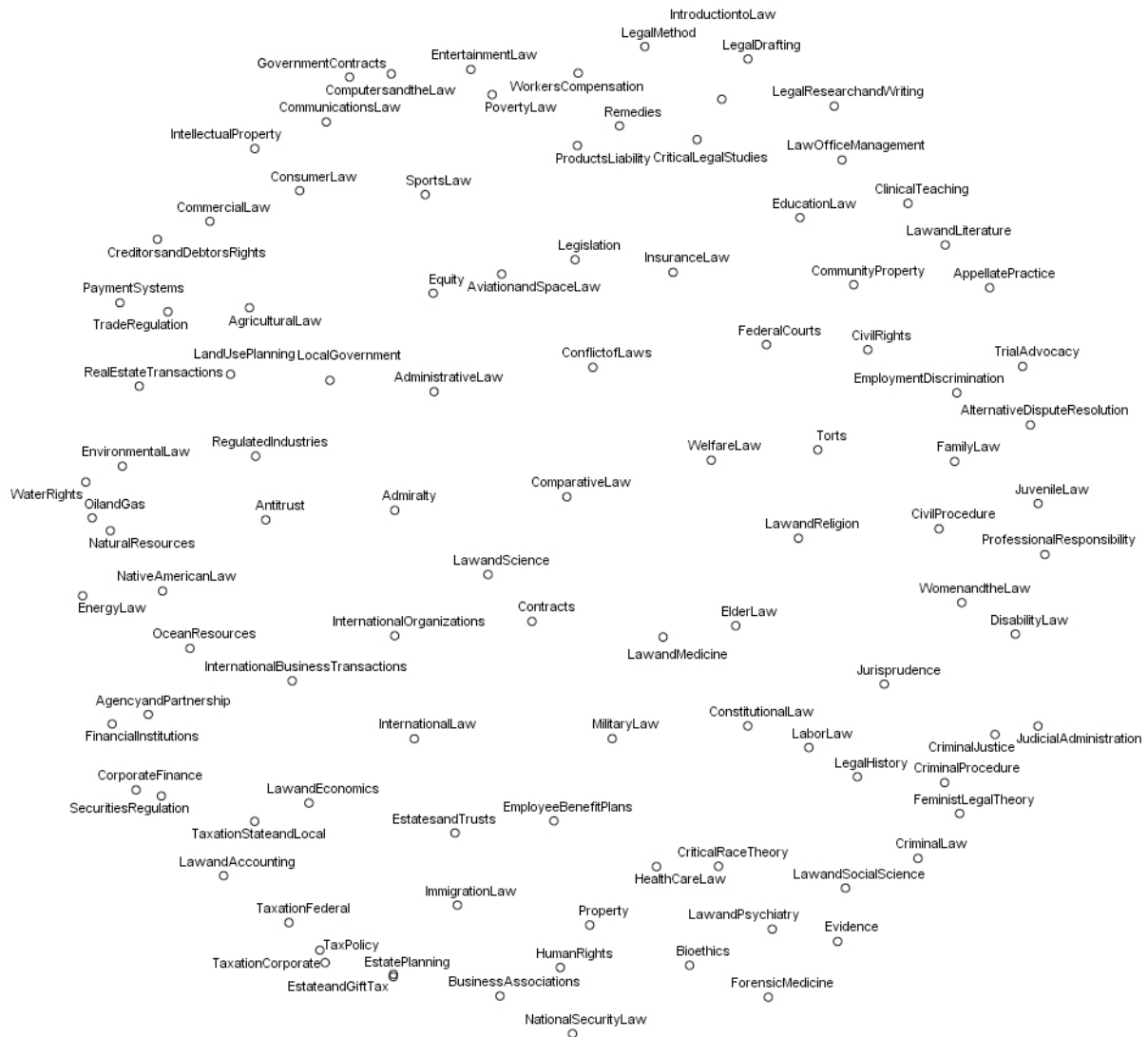
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217	426	29	Critical Race Theory	374	31	Education Law	1			1		
218	426	29	Critical Race Theory	427	32	Elder Law	1			1		
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220	426	29	Critical Race Theory	436	49	Health Care Law	1			1		
221	426	29	Critical Race Theory	382	59	Jurisprudence	1					1
222	426	29	Critical Race Theory	445	65	Law and Literature	1					1
223	426	29	Critical Race Theory	389	85	Poverty Law	1			1		
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228	374	31	Education Law	427	32	Elder Law	1			1		
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232	374	31	Education Law	466	102	Welfare Law	1			1		
233	427	32	Elder Law	432	41	Estates and Trusts	1				1	
234	427	32	Elder Law	436	49	Health Care Law	1			1		
235	427	32	Elder Law	458	88	Property	1				1	
236	427	32	Elder Law	469	96	Taxation, Federal	1				1	
237	375	34	Employment Discrimination	308	103	Women and the Law	1			1		
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244	432	41	Estates and Trusts	435	46	Financial Institutions	1				1	
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255	435	46	Financial Institutions	444	63	Law and Accounting	1				1	
256	435	46	Financial Institutions	396	64	Law and Economics	1				1	
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258	468	47	Forensic Medicine	436	49	Health Care Law	1		1			
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266	436	49	Health Care Law	464	99	Trade Regulation	1				1	
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274	380	53	Intellectual Property	449	69	Law and Science	1				1	
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277	439	54	International Business Transactions	469	96	Taxation, Federal	1				1	
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286	443	62	Land Use Planning	452	77	Local Government	1	1				
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295	444	63	Law and Accounting	337	70	Law and Social Science	1				1	
296	444	63	Law and Accounting	134	92	Securities Regulation	1					1
297	444	63	Law and Accounting	469	96	Taxation, Federal	1				1	
298	444	63	Law and Accounting	463	97	Taxation, State and Local	1				1	
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300	396	64	Law and Economics	134	92	Securities Regulation	1					1
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309	451	72	Legal Drafting	109	74	Legal Method	1					1
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313	35	76	Legislation	452	77	Local Government	1					1
314	96	78	Military Law	635	79	National Security Law	1					1
315	347	86	Products Liability	359	104	Workers' Compensation	1				1	
316	458	88	Property	469	96	Taxation, Federal	1				1	
317	458	88	Property	308	103	Women and the Law	1					1
318	459	90	Regulated Industries	134	92	Securities Regulation	1				1	
319	134	92	Securities Regulation	464	99	Trade Regulation	1				1	
320	462	95	Taxation, Corporate	463	97	Taxation, State and Local	1					1
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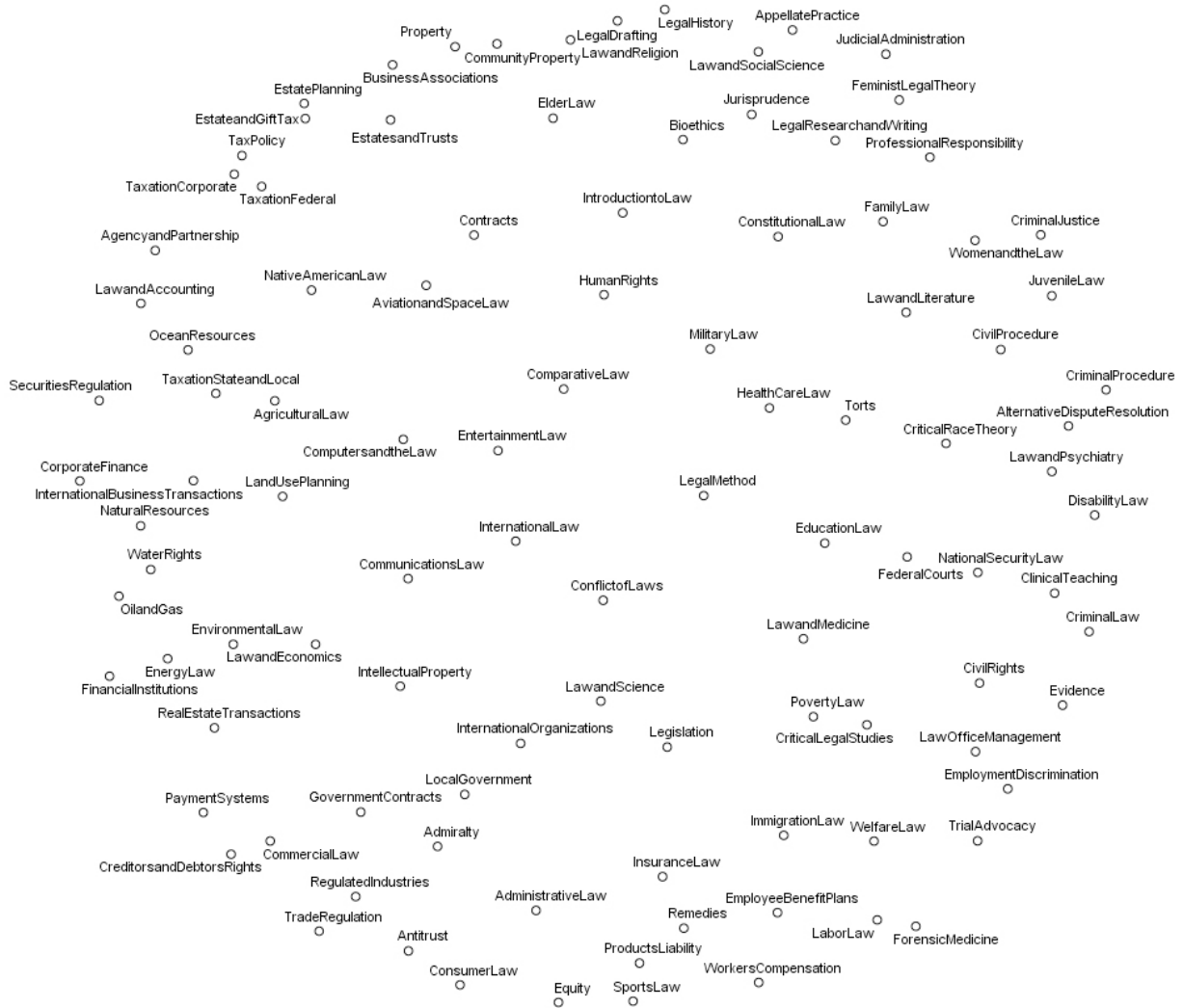
Appendix 27: 2010-11 Proxscal MDS Layout, Association Strength (2007) Total Occurrences Normalization



Appendix 28: 2010-11 Proxscal MDS Layout, Association Strength (2009) Total Occurrences Normalization



Appendix 29: 2010-11 Proxscal MDS Layout, Association Strength (2009) Column Totals Normalization



Appendix 30: 2010-11 Proxscal MDS Layout, Cosine (2009) Total Occurrences Normalization



Appendix 31: 2010-11 Proxscal MDS Layout, Cosine (2009) Column Totals Normalization



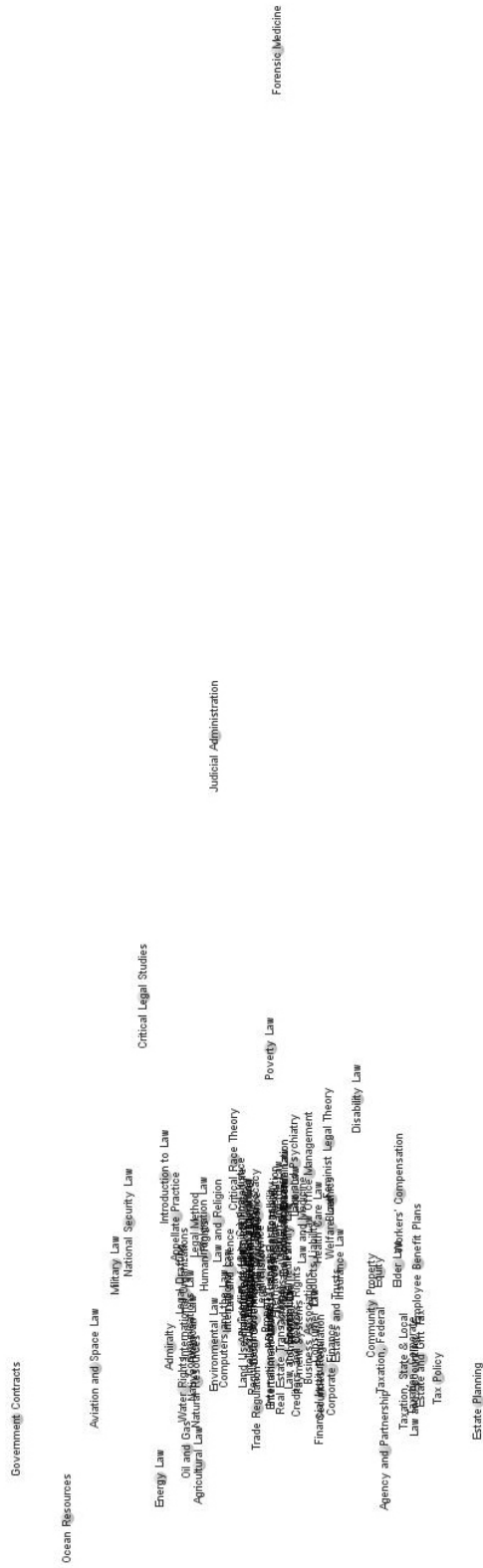
Appendix 32: 2010-11 Proxscal MDS Layout, Non-Normalized



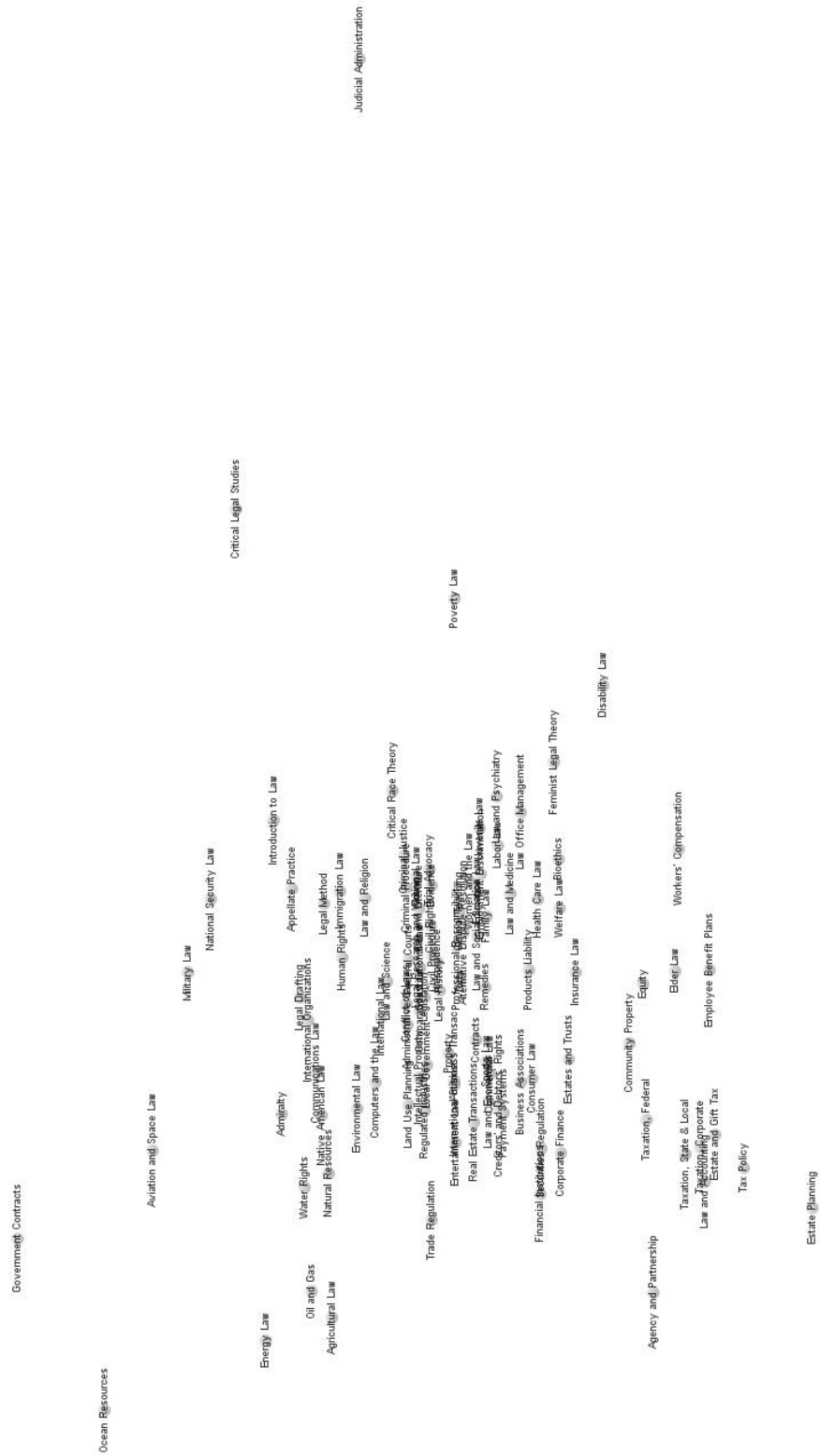
Appendix 33: 2010-11 VOS, Assoc. Strength (2009) Total Occurrences



Appendix 35: 2010-11 VOS, Cosine (2009) Total Occurrences



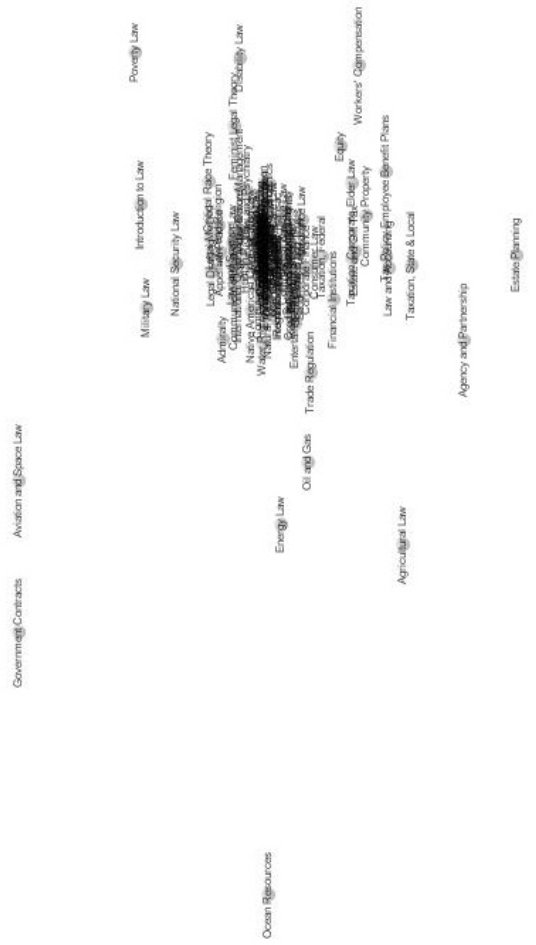
Appendix 36: 2010-11 VOS, Cosine (2009) Total Occurrences (Less Forensic Medicine)



Appendix 39: 2010-11 VOS, Non-Normalized (Less Forensic Medicine)

Judicial Administration

Critical Legal Studies



Appendix 41: Course-Subject Metrics 1931-32

1931-32 Course-Subject	Length of Time Faculty Member has Taught the Course-Subject			Total Number of Faculty Teaching the Course-Subject	Mean	Mode	Percentage of All Course-Subject Listed Professors (Out of 2674)	Rank of Most Professors Teaching a Particular Course-Subject	Quintile Rank of Most Professors Teaching a Particular Course-Subject (First Quintile Corresponds to Most Professors Teaching a Course-Subject)	Rank of the Mean Length Professors Have Been Teaching a Course-Subject (Lowest Number (Highest Rank) Corresponds with the "Youngest" Course-Subject)	Quintile Rank of the Mean Length Professors Have Been Teaching a Course-Subject (First Quintile Corresponds with Youngest Average)
	One to Five Years	Six to Ten Years	Over Ten Years								
Administrative Law	31	7	4	42	1.357	1	1.57%	31	3rd	12	2nd
Admiralty	10	5	4	19	1.684	1	0.71%	38	4th	40	4th
Agency	44	18	13	75	1.587	1	2.80%	16	2nd	30	3rd
Air Law	3	0	0	3	1.000	1	0.11%	58	5th	1	1st
Bankruptcy	27	14	7	48	1.583	1	1.80%	25	3rd	29	3rd
Bills and Notes	53	24	15	92	1.587	1	3.44%	6	1st	31	3rd
Business Organization	10	0	0	10	1.000	1	0.37%	47	5th	1	1st
Code Pleading (See also Pleading)	28	10	10	48	1.625	1	1.80%	25	3rd	35	4th
Common Law Pleading (See also Pleading)	31	8	21	60	1.833	1	2.24%	20	2nd	51	5th
Comparative Law	7	1	2	10	1.500	1	0.37%	47	5th	18	2nd
Conflict of Laws	47	19	21	87	1.701	1	3.25%	11	1st	44	4th
Constitutional Law	38	24	27	89	1.876	1	3.33%	8	1st	54	5th
Contracts	51	17	31	99	1.798	1	3.70%	4	1st	50	5th
Corporation Finance	9	0	0	9	1.000	1	0.34%	49	5th	1	1st
Credit Transactions	14	1	2	17	1.294	1	0.64%	40	4th	8	1st
Criminal Law Administration	6	2	0	8	1.250	1	0.30%	52	5th	6	1st
Criminal Law and Procedure	63	17	23	103	1.612	1	3.85%	3	1st	33	3rd
Damages	30	9	4	43	1.395	1	1.61%	29	3rd	14	2nd
Domestic Relations	52	8	15	75	1.507	1	2.80%	16	2nd	19	2nd
Equity	58	19	27	104	1.702	1	3.89%	2	1st	45	4th
Equity Pleading & Practice	12	2	6	20	1.700	1	0.75%	37	4th	43	4th
Evidence	50	15	23	88	1.693	1	3.29%	10	1st	42	4th
Federal Jurisdiction and Procedure	16	8	6	30	1.667	1	1.12%	35	4th	38	4th
Future Interests	22	9	15	46	1.848	1	1.72%	27	3rd	53	5th
Industrial Relations (See also Labor Law)	5	1	0	6	1.167	1	0.22%	57	5th	5	1st
Insurance	38	10	10	58	1.517	1	2.17%	21	2nd	21	2nd
International Law	18	5	9	32	1.719	1	1.20%	33	3rd	47	5th
Introduction to Law	5	3	1	9	1.556	1	0.34%	49	5th	25	3rd

Jurisprudence	11	4	4	19	1.632	1	0.71%	38	4th	36	4th
Labor Law (See also Industrial Relations)	6	3	0	9	1.333	1	0.34%	49	5th	10	1st
Legal Bibliography and Research	25	14	6	45	1.578	1	1.68%	28	3rd	28	3rd
Legal Ethics	20	5	6	31	1.548	1	1.16%	34	3rd	24	3rd
Legal History	10	2	1	13	1.308	1	0.49%	42	4th	9	1st
Legislation	8	1	2	11	1.455	1	0.41%	45	4th	16	2nd
Mining Law	1	1	5	7	2.571	3	0.26%	54	5th	58	5th
Mortgages	31	13	12	56	1.661	1	2.09%	22	2nd	37	4th
Municipal Corporations	37	9	6	52	1.404	1	1.94%	24	3rd	15	2nd
Office Practice	10	1	0	11	1.091	1	0.41%	45	4th	4	1st
Oil and Gas	4	2	1	7	1.571	1	0.26%	54	5th	27	3rd
Partnership	39	15	9	63	1.524	1	2.36%	19	2nd	22	2nd
Patent Law	3	2	3	8	2.000	1,3	0.30%	52	5th	55	5th
Personal Property	47	19	16	82	1.622	1	3.07%	14	2nd	34	3rd
Pleading (See also Code Pleading and Common Law Pleading)	6	0	6	12	2.000	1,3	0.45%	44	4th	55	5th
Practice	49	15	22	86	1.686	1	3.22%	12	2nd	41	4th
Practice Court	15	6	8	29	1.759	1	1.08%	36	4th	48	5th
Private Corporations (See also Municipal Corporations)	62	18	12	92	1.457	1	3.44%	6	1st	17	2nd
Public Utilities	48	15	14	77	1.558	1	2.88%	15	2nd	26	3rd
Quasi-Contract	33	4	6	43	1.372	1	1.61%	29	3rd	13	2nd
Real Property (See also Future Interests)	59	23	35	117	1.795	1	4.38%	1	1st	49	5th
Roman Law	7	1	5	13	1.846	1	0.49%	42	4th	52	5th
Sales	56	16	14	86	1.512	1	3.22%	12	2nd	20	2nd
Suretyship	32	12	10	54	1.593	1	2.02%	23	2nd	32	3rd
Taxation	27	6	3	36	1.333	1	1.35%	32	3rd	10	1st
Torts	52	23	24	99	1.717	1	3.70%	4	1st	46	4th
Trade Regulation	11	4	0	15	1.267	1	0.56%	41	4th	7	1st
Trusts	55	20	14	89	1.539	1	3.33%	8	1st	23	2nd
Water Rights	2	0	5	7	2.429	3	0.26%	54	5th	57	5th
Wills and Administration	39	22	14	75	1.667	1	2.80%	16	2nd	38	4th

Appendix 42: Course-Subject Metrics 1972-73

1972-73 Course-Subject	Length of Time Faculty Member has Taught the Course-Subject			Total Number of Faculty Teaching the Course-Subject	Mean	Mode	Percentage of All Course-Subject Listed Professors (Out of 19,025)	Rank of Most Professors Teaching a Particular Course-Subject	Quintile Rank of Most Professors Teaching a Particular Course-Subject (First Quintile Corresponds to Most Professors Teaching a Course-Subject)	Rank of the Mean Length Professors Have Been Teaching a Course-Subject (Lowest Number (Highest Rank) Corresponds with the "Youngest" Course-Subject)	Quintile Rank of the Mean Length Professors Have Been Teaching a Course-Subject (First Quintile Corresponds with Youngest Average)
	One to Five Years	Six to Ten Years	Over Ten Years								
Accounting	76	32	22	130	1.585	1	0.68%	58	4th	62	4th
Administrative Law (Includes Transportation, Government Litigation, Selective Service and Executive Function (see also Trade Regulation))	323	68	67	458	1.441	1	2.41%	9	1st	36	3rd
Admiralty (Includes Maritime Law)	86	21	13	120	1.392	1	0.63%	60	4th	29	2nd
Agency	190	56	36	282	1.454	1	1.48%	24	2nd	38	3rd
Air Law (Includes Space)	27	5	1	33	1.212	1	0.17%	80	5th	10	1st
Antitrust (Includes Competition and Price Administration)	147	43	27	217	1.447	1	1.14%	35	3rd	37	3rd
Arbitration	50	15	13	78	1.526	1	0.41%	69	4th	52	3rd
Atomic Energy	8	2	2	12	1.500	1	0.06%	86	5th	44	3rd
Business Organizations (Includes Cooperatives, Partnerships and Unincorporated Associations)	168	29	40	237	1.460	1	1.25%	31	2nd	39	3rd
Civil Procedure	299	77	88	464	1.545	1	2.44%	8	1st	56	4th
Clinical Teaching (Includes those who have taught any law subject by the Clinical Method, or directed a Legal Clinic in a law school, for a period of at least one full term)	188	3	1	192	1.026	1	1.01%	43	3rd	3	1st
Commercial Law (Includes Commercial Transactions, Uniform Commercial Code and Financial Institutions)	214	67	52	333	1.514	1	1.75%	17	1st	48	3rd
Community Property	44	11	14	69	1.565	1	0.36%	71	5th	61	4th
Comparative Law (Includes American Indian Law, Civil Law, Foreign Law, Law of Emerging Nations and Law of Specific Countries)	152	46	45	243	1.560	1	1.28%	30	2nd	57	4th
Conflict of Laws	221	77	91	389	1.666	1	2.04%	13	1st	71	5th
Constitutional Law (Includes Civil Rights, Church and State, and Right of Privacy)	459	110	130	699	1.529	1	3.67%	1	1st	53	4th
Contracts	354	110	123	587	1.606	1	3.09%	5	1st	65	4th
Corporation Finance (Includes Business Planning, Corporate	161	36	24	221	1.380	1	1.16%	34	2nd	27	2nd

Reorganization, Deferred Compensation and Employee Benefits Plans)											
Corporations (Includes Non-Profit Organizations)	262	66	82	410	1.561	1	2.16%	12	1st	59	4th
Credit Transactions (Includes Housing Finance and Development, Land Finance, Mortgages, Secured Transactions, Security and Suretyship)	169	49	61	279	1.613	1	1.47%	25	2nd	66	4th
Creditors' Rights (Includes Bankruptcy and Debtors' Estates and Debtors' Rights)	131	52	52	235	1.664	1	1.24%	33	2nd	70	5th
Criminal Law (Includes Criminal Law Administration, Problems of Policing and Police Internship)	431	93	98	622	1.465	1	3.27%	3	1st	41	3rd
Criminal Procedure (Includes Juvenile Delinquency and Juveniles)	367	75	48	490	1.349	1	2.58%	7	1st	23	2nd
Damages	50	15	12	77	1.506	1	0.40%	70	5th	45	3rd
Decedents' Estates (Includes Estates, Wills, and Succession)	144	45	59	248	1.657	1	1.30%	29	2nd	69	4th
Domestic Relations (Includes Family Law, Marital Property, Persons and Social Work)	247	65	60	372	1.497	1	1.96%	15	1st	43	3rd
Education, Legal Problems of (Includes Academic Freedom)	19	1	0	20	1.050	1	0.11%	84	5th	5	1st
Environmental Law (See also Land Use and Regulated Industries and Other Activities)	177	4	0	181	1.022	1	0.95%	46	3rd	2	1st
Equity (Includes Equitable Remedies and Equity Practice)	156	56	49	261	1.590	1	1.37%	27	2nd	63	4th
Estate Planning	124	41	49	214	1.650	1	1.12%	36	3rd	68	4th
Evidence (Includes Facts)	278	70	87	435	1.561	1	2.29%	11	1st	58	4th
Federal Jurisdiction (Includes Federal Practice, Federal Procedure, Law of the Federal System and Supreme Court)	224	52	49	325	1.462	1	1.71%	20	2nd	40	3rd
Fiduciary Administration	30	8	13	51	1.667	1	0.27%	77	5th	72	5th
Future Interests	72	37	80	189	2.042	3	0.99%	44	3rd	86	5th
Government Contracts (Includes Public Employment)	45	7	4	56	1.268	1	0.29%	76	5th	13	1st
Insurance (Includes Pensions and Profit-Sharing Plans)	137	33	41	211	1.545	1	1.11%	37	3rd	55	4th
International Law (Includes Consular Law, Human Rights, Immigration, Legal Aspects of American Foreign Relations, Treaties and World Order)	194	64	57	315	1.565	1	1.66%	21	2nd	60	4th
International Organizations (Includes Regional Organizations and United Nations Law)	61	21	12	94	1.479	1	0.49%	64	4th	42	3rd
International Transactions (Includes Common Market, Development Law, Foreign Patents, International Business, International Development, International Policies, International Taxation,	146	43	22	211	1.412	1	1.11%	37	3rd	34	2nd

International Trade, Control of International Aviation and Constitutional Problems of U.S. Foreign Affairs Operations)												
Introduction to Law (Includes Adversary System and American Legal System)	125	30	19	174	1.391	1	0.91%	47	3rd	28	2nd	
Judicial Administration	19	3	6	28	1.536	1	0.15%	82	5th	54	4th	
Jurisprudence (Includes Language and Logic, Law and Morality, Legal Philosophy and Legal Theory)	218	53	58	329	1.514	1	1.73%	18	2nd	49	3rd	
Labor Law (Includes Collective Bargaining)	184	46	81	311	1.669	1	1.63%	22	2nd	73	5th	
Land Use (Includes Agriculture Policy, Planning, Zoning and Urban Redevelopment (See also Environmental Law))	173	35	29	237	1.392	1	1.25%	31	2nd	30	2nd	
Law and Computers (Includes Jurimetrics)	24	2	0	26	1.077	1	0.14%	83	5th	6	1st	
Law and Medicine (Includes Health Law and Psychiatry and the Law)	155	30	24	209	1.373	1	1.10%	39	3rd	26	2nd	
Law and Poverty (Includes Legal Rights of the Poor)	186	9	0	195	1.046	1	1.02%	42	3rd	4	1st	
Law and Science	30	6	0	36	1.167	1	0.19%	79	5th	7	1st	
Law and Society (Includes Law and Anthropology and Law and Behavioral Sciences)	134	20	9	163	1.233	1	0.86%	49	3rd	11	1st	
Legal Bibliography (Includes Library Use (See also Legal Research and Writing))	75	28	31	134	1.672	1	0.70%	57	4th	75	5th	
Legal Clinics (Includes Public Defender Clinics)	121	14	7	142	1.197	1	0.75%	56	4th	8	1st	
Legal History (Includes Canon Law and Development of Legal Institutions)	111	23	19	153	1.399	1	0.80%	54	4th	31	2nd	
Legal Method (Includes Decision Process)	115	26	15	156	1.359	1	0.82%	52	3rd	25	2nd	
Legal Process	131	22	10	163	1.258	1	0.86%	49	3rd	12	1st	
Legal Profession (Includes Law and Public Opinion, Legal Education, Legal Ethics, Preventative Law, Professional Responsibility and the Lawyer as a Negotiator)	247	49	30	326	1.334	1	1.71%	19	2nd	21	2nd	
Legal Research and Writing (Includes Information Retrieval, Legal Drafting, Legal Expression and Research Aims and Methods (See also Legal Bibliography))	368	51	37	456	1.274	1	2.40%	10	1st	14	1st	
Legislation (Includes Legislative Drafting)	149	29	31	209	1.435	1	1.10%	39	3rd	35	3rd	
Librarian (Includes those who are of have been Law Librarians, Assistant Law Librarians, etc., and those who teach of have taught librarianship or use of libraries)	43	16	33	92	1.891	1	0.48%	65	4th	84	5th	
Local Government (Includes Municipal Corporations, Public	215	30	30	275	1.327	1	1.45%	26	2nd	18	2nd	

Education, Urban Finance and Urban Problems)											
Military Law	49	9	9	67	1.403	1	0.35%	72	5th	32	2nd
Natural Resources (Includes Mining, Ocean Resources, and Public Resources (See also Oil and Gas))	57	6	4	67	1.209	1	0.35%	72	5th	9	1st
Negotiable Instruments (Includes Banking, Bills and Notes and Commercial Paper)	99	39	49	187	1.733	1	0.98%	45	3rd	80	5th
Office Practice (Includes Legal Counseling)	33	4	5	42	1.333	1	0.22%	78	5th	19	2nd
Oil and Gas (See also Natural Resources)	31	12	22	65	1.862	1	0.34%	74	5th	83	5th
Patents, Copyrights, Trademarks (Includes Intellectual Property and Protection of Ideas)	72	27	27	126	1.643	1	0.66%	59	4th	67	4th
Personal Property (Includes Bailments)	136	51	68	255	1.733	1	1.34%	28	2nd	81	5th
Pleading	36	16	28	80	1.900	1	0.42%	68	4th	85	5th
Practice and Procedure (Includes Common Law Actions, Jurisdiction and Judgments)	92	32	47	171	1.737	1	0.90%	48	3rd	82	5th
Practice Court (Includes Moot Court and Oral Advocacy)	136	37	34	207	1.507	1	1.09%	41	3rd	46	3rd
Real Property (Includes Conveyances, Eminent Domain, Landlord and Tenant, Real Estate, Servitudes, Titles and Vendor and Purchaser)	351	109	151	611	1.673	1	3.21%	4	1st	76	5th
Regulated Industrial and Other Activities (Includes Air and Water Pollution, Government and Business, Government Control of Business and Law and Control of Economy)	86	14	10	110	1.309	1	0.58%	62	4th	15	1st
Remedies	124	14	18	156	1.321	1	0.82%	52	3rd	17	1st
Restitution (Includes Quasi Contracts)	55	19	23	97	1.670	1	0.51%	63	4th	74	5th
Roman Law	14	5	1	20	1.350	1	0.11%	84	5th	24	2nd
Sales	83	33	36	152	1.691	1	0.80%	55	4th	78	5th
Securities Regulation (See also Administrative Law)	125	24	14	163	1.319	1	0.86%	49	3rd	16	1st
Social Legislation	87	12	13	112	1.339	1	0.59%	61	4th	22	2nd
Taxation, Federal (Includes Income and Estate and Gift Taxation)	291	116	119	526	1.673	1	2.76%	6	1st	77	5th
Taxation, State and Local	63	8	19	90	1.511	1	0.47%	66	4th	47	3rd
Torts (Includes Injuries to Relations, Products Liability and Statutory Liability)	384	119	128	631	1.594	1	3.32%	2	1st	64	4th
Trade Regulation (Includes Business Regulation, Communications, Consumer Protection, Public Utilities, Pure Food and Drugs and Unfair Competition)	228	34	32	294	1.333	1	1.55%	23	2nd	19	2nd
Trial and Appellate Practice (Includes Litigation, Trial	269	65	45	379	1.409	1	1.99%	14	1st	33	2nd

Advocacy and Trial Practice)											
Trusts and Estates	203	76	92	371	1.701	1	1.95%	16	1st	79	5th
Water Rights	56	12	16	84	1.524	1	0.44%	67	4th	50	3rd
Women and the Law	29	0	0	29	1.000	1	0.15%	81	5th	1	1st
Workmen's Compensation	39	9	11	59	1.525	1	0.31%	75	5th	51	3rd

Appendix 43: Course-Subject Metrics 2010-11

2010-11 Course-Subject	Length of Time Faculty Member has Taught the Course-Subject			Total Number of Faculty Teaching the Course-Subject	Mean	Mode	Percentage of All Course-Subject Listed Professors (Out of 36,216)	Rank of Most Professors Teaching a Particular Course-Subject	Quintile Rank of Most Professors Teaching a Particular Course-Subject (First Quintile Corresponds to Most Professors Teaching a Course-Subject)	Rank of the Mean Length Professors Have Been Teaching a Course-Subject (Lowest Number (Highest Rank) Corresponds with the "Youngest" Course-Subject)	Quintile Rank of the Mean Length Professors Have Been Teaching a Course-Subject (First Quintile Corresponds with Youngest Average)
	One to Five Years	Six to Ten Years	Over Ten Years								
Administrative Law (Cross-referenced under Regulated Industries)	318	134	229	681	1.869	1	1.88%	16	1st	52	3rd
Admiralty (Includes Maritime Law)	20	11	39	70	2.271	3	0.19%	83	4th	102	5th
Agency and Partnership	25	5	8	38	1.553	1	0.10%	93	5th	14	1st
Agricultural Law	16	3	7	26	1.654	1	0.07%	98	5th	24	2nd
Alternative Dispute Resolution (Includes Arbitration, Mediation and Negotiation)	254	132	187	573	1.883	1	1.58%	25	2nd	56	3rd
Antitrust (Includes Unfair competition; Cross-referenced under Trade Regulation)	110	58	138	306	2.092	3	0.84%	38	2nd	93	5th
Appellate Practice (Includes Appellate Advocacy)	106	37	37	180	1.617	1	0.50%	56	3rd	21	1st
Aviation and Space Law	12	3	4	19	1.579	1	0.05%	100	5th	16	1st
Bioethics	59	27	24	110	1.682	1	0.30%	70	4th	27	2nd
Business Associations (Includes Agency and Partnership; Corporations, Business Planning)	468	223	396	1087	1.934	1	3.00%	8	1st	67	4th
Civil Procedure (Includes Common Law Actions, Judgments and Pleading)	532	257	570	1359	2.028	3	3.75%	3	1st	86	5th
Civil Rights (Includes Fair Housing; Race Relations; Cross-referenced under Constitutional Law)	276	131	151	558	1.776	1	1.54%	26	2nd	35	2nd
Clinical Teaching (Includes Counseling and those who have taught any law subject by the Clinical Method, or directed a Legal Clinic in a law school for a period of at least one full term.)	532	278	540	1350	2.006	3	3.73%	4	1st	79	4th
Commercial Law (Includes Sales and Secured Transactions)	218	121	320	659	2.155	3	1.82%	18	1st	97	5th
Communications Law	59	30	38	127	1.835	1	0.35%	66	4th	45	3rd
Community Property	26	8	38	72	2.167	3	0.20%	82	4th	98	5th
Comparative Law (Includes Civil Law, Foreign Law, Law of Emerging Nations, and Roman Law)	335	135	206	676	1.809	1	1.87%	17	1st	40	2nd
Computers and the Law (see also Law and Science)	135	59	34	228	1.557	1	0.63%	47	3rd	15	1st

Conflict of Laws	148	69	166	383	2.047	3	1.06%	31	2nd	88	5th
Constitutional Law (Includes Church and State; Cross-referenced under Civil Rights)	615	328	687	1630	2.044	3	4.50%	1	1st	87	5th
Consumer Law (Cross-referenced under Trade Regulation)	61	21	44	126	1.865	1	0.35%	67	4th	50	3rd
Contracts	511	238	526	1275	2.012	3	3.52%	5	1st	80	4th
Corporate Finance (Includes Corporate Reorganization)	138	71	107	316	1.902	1	0.87%	35	2nd	59	3rd
Creditors' and Debtors' Rights (Includes Bankruptcy)	88	67	151	306	2.206	3	0.84%	38	2nd	100	5th
Criminal Justice (Includes Corrections, Criminal Law Administration and Sentencing)	185	83	125	393	1.847	1	1.09%	30	2nd	49	3rd
Criminal Law	450	184	392	1026	1.943	1	2.83%	10	1st	69	4th
Criminal Procedure	361	167	359	887	1.998	1	2.45%	11	1st	76	4th
Critical Legal Studies	14	2	3	19	1.421	1	0.05%	100	5th	8	1st
Critical Race Theory	53	20	10	83	1.482	1	0.23%	80	4th	10	1st
Disability Law	29	8	12	49	1.653	1	0.14%	91	5th	23	2nd
Education Law (Includes Public Education, School Law and College and University Law)	105	40	42	187	1.663	1	0.52%	54	3rd	25	2nd
Elder Law	43	11	19	73	1.671	1	0.20%	81	4th	26	2nd
Employee Benefit Plans (Cross-Referenced under Labor Law)	26	10	27	63	2.016	3	0.17%	85	5th	82	4th
Employment Discrimination	187	88	154	429	1.923	1	1.18%	29	2nd	63	3rd
Energy Law	26	3	5	34	1.382	1	0.09%	96	5th	5	1st
Entertainment Law	43	19	28	90	1.833	1	0.25%	78	4th	44	3rd
Environmental Law (Cross-referenced under Land Use Planning; Natural Resources; Regulated Industries)	212	107	194	513	1.965	1	1.42%	27	2nd	71	4th
Equity (Includes Equitable Remedies; Equity Practice; Cross referenced under Remedies)	19	15	17	51	1.961	1	0.14%	90	5th	70	4th
Estate and Gift Tax	52	28	91	171	2.228	3	0.47%	57	3rd	101	5th
Estate Planning	26	2	10	38	1.579	1	0.10%	93	5th	16	1st
Estates and Trusts (Includes Decedents Estates; Estate Planning; Future Interests; Trusts and Wills; Cross-referenced under Estate and Gift Tax)	213	89	293	595	2.134	3	1.64%	21	1st	96	5th
Evidence	307	151	382	840	2.089	3	2.32%	13	1st	92	5th
Family Law (Includes Domestic Relations; Marital Property; Cross-referenced under Juvenile Law)	239	122	228	589	1.981	1	1.63%	23	2nd	74	4th
Federal Courts (Includes Federal Jurisdiction, Federal Practice, Federal Procedure, Law of the Federal System and Supreme Court)	274	117	258	649	1.975	1	1.79%	19	1st	72	4th

Feminist Legal Theory	27	13	16	56	1.804	1	0.15%	88	5th	39	2nd
Financial Institutions (Cross-referenced under Regulated Industries)	50	24	27	101	1.772	1	0.28%	75	4th	34	2nd
Forensic Medicine	1	0	0	1	1.000	1	0.00%	104	5th	1	1st
Government Contracts	13	2	8	23	1.783	1	0.06%	99	5th	37	2nd
Health Care Law (Cross-Referenced under Law and Medicine)	127	74	77	278	1.820	1	0.77%	41	2nd	43	3rd
Human Rights	167	57	44	268	1.541	1	0.74%	44	3rd	13	1st
Immigration Law	105	45	53	203	1.744	1	0.56%	50	3rd	32	2nd
Insurance Law	62	25	47	134	1.888	1	0.37%	64	4th	57	3rd
Intellectual Property (Includes Patents, Copyrights, Trademarks)	270	142	178	590	1.844	1	1.63%	22	2nd	48	3rd
International Business Transactions (Includes Common Market; Development Law; Foreign Patents; International Business; International Development, International Taxation; International Trade)	247	134	194	575	1.908	1	1.59%	24	2nd	61	3rd
International Law (Includes Legal Aspects of American Foreign Relations; Law of the Sea; Treaties; World Order)	434	182	271	887	1.816	1	2.45%	11	1st	42	2nd
International Organizations (Includes Regional Organizations and United Nations Law)	78	33	44	155	1.781	1	0.43%	61	3rd	36	2nd
Introduction to Law	45	8	12	65	1.492	1	0.18%	84	4th	11	1st
Judicial Administration	8	1	1	10	1.300	1	0.03%	103	5th	3	1st
Jurisprudence (Includes Language and Logic and Legal Philosophy)	321	150	253	724	1.906	1	2.00%	15	1st	60	3rd
Juvenile Law (Cross-referenced under Family Law)	124	51	77	252	1.813	1	0.70%	45	3rd	41	2nd
Labor Law (Includes Collective Bargaining; Public Employment; Cross-referenced under Employee Benefit Plans)	100	50	158	308	2.188	3	0.85%	37	2nd	99	5th
Land Use Planning (Includes Zoning; Cross-referenced under Environmental Law; Local Government)	125	59	103	287	1.923	1	0.79%	40	2nd	63	3rd
Law and Accounting	34	10	40	84	2.071	3	0.23%	79	4th	90	5th
Law and Economics	169	51	56	276	1.591	1	0.76%	42	2nd	18	1st
Law and Literature	97	29	34	160	1.606	1	0.44%	59	3rd	20	1st
Law and Medicine (Includes Forensic Medicine; Cross-referenced under Health Care Law; Law and Psychiatry)	81	59	85	225	2.018	3	0.62%	48	3rd	83	4th
Law and Psychiatry (Cross-referenced under Law and Medicine)	47	13	50	110	2.027	3	0.30%	70	4th	85	5th
Law and Religion	79	19	13	111	1.405	1	0.31%	69	4th	7	1st

Law and Science (Cross-referenced under Computers and the Law)	73	30	38	141	1.752	1	0.39%	63	3rd	33	2nd
Law and Social Science (Includes Law and Anthropology and Law and Behavioral Sciences)	169	64	79	312	1.712	1	0.86%	36	2nd	30	2nd
Law Office Management	45	22	37	104	1.923	1	0.29%	74	4th	63	3rd
Legal Drafting	102	27	14	143	1.385	1	0.39%	62	3rd	6	1st
Legal History	198	95	170	463	1.940	1	1.28%	28	2nd	68	4th
Legal Method	90	18	18	126	1.429	1	0.35%	67	4th	9	1st
Legal Research and Writing (Includes Legal Bibliography)	718	377	506	1601	1.868	1	4.42%	2	1st	51	3rd
Legislation	198	73	90	361	1.701	1	1.00%	33	2nd	29	2nd
Local Government (Cross-referenced under Land Use Planning; Taxation, State and Local)	87	38	72	197	1.924	1	0.54%	51	3rd	66	4th
Military Law	47	6	8	61	1.361	1	0.17%	87	5th	4	1st
National Security Law	73	16	5	94	1.277	1	0.26%	77	4th	2	1st
Native American Law	59	27	45	131	1.893	1	0.36%	65	4th	58	3rd
Natural Resources (Cross Referenced under Environmental Law; Oil and Gas)	91	36	66	193	1.870	1	0.53%	52	3rd	53	3rd
Ocean Resources	9	1	3	13	1.538	1	0.04%	102	5th	12	1st
Oil and Gas (Cross-referenced under Natural Resources)	14	4	18	36	2.111	3	0.10%	95	5th	94	5th
Payment Systems	62	46	126	234	2.274	3	0.65%	46	3rd	103	5th
Poverty Law	28	6	10	44	1.591	1	0.12%	92	5th	18	1st
Products Liability (Includes Consumer Product Safety)	67	31	69	167	2.012	3	0.46%	58	3rd	80	4th
Professional Responsibility	511	224	339	1074	1.840	1	2.97%	9	1st	46	3rd
Property (Includes Landlord and Tenant; Personal Property; Real Property)	428	214	481	1123	2.047	3	3.10%	7	1st	88	5th
Real Estate Transactions (Includes Mortgages)	84	32	109	225	2.111	3	0.62%	48	3rd	94	5th
Regulated Industries (Includes Public Utilities; Transportation; Cross-referenced under Administrative Law; Environmental Law; Financial Institutions; Trade Regulation)	85	44	56	185	1.843	1	0.51%	55	3rd	47	3rd
Remedies (Includes Damages; Restitution; Cross-referenced under Equity)	183	81	107	371	1.795	1	1.02%	32	2nd	38	2nd
Securities Regulation	143	58	137	338	1.982	1	0.93%	34	2nd	75	4th
Sports Law	49	25	36	110	1.882	1	0.30%	70	4th	55	3rd
Tax Policy	63	21	25	109	1.651	1	0.30%	73	4th	22	2nd
Taxation, Corporate	82	28	78	188	1.979	1	0.52%	53	3rd	73	4th
Taxation, Federal (Includes Income Tax)	161	96	362	619	2.325	3	1.71%	20	1st	104	5th
Taxation, State and Local (Cross-referenced under Local Government)	33	13	16	62	1.726	1	0.17%	86	5th	31	2nd

Torts	485	226	516	1227	2.025	3	3.39%	6	1st	84	4th
Trade Regulation (Cross-referenced under Antitrust; Consumer Law; Regulated Industries)	22	10	22	54	2.000	1,3	0.15%	89	5th	77	4th
Trial Advocacy (Includes Oral Advocacy)	288	158	290	736	2.003	3	2.03%	14	1st	78	4th
Water Rights	36	16	44	96	2.083	3	0.27%	76	4th	91	5th
Welfare Law	86	31	39	156	1.699	1	0.43%	60	3rd	28	2nd
Women and the Law	114	76	81	271	1.878	1	0.75%	43	3rd	54	3rd
Workers' Compensation	16	5	13	34	1.912	1	0.09%	96	5th	62	3rd

Appendix 44: IRB EMAIL Correspondence as to LSAC Grant

Henderson, William

From: IUB_HSC
Sent: Thursday, January 19, 2006 1:17 PM
To: Henderson, William; Finn, Peter
Cc: Dau-Schmidt, Kenneth Glenn; Andrew Morriss; oba1@case.edu; IUB_HSC
Subject: RE: IRB, Thanks

Bill,

Thank you for your email and voicemail.

I decided to respond to you by email so I will have documentation.

We will go ahead and withdraw your application per your conversation with Peter that human subject approval was not required.

If you have any further questions please let me know.

Thank you

Senta

From: Henderson, William
Sent: Thursday, January 19, 2006 9:57 AM
To: Finn, Peter
Cc: Dau-Schmidt, Kenneth Glenn; Andrew Morriss; oba1@case.edu; IUB_HSC
Subject: IRB, Thanks

Hi Peter,

Re our proposed longitudinal project on legal scholarship, I was at a conference when I got your voice message and misplaced my note to call you back. Please accept my apology.

I am glad to hear your assessment that the project does not involve human subjects research. CWRU came to the same assessment. I think the Law School has been very cautious about these matters out of sensitivity to our colleague, Ann Gellis, who has worked on the IRB committee for many years.

Thanks for taking the time to review our project. Bill H.

William D. Henderson
Associate Professor of Law
Indiana University School of Law--Bloomington
211 S. Indiana Ave.
Bloomington, IN 47405
Ph. 812.856.1788
Fax. 812.855.0555

View my research on my SSRN Author page:
<http://ssrn.com/author=337548>

Henderson, William

From: Andrew Morriss [andrew.morriss@case.edu]
Sent: Tuesday, September 20, 2005 2:28 PM
To: Henderson, William; Newton, Mark A; Dau-Schmidt, Kenneth Glenn; oba1@case.edu
Subject: Good News: Notice of Exemption for IRB Protocol Number: 20050902
Importance: High

From: CWRU Institutional Review Board [mailto:cwru-irb@case.edu]
Sent: Tuesday, September 20, 2005 1:32 PM
To: andrew.morriss@case.edu
Cc: jww2@cwru.edu; oba1@case.edu
Subject: Notice of Exemption for IRB Protocol Number: 20050902
Importance: High

*Case Western Reserve University
Institutional Review Board*

NOTICE OF EXEMPTION (#4)

Responsible Investigator: **Andrew Morriss**
Department: **Law School CC**
IRB Protocol Number: **20050902**
Title: ***The Production, Consumption and Content of Legal Scholarship***
Co-Investigator: **Olufunmilayo Arewa**

Exemption Date: September 20, 2005

The Institutional Review Board (IRB) has deemed the above protocol EXEMPT under 45 Code of Federal Regulations (CFR) part 46.101b, # 4. The IRB will not conduct subsequent reviews of this protocol.

Any changes to the protocol that put it under the purview of the IRB would require a formal application to, and approval of, the IRB prior to implementation of the change IRB applications are available at the [CWRU IRB Pages](#), or from the Office of Research Compliance (ORC) at Sears Library Building, #657.

Questions? Please visit our website: http://ora.ra.cwru.edu/orc_humansubjects_CWRU_IRB.asp

OR
contact our administrative office...

Isabel Sanchez, IRB Administrator
216.368.6993
Maureen Dore-Arshenovitz, IRB Assistant
216.368.6925

1/30/2006

Fax: 216.368.3737

**CASE Institutional Review Board
Office of Research Compliance
Sears Building 657
Cleveland, OH 44106-7230**

1/30/2006

Appendix 45: IRB Exempt Research Checklist (2011-02-03)

INDIANA UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB)

EXEMPT RESEARCH CHECKLIST

IRB Study Number: 1101004680

Principal Investigator: Peter A. Hook

Study Title: The History of an Academic Discipline (Law) as Revealed by a Longitudinal Analysis of Courses Taught (1922–23 through 1989–90)—Domain Maps from 30,000 Co-Teaching Events

DIRECTIONS: This form is to be neatly typed and submitted to the IRB only when the investigator is contemplating the initiation of a research project which, in the investigator’s judgment, is exempt from full IRB review. The IRB will then determine whether the activity is covered by these regulations. *Please type only in the gray boxes. To mark a box as checked, double-click the box, select “checked”, and click “OK”.*

Research activities are exempt from regulations for the protection of human research subjects when they are considered minimal risk (the probability or magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests (as defined by 45 CFR 46.102(i)) and the ONLY involvement of human subjects falls within one or more of the exempt categories listed below.

The exempt categories outlined below do not apply to research involving prisoners or research involving a test article regulated by the FDA, unless the research meets the criteria for exemption described in 45 CFR 46.101(b)(6) and 21 CFR 56.104(d). Additionally, research involving pregnant women that is conducted at or funded by the VA can not be exempt.

The exempt categories outlined below are based solely on methods of research, and do not take the level of risk into consideration. Although most exempt research requires no further oversight to be conducted ethically, some exempt research raises ethical concerns or requires measures to protect participants. As such, the IRB will not consider any research exempt that does not fulfill ethical principles reflected in the Belmont Report. These basic ethical principles are:

1. Respect for Persons (Autonomy) – individuals should be treated as autonomous agents and persons with diminished autonomy are entitled to protection.
2. Beneficence – Human subjects should not be harmed and the research should maximize possible benefits and minimize possible harms.
3. Justice – the benefits and risks of research must be distributed fairly.

Research that otherwise would be exempt by federal regulations that raises ethical concerns or requires measures to protect subjects may be denied and/or moved to a higher level of review (i.e. expedited or full IRB review).

SECTION I: EXEMPT CATEGORY

Check the appropriate category(ies) that applies to your research project:

<input type="checkbox"/>	1. Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special educational instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods. [45CFR46.101(b)(1)]
<input checked="" type="checkbox"/>	2. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless all of the following are true: <ul style="list-style-type: none"> (i) information obtained is recorded in such a manner that the human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the subjects’ responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects’ financial standing, employability, insurability, or reputation. [45CFR46.101(b)(2)] <p>NOTE: If the research involves children as participants, the research must be limited to educational tests</p>

	(cognitive, diagnostic, aptitude, achievement) and observation of public behavior when the investigator(s) do not participate in the activities being observed. Research involving children that uses survey procedures, interview procedures, or observation of public behavior when the investigator(s) participate in the activities being observed cannot be granted an exemption.
<input type="checkbox"/>	<p>3. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under category 2 above, if either:</p> <p>(i) the human subjects are elected or appointed public officials or candidates for public office; or</p> <p>(ii) federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter. [45CFR46.101(b)(3)]</p>
<p>If any of the above categories have been selected, answer the following:</p> <p>Will you be audio or video recording?</p> <p><input type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Yes. Explain how it will be assured that the identity of the subjects and/or link to the information obtained or the information recorded about the subjects does not place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, insurability, or reputation:</p> <p>Subjects are well educated law professors or others trained in the law. Video-taped, think aloud protocol interviews will be voluntary. The videos will not be publically aired without express consent of the subjects (if at all). Otherwise, the videos will be maintained in a manner such that they will not become public. Furthermore, the subjects will have the choice if they want to be identified by name in any reported, written results. Finally, commenting on the validity of a topic map(s) consisting of well established, non-political topics should not put any of the subjects in risk of harm.</p>	
X	<p>4. Research involving the collection or study of <u>existing</u> data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. [45CFR46.101(b)(4)]</p> <p>To qualify for this exemption, data, documents, records, or specimens must exist at the time the research is proposed and not prospectively collected.</p> <p>Provide a list of all data points (the types of data) that will be collected below or attach a data collection sheet.</p> <p>Since 1922, the American Association of Law Schools (AALS) has published an annual directory of its members that contains biographical information about law professors, administrators, and librarians at each member school. Each directory contains a list of faculty members by school for that particular year. Also, beginning in academic year 1931-32, and appearing in most years thereafter, the AALS directories include lists of what subjects were taught by which faculty member. This information is contained in the lists of "Law Teachers by Subject." These directories are publically available from just about any academic law library. The publically available information that will be used (and in some cases reported in the findings is):</p> <p>Faculty Member Name, Faculty Member Institution, Faculty Member Courses Taught Biographic Information About each Faculty Member</p>

<input type="checkbox"/>	<p>5. Research and demonstration projects which are conducted by or subject to the approval of Department or Agency heads, and which are designed to study, evaluate, or otherwise examine:</p> <ul style="list-style-type: none"> (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs. [45CFR46.101(b)(5)]. <p>The program under study must deliver a public benefit (for example, financial or medical benefits as provided under the Social Security Act) or service (for example, social, supportive, or nutrition services as provided under the Older Americans Act).</p> <p>The research or demonstration project must be conducted pursuant to specific federal statutory authority, must have no statutory requirement that an IRB review the project, and must not involve significant physical invasions or intrusions upon the privacy of the subjects.</p> <p>This exemption is for projects conducted by or subject to approval of Federal agencies and requires authorization or concurrence by the funding agency.</p>
<input type="checkbox"/>	<p>6. Taste and food quality evaluation and consumer acceptance studies,</p> <ul style="list-style-type: none"> (i) if wholesome foods without additives are consumed; or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural, chemical, or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture. [45CFR46.101(b)(6) and 21 CFR 56.104(d)]

SECTION II: PERFORMANCE SITE

- Indiana University
 - IUB Campus. Please state school/department/location(s): Law
 - IUPUI Campus. Please state school/department/location(s): _____
 - Bradford Woods
 - Center for Survey Research
 - Center for Evaluation & Education Policy (CEEP)
 - Indiana Clinical Research Center (ICRC)*
 - Indiana Institute on Disability and Communication
 - IU Simon Cancer Center*
 - Krannert Institute of Cardiology*
 - Kinsey Institute
 - Oral Health Research Institute
 - Other: _____
- Health & Hospital Corporation of Marion County
 - Bell Flower Clinic
 - Midtown Mental Health*
 - Wishard Memorial Hospital*
 - Hospital/ER
 - Non-primary care
 - Wishard Specialty Clinics
 - OB/GYN Clinics
- Indiana University Health (Clarian) Facilities
 - Bloomington Hospital

- Beltway Centers
- Methodist Hospital
- Methodist-Affiliated Centers/Private Practices
- North Hospital
- Riley Hospital for Children
- University Hospital
- West Hospital
- Other: _____
- IU Health Clinics. Please list location:_____.
- IU Medical Group Specialty Clinic (IUMG-SC). Please list location: _____.
- Larue Carter Hospital
- Monroe County Community School Corporation. Please list school: _____.
- Regenstrief Institute
- Rehabilitation Hospital of Indiana
- Richard L. Roudebush Veterans Affairs Medical Center*
- Other: Any place that is convenient for any of the non-IU legal experts I will interviewing.

** Additional information or submission may be required prior to initiating the study. Please check with the specific performance site for additional information.*

***Any study using the VA as a performance site, using VA patients, or funded by the VA MUST be submitted to and receive approval from the VA R&D Committee **before** any research can be conducted at the VA..*

SECTION III: RESEARCH DESCRIPTION
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NOTE: Study information will be released to the Clinical and Translational Science Institute (CTSI) for the clinical trials listing. To opt out of this listing requirement you will need to get opt-out approval from Dr. Anantha Shekhar, PhD, MD, Director of Indiana CTSI, prior to IRB submission. For additional information or to request opt-out approval, please contact Sam Scahill at (317) 278-6969 or sscahill@iupui.edu.

1. Provide a brief description, in lay terms, of the purpose of the proposed project.

General Theme: What is the history of an academic discipline as revealed by a longitudinal analysis as to which professors taught which courses (1922-23 through 1989-90)?

Co-Teaching Map

1. Is co-teaching analysis (the aggregate of the same professor teaching multiple, different courses) a legitimate means to produce a topic map of an academic discipline? (Hypothesis: Domain maps produced from co-teaching analysis will, on the whole, be regarded as valid by experts in the field. In other words, domain maps produced from co-teaching analysis will be successfully validated by current law school faculty.) Auxiliary Question: What is the best way to validate a domain map?

Comparison to other ‘Structures’

2. How do topic maps (domain maps) produced by co-teaching differ from topic maps (domain maps) produced by other datasets (overlapping list of cases/topics in casebooks; West Topic and Key Number system co-occurrence in caselaw, etc.).
3. How does the evolution of the subjects on the lists of “teachers by subject” contained in the AALS directories differ with those of the Topic and Key Number System (West Publishing) and the controlled thesaurus for the Index to Legal Periodicals? What is the degree of overlap? Which entity led? Did changes in the AALS directories presage the other taxonomies or vice versa?

Map Evolution & Trend Identification

4. How has the canon of subjects listed in the AALS (American Association of Law Schools) questionnaire changed over time? How quick is it to incorporate new subjects and has this changed over time?
 5. Do certain schools or geographic regions lead in the innovation of new subjects?
 6. What subjects are most frequently co-taught?
 7. Are certain types of professors (minority, part-time, new, or established), more apt to teach a specific course? Has this changed over time?
- a. List all methods by which information or data about or from subjects will be obtained. Describe the frequency and duration of the procedures. **NOTE:** Please include all surveys, instruments, survey/interview questions, etc. that will be used for this research.

Part 1: Harvest publically available information about law school personnel form the AALS Directories and securely store this information in a relational database.

Part 2: One interview (speak aloud protocols, video recorded interviews, etc.) lasting up to two hours (at the discretion of the subjects who are well educated legal professionals). The purpose of this is to validate the domain maps as to their accuracy, reliability, anomalies, strengths, etc. Up to 25 subjects will be interviewed.

Complete 2-6 below ONLY if you selected Categories 1, 2, 3, 5, or 6 in Section I above.

2. Please state the eligibility (inclusion/exclusion criteria).

Previously published, publically available data; and

Research involving interview procedures, but that will not place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, insurability, or reputation.

3. Will subjects be paid for participation in the study (e.g. monetary, free services, gifts, course credit, including extra credit)?

- No. Proceed to 4.
 Yes. Complete items a. and b. below.

- a. Explain the payment arrangements (e.g. amount and timing of payment and the proposed method of disbursement). **NOTE:** Payments must accrue and not be contingent upon completion of the study. However, a small payment (bonus) for completion of the study may be acceptable if it is found to not be persuasive for the subjects to remain in the study.
- b. Justify the proposed payment arrangements described in section B. (e.g., how this proposed payment arrangement is not considered to be coercive).

4. Provide the process by which individuals will be identified and recruited. **Note:** Please include a copy of all information to be shared with or intended to be seen by potential subjects to inform them of this research and ask for their participation.

Up to 25 individuals will be identified based on their subject expertise. They will be contacted by email and asked if they will be willing to be shown several maps and answer questions about them. The Principle Investigator will travel to a place of their convenience in order to conduct the interview.

- a. Explain how it will be ensured that recruitment or selection will not unfairly target a particular population or will target the population that will benefit from the project/research.

The ultimate beneficiaries of this work are those interested in the structure of legal topics. However, only those with advanced training and expertise can adequately speak as to the validity of the proposed maps. There is no other community capable of providing validation for the work other than well trained, legal experts.

5. Explain how it will be ensured that individuals will be treated with respect during interactions/observations with them. For those individuals with diminished autonomy (e.g. children, people with limited ability to make decisions), explain how they will be protected.

Interviews will be entirely voluntary. This will be stressed to the subjects.

- a. Explain how individual privacy will be protected. For example, if interviewing, where will that be conducted?

All interviews will occur at a location of the subject's own choosing. Usually, these will occur in the subject's academic office or a conference room near their office.

- b. Explain how individual confidentiality will be protected. For example, what kind of information will be recorded and how will that be protected?

If migrated to a computer, recorded interviews will be stored behind a firewall. Unless the Principal Investigator has obtained permission for additional limited use of the video recordings from the subject(s) videotaped, he will destroy the video recordings once he has transcribed their contents.

- c. Explain how subjects will be fully informed of this research prior to their participation (through the use of a consent form, study information sheet, etc.). **Note:** Please provide a copy of the consent form, study information sheet, etc.

Subjects will be informed via the contact email that their participation is entirely voluntary. At the interview, they will be told that they can terminate the interview for any reason and at any time. They will be given the following statement:

This interview is being video recorded in order to assist with the written record keeping of the Principle Investigator (Peter Hook). The video will not be shown to others without your express permission and for the purposes and settings described upon the request. Furthermore, it is your choice as to whether you are comfortable allowing yourself to be described in an identifiable manner (by name) in any written and published work stemming from this research.

6. How will you help to minimize potential risks that individuals may be exposed to while participating in the research? Potentials risks may include psychological, social, legal, physical, etc.

As long as the voluntariness and confidentiality of the subjects is respected, there is nothing inherently risky about exposing subjects to proposed topical maps of legal subjects and inviting their comments.

Appendix 46: IRB Documentation of Review and Approval (2011-02-03)

INDIANA UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB) DOCUMENTATION OF REVIEW AND APPROVAL (DRA)

Reviewing IRB (please choose one):

Biomedical: IRB-02 IRB-03 IRB-04 IRB-05
Behavioral: IRB-01 IUB IRB

IRB STUDY NUMBER: 1101004680

Please type only in the gray boxes. To mark a box as checked, double-click the box, select "checked", and click "OK".

SECTION I: INVESTIGATOR INFORMATION

Principal Investigator:

Name (Last, First, Middle Initial): Hook, Peter A.

Department: Law Library

Phone: 812-856-0464

E-Mail: pahook@indiana.edu

Fax: 812-855-7099

Address: 211 South Indiana Ave., Bloomington IN 47405

Additional Study Contact:

Name: _____ Phone: _____ E-Mail: _____

Student Contact, if this is a student protocol: _____ Phone: _____ Email: _____

Project Title: The History of an Academic Discipline (Law) as Revealed by a Longitudinal Analysis of Courses Taught (1922-23 through 1989-90)—Domain Maps from 30,000 Co-Teaching Events

Sponsor/Funding Agency: _____ PI on Grant: _____

Sponsor Protocol #/Grant #: _____ Period: from: _____ to _____

Sponsor Type: Federal State Industry Not-for-Profit Unfunded Internally Funded

Funding Status: Pending Funded N/A

Grant Title (if different from project title): _____

SECTION II: TYPE OF REVIEW

Exempt Review

Expedited Review

Full Board Review (Choose One) → Behavioral: IRB-01 IU Bloomington IRB
 Biomedical: IRB-02 IRB-04 IRB-05

SECTION III: DOCUMENTS INCLUDED WITH RESEARCH SUBMISSION

Assent, dated: _____
Number of assent documents: _____

Authorization, dated: _____
Number of authorizations: _____

Clinical Investigator's Brochure, dated: _____

Expedited Research Checklist, dated: _____

Exempt Research Checklist, dated: 2011-01-19

HIPAA & Recruitment Checklist, dated: _____

Informed Consent, dated: _____
Number of consent documents: _____

Protocol, dated: _____

Recruitment materials (please list and date): 2011-01-26

Request form(s) for vulnerable population(s) (please list and date): _____

Surveys, questionnaires (please list and date): _____

Summary Safeguard Statement or HUD Form, dated: _____

Study Information Sheet

Other (please list and date): _____

SECTION V: INVESTIGATOR STATEMENT OF COMPLIANCE

By submitting this form, the Principal Investigator assures that all information provided is accurate. He/she assures that procedures performed under this project will be conducted in strict accordance with federal regulations and Indiana University policies and procedures that govern research involving human subjects. He/she acknowledges that he/she has the resources required to conduct research in a way that will protect the rights and welfare of participants, and that he/she will employ sound study design which minimizes risks to subjects. He/she agrees to submit any change to the project (e.g. change in principal investigator, research methodology, subject recruitment procedures, etc.) to the Board in the form of an amendment for IRB approval prior to implementation.

SECTION VI: IRB APPROVAL

This research project, including all documents included with the submission (e.g., informed consent statement, authorization, and/or waiver of authorization) has been reviewed and approved by the Indiana University IRB for a maximum of a one year period unless otherwise indicated as follows: _____

- Exempt Category(ies), if applicable: 2
 Expedited Category(ies), if applicable: _____

Authorized IRB Signature: Senta K Baker IRB Approval Date: 2/3/11

Printed Name of IRB Member: Senta K Baker

Appendix 47: IRB Exemption Granted Letter (2011-02-08)



INDIANA UNIVERSITY
OFFICE OF RESEARCH ADMINISTRATION

To: PETER ANDREW HOOK
LAW LIBRARY

From: IU Human Subjects Office
Office of Research Administration – Indiana University

Date: February 08, 2011

RE: EXEMPTION GRANTED

Protocol Title: The History of an Academic Discipline (Law) as Revealed by a Longitudinal Analysis of Courses Taught (1922–23 through 1989–90)—Domain Maps from 30,000 Co-Teaching Events

Protocol #: 1101004680 |

Funding Agency/Sponsor: None

IRB: IRB-IUB, IRB00000222

Your study named above was accepted on February 03, 2011 as meeting the criteria of exempt research as described in the Federal regulations at 45 CFR 46.101(b), paragraph(s) (2) . This approval does not replace any departmental or other approvals that may be required.

As the principal investigator (or faculty sponsor in the case of a student protocol) of this study, you assume the following responsibilities:

Amendments: Any proposed changes to the research study must be reported to the IRB prior to implementation. To request approval, please complete an Amendment form and submit it, along with any revised study documents, to iub_hsc@indiana.edu. Only after approval has been granted by the IRB can these changes be implemented.

Completion: Although a continuing review is not required for an exempt study, you are required to notify the IRB when this project is completed. In some cases, you will receive a request for current project status from our office. If we are unsuccessful at in our attempts to confirm the status of the project, we will consider the project closed. It is your responsibility to inform us of any address changes to ensure our records are kept current.

Per federal regulations, there is no requirement for the use of an informed consent document or study information sheet for exempt research, although one may be used if it is felt to be appropriate for the research being conducted. As such, these documents are returned without an IRB-approval stamp. Please note that if your submission included an informed consent statement or a study information sheet, the IRB requires the investigational team to use these documents.

You should retain a copy of this letter and any associated approved study documents for your records. Please refer to the project title and number in future correspondence with our office. Additional information is available on our website at http://researchadmin.iu.edu/HumanSubjects/IUB/hs_home.html.

If you have any questions, please contact our office at the below address.

Thank you.

Appendix 48: IRB Study Information Sheet (2011-02-01)

IRB STUDY #1101004680

INDIANA UNIVERSITY STUDY INFORMATION SHEET FOR:

The History of an Academic Discipline (Law) as Revealed by a Longitudinal Analysis of Courses
Taught (1922–23 through 1989–90)—Domain Maps from 30,000 Co-Teaching Events

You are invited to participate in a research study of topic maps about academic legal subjects. You were selected as a possible participant because of your specific subject expertise as a legal scholar or as a law professor. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

The study is being conducted by Peter Hook (J.D., M.S.L.I.S), Electronic Services Librarian and Lecturer in Law at the Indiana University Maurer School of Law.

STUDY PURPOSE

The purpose of this study is to see if spatial distributions of academic legal subjects (topic maps) produced by automated means from thousands of aggregated incidences of the same faculty member teaching multiple different subjects, adequately capture the spatial adjacencies of academic legal subjects. Additionally, it is hoped that maps produced in ten year increments reveal the evolution of the canon of academic legal subjects. It is also hoped that such maps, once validated by subject experts, will be useful for teaching purposes and to introduce students to the relationships between the various academic legal subjects.

PROCEDURES FOR THE STUDY:

If you agree to be in the study, you will be one of 25 subjects and will do the following things:

You will be shown several topic maps of academic legal subjects on large pieces of paper. You will be asked to speak aloud whatever thoughts you may have as you view the maps. You will be asked to note the adjacencies that seem correct to you or any that seem jarring. Additionally, you will be asked to annotate the maps by circling the placement of subjects that you find striking, drawing connections between topics that in your opinion should be more proximate, and/or writing comments as to the arrangements of particular subjects. You will also be asked to assess the accuracy, reliability, and anomalies of the maps in general. The process should last no more than two hours. At your discretion, the interview may be videotaped. If videotaped, this will only be for the purposes of assisting the researcher (Peter Hook) with adequately transcribing your reactions to the topic maps and making notes about the session. Unless the Principal Investigator has obtained permission for additional limited use of the video recordings from the subject(s) videotaped, he will destroy the video recordings once he has transcribed their contents.

CONFIDENTIALITY

Efforts will be made to keep your personal information confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Your identity will be held in confidence in reports in which the study may be published.

If migrated to a computer, recorded interviews will be stored behind a firewall. Furthermore, Peter Hook will destroy the video recordings once he has transcribed their contents, unless he has obtained permission for their additional limited use from the subjects.

Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the study investigator and his/her research associates, the Indiana University Institutional Review Board or its designees, and (as allowed by law) state or federal agencies, specifically the Office for Human Research Protections (OHRP), etc., who may need to access your research records.

PAYMENT

You will not receive payment for taking part in this study.

CONTACTS FOR QUESTIONS OR PROBLEMS

For questions about the study, contact the researcher Peter Hook by telephone at 812-856-0464 or by email at pahook@indiana.edu.

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the IU Human Subjects Office at (812) 856-4242 or (800) 696-2949.

VOLUNTARY NATURE OF STUDY

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. Your decision whether or not to participate in this study will not affect your current or future relations with Peter Hook, Indiana University Maurer School of Law, or Indiana University.

Form Date: 1 February 2011

Appendix 49: IRB Study Amendment (2011-06-03)

INDIANA UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB) STUDY AMENDMENT

Reviewing IRB (please choose one):

Biomedical: IRB-02 IRB-03 IRB-04 IRB-05
Behavioral: IRB-01 IUB IRB

IRB STUDY NUMBER: 1101004680

AMENDMENT NUMBER: _____

Please type only in the gray boxes. To mark a box as checked, double-click the box, select "checked", and click "OK".

SECTION I: INVESTIGATOR INFORMATION

Principal Investigator:

Name (Last, First, Middle Initial): Hook, Peter A.

Department: Law Library

Phone: 812-856-0464

E-Mail: pahook@indiana.edu

Additional Study Contact:

Name: _____

Phone: _____

E-Mail: _____

Project Title: The History of an Academic Discipline (Law) as Revealed by a Longitudinal Analysis of Courses Taught (1922–23 through 1989–90)—Domain Maps from 30,000 Co-Teaching Events

Sponsor/Funding Agency: _____ Sponsor Number: _____

Sponsor Amendment Number: _____

SECTION II: STUDY INFORMATION

This study is:

- Open to enrollment
 Closed to enrollment

Number of active subjects: 0

SECTION III: AMENDMENT DESCRIPTION

1. Provide a complete description of the proposed change(s) included in this amendment:

I have reconceptualized the human subjects component of the research as a two part process. Everything previously approved will be part 2. I am adding a preliminary part 1 (see below). The overall goal of the research is to identify the structure of legal academia in terms of a spatial distribution of academic course subjects. The card sort exercise in the first part will provide facial support for the validity of the domain maps produced from the previously described domain mapping techniques. The targeted subject population will remain the same: up to 25 individuals with either law degrees or other advanced training or experience involving the law. Furthermore, in addition to the think aloud interview technique, I will use a structured interview technique.

Part 1 – (Estimated Length of time—60 minutes) Subjects will be asked to sort 104 index cards containing the names of law school course subjects based on their topical similarity with one another. They are to create groupings and sub-groupings and to label the groupings. Upon completion, they will be asked several questions about the process.

Instructions: In front of you, in random order, are 104 index cards with the course subjects currently used in the American Association of Law Schools (AALS) annual directory's listing of Teachers by Subject. Please place them in as many groupings and sub-groupings as appropriate based on their topical similarity. Once the cards are in groupings and sub-groupings, please label the groupings and sub-groupings with the yellow sticky notes and a descriptor word or words for each grouping and subgrouping. Finally, please arrange the groupings and sub groupings spatially on the table based on the topical similarity of the groupings. Upon completion of the sorting and labeling, I will ask you a few questions about the process and the topical relatedness of the groupings.

Part 2 – (Estimated Length of time—60 minutes) – The same subjects will be asked to comment on 6 maps: (1) a base map made from multi-teaching data for the academic year 1972-73; overlay maps for the years (2) 1932-33, (3) 1941-42, (4) 1949-50, (5) 1961-62, and a (6) consensus map of contemporary course subjects produced from the co-occurrence data from the card sort exercise.

IRB Form v01/21/2011

Instructions: In front of you are several topic maps of academic legal subjects on large pieces of paper. Please speak aloud whatever thoughts you may have as you view the maps. Please note the adjacencies that seem correct to you or any that seem jarring. Please annotate the maps by circling the placement of subjects that you find striking, drawing connections between topics that in your opinion should be more proximate, and/or writing comments as to the arrangements of particular subjects. Please assess the accuracy, reliability, and anomalies of the maps in general. Upon completion, I will ask you a few additional questions.

2. State the justification/rationale for this amendment. If risks are being updated, please provide specific justification:

I want to use the additional card sorting exercise to create a consensus map of the structure of legal courses to compare with the maps from the multi-teaching data (the same professor teaching multiple different courses). The subjects will also be asked to critique the consensus map during Part 2 when they evaluate the multi-teaching maps produced from the domain mapping and information visualization techniques.

3. Is the study sponsored?

- No.
 Yes. Check the appropriate line below and provide with this amendment, as applicable:
 A copy of the sponsor's amendment, if the amendment came from the sponsor.
 A copy of your notice to the sponsor of this change, if you initiated the amendment.
 A copy of the approved amendment will be sent to the sponsor.
 None of the above apply. Please explain: _____

4. Do the proposed change(s) described in this amendment alter the risk to benefit assessment?

- No.
 Yes. Please describe how the assessment is altered: _____

5. Do the proposed change(s) described in this amendment require changes to the informed consent and/or assent document(s) or process?

- N/A. Informed consent, written documentation of informed consent, and/or assent has been waived for this study. Skip to item 6 below.
 No. Skip to item 6 below.
 Yes. Answer items A and B below.

A. Check the appropriate line below.

- The new informed consent and/or assent document(s) are in addition to the current one(s).
 The new informed consent and/or assent document(s) replace the current one(s).
 If there are multiple consent and/or documents for this study, please indicate which consent and/or assent document(s) are to be replaced. _____

B. Will enrolled subjects be informed of the change(s) described in this amendment?

- No. Please explain why not: _____
 Yes. Will enrolled subjects be re-consented and/or re-assented?
 Yes.
 No. Please explain how enrolled subjects will be notified: _____

6. Amendment includes:

- | | |
|---|---|
| <input type="checkbox"/> Assent, dated: _____
Number of assent documents: _____ | <input type="checkbox"/> Protocol, dated: _____ |
| <input type="checkbox"/> Authorization, dated: _____
Number of authorizations: _____ | <input type="checkbox"/> Recruitment materials (please list and date): _____ |
| <input type="checkbox"/> Clinical Investigator's Brochure, dated: _____ | <input type="checkbox"/> Request form(s) for vulnerable population(s) (please list and date); _____ |
| <input type="checkbox"/> Expedited Research Checklist, dated: _____ | <input type="checkbox"/> Surveys, questionnaires (please list and date): _____ |
| <input type="checkbox"/> Exempt Research Checklist, dated: _____ | <input type="checkbox"/> Summary Safeguard Statement or HUD Form, dated: _____ |
| <input type="checkbox"/> HIPAA & Recruitment Checklist, dated: _____ | <input checked="" type="checkbox"/> Study Information Sheet |
| <input type="checkbox"/> Informed Consent, dated: _____
Number of consent documents: _____ | <input type="checkbox"/> Other (please list and date): _____ |

NOTE: Only documents that are being changed as a result of the amendment should be attached and checked in items 6 above. Listing document dates are optional and only necessary if required by the investigator or sponsor.

NOTE TO INVESTIGATORS: Study amendments may not be instituted until approval from the IRB is given.

Please indicate the type of amendment you are submitting. Please see the Guidelines for Determining an Amendment Type available on the IU Human Subjects Office website for additional information. **Please note that the IRB makes the final determination with regard to whether or not the amendment is acceptable for expedited review or if it requires review at a convened IRB meeting.**

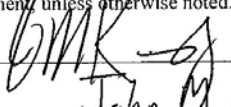
- Minor Amendment.** Change(s) do not significantly affect the safety of subjects and is acceptable for expedited review per 45 CFR 46.110(b)(2)/21 CFR 56.110(b)(2).
- Major Amendment.** Changes potentially involve increased risks or discomforts or decrease potential benefit. The amendment requires review at a convened IRB meeting.

SECTION IV: INVESTIGATOR STATEMENT OF COMPLIANCE

By submitting this form, the Principal Investigator assures that all information provided is accurate. He/she assures that procedures performed under this project will be conducted in strict accordance with federal regulations and Indiana University policies and procedures that govern research involving human subjects. He/she acknowledges that he/she has the resources required to conduct research in a way that will protect the rights and welfare of participants, and that he/she will employ sound study design which minimizes risks to subjects. He/she agrees to submit *any* change to the project (e.g. change in principal investigator, research methodology, subject recruitment procedures, etc.) to the Board in the form of an amendment for IRB approval prior to implementation.

SECTION V: IRB APPROVAL

This amendment, including documentation noted above, has been reviewed and approved by the Indiana University IRB as meeting the criteria for IRB approval as outlined in 45 CFR 46.111(a). I agree with the investigator's assessment above regarding whether the amendment is a minor or major amendment, unless otherwise noted.

Authorized IRB Signature:  IRB Approval Date: 6/3/11

Printed Name of IRB Member: John M. Kennedy

Appendix 50: IRB Summary Safeguard Statement (2011-05-20)

INDIANA UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB) REVIEW SUMMARY SAFEGUARD STATEMENT

IRB STUDY NUMBER: 1101004680
PRINCIPAL INVESTIGATOR: Peter A. Hook
DOCUMENT DATE: May 20, 2011

THIS FORM MUST BE NEATLY TYPED. (DO NOT TYPE ON THE REVERSE SIDE OF ANY FORMS). **Note: To check a box on this form, double-click the box and select "Checked" under "Default Value."**

STUDY TITLE: **The Quest for the Structure of Law: Domain Maps from 30,000 Course Coupling Events and a History of an Academic Discipline (1931-1973)**

Please type only in the gray boxes. To mark a box as checked, double-click the box, select "checked", and click "OK".

SECTION I: STUDY DESCRIPTION

- A. Please describe (in lay terms) the general objective(s) of the proposed research , including research question(s), hypothesis, and a short summary of the main interactions/interventions. If appropriate, describe any usual methods, that were considered, but not chosen, and why.

The overall goal of the research is to identify the structure of legal academia in terms of a spatial distribution of academic course subjects based on their topical similarity and to conduct an analysis of how course subjects have changed over time.

Course Coupling Map

1. Is course coupling analysis (the aggregate of the same professor teaching multiple, different courses) a legitimate means to produce a topic map of an academic discipline? This work is premised on the assumption that in the aggregate, law professors teach academic subjects that are topically related. In other words, faculty members, on the whole, specialize and focus their energy teaching courses that are topically similar to other courses they teach.

Hypothesis: Domain maps produced from course coupling analysis will, on the whole, be regarded as valid by experts in the field. When asked, "Considering the macro structure of the map as a whole and the general groupings of the major course subjects, is the map consistent with your understanding of the relative adjacencies (similarities) of academic legal subjects?," an overwhelming preponderance (75%) of legal academics or other trained legal experts will answer in the affirmative.

Comparison to other 'Structures'

2. How does the evolution of the subjects on the lists of "teachers by subject" contained in the AALS directories differ with those of the Topic and Key Number System (West Publishing) and the controlled thesaurus for the Index to Legal Periodicals? What is the degree of overlap? Which entity led? Did changes in the AALS directories presage the other taxonomies or vice versa?

Map Evolution & Trend Identification

3. How has the canon of subjects listed in the AALS (American Association of Law Schools) questionnaire changed over time? How quick is it to incorporate new subjects and has this changed over time?
4. Do certain schools or geographic regions lead in the innovation of new subjects?
5. What subjects are most frequently taught by the same faculty member?

Data Source (Faculty Affiliation and Courses Taught Data)

Since 1922, the American Association of Law Schools (AALS) has published an annual directory of its members that contains biographical information about law professors, administrators, and librarians at each member school. Each directory contains a list of faculty members by school for that particular year. Also, beginning in academic year 1931-32, and appearing in most years thereafter, the AALS directories include lists of what subjects were taught by which faculty member. This information is contained in the lists of "Law Teachers by Subject." These directories are publically available from just about any academic law library. The publically available information that will be used (and in some cases reported in the findings) is:

Faculty Member Name,
Faculty Member Institution,
Faculty Member Courses Taught
Biographic Information about each Faculty Member

The data collected above will be used to produce domain maps showing the spatial distribution of course subjects base on the incidence of their being taught by the same faculty member (course coupling). The courses taught data will be captured in a co-occurrence matrix and visualized using Multi-Dimensional Scaling (MDS) algorithms. Subjects will be shown and asked to comment on 6 maps: (1) a base map made from multi-teaching data for the academic year 1972-73; overlay maps for the academic years (2) 1932-33, (3) 1941-42, (4) 1949-50, (5) 1961-62, and a (6) consensus map of contemporary course subjects produced from the co-occurrence data from the card sort exercise.

Human Subjects Involvement

Human subject involvement for this study will consist of two different interactions separated by no less than two weeks. The targeted subject population will be up to 25 individuals with either law degrees or other advanced training or experience involving law school education. It is hypothesized that the card sort exercise is the first part and will provide facial support for the validity of the domain maps produced from the MDS domain mapping techniques.

Part 1 – (Estimated Length of time—60 minutes) Subjects will be asked to sort 104 index cards containing the names of law school course subjects based on their topical similarity with one another. They are to create groupings and sub-groupings and to label the groupings. Upon completion, they will be asked several questions about the process.

Part 2 – (Estimated Length of time—60 minutes) – The same subjects will be asked to comment on 6 maps: (1) a base map made from course coupling data for the academic year 1972-73; overlay maps for the years (2) 1932-33, (3) 1941-42, (4) 1949-50, (5) 1961-62, and a (6) consensus map of contemporary course subjects produced from the co-occurrence data from the card sort exercise.

SECTION II: HIPAA

- A. Are you part of a covered entity or are you involving a covered entity in your research? Please review the **Covered Entity Checklist** for guidance.
- NO.** You are not subject to HIPAA. For additional information, please see the **Covered Entity Checklist** available on the IU Human Subjects Office website. Proceed to Section III.
- YES.** Continue below:
- B. Will protected health information (PHI) be utilized, accessed, collected, or generated as part of the study? For additional guidance on PHI, please refer to the definitions in the Standard Operating Procedures document.
- NO.** Your research is not subject to HIPAA. However, will health information (that is not PHI) be used that is:
- De-identified?
 - Part of a Limited Data Set?
 - Health information will be received from a separate covered entity from that of the investigator. You must establish a data use agreement with the entity providing the health information.
 - Health information will be obtained from within the investigator's own covered entity. No data use agreement is required.
 - No health information will be utilized in any form.
- YES.** Your research is subject to HIPAA. Complete the HIPAA& Recruitment Checklist.

SECTION III: PERFORMANCE SITE

- Indiana University
- IUB Campus. Please state school/department/location(s): Law School
 - IUPUI Campus. Please state school/department/location(s): _____
 - Bradford Woods
 - Center for Survey Research
 - Center for Evaluation & Education Policy (CEEP)

- Indiana Clinical Research Center (ICRC)*
- Indiana Institute on Disability and Communication
- IU Simon Cancer Center*
- Krannert Institute of Cardiology*
- Kinsey Institute
- Oral Health Research Institute
- Other: _____
- Health & Hospital Corporation of Marion County
 - Bell Flower Clinic
 - Midtown Mental Health*
 - Wishard Memorial Hospital*
 - Hospital/ER
 - Non-primary care
 - Wishard Specialty Clinics
 - OB/GYN Clinics
- Indiana University Health (Clarian) Facilities
 - Bloomington Hospital
 - Beltway Centers
 - Methodist Hospital
 - Methodist-Affiliated Centers/Private Practices
 - North Hospital
 - Riley Hospital for Children
 - University Hospital
 - West Hospital
 - Other: _____
- IU Health Clinics. Please list location:_____.
- IU Medical Group Specialty Clinic (IUMG-SC). Please list location:_____.
- Larue Carter Hospital
- Monroe County Community School Corporation. Please list school:_____.
- Regenstrief Institute
- Rehabilitation Hospital of Indiana
- Richard L. Roudebush Veterans Affairs Medical Center*
- Other: Any place that is convenient for my subjects and has a large table or workspace. Probably their faculty office or conference room.

** Additional information and/or approvals may be required prior to submitting and/or initiating the research. Please see the IU Human Subjects Office website and check with the specific performance site for additional information.*

- B. Please list other facilities not under the direct supervision of the investigator where research-related procedures will be performed (e.g. pathology, nursing, pharmacy, radiology, counseling). *

NONE

You must ensure these persons/facilities are kept adequately informed about the study and their research-related duties and functions as they relate to the protection of human participants.

SECTION IV: SUBJECT POPULATION

- A. **Subject Population.** Check all subject population categories below for which there is a reasonable expectation of enrollment into this research study:

- Children** (Complete the Request Form for the Inclusion of Children in Research)
- Cognitively Impaired** (Complete the Request Form for the Inclusion of Cognitively Impaired Individuals in Research)
- Economically/Educationally Disadvantaged**
- Pregnant Women, Human Fetuses, or Fetal Material** (Complete the Request Form for the Inclusion of Pregnant Women, Human Fetuses, and Neonates in Research)
- Prisoners** (Complete the Request Form for the Inclusion of Prisoners in Research)
- Subjects Outside of U.S. Targeted for Enrollment** (Complete the Transnational Research Information Form)
- Students.** When there is a teacher-student relationship dynamic or when using a student subject pool, complete the following questions:

1. Clarify the necessity for involving students in the research:
 2. Explain how the possibility of coercion or undue influence will be minimized when informed consent is being sought:
 3. Explain what genuinely equivalent alternatives are available for students who wish not to participate:
- B. **Inclusion/Exclusion.** List specific eligibility requirements for subjects, including those criteria which would exclude otherwise acceptable subjects (e.g. inclusion/exclusion criteria).

The targeted subject population will be up to 25 individuals with either law degrees or other advanced training or experience involving law school education. All will have graduate degrees that have enabled them to work as law professors, legal taxonomers, law librarians, legal historians or law school administrators. I will target a diversity of doctrinal expertise. I will attempt to have the sample not be too skewed by gender or age demographics.

- C. **Number of Subjects.** State the number of subjects to be involved in the research (i.e. number of subjects who will receive research intervention, or about/from whom information or specimens will be collected) both locally and nationally (if a multi-center study).

25 (twenty-five)

NOTE: The number provided will be the maximum number of subjects approved to participate in this research.

SECTION V: RECRUITMENT

NOTE: Study information will be released to the Clinical and Translational Science Institute (CTSI) for the research study listing. To opt out of this listing requirement you will need to get opt-out approval from Dr. Anantha Shekhar, PhD, MD, Director of Indiana CTSI, prior to IRB submission. For additional information or to request opt-out approval, please contact Patrick McGuire at (317) 278-2176 or pacmcgui@iupui.edu.

- A. Is this research subject to HIPAA? (refer to Section II above)

YES. Do not answer questions 1-3 below. Instead, complete the **HIPAA & Recruitment Checklist**.

NO. Answer questions 1-3 below.

1. Describe how potential subjects will be initially identified (include specific source, e.g. databases, medical records, advertisements, newsletters, self-referral, physician referral, from clinics, etc.):

Potential subjects will initially be drawn from my personal contacts in the Indiana University Maurer School of Law, School, the Law Library, and national and international connections with those in the legal information profession or law librarianship.

2. Describe how potential subjects who are identified will be contacted (e.g. letter, phone call, face-to-face) and who will be contacting them (e.g. their physician, research coordinator, nurse, etc.). Include a copy of all information to be shared with or intended to be seen by potential subjects.

All subjects will be contacted by me personally. This will include email (which will include the informed consent statement), in person (face to face) in which the informed consent statement will be given, and also by phone (with a follow-up letter or email containing the informed consent statement).

3. Is the investigator currently conducting competing studies? Competing studies refers to two or more studies which utilize overlapping or very similar eligibility criteria.

No.

Yes. Please describe the plan to ensure fair and unbiased recruitment:

NOTE: Allowing the Principal Investigator or the subject to choose one study over another is rarely acceptable. Consider randomization procedures or exclusive enrollment in one study at a time.

SECTION VI: STUDY PROCEDURES

List all methods by which information or data about or from subjects will be obtained, including any drugs or devices to be used on human subjects and all procedures/interventions that are being performed that would not otherwise be performed outside of the research study [e.g. an investigational drug, a blood draw that is taken purely for research (not treatment purposes) or a standardized survey that is being completed solely for the purposes of this research]. Describe the frequency and duration of the procedures.

Part 1 – (Estimated Length of time—60 minutes) Subjects will be asked to sort 104 index cards containing the names of law school course subjects based on their topical similarity with one another. They are to create groupings and sub-groupings and to label the groupings. Upon completion, they will be asked several questions about the process.

Instructions: In front of you, in random order, are 104 index cards with the course subjects currently used in the American Association of Law Schools (AALS) annual directory's listing of Teachers by Subject. Please place them in as many groupings and sub-groupings as appropriate based on their topical similarity. Once the cards are in groupings and sub-groupings, please label the groupings and sub-groupings with the yellow sticky notes and a descriptor word or words for each grouping and subgrouping. Finally, please arrange the groupings and sub groupings spatially on the table based on the topical similarity of the groupings. Upon completion of the sorting and labeling, I will ask you a few questions about the process and the topical relatedness of the groupings.

Guided Interview Questions:

Topically, what grouping is most central to the overall organization of the course subjects?
Why?

Topically, are there any groupings that are marginal or on the fringe?

Did any of the course subjects give you particular trouble?

Were any of the course subjects particularly easy to sort?

On a Scale of 1 to 5, 1 being the least confident and 5 being the most confident, how confident are you in your ability to globally organize the course subjects based on topical similarity?

What is your primary area of expertise?

Photographs of Card Piles on the Table: Upon completion of the card sort exercise, the investigator (Peter Hook) will photograph the cards on the table in order to record the adjacencies of the groupings. These photos will not be published in any form in which the subject's hand writing is identifiable, nor will any other information about the subject be identifiable. Diagrams of the layouts may be reproduced and referred to in anonymously so as to not reveal the identity of the subject.

Part 2 – (Estimated Length of time—60 minutes) – The same subjects will be asked to comment on 6 maps: (1) a base map made from course coupling data for the academic year 1972-73; overlay maps for the years (2) 1932-33, (3) 1941-42, (4) 1949-50, (5) 1961-62, and a (6) consensus map of contemporary course subjects produced from the co-occurrence data from the card sort exercise.

Instructions: In front of you are several topic maps of academic legal subjects on large pieces of paper. Please speak aloud whatever thoughts you may have as you view the maps. Please note the adjacencies that seem correct to you or any that seem jarring. Please annotate the maps by circling the placement of subjects that you find striking, drawing connections between topics that in your opinion should be more proximate, and/or writing comments as to the arrangements of particular subjects. Please assess the accuracy, reliability, and anomalies of the maps in general. Upon completion, I will ask you a few additional questions.

Guided Interview Question:

Considering the macro structure of the map as a whole and the general groupings of the major course subjects, is the map consistent with your understanding of the relative adjacencies (similarities) of academic legal subjects?

NOTE: Please include all surveys, instruments, survey/focus group questions, etc. that will be used for this research.

SECTION VII: RISK/BENEFIT RATIO

- A. State the potential risks – for example, physical, psychological, social, legal, loss of confidentiality or other – connected with the proposed procedures.

The possible risks foreseeable by the investigator stem from the potential loss of confidentiality. Subjects might face professional embarrassment if either their card sort taxonomy or reflections on the domain maps become public and are criticized by others as being either poorly constructed or conceived.

- B. State the potential benefits to be gained by the SUBJECT.

Participating subjects will be prompted to think about how their course subjects typically interrelate with other courses and the entirety of all courses in legal academia. It is hoped that by doing so, subjects will gain a greater awareness of the interrelatedness of legal course subjects and will have the potential to be better educators and academic advisors as a result.

- C. State the potential benefits or information which may accrue to SCIENCE or SOCIETY, in general, as a result of this work.

Society, law students, and perspective law students will be able to see the macro topical structure of the relatedness of law school courses. They should be able to infer something about an unknown course from the adjacencies to familiar course subjects. Validated course domain maps have the potential to be used as front ends to digital libraries or as navigation menus to learn more about the law school course catalog. Both would enhance their pedagogical benefit.

- D. Explain how the potential risks to subjects are reasonable in relation to anticipated benefits.

The professional reputation of the subjects should be adequately protected through measures to insure confidentiality in order to greatly reduce any possibility of harm to the subjects. In this case, the benefits to society from having big picture overviews of a graduate field of study far outweigh any potential risks to the study's participants.

SECTION VIII: PROTECTION PROCEDURES

- A. Describe procedures for protecting against, or minimizing, the potential risks described in Section VII, including using procedures that are already being performed on subjects for diagnostic, treatment, or standard purposes, when appropriate.

All subject information will be kept strictly confidential. Any results published from the research will be completely anonymous without allowing the identities of the human participants from being inferred. Any data stored on computers will be password protected and behind a firewall. Upon completion of the research, identifiable information about the subjects will be destroyed.

- B. Explain provisions to protect privacy interests of subjects. This refers to how access to subjects will be controlled (e.g. time, place, etc. of research procedures).

Subjects will be given the choice to participate in the study at a location in which their participation will be kept strictly confidential. This will be a windowless room in which their interaction with the investigator cannot be seen by others. However, for the convenience of any particular subject, the subject might choose to use either his or her faculty office or departmental conference room. In this case, their participation in the study might be perceived by others.

- C. Is this a multi-center clinical trial?

No. Continue to the next section.

Yes. Is the PI the lead investigator?

No. Continue to the next section

Yes. Describe the plan for the management and communication of multi-site information that may be relevant to the protection of participants (e.g. unanticipated problems, adverse events, interim analysis, modifications, etc.).

SECTION IX: DATA SAFETY MONITORING PLAN

For all research that is **greater than minimal risk**, a Data Safety Monitoring Plan (DSMP) must be developed. This is a plan to assure the research includes a system for appropriate oversight and monitoring of the conduct of the study to ensure the safety of subjects and the validity and integrity of the data.

- N/A. The research is minimal risk.
- The DSMP is contained in the protocol. State where in the protocol the description is located: _____
NOTE: Ensure that all points outlined below are addressed in the description in the protocol. If any points are not addressed, within the protocol, they should be addressed below.
- The DSMP is NOT contained in the protocol; however, this is a repository/database protocol and the primary risk is that of loss of confidentiality; thus, I do not need to complete this section.
- The DSMP is NOT contained in the protocol. Complete the questions below.

A. Who will be responsible for the data and safety monitoring? (Examples include: a DSMC or DSMB, medical monitor, investigator, independent physician) **Clarify if this individual or committee is independent from the sponsor and/or investigator.**

B. What will be monitored. (Examples include: data quality, subject recruitment, accrual, and retention, outcome and adverse event data, assessment of scientific reports or therapeutic development, results of related studies that impact subject safety, procedures designed to protect the privacy of subjects)

C. What are the procedures for analysis and interpretation of data, the actions to be taken upon specific events or endpoints, the procedures for communication from the data monitor to the IRB and site, and other reporting mechanisms?

D. What is the frequency of monitoring? (The appropriate frequency of data and safety monitoring will be dependent on the nature and progress of the research; however, monitoring must be performed on a regular basis (e.g. at least annually).

E. What information will be reported to the IRB? (Minimally, the IRB requires the following information at the time of continuing review: 1) frequency and date(s) of monitoring; 2) summary of cumulative adverse events; 3) assessment of external factors (i.e. scientific reports, therapeutic developments, results of related studies) that impacted the safety of subjects; 4) summary of subject privacy and research data confidentiality outcomes; and 5) any changes to the risk-benefit ratio.

SECTION X: PAYMENT FOR PARTICIPATION

A. Will subjects be paid for participation in the study (e.g. monetary, free services, gifts, course credit, including extra credit)?

- No. Proceed to next section.
- Yes. Complete items 1-3 below.

1. Explain the payment arrangements (e.g. amount and timing of payment and the proposed method of disbursement), including reimbursement of expenses. **NOTE:** Payments must accrue and not be contingent upon completion of the study. However, a small payment (bonus) for completion of the study may be approved by the IRB if it is found to not be persuasive for the subjects to remain in the study.
2. Justify the proposed payment arrangements described in section B. (e.g., how this proposed payment arrangement is not considered to be coercive).
3. Explain if there will be any partial payment if the subject withdraws prior to completion of the study (e.g. prorated). Note: This payment may be paid at the end of the subject's participation or at the end of the study.

SECTION XI: INFORMED CONSENT PROCESS

Check here if this study will **only** enroll children and the parental/guardian permission (consent) process has already been explained on the Request Form for the Inclusion of Children in Research. You do not need to complete section A below.

A. I WILL be obtaining informed consent from all subjects.

1. **When (in what timeframe) and where (what setting) will consent take place?** Indicate any waiting period between informing the subject and obtaining consent. The timeframe and any waiting should ensure the prospective subjects or their legally authorized representatives are provided sufficient opportunity to consider whether or not to participate in the study.

The consent form will be given to potential subjects during the recruitment process. If subjects accept, it will be collected once the meeting occurs in person. As subjects are trained legal experts, they should have no problem assessing their risks and obligations in regard to signing the consent form.

2. **Who will be responsible for obtaining initial and ongoing consent? (check all that apply)**

- Principal Investigator
 Co-Investigator
 Other (specify):

NOTE: Individuals who will be obtaining consent must be listed on the Investigator List.

- a. **Explain how these individuals will be adequately trained to conduct the consent interview and answer subject's questions (check all that apply):**

- Passed the required Collaborative Institutional Training Initiative (CITI) modules
 Attended the Research Coordinator Education Program (RCEP)
 Attended the Research Coordinator Certification Program (RCCP)
 Received study-specific training from study personnel
 Other (specify): _____

- b. **Indicate in what language(s) the consent interview will be conducted.**

- English
 Spanish
 Other (specify):

- c. **If the consent interview will be conducted in a language other than English, state how the interview will be conducted (e.g. use of an interpreter):**

NOTE: Ensure that language-appropriate consent documents are submitted with this application.

3. **Explain how subjects' privacy will be protected during the consent process.** This refers to how access to subjects will be controlled (e.g. time, place, etc. of consent procedures).

Only the principal investigator (Peter A. Hook) will have contact with the human subjects. Subject participation will be kept strictly confidential. All subjects will be contacted individually so that the subjects will not be able to ascertain the identities of others asked to participate in the study.

4. **Indicate any factors that might result in the possibility of coercion or undue influence. (check all that apply)**

- the research will involve students of the investigator(s)
 the subjects will be recruited through institutions with which the PI has a close relationship
 Other (please specify):

Describe steps taken to mitigate the possible coercion:

The investigator (Peter A. Hook) will strongly emphasize that participation is entirely voluntary.

- B. I am requesting a **waiver of the informed consent process (i.e. no consent document)** for (check all that apply):
- the entire study.
 - recruitment only (VA requirement: please see the sample language provided in VA Waivers for Recruitment located on the IU Human Subjects Office website).
 - a specific minimal risk research activity or procedure that is part of the study: _____.

For the IRB to grant a waiver of informed consent, the below criteria must be satisfied. Please provide a response to each criterion.

1. The research involves no more than minimal risk to the subject. If you are requesting a waiver of informed consent for part of the study (e.g. recruitment or a specific minimal risk activity or procedure), please state to which activity/procedure the waiver request applies and explain how this criterion is satisfied.
2. Explain how the waiver will not adversely affect the rights and welfare of the subjects.
3. Explain how the research could not be practicably carried out without the waiver.
4. Explain how, if appropriate, subjects will be informed of pertinent results at the conclusion of the study.
5. The research is **NOT** FDA-regulated (i.e. The activity is NOT an experiment or does NOT involve one or more of the following test articles: foods or dietary supplements that bear a nutrient content claim or a health claim, infant formulas, food and color additives, drugs for human use, medical devices for human use, biological products for human use, electronic products. Additionally, **NONE** of the following can be true: the research involves using the test article with one or more participants, the research is being done as part of an IND or IDE submission, the data may be submitted to the FDA, or the data may be held for inspection by the FDA).
6. **ONLY COMPLETE FOR RESEARCH AND DEMONSTRATION PROJECTS CONDUCTED BY OR SUBJECT TO THE APPROVAL OF STATE OR LOCAL GOVERNMENT OFFICIALS.** In order for the IRB to approve a waiver of informed consent for a research or demonstration project, conducted by or subject to the approval of state or local government officials, it must NOT be FDA-regulated and be designed such that it studies, evaluates, or otherwise examines one of the following (check all that apply):
 - public benefit or service programs;
 - procedures for obtaining benefits or services under those programs;
 - possible changes in or alternatives to those programs or procedures; or
 - possible changes in methods or levels of payment for benefits or services under those programs.

- C. I am requesting a **waiver of written documentation of informed consent** (i.e. a consent process will occur, but no signature will be obtained from the subject).
- Written statement regarding the research has been attached. Statement will be provided to subjects upon their request. Please explain:

For the IRB to grant a waiver of written documentation of informed consent, EITHER of the following criteria must be met. Please indicate which criterion is met and provide an appropriate response below.

- 1. The only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality, and the research is not FDA-regulated. Each subject will

be asked whether the subject wants documentation linking the subject with the research and the subject's wishes will govern. Please explain:

OR

2. The research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context. Please explain:

D. I am requesting modification to the required elements for informed consent document for:

- the entire study**
 a specific minimal risk research activity or procedure that is part of the study

Check all of the required elements below that you are requesting to modify or omit from the informed consent document:

- | | |
|--|--|
| <input type="checkbox"/> Statement that the study involves research | <input type="checkbox"/> Disclosure of appropriate alternative procedures or courses of treatment |
| <input type="checkbox"/> Explanation of the purposes of the research | <input type="checkbox"/> Statement describing the extent to which confidentiality of records identifying subjects will be maintained |
| <input type="checkbox"/> Expected duration of subject participation | <input type="checkbox"/> Explanation regarding any compensation |
| <input type="checkbox"/> Description of procedures to be followed | <input type="checkbox"/> Explanation of available medical treatments if injury occurs |
| <input type="checkbox"/> Identification of any procedures that are experimental | <input type="checkbox"/> Contact information for questions about the research, research-related injury, or subject rights |
| <input type="checkbox"/> Description of any reasonably foreseeable risks or discomforts to subjects | <input type="checkbox"/> Statement that participation is voluntary |
| <input type="checkbox"/> Description of benefits (to subjects or others) that may reasonably be expected from the research | |

For the IRB to grant a modification to the required elements of informed consent, the below criteria must be satisfied. Please provide a response to each criterion.

1. The research involves no more than minimal risk to the subject. If you are requesting a waiver of informed consent for part of the study (e.g. a specific minimal risk activity or procedure), please state to which activity/procedure the waiver request applies and explain how this criterion is satisfied
2. Explain how the modification will not adversely affect the rights and welfare of the subjects.
3. Explain how the research could not be practically carried out without modification of informed consent.
4. Explain how, if appropriate, subjects will be informed of pertinent results at the conclusion of the study.
5. The research is **NOT** FDA-regulated (i.e. The activity is NOT an experiment or does NOT involve one or more of the following test articles: foods or dietary supplements that bear a nutrient content claim or a health claim, infant formulas, food and color additives, drugs for human use, medical devices for human use, biological products for human use, electronic products. Additionally, **NONE** of the following can be true: the research involves using the test article with one or more participants, the research is being done as part of an IND or IDE submission, the data may be submitted to the FDA, or the data may be held for inspection by the FDA).

SECTION XII: ADDITIONAL REVIEWS

- N/A. This research does not require any additional institutional reviews. Proceed to next section.
- A. Will this study specifically enroll cancer patients (e.g. is the study focused on cancer treatment or care or does the study include a control group of cancer patients) or involve cancer-related gene therapy?
- No.
- Yes. You must first obtain approval from the Scientific Review Committee (SRC) prior to submitting to the IRB. Please include that approval with your IRB study submission. Please contact the SRC at (317) 274-0930 or erosrc@iupui.edu for additional information.
- Check here if this study is a retrospective chart review involving cancer patients; SRC approval is NOT necessary.
- B. Does the study involve recombinant DNA (e.g. gene therapy)?
- No.
- Yes. IBC or BHC protocol number:
- C. Does the study involve radiation / radioactivity (e.g. x-rays, nuclear medical scans) in addition to what is used for standard clinical treatment?
- No
- Yes. Radiation Safety approval must be obtained if radiation beyond standard of care is involved. Concurrent IRB and radiation safety review is permissible; however, final IRB approval will not be granted until documentation of radiation safety approval is provided.
- D. Does this study involve the use of *non-cancer-related* gene therapy?
- No.
- Yes. Has the proposal been submitted to the ICRC Advisory Committee? (**NOTE:** It is a requirement of the School of Medicine for all non-cancer related gene therapy studies to be reviewed by the ICRC Advisory Committee. Additionally, it is the ICRC's requirement that approval be granted from them prior to IRB submission.)
- No. You must submit to the ICRC Advisory Committee *before* you can submit to the IRB. Please call (317) 278-3446 for more information.
- Yes. Include a copy of that approval with this study submission.
- E. Is this a VA study (funded by the VA, utilizing the VA as a performance site, or using VA patients)?
- No.
- Yes.
1. VA studies must be submitted to and receive approval from the VA R&D Committee **before** any research can be conducted at the VA,
- R&D Committee approval has been obtained. R&D Committee Number:
- R&D Committee approval is pending.
- Study will be submitted to the R&D Committee within 60 days of IRB approval.
2. Will non-veterans be included in the study?
- No.
- YES. Provide justification for their inclusion:

SECTION XIII: FEDERAL FUNDING

- A. Is this research funded by a federal agency (e.g. DHHS, NIH, VA, CDC, ICTSI, etc.), or has it been submitted to a federal agency for funding?
- No. Proceed to the next section.
- Yes. Please ensure copies of the entire funding proposal and DHHS-approved sample informed consent (if applicable) are available to the IRB.

NOTE: If this is a federally-funded study, you will be required to track the race and ethnicity of subjects enrolled. This is reported to the IRB at the time of continuing review.

SECTION XIV: INVESTIGATIONAL TEST ARTICLES

- N/A. No investigational drugs or devices are being studied in this research.

- This study involves a device that is exempt from the IDE requirements. Please submit the IDE Checklist or notification from the FDA confirming status of this device.

If you are studying an investigational drug or device, an IND or IDE may be required. Please see the IND Checklist or IDE Checklist for more information.

INVESTIGATIONAL DRUGS

A. Name of Drug Sponsor: _____
Name of Drug: _____

Study Phase: I I/II II II/III III III/IV IV

An IND is not required. Please submit the IND Checklist or notification from the FDA confirming exempt status.

An IND is required and has been obtained for this drug. IND Number: _____

1. Provide verification of the IND number (choose all that apply):
 Documentation from the FDA provided
 IND number included in the sponsor protocol, list the page number where the IND number is located
2. Does the investigator hold the IND?
 No
 Yes. Before approval can be granted, the investigator must meet with the Office of Research Administration staff to discuss the additional responsibilities as a sponsor of an IND. Please contact the IU Human Subjects Office at (317) 274-8289 and submit documentation from them verifying this discussion has taken place.
3. Will services of the Investigational Drug Services (IDS) be used?
 Yes
 No. The investigator must demonstrate understanding of the handling and control of investigational test articles by reviewing the SOP for Investigational Test Articles. Check here to confirm the investigator has read the SOP and agrees to comply with the policies and procedures outlined.

INVESTIGATIONAL DEVICES

B. Name of Device Manufacturer: _____ Name of Device: _____

The IRB is required to determine whether or not the device is significant risk. To help in this determination, please provide the sponsor's documentation on the risk assessment and the rationale used in making the risk determination. ***Please provide the investigator's assessment of the device risk below:***

Nonsignificant Risk (NSR) Device. Please provide a risk assessment and rationale for this risk determination:

Significant Risk (SR) Device

An IDE has been obtained for this device. IDE Number: _____

1. Provide verification of the IDE number (choose all that apply):
 Documentation from the FDA provided
 IDE number included in the sponsor protocol, list the page number where the IDE number is located
2. Does the IU affiliated investigator hold the IDE?
 No
 Yes. Before approval can be granted, the investigator must meet with the Office of Research Administration staff to discuss the additional responsibilities as a sponsor of an IDE. Please contact the IU Human Subjects Office at (317) 274-8289 and submit documentation from them verifying this discussion has taken place.
3. The investigator must demonstrate understanding of the handling and control of investigational test articles by reviewing the SOP for Investigational Test Articles. Check here to confirm the investigator has read the SOP and agrees to comply with the policies and procedures outlined.

Appendix 51: IRB Investigator List (2011-05-27)

INDIANA UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB)

INVESTIGATOR LIST

PRINCIPAL INVESTIGATOR: Peter A. Hook

IRB STUDY NUMBER: 1101004680

STUDY TITLE: The Quest for the Structure of Law: Domain Maps from 30,000 Course Coupling Events and a History of an Academic Discipline (1931-1973)

DOCUMENT DATE: May 27, 2011

Co-investigators: Provide the name and department of other individual(s) assisting with the study who 1) will be responsible for the design, conduct, or reporting of the study, 2) have access to subjects (i.e. will consent subjects, conduct parts of the study), 3) will be making independent decisions about the inclusion or exclusion of participants, or 4) have access to identifying and confidential information. Persons without access to identifiable information, or persons whose activities are solely related to safety monitoring, are not considered co-investigators.

SECTION I: INVESTIGATORS

List the principal investigator and any co-investigators and their respective departments. (If there are multiple investigators, please indicate only one person as the principal investigator; others should be designated as co-investigators).

A. **Principal Investigator:** Department
 Peter A. Hook Law Library, Indiana University Maurer School of Law, IUB

B. **Affiliated Co-investigators:** Provide the name, department, and IU username and email address for all co-investigators who are employed or otherwise affiliated with Indiana University and affiliated institutions. Affiliated institutions include Indiana University Health (Clarian), Roudebush Veterans Affairs Medical Center, Regenstrief, and Wishard Hospital, among others.

- List individuals from affiliated institutions who are directly interacting or intervening with subjects:
 Name: First, MI, Last Department IU Username and/or Email Address

The individuals listed above are required to:

- complete the investigator education requirements (CITI);
- provide the IRB with documentation of their agreement to participate in the research; and
- have a Conflict of Interest (COI) disclosure form on file with the appropriate IU Conflicts of Interest Office.

For more information regarding CITI, please visit – please see http://researchadmin.iu.edu/REEP/leep_citi.html. For more information regarding COI, please visit http://researchadmin.iu.edu/COI/coi_disclosure.html.

- List individuals from affiliated institutions who are **not** directly interacting or intervening with subjects:
 Name: First, MI, Last Department IU Username and/or Email Address

C. **Non-affiliated Investigators.** List any co-investigators who are not employed or otherwise affiliated with IU or an affiliated institution.

Note: Nonaffiliated investigators who do not have local IRB approval for this protocol from their own facilities must enter into a non-affiliated investigator agreement. For additional guidance, refer to the IU IRB Guidance on Collaborations in Research available on the IU Human Subjects Office Website. Nonaffiliated investigators who are directly interacting or intervening with subjects (including obtaining consent) must complete the IU investigator education requirement, provide documentation of agreement to participate in the research (unless a non-affiliated investigator agreement if necessary), and complete a COI disclosure form.

Name of Non-Affiliated investigator	Email Address	Institution/Employer	Description of Procedures Performed	Is the non-affiliated investigator	Is the non-affiliated investigator

directly interacting or intervening with subjects? (yes/no)	required to receive review from a local IRB? (yes/no)
---	--

SECTION II: CONFLICT OF INTEREST

Federal regulations and Indiana University policy require that all investigators participating in human subjects research disclose and manage (potential) conflicts of interest. Disclosed conflicts relating to this study must be disclosed to potential subjects in the informed consent document.

1. Are any of the investigators listed in Section I aware of an institutional conflict of interest which could affect or be affected by this research?

No.
 Yes. Please explain: _____

2. Do any of the investigators listed in Section I (or their immediate family members) have a (potential) financial interest which could affect or be affected by this research?

Potential financial interests could include: stock ownership in the sponsor or manufacturer of the investigational item, compensation from the sponsor or manufacturer of the investigational item (excluding payments for conducting as outlined in the clinical trials agreement), patent or proprietary interest in the investigational item, employment relationship with the sponsor or manufacturer or the investigational item, proprietary interest related to the research including, but not limited to, a patent, trademark, copyright or licensing agreement, any arrangement, ownership interest, or compensation that could be affected by the outcome of the research, and/or any other interest which may be perceived to interfere with the investigator's ability to protect subjects.

No.
 Yes. The following investigators have a financial interest in this research: _____

If any of the investigators listed in Section I have a financial interest in this research, the informed consent document must include the financial interest statement. Please see the Informed Consent Template for more information.

3. Have all potential financial interests listed in Question 1 above been disclosed and managed by the appropriate IU Conflicts of Interest Office?

N/A. None of the investigators listed in Section I (or their immediate family members) have a potential financial interest which relates to this research.
 No. Please contact the appropriate IU Conflicts of Interest Office immediately. Research may not be approved until all disclosures have been reviewed and managed, if necessary. Please visit http://researchadmin.iu.edu/COI/coi_home.html for more information.
 Yes. The disclosure has been approved by the appropriate IU Conflicts of Interest Office OR a copy of the management plan is on file.

Appendix 52: IRB Amendment Approval Letter (2011-06-07)



INDIANA UNIVERSITY
OFFICE OF RESEARCH ADMINISTRATION

To: PETER ANDREW HOOK
LAW LIBRARY

From: IU Human Subjects Office
Office of Research Administration – Indiana University

Date: June 07, 2011

RE: NOTICE OF EXPEDITED APPROVAL - AMENDMENT

Protocol Title: The History of an Academic Discipline (Law) as Revealed by a Longitudinal Analysis of Courses Taught (1922–23 through 1989–90)—Domain Maps from 30,000 Co-Teaching Events

Protocol #: 1101004680

Funding Agency/Sponsor: None

IRB: IRB-IUB, IRB00000222

An amendment to your above-referenced protocol was approved by the Institutional Review Board on June 03, 2011. The protocol meets the requirements for expedited review pursuant to §46.110(b)(2). The changes described in the amendment can now be implemented, unless any departmental or other approvals are required.

If you submitted a revised informed consent document a copy of the approved stamped document is enclosed and must now be used.

You should retain a copy of this letter and any associated approved study documents for your records. All documentation related to this protocol must be maintained in your files for audit purposes for at least three years after closure of the research; however, please note that research studies subject to HIPAA may have different requirements regarding file storage after closure. Additional information is available on our website at <http://researchadmin.iu.edu/HumanSubjects/index.html>. If you have any questions, please contact our office at the below address.

Thank you.

Appendix 53: IRB Informed Consent Statement (2011-06-03)

IRB Study # 1101004680

INDIANA UNIVERSITY INFORMED CONSENT STATEMENT FOR

The Quest for the Structure of Law: Domain Maps from 30,000 Course Coupling Events and a History of an Academic Discipline (1931-1973)

You are invited to participate in a research study of the topical similarity of academic legal course subjects. You were selected as a possible subject because of your expertise in legal education and / or doctrinal legal subjects. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

The study is being conducted by Peter A. Hook, Electronic Services Librarian at the Indiana University Maurer School of Law.

STUDY PURPOSE

The purpose of this study is to identify the structure of legal academia in terms of a spatial distribution of academic course subjects based on their topical similarity and to conduct an analysis of how course subjects have changed over time.

NUMBER OF PEOPLE TAKING PART IN THE STUDY:

If you agree to participate, you will be one of up to 25 subjects who will be participating in this research.

PROCEDURES FOR THE STUDY:

If you agree to be in the study, you will do the following things:

Part 1 – (Estimated Length of time—60 minutes) – Meet with Peter A. Hook at a time and place convenient to you. You will be asked to sort 104 index cards containing the names of law school course subjects based on their topical similarity with one another. You will be asked to place the cards in groupings and sub-groupings and to label the groupings. Upon completion, you will be asked several questions about the process.

On a subsequent day, separated by at least a week, you will be asked to do the following:

Part 2 – (Estimated Length of time—60 minutes) – Meet with Peter A. Hook at a time and place convenient to you. You will be shown several topic maps of academic legal subjects on large pieces of paper. You will be asked to speak aloud whatever thoughts you may have as you view the maps. You will be asked to note the adjacencies that seem correct to you or any that seem jarring. Additionally, you will be asked to annotate the maps by circling the placement of subjects that you find striking, drawing connections between topics that in your opinion should be more proximate, and/or writing comments as to the arrangements of particular subjects. You will also be asked to assess the accuracy, reliability, and anomalies of the maps in general.

RISKS OF TAKING PART IN THE STUDY:

Participation in the study has only a slight risk. Subjects might face professional embarrassment if either their card sort taxonomy or reflections on the domain maps become public and are criticized by others. You will be protected from such risk by the strict maintenance of your confidentiality. All results published from the study will be anonymous with almost no chance for readers to infer the identities of participants.

BENEFITS OF TAKING PART IN THE STUDY:

The benefits of participation in this study are that you are contributing to the creation of large scale, global views of an important graduate discipline. These global views (concept maps) have the potential to be used for purposes of education and orienting new students to the field.

CONFIDENTIALITY

Efforts will be made to keep your personal information confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Your identity will be held in confidence in reports in which the study may be published. Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the study investigator and his/her research associates, the Indiana University Institutional Review Board or its designees, and (as allowed by law) state or federal agencies, specifically the Office for Human Research Protections (OHRP).

NO PAYMENT

You will not receive payment for taking part in this study.

CONTACTS FOR QUESTIONS OR PROBLEMS

For questions about the study or a research-related injury, contact the researcher, Peter A. Hook, at (812) 856-0464. If you cannot reach the researcher during regular business hours (i.e. 8:00AM-5:00PM), please call the IU Human Subjects Office at (812) 856-4242 or (800) 696-2949. After business hours, or in the event of an emergency, please call Peter A. Hook on his cellular phone at (812) 345-4235.

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the IU Human Subjects Office at (812) 856-4242 or (800) 696-2949.

VOLUNTARY NATURE OF STUDY

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. Your decision whether or not to participate in this study will not affect your current or future relations with Peter A. Hook or the Indiana University Maurer School of Law.

SUBJECT'S CONSENT

In consideration of all of the above, I give my consent to participate in this research study.

I will be given a copy of this informed consent document to keep for my records. I agree to take part in this study.

Subject's Printed Name: _____

Subject's Signature: _____ Date: _____
(must be dated by the subject)

Printed Name of Person Obtaining Consent: _____

Signature of Person Obtaining Consent: _____ Date: _____

IRB Approval Date: <u>JUN 3, 2011</u>
Expiration Date: <u>JUN 2, 2012</u>
IU Institutional Review Board (IRB)

Appendix 54: IRB Continuing Review Form, Signed (2012-07-05)

INDIANA UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB)

CONTINUING REVIEW OPEN TO ENROLLMENT

Reviewing IRB (please choose one):

IRB STUDY NUMBER: 1101004680

Biomedical: IRB-02 IRB-03 IRB-04 IRB-05
Behavioral: IRB-01 IUB IRB

Please type only in the gray boxes. To mark a box as checked, double-click the box, select "checked", and click "OK". Please see the Continuing Review/Closeout Form Instructions for more information.

SECTION I: INVESTIGATOR INFORMATION

Principal Investigator:

Name (Last, First, Middle Initial): **Hook, Peter A.**

Department: Law Library Phone: 856-0464 E-Mail: pahook@indiana.edu

Additional Study Contact:

Name: _____ Phone: _____ E-Mail: _____

Project Title: The Quest for the Structure of Law: Domain Maps from 30,000 Course Coupling Events and a History of an Academic Discipline (1931-1973)

Sponsor/Funding Agency: n/a Sponsor Number: _____

SECTION II: CURRENT STUDY STATUS

ONGOING – OPEN TO ENROLLMENT

Date study was initiated: June 10, 2011

Projected date of completion: December 31, 2012

(Select one below)

Enrollment of new participants or review of records/specimens continues

No participants have been enrolled to date. Please explain, then skip to Section V: _____

Please check here if the study is currently suspended (temporarily) and indicate the reason(s) for the suspension:

SECTION III: SUBJECT SUMMARY

Check here if your study utilizes records or specimens versus human subjects. When the form asks for the number of subjects, document the number of records/specimens that have been reviewed or collected.

Check here if the IRB has approved a waiver of consent for your study. When the form asks for the number of subjects consented, document the number of records that have been reviewed or the number of individuals enrolled.

1. Subject Summary Table

		On-Site
Since last IRB review	Total number of subjects CONSENTED	18
	Total number of subjects who FAILED SCREENING (e.g. found ineligible to participate)	0
	Total number of subjects who have WITHDRAWN from the study	0
Since beginning of study	Total number of subjects CONSENTED	18
	Total number of subjects who FAILED SCREENING (e.g. found ineligible to participate)	0
	Total number of subjects who have WITHDRAWN from the study	0
Number of ACTIVE subjects		18
Number of subjects who have COMPLETED the study		0

If necessary, please provide further explanation regarding the subject summary:

Part 1 of the Study Procedures has been completed and a summary is provided below.

Part 1 – (Estimated Length of time—60 minutes) – Meet with Peter A. Hook at a time and place convenient to you. You will be asked to sort 104 index cards containing the names of law school course subjects based on their topical similarity with one another. You will be asked to place the cards in groupings and sub-groupings and to label the groupings. Upon completion, you will be asked several questions about the process.

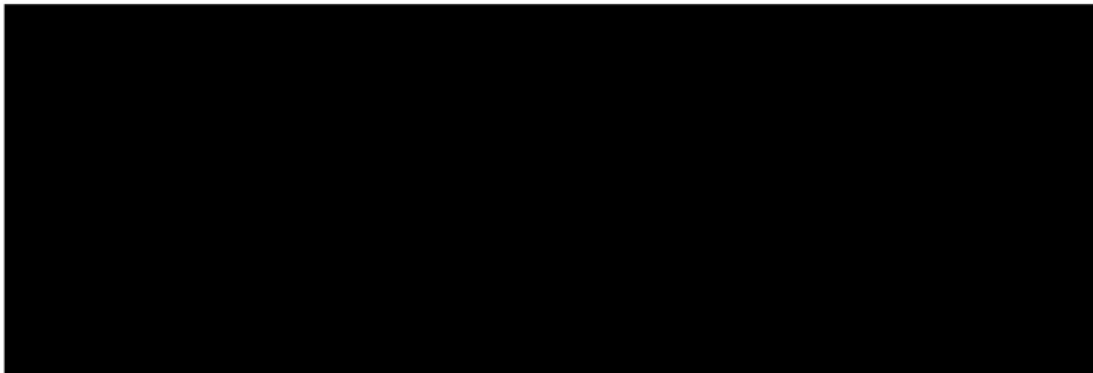
Part 2 of the Study Procedures has yet to be completed and it is contemplated that this will be completed by December 31, 2012.

Part 2 – (Estimated Length of time—60 minutes) – Meet with Peter A. Hook at a time and place convenient to you. You will be shown several topic maps of academic legal subjects on large pieces of paper. You will be asked to speak aloud whatever thoughts you may have as you view the maps. You will be asked to note the adjacencies that seem correct to you or any that seem jarring. Additionally, you will be asked to annotate the maps by circling the placement of subjects that you find striking, drawing connections between topics that in your opinion should be more proximate, and/or writing comments as to the arrangements of particular subjects. You will also be asked to assess the accuracy, reliability, and anomalies of the maps in general.

Part 1 Summary:

I have done the card sort exercise with 18 subjects. I regard this as done and am processing the results. I was happy with the turnout.

Sex: 11 males, 7 females,



2. **Withdrawal.** Have any subjects withdrawn from the study since the last IRB review?
 No
 Yes, state the reasons for withdrawal: _____
3. **Justification for Study Continuation.** Have subjects accrued in the study since the last IRB review?
 Yes
 No. Justify study continuation: _____
4. **Vulnerable Populations.** Are any of the subjects who have consented or enrolled in the study members of a vulnerable population?
 No.
 Yes. Has the IRB previously approved enrollment of these subjects?
 Yes. Continue to Question 5.
 No. **You must submit an amendment to the IRB to request the inclusion of these subjects.** Subjects in the the following vulnerable populations were enrolled without IRB approval.
 Children Pregnant Women and Human Fetuses
 Prisoners Economically/Educationally Disadvantaged
 Cognitively Impaired Students
5. **Short Form Consent.** Were any subjects consented using the short form written consent document?
 No.
 Yes. Please describe the circumstances of each subject enrolled, including language in which the consent process was conducted: _____
 Is there a reasonable possibility that additional subjects who speak this language could be enrolled?
 No.
 Yes. Please submit a translated version of the IRB-approved consent document for review and approval by the IRB.
6. **For studies employing waivers of assent:**
a. State the number of assent waivers that were employed since the last IRB review: _____
b. Explain the circumstances surrounding each assent waiver employed: _____

SECTION IV: ETHNIC/RACIAL REPORTING REQUIRED FOR FEDERALLY-SPONSORED AND VA STUDIES

SUBJECT ACCRUAL				
Ethnic Category	Sex/Gender			Total
	Females	Males	Unknown or Not Reported	
Hispanic or Latino				
Not Hispanic or Latino				
known (Individuals Not Reporting Ethnicity)				
Ethnic Category Total of All Subjects*				
Racial Categories				
American Indian/Alaska Native				
Asian				
Native Hawaiian or Other Pacific Islander				
Black or African American				
White				
More Than One Race				
Unknown or Not Reported				
Racial Categories Total of All Subjects*				

If ETHNIC and RACIAL category totals are not equal, please explain:

- Have there been any unexpected problems recruiting participants, especially subjects in a particular category (including children and women)?
 - No.
 - Yes. Please explain: _____
- Is this study conducted at, funded by, or recruiting from the VA?**
 - No.
 - Yes. In the table below, please indicate the total number of VA subjects enrolled in the study and indicate in which categories those subjects fall and how many represent each category indicated.

Total number of VA subjects: _____

<input type="checkbox"/>	Children:	_____
<input type="checkbox"/>	Cognitively Impaired:	_____
<input type="checkbox"/>	Economically/Educationally Disadvantaged:	_____
<input type="checkbox"/>	Pregnant Women and Fetuses:	_____
<input type="checkbox"/>	Prisoners:	_____
<input type="checkbox"/>	Students:	_____

SECTION V: STUDY SUMMARY OF EVENTS

- Since the last IRB review**, did any unanticipated problems, including adverse events, protocol deviations, or subject complaints, or noncompliance occur that required prompt reporting to the IRB?
 - No.
 - Yes. Were these events reported previously to the IRB and VA, if applicable?
 - No. Please explain why these events were not previously reported: _____
 - Yes. Provide a **summary** of these events: _____
 - Check here if the **summary** is attached.
- Since the last IRB review**, did any protocol-related adverse events, subject complaints, or protocol deviations occur on-site that did **not** require prompt reporting to the IRB?
 - No.
 - Yes. Provide a **summary** of these events: _____
 - Check here if the **summary** is attached.
- Is there a data safety monitoring plan for this study?
 - No. This study is minimal risk (exempt or expedited).
 - Yes. Does the plan include a data safety monitoring board?
 - No.
 - Yes. Please provide the most recent monitoring report if it has not already been provided to the IRB or explain why one cannot be provided: _____
- Based on the above information, do you feel the validity of the data is affected?
 - No.
 - Yes. Explain: _____
- Based on the above information, do you feel there is an increase in risk to subjects or others or in the frequency or severity of adverse events, protocol deviations, problems, complaints, etc. since the last IRB review?
 - No.
 - Yes. Explain: _____

SECTION VI: SUMMARY

- Describe the progress of the research, including any preliminary observations and information about study results or trends:

Initial results indicate that the use of course-subject co-occurrence is a legitimate means to make topic maps of academic disciplines.

- If no progress description is provided, please explain why: _____
2. Have subjects experienced any **direct** benefit(s) from their participation in the study?
- No.
 Yes.
Please explain:
- Subjects became globally aware of the 104 categories currently used by the American Association of Law Schools to identify course subjects.
3. If any recent literature has been published or presented by you or others since the last IRB review, has it demonstrated a significant impact on the conduct of the study or the well-being of subjects?
- N/A. There has not been any recent literature published or presented since the last IRB review.
 No.
 Yes. Attach a copy or explain: _____
4. Have there been any audits from federal agencies conducted since the last IRB review that identified unanticipated problems involving risks to subjects or others or noncompliance?
- No.
 Yes. Attach the report(s).
5. Do you believe the risk/benefit ratio has changed based on all of the information provided on this form and any attachments?
- No.
 Yes. Explain: _____

SECTION VII: CO-INVESTIGATOR UPDATE

- This submission does NOT include additions or removals to the Investigator List. *Proceed to section VIII.*
- This submission includes additions or removals to the Investigator List. The updated Investigator List is attached.

The following investigators are being added to the current Investigator List:

The following investigators are being **removed** from the Investigator List and will no longer be participating in this research:

SECTION VIII: REQUIRED ATTACHMENTS

All current study documents must be included with your continuing review submission. Please check the appropriate boxes as they apply to your study.

- | | |
|---|---|
| <input type="checkbox"/> Assent, dated: _____ | <input type="checkbox"/> Protocol, dated: _____ |
| <input type="checkbox"/> Number of assent documents: _____ | <input type="checkbox"/> Recruitment materials (please list and date): _____ |
| <input type="checkbox"/> Authorization, dated: _____ | <input type="checkbox"/> Request form(s) for vulnerable population(s) (please list and date); _____ |
| <input type="checkbox"/> Number of authorizations: _____ | <input type="checkbox"/> Surveys, questionnaires (please list and date): _____ |
| <input type="checkbox"/> Clinical Investigator's Brochure, dated: _____ | <input checked="" type="checkbox"/> Summary Safeguard Statement or HUD Form, dated: <u>May 20, 2011</u> |
| <input type="checkbox"/> Expedited Research Checklist, dated: _____ | <input type="checkbox"/> Study Information Sheet |
| <input type="checkbox"/> Exempt Research Checklist, dated: _____ | <input type="checkbox"/> Other (please list and date): _____ |
| <input type="checkbox"/> HIPAA & Recruitment Checklist, dated: _____ | |
| <input checked="" type="checkbox"/> Informed Consent, dated: <u>7/3/2012</u> | |
| <input type="checkbox"/> Number of consent documents: <u>1</u> | |
| <input checked="" type="checkbox"/> Investigator List, dated: <u>7/3/2012</u> | |

Include the following documents, as applicable:

- Publications, if you answered YES to VI.3. above
- Audit reports, if you answered YES to VI.4 above
- Summaries, if you indicated in Section V that summaries are attached
- DSMB report, if the study includes a DSMB and you are submitting the most recent DSMB report

- Interim findings, *if there are any to report*
- Multi-center trial reports, *if there are any available*

NOTES:

- No changes to previously approved study documents are allowed at the time of continuing review unless requested by the IRB.
- Incomplete submissions will result in a processing delay, which could result in study expiration.
- **VA Requirements:** For studies conducted at the VA, utilizing VA funding or VA patients, you must provide a copy of the approved continuing review form to the VA Research Service office.

SECTION IX: INVESTIGATOR STATEMENT OF COMPLIANCE

By submitting this form, the Principal Investigator assures that all information provided is accurate. He/she assures that procedures performed under this project will be conducted in strict accordance with federal regulations and Indiana University policies and procedures that govern research involving human subjects. He/she acknowledges that he/she has the resources required to conduct research in a way that will protect the rights and welfare of participants, and that he/she will employ sound study design which minimizes risks to subjects. He/she agrees to submit *any* change to the project (e.g. change in principal investigator, research methodology, subject recruitment procedures, etc.) to the Board in the form of an amendment for IRB approval prior to implementation.

SECTION X: IRB APPROVAL

For IU Human Subjects Office Use Only

Type of review: Full Board
 Expedited, Category: 6, 7

STATUS OF STUDY: ONGOING - Open to Enrollment

This continuing review has been reviewed and approved as meeting the criteria for IRB approval as outlined in 45 CFR 46.111(a) by the Indiana University IRB. Based on the criteria for determining the frequency of continuing review and the level of risk, this study will expire on: 07/04/2013. If the study is not re-approved prior to that date all research activities must cease on that date, including enrollment of new subjects, intervention/interaction with current participants, and analysis of identified data.


Sara Benken
Digitally signed by Sara Benken
 DN: cn=Sara Benken, o=HSO, ou=ORA,
 email=sibenken@iu.edu, c=US
 Date: 2012.07.05 09:19:42 -0400

Authorized IRB Signature: _____ IRB Approval Date: 07/05/2012

Printed Name of IRB Member: Sara Benken

Appendix 55: IRB Renewal Approval Letter (2012-07-05)



INDIANA UNIVERSITY
OFFICE OF RESEARCH ADMINISTRATION

To: PETER ANDREW HOOK
LAW LIBRARY

From: IU Human Subjects Office
Office of Research Administration – Indiana University

Date: July 05, 2012

RE: NOTICE OF EXPEDITED PROTOCOL RENEWAL APPROVAL

Protocol Title: The History of an Academic Discipline (Law) as Revealed by a Longitudinal Analysis of Courses Taught (1922–23 through 1989–90)—Domain Maps from 30,000 Co-Teaching Events

Protocol #: 1101004680

Funding Agency/Sponsor: None

IRB: IRB-IUB, IRB00000222

Expiration Date: July 04, 2013

The above-referenced protocol was reviewed by the Institutional Review Board (IRB-IUB). The protocol is approved as Active - Open to Enrollment for a period of July 05, 2012 through July 04, 2013. This approval does not replace any departmental or other approvals that may be required.

If you submitted and/or are required to provide participants with an informed consent document, study information sheet, or other documentation, a copy of the enclosed approved stamped document(s) is enclosed and must be used.

Please note that as the principal investigator (or faculty sponsor in the case of a student protocol) of this study, you assume the following responsibilities:

- CONTINUING REVIEW:** You must receive re-approval of ongoing research prior to the protocol's expiration date (noted above). You may receive a renewal reminder from our office approximately two months prior to the expiration date; however, it is your responsibility to submit the applicable protocol documentation to the IRB in a timely manner. If continued approval is not received by the expiration date, the study will automatically expire, requiring all research activities, including enrollment of new subjects, interaction and intervention with current participants, and analysis of identified data to cease.
- AMENDMENTS:** You must request approval from the IRB of any proposed changes to the research prior to implementation. An amendment form can be obtained at: http://researchadmin.iu.edu/HumanSubjects/hs_forms.html.
- UNANTICIPATED PROBLEMS AND NONCOMPLIANCE:** You must report unanticipated problems and noncompliance to the IRB according to the Unanticipated Problems and Noncompliance SOP, which can be found at: http://researchadmin.iu.edu/HumanSubjects/hs_policies.html.
- COMPLETION:** You must promptly notify the IRB when the research is complete. To notify the IRB of study closure, please obtain a close-out form at: http://researchadmin.iu.edu/HumanSubjects/hs_forms.html.
- LEAVING THE INSTITUTION:** You must notify the IRB of the disposition of the research when you leave the institution.

Note: SOPs exist covering a variety of topics that may be relevant to the conduct of your research. For more information on the relevant policies and procedures, go to http://researchadmin.iu.edu/HumanSubjects/hs_policies.html.

You should retain a copy of this letter and any associated approved study documents (e.g. informed consent or information sheet) for your records. Please refer to the project title and number in future correspondence with our office. Additional information is available on our website at <http://researchadmin.iu.edu/HumanSubjects/index.html>. Please contact our office if you have questions or need further assistance.

Thank you.

Appendix 56: IRB Informed Consent Statement (2012-07-05)

IRB Study # 1101004680

INDIANA UNIVERSITY INFORMED CONSENT STATEMENT FOR

The Quest for the Structure of Law: Domain Maps from 30,000 Course Coupling Events and a History of an Academic Discipline (1931-1973)

You are invited to participate in a research study of the topical similarity of academic legal course subjects. You were selected as a possible subject because of your expertise in legal education and / or doctrinal legal subjects. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

The study is being conducted by Peter A. Hook, Electronic Services Librarian at the Indiana University Maurer School of Law.

STUDY PURPOSE

The purpose of this study is to identify the structure of legal academia in terms of a spatial distribution of academic course subjects based on their topical similarity and to conduct an analysis of how course subjects have changed over time.

NUMBER OF PEOPLE TAKING PART IN THE STUDY:

If you agree to participate, you will be one of up to 25 subjects who will be participating in this research.

PROCEDURES FOR THE STUDY:

If you agree to be in the study, you will do the following things:

Part 1 – (Estimated Length of time—60 minutes) – Meet with Peter A. Hook at a time and place convenient to you. You will be asked to sort 104 index cards containing the names of law school course subjects based on their topical similarity with one another. You will be asked to place the cards in groupings and sub-groupings and to label the groupings. Upon completion, you will be asked several questions about the process.

On a subsequent day, separated by at least a week, you will be asked to do the following:

Part 2 – (Estimated Length of time—60 minutes) – Meet with Peter A. Hook at a time and place convenient to you. You will be shown several topic maps of academic legal subjects on large pieces of paper. You will be asked to speak aloud whatever thoughts you may have as you view the maps. You will be asked to note the adjacencies that seem correct to you or any that seem jarring. Additionally, you will be asked to annotate the maps by circling the placement of subjects that you find striking, drawing connections between topics that in your opinion should be more proximate, and/or writing comments as to the arrangements of particular subjects. You will also be asked to assess the accuracy, reliability, and anomalies of the maps in general.

RISKS OF TAKING PART IN THE STUDY:

Participation in the study has only a slight risk. Subjects might face professional embarrassment if either their card sort taxonomy or reflections on the domain maps become public and are criticized by others. You will be protected from such risk by the strict maintenance of your confidentiality. All results published from the study will be anonymous with almost no chance for readers to infer the identities of participants.

BENEFITS OF TAKING PART IN THE STUDY:

The benefits of participation in this study are that you are contributing to the creation of large scale, global views of an important graduate discipline. These global views (concept maps) have the potential to be used for purposes of education and orienting new students to the field.

7/3/2012

CONFIDENTIALITY

Efforts will be made to keep your personal information confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Your identity will be held in confidence in reports in which the study may be published. Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the study investigator and his/her research associates, the Indiana University Institutional Review Board or its designees, and (as allowed by law) state or federal agencies, specifically the Office for Human Research Protections (OHRP).

NO PAYMENT

You will not receive payment for taking part in this study.

CONTACTS FOR QUESTIONS OR PROBLEMS

For questions about the study, contact the researcher, Peter A. Hook, at (812) 856-0464. After business hours, or in the event of an emergency, please call Peter A. Hook on his cellular phone at (812) 345-4235.

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the IU Human Subjects Office at (812) 856-4242 or (800) 696-2949.

VOLUNTARY NATURE OF STUDY

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. Your decision whether or not to participate in this study will not affect your current or future relations with Peter A. Hook or the Indiana University Maurer School of Law.

SUBJECT'S CONSENT

In consideration of all of the above, I give my consent to participate in this research study.

I will be given a copy of this informed consent document to keep for my records. I agree to take part in this study.

Subject's Printed Name: _____

Subject's Signature: _____ **Date:** _____
(must be dated by the subject)

Printed Name of Person Obtaining Consent: _____

Signature of Person Obtaining Consent: _____ **Date:** _____

<p><i>For IRB Office Use ONLY</i> IRB Approval Date: <u>Jul 5, 2012</u> Expiration Date: <u>Jul 4, 2013</u></p>

Appendix 57: IRB Study Amendment (2013-06-27)

INDIANA UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB)
STUDY AMENDMENT

Reviewing IRB (please choose one):

Biomedical: IRB-02 IRB-03 IRB-04 IRB-05
Behavioral: IRB-01 IUB IRB

IRB STUDY NUMBER: 1101004680
AMENDMENT NUMBER: 004 R002

Please type only in the gray boxes. To mark a box as checked, double-click the box, select "checked", and click "OK".

SECTION I: INVESTIGATOR INFORMATION

Principal Investigator:

Name (*Last, First, Middle Initial*): Börner, Katy

Department: School of Library and Information Science Phone: (812) 855-3256 E-Mail: katy@indiana.edu

Additional Study Contact:

Name: Hook, Peter A. Phone: (812) 345-4235 E-Mail: pahook@indiana.edu

Project Title: The Structure and Evolution of the Academic Discipline of Law in the United States: Generation and Validation of Course-Subject Co-Occurrence (CSCO) Maps

Sponsor/Funding Agency: NA Sponsor Number: NA
Sponsor Amendment Number: NA

SECTION II: STUDY INFORMATION

This study is:

- Open to enrollment
 Closed to enrollment

Number of active subjects: 18

SECTION III: AMENDMENT DESCRIPTION

1. Provide a complete description of the proposed change(s) included in this amendment:

A. Change of PI from Peter A. Hook to Katy Börner. Peter A. Hook becomes a co-PI.

At the time of previous IRB approvals, Peter A. Hook was a librarian on campus and thus, University faculty. Peter A. Hook resigned his faculty affiliation on Oct. 3, 2012 in order to finish his dissertation and to teach in the field of his doctoral studies—Library and Information Science. Thus, his University affiliation is now exclusively as a PhD student and as an adjunct lecturer. His doctoral advisor, Katy Börner, is willing to become the PI with Hook becoming a co-PI.

B. Change of Project Title from: The Quest for the Structure of Law: Domain Maps from 30,000 Course Coupling Events and a History of an Academic Discipline (1931-1973) **to** The Structure and Evolution of the Academic Discipline of Law in the United States: Generation and Validation of Course-Subject Co-Occurrence (CSCO) Maps.

Note: This new title better describes the study. It does not reflect methodological changes or changes to Human Subject interactions and protocols. If this will cause problems, the old title will suffice.

2. State the justification/rationale for this amendment. If risks are being updated, please provide specific justification:

A. Former PI is no longer University faculty.

B. New title better describes the study. (No methodological changes or changes to Human Subjects interactions and protocols are involved.)

3. Is the study sponsored?

IRB Form v10/01/2012

- No.
 - Yes. Check the appropriate line below and provide with this amendment, as applicable:
 - A copy of the sponsor's amendment, if the amendment came from the sponsor.
 - A copy of your notice to the sponsor of this change, if you initiated the amendment.
 - A copy of the approved amendment will be sent to the sponsor.
 - None of the above apply. Please explain: _____
4. Do the proposed change(s) described in this amendment alter the risk to benefit assessment?
- No.
 - Yes. Please describe how the assessment is altered: _____
5. Do the proposed change(s) described in this amendment require changes to the informed consent and/or assent document(s) or process?
- N/A. Informed consent, written documentation of informed consent, and/or assent has been waived for this study. Skip to Section IV.
 - No. Skip to Section IV.
 - Yes. Answer items A and B below.
- A. Check the appropriate line below.
- The new informed consent and/or assent document(s) are in addition to the current one(s).
 - The new informed consent and/or assent document(s) replace the current one(s).
If there are multiple consent and/or documents for this study, please indicate which consent and/or assent document(s) are to be replaced. _____
 - N/A. Changes are being made to the informed consent process only and informed consent document(s) will not change.
- B. Will enrolled subjects be informed of the change(s) described in this amendment?
- No. Please explain why not: _____
 - Yes. Will enrolled subjects be re-consented and/or re-assented?
 - Yes.
 - No. Please explain how enrolled subjects will be notified: _____

SECTION IV: CO-INVESTIGATOR UPDATE

- This submission does NOT include additions or removals to the Investigator List. *Proceed to Section V.*
- This submission includes additions or removals to the Investigator List. The updated Investigator List is attached.

The following investigators are being added to the current Investigator List:
Katy Börner

The following investigators are being **removed** from the Investigator List and will no longer be participating in this research:

SECTION V: AMENDMENT SUMMARY

Amendment includes:

- | | |
|---|---|
| <input type="checkbox"/> Assent, dated: _____
Number of assent documents: _____ | <input type="checkbox"/> Investigator List, dated: _____ |
| <input type="checkbox"/> Authorization, dated: _____
Number of authorizations: _____ | <input type="checkbox"/> Protocol, dated: _____ |
| <input type="checkbox"/> Clinical Investigator's Brochure, dated: _____ | <input type="checkbox"/> Recruitment materials (please list and date): _____ |
| <input type="checkbox"/> Expedited Research Checklist, dated: _____ | <input type="checkbox"/> Request form(s) for vulnerable population(s) (please list and date): _____ |
| <input type="checkbox"/> Exempt Research Checklist, dated: _____ | <input type="checkbox"/> Surveys, questionnaires (please list and date): _____ |
| <input type="checkbox"/> HIPAA & Recruitment Checklist, dated: _____ | <input type="checkbox"/> Summary Safeguard Statement or HUD Form, dated: _____ |
| <input type="checkbox"/> Informed Consent, dated: _____
Number of consent documents: _____ | <input type="checkbox"/> Study Information Sheet |
| | <input type="checkbox"/> Other (please list and date): _____ |

NOTE: Only documents that are being changed as a result of the amendment should be attached and checked in items 6 above. Listing document dates are optional and only necessary if required by the investigator or sponsor.

NOTE TO INVESTIGATORS: Study amendments *may not* be instituted until approval from the IRB is given.

Please indicate the type of amendment you are submitting. Please see the Guidelines for Determining an Amendment Type available on the IU Human Subjects Office website for additional information. **Please note that the IRB makes the final determination with regard to whether or not the amendment is acceptable for expedited review or if it requires review at a convened IRB meeting.**

Minor Amendment. Change(s) do not significantly affect the safety of subjects and is acceptable for expedited review per 45 CFR 46.110(b)(2)/21 CFR 56.110(b)(2).

Major Amendment. Changes potentially involve increased risks or discomforts or decrease potential benefit. The amendment requires review at a convened IRB meeting.

SECTION VI: INVESTIGATOR STATEMENT OF COMPLIANCE

By submitting this form, the Principal Investigator assures that all information provided is accurate. He/she assures that procedures performed under this project will be conducted in strict accordance with federal regulations and Indiana University policies and procedures that govern research involving human subjects. He/she acknowledges that he/she has the resources required to conduct research in a way that will protect the rights and welfare of participants, and that he/she will employ sound study design which minimizes risks to subjects. He/she agrees to submit *any* change to the project (e.g. change in principal investigator, research methodology, subject recruitment procedures, etc.) to the Board in the form of an amendment for IRB approval prior to implementation.

SECTION VII: IRB APPROVAL

This amendment, including documentation noted above, has been reviewed and approved by the Indiana University IRB as meeting the criteria for IRB approval as outlined in 45 CFR 46.111(a). I agree with the investigator's assessment above regarding whether the amendment is a minor or major amendment, unless otherwise noted.

Authorized IRB Signature: _____



IRB Approval Date: 06.27.13

Printed Name of IRB Member: John R Baumann

Appendix 58: IRB Notice of Expedited Protocol Renewal Approval (2013-07-01)



INDIANA UNIVERSITY
OFFICE OF RESEARCH ADMINISTRATION

To: KATY BORNER
LIBRARY AND INFORMATION SCIENCE

From: IU Human Subjects Office
Office of Research Administration – Indiana University

Date: July 01, 2013

RE: NOTICE OF EXPEDITED PROTOCOL RENEWAL APPROVAL

Protocol Title: The History of an Academic Discipline (Law) as Revealed by a Longitudinal Analysis of Courses Taught (1922–23 through 1989–90)—Domain Maps from 30,000 Co-Teaching Events
Protocol #: 1101004680
Funding Agency/Sponsor: None
IRB: IRB-IUB, IRB00000222

Expiration Date: June 26, 2015

The above-referenced protocol was reviewed by the Institutional Review Board (IRB-IUB). The protocol is approved as Active - Open to Enrollment for a period of June 27, 2013 through June 26, 2015. This approval does not replace any departmental or other approvals that may be required.

If you submitted and/or are required to provide participants with an informed consent document, study information sheet, or other documentation, a copy of the enclosed approved stamped document(s) is enclosed and must be used.

Please note that as the principal investigator (or faculty sponsor in the case of a student protocol) of this study, you assume the following responsibilities:

1. **CONTINUING REVIEW:** You must receive re-approval of ongoing research prior to the protocol's expiration date (noted above). You may receive a renewal reminder from our office approximately two months prior to the expiration date; however, it is your responsibility to submit the applicable protocol documentation to the IRB in a timely manner. If continued approval is not received by the expiration date, the study will automatically expire, requiring all research activities, including enrollment of new subjects, interaction and intervention with current participants, and analysis of identified data to cease.
2. **AMENDMENTS:** You must request approval from the IRB of any proposed changes to the research prior to implementation. An amendment form can be obtained at: http://researchadmin.iu.edu/HumanSubjects/hs_forms.html.
3. **UNANTICIPATED PROBLEMS AND NONCOMPLIANCE:** You must report unanticipated problems and noncompliance to the IRB according to the Unanticipated Problems and Noncompliance SOP, which can be found at: http://researchadmin.iu.edu/HumanSubjects/hs_policies.html.
4. **COMPLETION:** You must promptly notify the IRB when the research is complete. To notify the IRB of study closure, please obtain a close-out form at: http://researchadmin.iu.edu/HumanSubjects/hs_forms.html.
5. **LEAVING THE INSTITUTION:** You must notify the IRB of the disposition of the research when you leave the institution.

Note: SOPs exist covering a variety of topics that may be relevant to the conduct of your research. For more information on the relevant policies and procedures, go to http://researchadmin.iu.edu/HumanSubjects/hs_policies.html.

You should retain a copy of this letter and any associated approved study documents (e.g. informed consent or information sheet) for your records. Please refer to the project title and number in future correspondence with our office. Additional information is available on our website at <http://researchadmin.iu.edu/HumanSubjects/index.html>. Please contact our office if you have questions or need further assistance.

Thank you.

Appendix 59: IRB Continuing Review Open to Enrollment (2013-06-27)

INDIANA UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB)

CONTINUING REVIEW OPEN TO ENROLLMENT

Reviewing IRB (please choose one):

IRB STUDY NUMBER: 1101004680

Biomedical: IRB-02 IRB-03 IRB-04 IRB-05
Behavioral: IRB-01 IUB IRB

Please type only in the gray boxes. To mark a box as checked, double-click the box, select "checked", and click "OK". Please see the Continuing Review/Closeout Form Instructions for more information.

SECTION I: INVESTIGATOR INFORMATION

Principal Investigator:

Name (Last, First, Middle Initial): Börner, Katy

Department: School of Library and Information Science Phone: (812) 855-3256 E-Mail: katy@indiana.edu

Additional Study Contact:

Name: **Hook, Peter A.** Phone: 812-345-4235 E-Mail: pahook@indiana.edu

Project Title: The Structure and Evolution of the Academic Discipline of Law in the United States: Generation and Validation of Course-Subject Co-Occurrence (CSCO) Maps

Funding Source: NA

Sponsor Number: NA

Sponsor Type: Federal Federal Pass-Through State Industry Not-for-Profit Unfunded Internally Funded

Funding Status: Pending Funded N/A

SECTION II: CURRENT STUDY STATUS

ONGOING – OPEN TO ENROLLMENT

Date study was initiated: June 10, 2011

Projected date of completion: December 31, 2013

(Select one below)

Enrollment of new participants or review of records/specimens continues

No participants have been enrolled to date. Please explain, then skip to Section V: _____

Please check here if the study is currently suspended (temporarily) and indicate the reason(s) for the suspension:

SECTION III: SUBJECT SUMMARY

Check here if your study utilizes records or specimens versus human subjects. When the form asks for the number of subjects, document the number of records/specimens that have been reviewed or collected.

Check here if the IRB has approved a waiver of consent for your study. When the form asks for the number of subjects consented, document the number of records that have been reviewed or the number of individuals enrolled.

1. Subject Summary Table

		On-Site
Since last IRB review	Total number of subjects CONSENTED	0
	Total number of subjects who FAILED SCREENING (e.g. found ineligible to participate)	0
	Total number of subjects who have WITHDRAWN from the study	0
Since beginning of study	Total number of subjects CONSENTED	18
	Total number of subjects who FAILED SCREENING (e.g. found ineligible to participate)	0
	Total number of subjects who have WITHDRAWN from the study	0
Number of ACTIVE subjects		18
Number of subjects who have COMPLETED the study		0

If necessary, please provide further explanation regarding the subject summary:

18 subjects completed Part 1 of the study. This consisted of the card sort procedure. These card procedures were completed between June 7, 2011 and July 29, 2011. In the interim, extensive data manipulation has been occurring in order to prepare the domain maps. Part 2 of the study consists of showing these domain maps to the human subjects and inviting their comments. It is desired that all 18 recruited subjects will do Part 2 of the study. However, as the applicable informed consent forms have expired, the subjects will have to agree to continue in the study in order to complete Part 2. Additionally, new signed informed consent statements will have to be obtained. No additional card sorting procedures (Part 1) will be conducted. However, the investigators may wish to recruit entirely new subjects to do only Part 2 of the study as it is believed that some of the original 18 will not wish to participate further. No more than the maximum 25 allowed, will be recruited.

2. **Withdrawal.** Have any subjects withdrawn from the study since the last IRB review?

- No
 Yes, state the reasons for withdrawal: _____

3. **Justification for Study Continuation.** Have subjects accrued in the study since the last IRB review?

- Yes
 No. Justify study continuation:

As per the original research design, human subjects are used in two phases. At the outset, they are used to provide one of five different sources of the similarity of law school course-subjects. (The other four sources are published items in the literature that do not involve human subjects.) This was accomplished through the card sorting procedure described above. In the interim, there has been much data crunching and processing to produce spatial representations of law school course-subjects to be compared and evaluated against a gold-standard of the five different sources of the similarity of law school course-subjects. (The five source gold-standard is extrinsic to the main dataset—incidences of faculty teaching different course-subjects in the same academic year as indicated by the list of teachers by subject in the annual directories of the American Association of Law Schools.) The ultimate validation of the domain maps incorporating the best results when compared against the gold-standard, is comment by human subjects in Part 2 of the study.

4. **Vulnerable Populations.** Are any of the subjects who have consented or enrolled in the study members of a vulnerable population?
- No.
- Yes. Has the IRB previously approved enrollment of these subjects?
- Yes. Continue to Question 5.
- No. **You must submit an amendment to the IRB to request the inclusion of these subjects.** Subjects in the the following vulnerable populations were enrolled without IRB approval.
- | | |
|---|---|
| <input type="checkbox"/> Children | <input type="checkbox"/> Pregnant Women and Human Fetuses |
| <input type="checkbox"/> Prisoners | <input type="checkbox"/> Economically/Educationally Disadvantaged |
| <input type="checkbox"/> Cognitively Impaired | <input type="checkbox"/> Students |
5. **Short Form Consent.** Were any subjects consented using the short form written consent document?
- No.
- Yes. Please describe the circumstances of each subject enrolled, including language in which the consent process was conducted: _____
- Is there a reasonable possibility that additional subjects who speak this language could be enrolled?
- No.
- Yes. Please submit a translated version of the IRB-approved consent document for review and approval by the IRB.
6. **For studies employing waivers of assent:**
- a. State the number of assent waivers that were employed since the last IRB review: _____
- b. Explain the circumstances surrounding each assent waiver employed: _____

SECTION IV: ETHNIC/RACIAL REPORTING REQUIRED FOR FEDERALLY-SPONSORED AND VA STUDIES



If ETHNIC and RACIAL category totals are not equal, please explain:

Participants had to be familiar with law school education. Unfortunately, very few minority members are on law school faculties. Additionally, participants were solicited in order to obtain a balance of subject specialty and gender. No additional considerations were taken into account.

1. Have there been any unexpected problems recruiting participants, especially subjects in a particular category (including children and women)?
- No.
- Yes. Please explain: _____
2. **Is this study conducted at, funded by, or recruiting from the VA?**

- No.
 Yes. In the table below, please indicate the total number of VA subjects enrolled in the study and indicate in which categories those subjects fall and how many represent each category indicated.

Total number of VA subjects: _____

<input type="checkbox"/>	Children:	_____
<input type="checkbox"/>	Cognitively Impaired:	_____
<input type="checkbox"/>	Economically/Educationally Disadvantaged:	_____
<input type="checkbox"/>	Pregnant Women and Fetuses:	_____
<input type="checkbox"/>	Prisoners:	_____
<input type="checkbox"/>	Students:	_____

SECTION V: STUDY SUMMARY OF EVENTS

- Since the last IRB review, did any unanticipated problems, including adverse events, protocol deviations, or subject complaints, or noncompliance occur that required prompt reporting to the IRB?
 - No.
 - Yes. Were these events reported previously to the IRB and VA, if applicable?
 - No. Please explain why these events were not previously reported: _____
 - Yes. Provide a **summary** of these events: _____
 - Check here if the **summary** is attached.
- Since the last IRB review, did any protocol-related adverse events, subject complaints, or protocol deviations occur on-site that did **not** require prompt reporting to the IRB?
 - No.
 - Yes. Provide a **summary** of these events: _____
 - Check here if the **summary** is attached.
- Is there a data safety monitoring plan for this study?
 - No. This study is minimal risk (exempt or expedited).
 - Yes. Does the plan include a data safety monitoring board?
 - No.
 - Yes. Please provide the most recent monitoring report if it has not already been provided to the IRB or explain why one cannot be provided: _____
- Based on the above information, do you feel the validity of the data is affected?
 - No.
 - Yes. Explain: _____
- Based on the above information, do you feel there is an increase in risk to subjects or others or in the frequency or severity of adverse events, protocol deviations, problems, complaints, etc. since the last IRB review?
 - No.
 - Yes. Explain: _____

SECTION VI: SUMMARY

- Describe the progress of the research, including any preliminary observations and information about study results or trends:

Initial results indicate that the use of course-subject co-occurrence is a legitimate means to make topic maps of academic disciplines.

If no progress description is provided, please explain why: _____
- Have subjects experienced any **direct** benefit(s) from their participation in the study?
 - No.
 - Yes.

Please explain:

Subjects became globally aware of the 104 categories currently used by the American Association of Law Schools to identify course subjects.

3. If any recent literature has been published or presented by you or others since the last IRB review, has it demonstrated a significant impact on the conduct of the study or the well-being of subjects?
- N/A. There has not been any recent literature published or presented since the last IRB review.
 No.
 Yes. Attach a copy or explain: _____
4. Have there been any audits from federal agencies conducted since the last IRB review that identified unanticipated problems involving risks to subjects or others or noncompliance?
- No.
 Yes. Attach the report(s).
5. Do you believe the risk/benefit ratio has changed based on all of the information provided on this form and any attachments?
- No.
 Yes. Explain: _____

SECTION VII: CO-INVESTIGATOR UPDATE

- This submission does NOT include additions or removals to the Investigator List. *Proceed to section VIII.*
- This submission includes additions or removals to the Investigator List. The updated Investigator List is attached.

The following investigators are being added to the current Investigator List:

The following investigators are being **removed** from the Investigator List and will no longer be participating in this research:

SECTION VIII: REQUIRED ATTACHMENTS

All current study documents must be included with your continuing review submission. Please check the appropriate boxes as they apply to your study.

- | | |
|---|---|
| <input type="checkbox"/> Assent, dated: _____
Number of assent documents: _____ | <input type="checkbox"/> Medical Device Form, dated: _____ |
| <input checked="" type="checkbox"/> Authorization, dated: June 07, 2011; July 4, 2012
Number of authorizations: <u>2</u> | <input type="checkbox"/> Protocol, dated: _____ |
| <input type="checkbox"/> Clinical Investigator's Brochure, dated: _____ | <input type="checkbox"/> Recruitment materials (please list and date): _____ |
| <input type="checkbox"/> Drug or Biological Products Form, dated: _____ | <input type="checkbox"/> Request form(s) for vulnerable population(s) (please list and date): _____ |
| <input checked="" type="checkbox"/> Expedited Research Checklist, dated: May 19, 2011 | <input type="checkbox"/> Surveys, questionnaires (please list and date): _____ |
| <input type="checkbox"/> HIPAA & Recruitment Checklist, dated: _____ | <input checked="" type="checkbox"/> Summary Safeguard Statement or HUD Form, dated: May 20, 2011. |
| <input checked="" type="checkbox"/> Informed Consent, dated: June 03, 2011,
Number of consent documents: <u>2</u> | <input type="checkbox"/> Study Information Sheet |
| | <input type="checkbox"/> Test Articles Supplement, dated: _____ |
| | <input type="checkbox"/> Other (please list and date): _____ |
- Investigator List, dated: June 14, 2013

Include the following documents, as applicable:

- Publications, if you answered YES to VI.3. above
 Audit reports, if you answered YES to VI.4 above
 Summaries, if you indicated in Section V that summaries are attached
 DSMB report, if the study includes a DSMB and you are submitting the most recent DSMB report
 Interim findings, SEE DISSERTATION TO DATE
 Multi-center trial reports, if there are any available

NOTES:

- No changes to previously approved study documents are allowed at the time of continuing review unless requested by the IRB.
- Incomplete submissions will result in a processing delay, which could result in study expiration.
- **VA Requirements:** For studies conducted at the VA, utilizing VA funding or VA patients, you must provide a copy of the approved continuing review form to the VA Research Service office.

SECTION IX: INVESTIGATOR STATEMENT OF COMPLIANCE

By submitting this form, the Principal Investigator assures that all information provided is accurate. He/she assures that procedures performed under this project will be conducted in strict accordance with federal regulations and Indiana University policies and procedures that govern research involving human subjects. He/she acknowledges that he/she has the resources required to conduct research in a way that will protect the rights and welfare of participants, and that he/she will employ sound study design which minimizes risks to subjects. He/she agrees to submit *any* change to the project (e.g. change in principal investigator, research methodology, subject recruitment procedures, etc.) to the Board in the form of an amendment for IRB approval prior to implementation.

SECTION X: IRB APPROVAL

For IU Human Subjects Office Use Only

Type of review: Full Board
 Expedited, Category: 6 & 7 Approved for a period of: one (1) year two (2) years

STATUS OF STUDY: ONGOING - Open to Enrollment

This continuing review has been reviewed and approved as meeting the criteria for IRB approval as outlined in 45 CFR 46.111(a) by the Indiana University IRB. Based on the criteria for determining the frequency of continuing review and the level of risk, this study will expire on: 06.26.15 If the study is not re-approved prior to that date all research activities must cease on that date, including enrollment of new subjects, intervention/interaction with current participants, and analysis of identified data.

Authorized IRB Signature:  IRB Approval Date: 06.27.13

Printed Name of IRB Member: John R. Baumann

For IU Human Subjects Office use only.

Recorded in the Minutes of: _____

Appendix 60: IRB Informed Consent Statement (2013-06-27)

IRB Study # 1101004680

INDIANA UNIVERSITY INFORMED CONSENT STATEMENT FOR

The Quest for the Structure of Law: Domain Maps from 30,000 Course Coupling Events and a History of an Academic Discipline (1931-1973)

You are invited to participate in a research study of the topical similarity of academic legal course subjects. You were selected as a possible subject because of your expertise in legal education and / or doctrinal legal subjects. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

The study is being conducted by Peter A. Hook, Electronic Services Librarian at the Indiana University Maurer School of Law.

STUDY PURPOSE

The purpose of this study is to identify the structure of legal academia in terms of a spatial distribution of academic course subjects based on their topical similarity and to conduct an analysis of how course subjects have changed over time.

NUMBER OF PEOPLE TAKING PART IN THE STUDY:

If you agree to participate, you will be one of up to 25 subjects who will be participating in this research.

PROCEDURES FOR THE STUDY:

If you agree to be in the study, you will do the following things:

Part 1 – (Estimated Length of time—60 minutes) – Meet with Peter A. Hook at a time and place convenient to you. You will be asked to sort 104 index cards containing the names of law school course subjects based on their topical similarity with one another. You will be asked to place the cards in groupings and sub-groupings and to label the groupings. Upon completion, you will be asked several questions about the process.

On a subsequent day, separated by at least a week, you will be asked to do the following:

Part 2 – (Estimated Length of time—60 minutes) – Meet with Peter A. Hook at a time and place convenient to you. You will be shown several topic maps of academic legal subjects on large pieces of paper. You will be asked to speak aloud whatever thoughts you may have as you view the maps. You will be asked to note the adjacencies that seem correct to you or any that seem jarring. Additionally, you will be asked to annotate the maps by circling the placement of subjects that you find striking, drawing connections between topics that in your opinion should be more proximate, and/or writing comments as to the arrangements of particular subjects. You will also be asked to assess the accuracy, reliability, and anomalies of the maps in general.

RISKS OF TAKING PART IN THE STUDY:

Participation in the study has only a slight risk. Subjects might face professional embarrassment if either their card sort taxonomy or reflections on the domain maps become public and are criticized by others. You will be protected from such risk by the strict maintenance of your confidentiality. All results published from the study will be anonymous with almost no chance for readers to infer the identities of participants.

BENEFITS OF TAKING PART IN THE STUDY:

The benefits of participation in this study are that you are contributing to the creation of large scale, global views of an important graduate discipline. These global views (concept maps) have the potential to be used for purposes of education and orienting new students to the field.

7/3/2012

CONFIDENTIALITY

Efforts will be made to keep your personal information confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Your identity will be held in confidence in reports in which the study may be published. Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the study investigator and his/her research associates, the Indiana University Institutional Review Board or its designees, and (as allowed by law) state or federal agencies, specifically the Office for Human Research Protections (OHRP).

NO PAYMENT

You will not receive payment for taking part in this study.

CONTACTS FOR QUESTIONS OR PROBLEMS

For questions about the study, contact the researcher, Peter A. Hook, at (812) 856-0464. After business hours, or in the event of an emergency, please call Peter A. Hook on his cellular phone at (812) 345-4235.

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the IU Human Subjects Office at (812) 856-4242 or (800) 696-2949.

VOLUNTARY NATURE OF STUDY

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. Your decision whether or not to participate in this study will not affect your current or future relations with Peter A. Hook or the Indiana University Maurer School of Law.

SUBJECT'S CONSENT

In consideration of all of the above, I give my consent to participate in this research study.

I will be given a copy of this informed consent document to keep for my records. I agree to take part in this study.

Subject's Printed Name: _____

Subject's Signature: _____ Date: _____
(must be dated by the subject)

Printed Name of Person Obtaining Consent: _____

Signature of Person Obtaining Consent: _____ Date: _____

<p><i>For IRB Office Use ONLY</i> IRB Approval Date: <u>Jun 27, 2013</u> Expiration Date: <u>Jun 26, 2015</u></p>

Appendix 61: IRB Investigator List (2013-06-24)

INDIANA UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB)

INVESTIGATOR LIST

PRINCIPAL INVESTIGATOR: Katy Börner

IRB STUDY NUMBER: 1101004680

STUDY TITLE: The Structure and Evolution of the Academic Discipline of Law in the United States: Generation and Validation of Course-Subject Co-Occurrence (CSCO) Maps

DOCUMENT DATE: June 24, 2013

Co-Investigators (key personnel): key investigators responsible for the conduct and/or reporting of research, including:

- Investigators making decisions regarding eligibility of subjects.
- Investigators obtaining consent for a study which is greater than minimal risk (full Board).
- Investigators listed on the FDA 1572 form
- Students who have designed a research project and are conducting it in order to complete an education requirement and who are conducting the research under the mentorship of a principal investigator

Research Personnel (non key): non-key research personnel who carry out study procedures but who are not considered responsible for the conduct and/or reporting of research, including:

- Research personnel who are collecting data under the instruction of key personnel
- Students working on a project designed by another under the instruction of key personnel

***VA Research:** * Research conducted by research personnel (whether key or non key) utilizing VA resources (e.g., equipment), or on VA property, while on VA time. VA time includes compensated, without compensation (WOC), or Intergovernmental Personnel Agreement (IPA).

NOTE: Investigators who do not interact with subjects or access subjects' identifiable data are **not** engaged in human subjects research and should not be listed as co-investigators on this form.

SECTION I: INVESTIGATORS

List the principal investigator and study personnel and their respective departments. (If there are multiple investigators, please indicate only one person as the principal investigator; others should be designated as either key or non-key personnel).

A. **Principal Investigator:**

	Department	IU Username and/or Email Address	*VA (Yes/No)
Katy Börner	Library and Information Science	katy@indiana.edu	No

B. **Co-Investigators (Key Personnel):** Provide the name, department, and IU username and email address for all key personnel who are employed or otherwise affiliated with Indiana University and affiliated institutions. Affiliated institutions include Indiana University Health (Clarian), Roudebush Veterans Affairs Medical Center, Regenstrief, and Wishard Hospital, among others.

These individuals are required to complete the investigator education requirement (CITI) and have a Conflict of Interest (COI) disclosure form on file with the appropriate IU Conflicts of Interest Office.

Name: Last, First MI	Department	IU Username and/or Email Address	Directly Interacting with Subjects: Yes/No	*VA: Yes/No
Hook, Peter A.	Library and Info. Science	pahook@indiana.edu	Yes	No

Potential financial interests could include: stock ownership in the sponsor or manufacturer of the investigational item, compensation from the sponsor or manufacturer of the investigational item (excluding payments for conducting as outlined in the clinical trials agreement), patent or proprietary interest in the investigational item, employment relationship with the sponsor or manufacturer of the investigational item, proprietary interest related to the research including, but not limited to, a patent, trademark, copyright or licensing agreement, any arrangement, ownership interest, or compensation that could be affected by the outcome of the research, and/or any other interest which may be perceived to interfere with the investigator's ability to protect subjects.

- No.
 Yes. The following investigators have a financial interest in this research: _____

If any of the investigators listed above have a financial interest in this research, the informed consent document must include the financial interest statement. Please see the Informed Consent Template for more information.

3. Have all potential financial interests listed in Question 1 above been disclosed and managed by the appropriate IU Conflicts of Interest Office?
- N/A. None of the investigators listed above (or their immediate family members) have a potential financial interest which relates to this research.
 No. Please contact the appropriate IU Conflicts of Interest Office immediately. Research may not be approved until all disclosures have been reviewed and managed, if necessary. Please visit http://researchadmin.iu.edu/COI/coi_home.html for more information.
 Yes. The disclosure has been approved by the appropriate IU Conflicts of Interest Office OR a copy of the management plan is on file.

SECTION III: INVESTIGATOR ACKNOWLEDGEMENT

By submitting this form, the Principal Investigator affirms all investigators submitted on this form have agreed to participate in this project, are aware of their status and role, and have been adequately trained to participate in the project.

Appendix 62: IRB Summary Safeguard Statement (2013-06-24)

INDIANA UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB) REVIEW SUMMARY SAFEGUARD STATEMENT

IRB STUDY NUMBER: 1101004680
PRINCIPAL INVESTIGATOR: Katy Bomer
DOCUMENT DATE: June 24, 2013

THIS FORM MUST BE NEATLY TYPED. (DO NOT TYPE ON THE REVERSE SIDE OF ANY FORMS). **Note: To check a box on this form, double-click the box and select "Checked" under "Default Value."**

STUDY TITLE: **The Quest for the Structure of Law: Domain Maps from 30,000 Course Coupling Events and a History of an Academic Discipline (1931-1973)**

Please type only in the gray boxes. To mark a box as checked, double-click the box, select "checked", and click "OK".

SECTION I: STUDY DESCRIPTION

- A. Please describe (in lay terms) the general objective(s) of the proposed research, including research question(s), hypothesis, and a short summary of the main interactions/interventions. If appropriate, describe any usual methods, that were considered, but not chosen, and why.

The overall goal of the research is to identify the structure of legal academia in terms of a spatial distribution of academic course subjects based on their topical similarity and to conduct an analysis of how course subjects have changed over time.

Course Coupling Map

1. Is course coupling analysis (the aggregate of the same professor teaching multiple, different courses) a legitimate means to produce a topic map of an academic discipline? This work is premised on the assumption that in the aggregate, law professors teach academic subjects that are topically related. In other words, faculty members, on the whole, specialize and focus their energy teaching courses that are topically similar to other courses they teach.

Hypothesis: Domain maps produced from course coupling analysis will, on the whole, be regarded as valid by experts in the field. When asked, "Considering the macro structure of the map as a whole and the general groupings of the major course subjects, is the map consistent with your understanding of the relative adjacencies (similarities) of academic legal subjects?," an overwhelming preponderance (75%) of legal academics or other trained legal experts will answer in the affirmative.

Comparison to other 'Structures'

2. How does the evolution of the subjects on the lists of "teachers by subject" contained in the AALS directories differ with those of the Topic and Key Number System (West Publishing) and the controlled thesaurus for the Index to Legal Periodicals? What is the degree of overlap? Which entity led? Did changes in the AALS directories prepage the other taxonomies or vice versa?

Map Evolution & Trend Identification

3. How has the canon of subjects listed in the AALS (American Association of Law Schools) questionnaire changed over time? How quick is it to incorporate new subjects and has this changed over time?
4. Do certain schools or geographic regions lead in the innovation of new subjects?
5. What subjects are most frequently taught by the same faculty member?

Data Source (Faculty Affiliation and Courses Taught Data)

Since 1922, the American Association of Law Schools (AALS) has published an annual directory of its members that contains biographical information about law professors, administrators, and librarians at each member school. Each directory contains a list of faculty members by school for that particular year. Also, beginning in academic year 1931-32, and appearing in most years thereafter, the AALS directories include lists of what subjects were taught by which faculty member. This information is contained in the lists of "Law Teachers by Subject." These directories are publically available from just about any academic law library. The publically available information that will be used (and in some cases reported in the findings) is:

Faculty Member Name,
Faculty Member Institution,
Faculty Member Courses Taught
Biographic Information about each Faculty Member

The data collected above will be used to produce domain maps showing the spatial distribution of course subjects base on the incidence of their being taught by the same faculty member (course coupling). The courses taught data will be captured in a co-occurrence matrix and visualized using Multi-Dimensional Scaling (MDS) algorithms. Subjects will be shown and asked to comment on 6 maps: (1) a base map made from multi-teaching data for the academic year 1972-73; overlay maps for the academic years (2) 1932-33, (3) 1941-42, (4) 1949-50, (5) 1961-62, and a (6) consensus map of contemporary course subjects produced from the co-occurrence data from the card sort exercise.

Human Subjects Involvement

Human subject involvement for this study will consist of two different interactions separated by no less than two weeks. The targeted subject population will be up to 25 individuals with either law degrees or other advanced training or experience involving law school education. It is hypothesized that the card sort exercise is the first part and will provide facial support for the validity of the domain maps produced from the MDS domain mapping techniques.

Part 1 – (Estimated Length of time—60 minutes) Subjects will be asked to sort 104 index cards containing the names of law school course subjects based on their topical similarity with one another. They are to create groupings and sub-groupings and to label the groupings. Upon completion, they will be asked several questions about the process.

Part 2 – (Estimated Length of time—60 minutes) – The same subjects will be asked to comment on 6 maps: (1) a base map made from course coupling data for the academic year 1972-73; overlay maps for the years (2) 1932-33, (3) 1941-42, (4) 1949-50, (5) 1961-62, and a (6) consensus map of contemporary course subjects produced from the co-occurrence data from the card sort exercise.

SECTION II: HIPAA

- A. Are you part of a covered entity or are you involving a covered entity in your research? Please review the **Covered Entity Checklist** for guidance.
- NO.** You are not subject to HIPAA. For additional information, please see the **Covered Entity Checklist** available on the IU Human Subjects Office website. Proceed to Section III.
- YES.** Continue below:
- B. Will protected health information (PHI) be utilized, accessed, collected, or generated as part of the study? For additional guidance on PHI, please refer to the definitions in the Standard Operating Procedures document.
- NO.** Your research is not subject to HIPAA. However, will health information (that is not PHI) be used that is:
- De-identified?
 - Part of a Limited Data Set?
 - Health information will be received from a separate covered entity from that of the investigator. You must establish a **data use agreement** with the entity providing the health information.
 - Health information will be obtained from within the investigator's own covered entity. No data use agreement is required.
 - No health information will be utilized in any form.
- YES.** Your research is subject to HIPAA. Complete the HIPAA& Recruitment Checklist.

SECTION III: PERFORMANCE SITE

- Indiana University
- IUB Campus. Please state school/department/location(s): Law School
 - IUPUI Campus. Please state school/department/location(s): _____
 - Bradford Woods
 - Center for Survey Research
 - Center for Evaluation & Education Policy (CEEP)

- Indiana Clinical Research Center (ICRC)*
- Indiana Institute on Disability and Communication
- IU Simon Cancer Center*
- Krannert Institute of Cardiology*
- Kinsey Institute
- Oral Health Research Institute
- Other: _____
- Health & Hospital Corporation of Marion County
 - Bell Flower Clinic
 - Midtown Mental Health*
 - Wishard Memorial Hospital*
 - Hospital/ER
 - Non-primary care
 - Wishard Specialty Clinics
 - OB/GYN Clinics
- Indiana University Health (Clarian) Facilities
 - Bloomington Hospital
 - Beltway Centers
 - Methodist Hospital
 - Methodist-Affiliated Centers/Private Practices
 - North Hospital
 - Riley Hospital for Children
 - University Hospital
 - West Hospital
 - Other: _____
- IU Health Clinics. Please list location: _____
- IU Medical Group Specialty Clinic (IUMG-SC). Please list location: _____
- Larue Carter Hospital
- Monroe County Community School Corporation. Please list school: _____
- Regenstrief Institute
- Rehabilitation Hospital of Indiana
- Richard L. Roudebush Veterans Affairs Medical Center*
- Other: Any place that is convenient for my subjects and has a large table or workspace. Probably their faculty office or conference room.

* Additional information and/or approvals may be required prior to submitting and/or initiating the research. Please see the IU Human Subjects Office website and check with the specific performance site for additional information.

- B. Please list other facilities not under the direct supervision of the investigator where research-related procedures will be performed (e.g. pathology, nursing, pharmacy, radiology, counseling). *

NONE

You must ensure these persons/facilities are kept adequately informed about the study and their research-related duties and functions as they relate to the protection of human participants.

SECTION IV: SUBJECT POPULATION

- A. **Subject Population.** Check all subject population categories below for which there is a reasonable expectation of enrollment into this research study:

- Children** (Complete the Request Form for the Inclusion of Children in Research)
- Cognitively Impaired** (Complete the Request Form for the Inclusion of Cognitively Impaired Individuals in Research)
- Economically/Educationally Disadvantaged**
- Pregnant Women, Human Fetuses, or Fetal Material** (Complete the Request Form for the Inclusion of Pregnant Women, Human Fetuses, and Neonates in Research)
- Prisoners** (Complete the Request Form for the Inclusion of Prisoners in Research)
- Subjects Outside of U.S. Targeted for Enrollment** (Complete the Transnational Research Information Form)
- Students.** When there is a teacher-student relationship dynamic or when using a student subject pool, complete the following questions:

1. Clarify the necessity for involving students in the research:
 2. Explain how the possibility of coercion or undue influence will be minimized when informed consent is being sought:
 3. Explain what genuinely equivalent alternatives are available for students who wish not to participate:
- B. **Inclusion/Exclusion.** List specific eligibility requirements for subjects, including those criteria which would exclude otherwise acceptable subjects (e.g. inclusion/exclusion criteria).

The targeted subject population will be up to 25 individuals with either law degrees or other advanced training or experience involving law school education. All will have graduate degrees that have enabled them to work as law professors, legal taxonomers, law librarians, legal historians or law school administrators. I will target a diversity of doctrinal expertise. I will attempt to have the sample not be too skewed by gender or age demographics.

- C. **Number of Subjects.** State the number of subjects to be involved in the research (i.e. number of subjects who will receive research intervention, or about/from whom information or specimens will be collected) both locally and nationally (if a multi-center study).

25 (twenty-five)

NOTE: The number provided will be the maximum number of subjects approved to participate in this research.

SECTION V: RECRUITMENT

NOTE: Study information will be released to the Clinical and Translational Science Institute (CTSI) for the research study listing. To opt out of this listing requirement you will need to get opt-out approval from Dr. Anantha Shekhar, PhD, MD, Director of Indiana CTSI, prior to IRB submission. For additional information or to request opt-out approval, please contact Patrick McGuire at (317) 278-2176 or pacmcgui@iupui.edu.

- A. Is this research subject to HIPAA? (refer to Section II above)

YES. Do not answer questions 1-3 below. Instead, complete the **HIPAA & Recruitment Checklist**.

NO. Answer questions 1-3 below.

1. Describe how potential subjects will be initially identified (include specific source, e.g. databases, medical records, advertisements, newsletters, self-referral, physician referral, from clinics, etc.):

Potential subjects will initially be drawn from my personal contacts in the Indiana University Maurer School of Law, School, the Law Library, and national and international connections with those in the legal information profession or law librarianship.

2. Describe how potential subjects who are identified will be contacted (e.g. letter, phone call, face-to-face) and who will be contacting them (e.g. their physician, research coordinator, nurse, etc.). Include a copy of all information to be shared with or intended to be seen by potential subjects.

All subjects will be contacted by me personally. This will include email (which will include the informed consent statement), in person (face to face) in which the informed consent statement will be given, and also by phone (with a follow-up letter or email containing the informed consent statement).

3. Is the investigator currently conducting competing studies? Competing studies refers to two or more studies which utilize overlapping or very similar eligibility criteria.

No.

Yes. Please describe the plan to ensure fair and unbiased recruitment:

NOTE: Allowing the Principal Investigator or the subject to choose one study over another is rarely acceptable. Consider randomization procedures or exclusive enrollment in one study at a time.

SECTION VI: STUDY PROCEDURES

List all methods by which information or data about or from subjects will be obtained, including any drugs or devices to be used on human subjects and all procedures/interventions that are being performed that would not otherwise be performed outside of the research study [e.g. an investigational drug, a blood draw that is taken purely for research (not treatment purposes) or a standardized survey that is being completed solely for the purposes of this research]. Describe the frequency and duration of the procedures.

Part 1 – (Estimated Length of time—60 minutes) Subjects will be asked to sort 104 index cards containing the names of law school course subjects based on their topical similarity with one another. They are to create groupings and sub-groupings and to label the groupings. Upon completion, they will be asked several questions about the process.

Instructions: In front of you, in random order, are 104 index cards with the course subjects currently used in the American Association of Law Schools (AALS) annual directory's listing of Teachers by Subject. Please place them in as many groupings and sub-groupings as appropriate based on their topical similarity. Once the cards are in groupings and sub-groupings, please label the groupings and sub-groupings with the yellow sticky notes and a descriptor word or words for each grouping and subgrouping. Finally, please arrange the groupings and sub groupings spatially on the table based on the topical similarity of the groupings. Upon completion of the sorting and labeling, I will ask you a few questions about the process and the topical relatedness of the groupings.

Guided Interview Questions:

Topically, what grouping is most central to the overall organization of the course subjects?
Why?

Topically, are there any groupings that are marginal or on the fringe?

Did any of the course subjects give you particular trouble?

Were any of the course subjects particularly easy to sort?

On a Scale of 1 to 5, 1 being the least confident and 5 being the most confident, how confident are you in your ability to globally organize the course subjects based on topical similarity?

What is your primary area of expertise?

Photographs of Card Piles on the Table: Upon completion of the card sort exercise, the investigator (Peter Hook) will photograph the cards on the table in order to record the adjacencies of the groupings. These photos will not be published in any form in which the subject's hand writing is identifiable, nor will any other information about the subject be identifiable. Diagrams of the layouts may be reproduced and referred to in anonymously so as to not reveal the identity of the subject.

Part 2 – (Estimated Length of time—60 minutes) – The same subjects will be asked to comment on 6 maps: (1) a base map made from course coupling data for the academic year 1972-73; overlay maps for the years (2) 1932-33, (3) 1941-42, (4) 1949-50, (5) 1961-62, and a (6) consensus map of contemporary course subjects produced from the co-occurrence data from the card sort exercise.

Instructions: In front of you are several topic maps of academic legal subjects on large pieces of paper. Please speak aloud whatever thoughts you may have as you view the maps. Please note the adjacencies that seem correct to you or any that seem jarring. Please annotate the maps by circling the placement of subjects that you find striking, drawing connections between topics that in your opinion should be more proximate, and/or writing comments as to the arrangements of particular subjects. Please assess the accuracy, reliability, and anomalies of the maps in general. Upon completion, I will ask you a few additional questions.

Guided Interview Question:

Considering the macro structure of the map as a whole and the general groupings of the major course subjects, is the map consistent with your understanding of the relative adjacencies (similarities) of academic legal subjects?

NOTE: Please include all surveys, instruments, survey/focus group questions, etc. that will be used for this research.

SECTION VII: RISK/BENEFIT RATIO

- A. State the potential risks – for example, physical, psychological, social, legal, loss of confidentiality or other – connected with the proposed procedures.

The possible risks foreseeable by the investigator stem from the potential loss of confidentiality. Subjects might face professional embarrassment if either their card sort taxonomy or reflections on the domain maps become public and are criticized by others as being either poorly constructed or conceived.

- B. State the potential benefits to be gained by the SUBJECT.

Participating subjects will be prompted to think about how their course subjects topically interrelate with other courses and the entirety of all courses in legal academia. It is hoped that by doing so, subjects will gain a greater awareness of the interrelatedness of legal course subjects and will have the potential to be better educators and academic advisors as a result.

- C. State the potential benefits or information which may accrue to SCIENCE or SOCIETY, in general, as a result of this work.

Society, law students, and perspective law students will be able to see the macro topical structure of the relatedness of law school courses. They should be able to infer something about an unknown course from the adjacencies to familiar course subjects. Validated course domain maps have the potential to be used as front ends to digital libraries or as navigation menus to learn more about the law school course catalog. Both would enhance their pedagogical benefit.

- D. Explain how the potential risks to subjects are reasonable in relation to anticipated benefits.

The professional reputation of the subjects should be adequately protected through measures to insure confidentiality in order to greatly reduce any possibility of harm to the subjects. In this case, the benefits to society from having big picture overviews of a graduate field of study far outweigh any potential risks to the study's participants.

SECTION VIII: PROTECTION PROCEDURES

- A. Describe procedures for protecting against, or minimizing, the potential risks described in Section VII, including using procedures that are already being performed on subjects for diagnostic, treatment, or standard purposes, when appropriate.

All subject information will be kept strictly confidential. Any results published from the research will be completely anonymous without allowing the identities of the human participants from being inferred. Any data stored on computers will be password protected and behind a firewall. Upon completion of the research, identifiable information about the subjects will be destroyed.

- B. Explain provisions to protect privacy interests of subjects. This refers to how access to subjects will be controlled (e.g. time, place, etc. of research procedures).

Subjects will be given the choice to participate in the study at a location in which their participation will be kept strictly confidential. This will be a windowless room in which their interaction with the investigator cannot be seen by others. However, for the convenience of any particular subject, the subject might choose to use either his or her faculty office or departmental conference room. In this case, their participation in the study might be perceived by others.

- C. Is this a multi-center clinical trial?

No. Continue to the next section.

Yes. Is the PI the lead investigator?

No. Continue to the next section

Yes. Describe the plan for the management and communication of multi-site information that may be relevant to the protection of participants (e.g. unanticipated problems, adverse events, interim analysis, modifications, etc.).

SECTION IX: DATA SAFETY MONITORING PLAN

For all research that is **greater than minimal risk**, a Data Safety Monitoring Plan (DMSP) must be developed. This is a plan to assure the research includes a system for appropriate oversight and monitoring of the conduct of the study to ensure the safety of subjects and the validity and integrity of the data.

- N/A. The research is minimal risk.
- The DSMP is contained in the protocol. State where in the protocol the description is located: _____
NOTE: Ensure that all points outlined below are addressed in the description in the protocol. If any points are not addressed, within the protocol, they should be addressed below.
- The DSMP is NOT contained in the protocol; however, this is a repository/database protocol and the primary risk is that of loss of confidentiality; thus, I do not need to complete this section.
- The DSMP is NOT contained in the protocol. Complete the questions below.

A. Who will be responsible for the data and safety monitoring? (Examples include: a DSMC or DSMB, medical monitor, investigator, independent physician) **Clarify if this individual or committee is independent from the sponsor and/or investigator.**

B. What will be monitored. (Examples include: data quality, subject recruitment, accrual, and retention, outcome and adverse event data, assessment of scientific reports or therapeutic development, results of related studies that impact subject safety, procedures designed to protect the privacy of subjects)

C. What are the procedures for analysis and interpretation of data, the actions to be taken upon specific events or endpoints, the procedures for communication from the data monitor to the IRB and site, and other reporting mechanisms?

D. What is the frequency of monitoring? (The appropriate frequency of data and safety monitoring will be dependent on the nature and progress of the research; however, monitoring must be performed on a regular basis (e.g. at least annually).

E. What information will be reported to the IRB? (Minimally, the IRB requires the following information at the time of continuing review: 1) frequency and date(s) of monitoring; 2) summary of cumulative adverse events; 3) assessment of external factors (i.e. scientific reports, therapeutic developments, results of related studies) that impacted the safety of subjects; 4) summary of subject privacy and research data confidentiality outcomes; and 5) any changes to the risk-benefit ratio.

SECTION X: PAYMENT FOR PARTICIPATION

A. Will subjects be paid for participation in the study (e.g. monetary, free services, gifts, course credit, including extra credit)?

- No. Proceed to next section.
- Yes. Complete items 1-3 below.

1. Explain the payment arrangements (e.g. amount and timing of payment and the proposed method of disbursement), including reimbursement of expenses. **NOTE:** Payments must accrue and not be contingent upon completion of the study. However, a small payment (bonus) for completion of the study may be approved by the IRB if it is found to not be persuasive for the subjects to remain in the study.
2. Justify the proposed payment arrangements described in section B. (e.g., how this proposed payment arrangement is not considered to be coercive).
3. Explain if there will be any partial payment if the subject withdraws prior to completion of the study (e.g. prorated). Note: This payment may be paid at the end of the subject's participation or at the end of the study.

SECTION XI: INFORMED CONSENT PROCESS

Check here if this study will only enroll children and the parental/guardian permission (consent) process has already been explained on the Request Form for the Inclusion of Children in Research. You do not need to complete section A below.

A. I WILL be obtaining informed consent from all subjects.

1. **When (in what timeframe) and where (what setting) will consent take place?** Indicate any waiting period between informing the subject and obtaining consent. The timeframe and any waiting should ensure the prospective subjects or their legally authorized representatives are provided sufficient opportunity to consider whether or not to participate in the study.

The consent from will be given to potential subjects during the recruitment process. If subjects accept, it will be collected once the meeting occurs in person. As subjects are trained legal experts, they should have no problem assessing their risks and obligations in regard to signing the consent form.

2. **Who will be responsible for obtaining initial and ongoing consent? (check all that apply)**

- Principal Investigator
 Co-Investigator
 Other (specify):

NOTE: Individuals who will be obtaining consent must be listed on the Investigator List.

- a. **Explain how these individuals will be adequately trained to conduct the consent interview and answer subject's questions (check all that apply):**

- Passed the required Collaborative Institutional Training Initiative (CITI) modules
 Attended the Research Coordinator Education Program (RCEP)
 Attended the Research Coordinator Certification Program (RCCP)
 Received study-specific training from study personnel
 Other (specify): _____

- b. **Indicate in what language(s) the consent interview will be conducted.**

- English
 Spanish
 Other (specify):

- c. **If the consent interview will be conducted in a language other than English, state how the interview will be conducted (e.g. use of an interpreter):**

NOTE: Ensure that language-appropriate consent documents are submitted with this application.

3. **Explain how subjects' privacy will be protected during the consent process.** This refers to how access to subjects will be controlled (e.g. time, place, etc. of consent procedures).

Only the principal investigator (Peter A. Hook) will have contact with the human subjects. Subject participation will be kept strictly confidential. All subjects will be contacted individually so that the subjects will not be able to ascertain the identities of others asked to participate in the study.

4. **Indicate any factors that might result in the possibility of coercion or undue influence. (check all that apply)**

- the research will involve students of the investigator(s)
 the subjects will be recruited through institutions with which the PI has a close relationship
 Other (please specify):

Describe steps taken to mitigate the possible coercion:

The investigator (Peter A. Hook) will strongly emphasize that participation is entirely voluntary.

- B. I am requesting a waiver of the informed consent process (i.e. no consent document) for (check all that apply):
- the entire study.
 - recruitment only (VA requirement: please see the sample language provided in VA Waivers for Recruitment located on the IU Human Subjects Office website).
 - a specific minimal risk research activity or procedure that is part of the study: _____.

For the IRB to grant a waiver of informed consent, the below criteria must be satisfied. Please provide a response to each criterion.

1. The research involves no more than minimal risk to the subject. If you are requesting a waiver of informed consent for part of the study (e.g. recruitment or a specific minimal risk activity or procedure), please state to which activity/procedure the waiver request applies and explain how this criterion is satisfied.
2. Explain how the waiver will not adversely affect the rights and welfare of the subjects.
3. Explain how the research could not be practicably carried out without the waiver.
4. Explain how, if appropriate, subjects will be informed of pertinent results at the conclusion of the study.
5. The research is **NOT** FDA-regulated (i.e. The activity is NOT an experiment or does NOT involve one or more of the following test articles: foods or dietary supplements that bear a nutrient content claim or a health claim, infant formulas, food and color additives, drugs for human use, medical devices for human use, biological products for human use, electronic products. Additionally, **NONE** of the following can be true: the research involves using the test article with one or more participants, the research is being done as part of an IND or IDE submission, the data may be submitted to the FDA, or the data may be held for inspection by the FDA).
6. **ONLY COMPLETE FOR RESEARCH AND DEMONSTRATION PROJECTS CONDUCTED BY OR SUBJECT TO THE APPROVAL OF STATE OR LOCAL GOVERNMENT OFFICIALS.** In order for the IRB to approve a waiver of informed consent for a research or demonstration project, conducted by or subject to the approval of state or local government officials, it must NOT be FDA-regulated and be designed such that it studies, evaluates, or otherwise examines one of the following (check all that apply):
 - public benefit or service programs;
 - procedures for obtaining benefits or services under those programs;
 - possible changes in or alternatives to those programs or procedures; or
 - possible changes in methods or levels of payment for benefits or services under those programs.

- C. I am requesting a waiver of written documentation of informed consent (i.e. a consent process will occur, but no signature will be obtained from the subject).
- Written statement regarding the research has been attached. Statement will be provided to subjects upon their request. Please explain:

For the IRB to grant a waiver of written documentation of informed consent, EITHER of the following criteria must be met. Please indicate which criterion is met and provide an appropriate response below.

1. The only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality, and the research is not FDA-regulated. Each subject will

be asked whether the subject wants documentation linking the subject with the research and the subject's wishes will govern. Please explain:

OR

2. The research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context. Please explain:

D. I am requesting modification to the required elements for informed consent document for:

- the entire study**
 a specific minimal risk research activity or procedure that is part of the study

Check all of the required elements below that you are requesting to modify or omit from the informed consent document:

- | | |
|--|--|
| <input type="checkbox"/> Statement that the study involves research | <input type="checkbox"/> Disclosure of appropriate alternative procedures or courses of treatment |
| <input type="checkbox"/> Explanation of the purposes of the research | <input type="checkbox"/> Statement describing the extent to which confidentiality of records identifying subjects will be maintained |
| <input type="checkbox"/> Expected duration of subject participation | <input type="checkbox"/> Explanation regarding any compensation |
| <input type="checkbox"/> Description of procedures to be followed | <input type="checkbox"/> Explanation of available medical treatments if injury occurs |
| <input type="checkbox"/> Identification of any procedures that are experimental | <input type="checkbox"/> Contact information for questions about the research, research-related injury, or subject rights |
| <input type="checkbox"/> Description of any reasonably foreseeable risks or discomforts to subjects | <input type="checkbox"/> Statement that participation is voluntary |
| <input type="checkbox"/> Description of benefits (to subjects or others) that may reasonably be expected from the research | |

For the IRB to grant a modification to the required elements of informed consent, the below criteria must be satisfied. Please provide a response to each criterion.

1. The research involves no more than minimal risk to the subject. If you are requesting a waiver of informed consent for part of the study (e.g. a specific minimal risk activity or procedure), please state to which activity/procedure the waiver request applies and explain how this criterion is satisfied
2. Explain how the modification will not adversely affect the rights and welfare of the subjects.
3. Explain how the research could not be practically carried out without modification of informed consent.
4. Explain how, if appropriate, subjects will be informed of pertinent results at the conclusion of the study.
5. The research is **NOT** FDA-regulated (i.e. The activity is NOT an experiment or does NOT involve one or more of the following test articles: foods or dietary supplements that bear a nutrient content claim or a health claim, infant formulas, food and color additives, drugs for human use, medical devices for human use, biological products for human use, electronic products. Additionally, **NONE** of the following can be true: the research involves using the test article with one or more participants, the research is being done as part of an IND or IDE submission, the data may be submitted to the FDA, or the data may be held for inspection by the FDA).

SECTION XII: ADDITIONAL REVIEWS

- N/A. This research does not require any additional institutional reviews. Proceed to next section.
- A. Will this study specifically enroll cancer patients (e.g. is the study focused on cancer treatment or care or does the study include a control group of cancer patients) or involve cancer-related gene therapy?
- No.
- Yes. You must first obtain approval from the Scientific Review Committee (SRC) prior to submitting to the IRB. Please include that approval with your IRB study submission. Please contact the SRC at (317) 274-0930 or crosrc@iupui.edu for additional information.
- Check here if this study is a retrospective chart review involving cancer patients; SRC approval is NOT necessary.
- B. Does the study involve recombinant DNA (e.g. gene therapy)?
- No.
- Yes. IBC or BHC protocol number:
- C. Does the study involve radiation / radioactivity (e.g. x-rays, nuclear medical scans) in addition to what is used for standard clinical treatment?
- No
- Yes. Radiation Safety approval must be obtained if radiation beyond standard of care is involved. Concurrent IRB and radiation safety review is permissible; however, final IRB approval will not be granted until documentation of radiation safety approval is provided.
- D. Does this study involve the use of *non-cancer-related* gene therapy?
- No.
- Yes. Has the proposal been submitted to the ICRC Advisory Committee? (**NOTE:** It is a requirement of the School of Medicine for all non-cancer related gene therapy studies to be reviewed by the ICRC Advisory Committee. Additionally, it is the ICRC's requirement that approval be granted from them prior to IRB submission.)
- No. You must submit to the ICRC Advisory Committee *before* you can submit to the IRB. Please call (317) 278-3446 for more information.
- Yes. Include a copy of that approval with this study submission.
- E. Is this a VA study (funded by the VA, utilizing the VA as a performance site, or using VA patients)?
- No.
- Yes.
1. VA studies must be submitted to and receive approval from the VA R&D Committee **before** any research can be conducted at the VA,
- R&D Committee approval has been obtained. R&D Committee Number:
- R&D Committee approval is pending.
- Study will be submitted to the R&D Committee within 60 days of IRB approval.
2. Will non-veterans be included in the study?
- No.
- YES. Provide justification for their inclusion:

SECTION XIII: FEDERAL FUNDING

- A. Is this research funded by a federal agency (e.g. DHHS, NIH, VA, CDC, ICTSI, etc.), or has it been submitted to a federal agency for funding?
- No. Proceed to the next section.
- Yes. Please ensure copies of the entire funding proposal and DHHS-approved sample informed consent (if applicable) are available to the IRB.

NOTE: If this is a federally-funded study, you will be required to track the race and ethnicity of subjects enrolled. This is reported to the IRB at the time of continuing review.

SECTION XIV: INVESTIGATIONAL TEST ARTICLES

- N/A. No investigational drugs or devices are being studied in this research.

- This study involves a device that is exempt from the IDE requirements. Please submit the IDE Checklist or notification from the FDA confirming status of this device.

If you are studying an investigational drug or device, an IND or IDE may be required. Please see the IND Checklist or IDE Checklist for more information.

INVESTIGATIONAL DRUGS

A. Name of Drug Sponsor: _____
Name of Drug: _____

Study Phase: I I/II II II/III III III/IV IV

An IND is not required. Please submit the IND Checklist or notification from the FDA confirming exempt status.

An IND is required and has been obtained for this drug. IND Number: _____

1. Provide verification of the IND number (choose all that apply):
 - Documentation from the FDA provided
 - IND number included in the sponsor protocol, list the page number where the IND number is located
2. Does the investigator hold the IND?
 - No
 - Yes. Before approval can be granted, the investigator must meet with the Office of Research Administration staff to discuss the additional responsibilities as a sponsor of an IND. Please contact the IU Human Subjects Office at (317) 274-8289 and submit documentation from them verifying this discussion has taken place.
3. Will services of the Investigational Drug Services (IDS) be used?
 - Yes
 - No. The investigator must demonstrate understanding of the handling and control of investigational test articles by reviewing the SOP for Investigational Test Articles. Check here to confirm the investigator has read the SOP and agrees to comply with the policies and procedures outlined.

INVESTIGATIONAL DEVICES

B. Name of Device Manufacturer: _____ Name of Device: _____

The IRB is required to determine whether or not the device is significant risk. To help in this determination, please provide the sponsor's documentation on the risk assessment and the rationale used in making the risk determination. ***Please provide the investigator's assessment of the device risk below:***

Nonsignificant Risk (NSR) Device. Please provide a risk assessment and rationale for this risk determination:

Significant Risk (SR) Device

An IDE has been obtained for this device. IDE Number: _____

1. Provide verification of the IDE number (choose all that apply):
 - Documentation from the FDA provided
 - IDE number included in the sponsor protocol, list the page number where the IDE number is located
2. Does the IU affiliated investigator hold the IDE?
 - No
 - Yes. Before approval can be granted, the investigator must meet with the Office of Research Administration staff to discuss the additional responsibilities as a sponsor of an IDE. Please contact the IU Human Subjects Office at (317) 274-8289 and submit documentation from them verifying this discussion has taken place.
3. The investigator must demonstrate understanding of the handling and control of investigational test articles by reviewing the SOP for Investigational Test Articles. Check here to confirm the investigator has read the SOP and agrees to comply with the policies and procedures outlined.

PETER A. HOOK

peter.hook@wayne.edu

<http://info.ils.indiana.edu/~pahook>

OBJECTIVE

To prepare the next generation of librarians and information professionals by utilizing my experience as an academic librarian, legal training, and research in information visualization (domain mapping) and data analytics. I want to continue to enhance existing data infrastructures by making explicit their latent structures and to reveal relationships that would not be apparent otherwise. In addition to teaching courses related to my research, I want to teach library science courses: reference, online searching, computer based information tools, information policy/privacy, information architecture, legal information for librarians, etc.

EDUCATION

Aug. 2004 – Aug. 2014
(Mostly part-time
while working as an
academic librarian.)

Ph.D. – Department of Information and Library Science, School of Informatics and Computing, *Indiana University–Bloomington*.

Dissertation: The Structure and Evolution of the Academic Discipline of Law in the United States: Generation and Validation of Course-Subject Co-Occurrence Maps. (*Advisor:* Dr. Katy Börner. *General Topics:* Data Mining, Data Analysis, and Information Visualization).

Aug. 1999 – Aug. 2000

M.S. (Library and Information Science) – Graduate School of Library and Information Science, *University of Illinois*.

May 1994 – May 1997

J.D. (Juris Doctor) – *University of Kansas*. (Obtained professional licenses in Kansas, Missouri, and Illinois.)

Jan. 1990 – May 1994

B.A. (English) – *University of Kansas*.

EMPLOYMENT

TEACHING

Aug. 2014 – present

Assistant Professor – School of Library and Information Science, *Wayne State University*.

Jan. 2014 (Spring)

Adjunct Instructor – School of Library and Information Science, *Wayne State University*. Taught Data Analytics.

Aug. 2011 – present;
Aug. 2005 Dec. 2006

Adjunct Instructor – Department of Information and Library Science, School of Informatics and Computing, *Indiana University–Bloomington*. Taught Reference, Online Searching, and Computer Based Information Tools.

Apr. 1999 – Jun. 1999

Substitute Teacher – Chicago Public Schools.

LIBRARY

- Jun. 2006 – Aug. 2012
Oct. 2001 – Aug. 2004 **Electronic Services and Reference Librarian** – Maurer School of Law, *Indiana University—Bloomington*. Tenure track librarian. Provided reference service, taught legal research skills, participated in collection development, maintained subscriptions to online databases, and served on library and university committees. (Left briefly in 2004 to begin doctoral studies full-time. Left in 2012 to teach additional LIS courses and complete my dissertation.)
- Aug. 2004 – Dec. 2004 **Graduate Assistantship** – Department of Information and Library Science, School of Informatics and Computing, *Indiana University—Bloomington*. Assisted the Dean of Research by providing faculty members information about grant opportunities and conferences.
- Aug. 2000 – Sept. 2001 **Law Librarian and Assistant Professor of Library Administration** – Albert E. Jenner Jr. Memorial Law Library, *University of Illinois*. Tenure track librarian. Provided reference service, taught legal research skills, and served on library and university committees.
- Aug. 1999 – Aug. 2000 **Graduate Assistantship** – Albert E. Jenner Jr. Memorial Law Library, *University of Illinois*. Provided reference services and completed various projects. Compiled inventories and finding aids. Cleaned rare books.
- Dec. 1990 – Apr. 1994 **Circulation Clerk** – University of Kansas Libraries. Shelled books.

LAW

- Dec. 1998 – Mar. 1999 **Attorney** – Lavelle Legal Services, *Chicago, Illinois*. Provided transactional legal services at a private law firm (estate planning, bankruptcy, real estate contracts, etc.). Counseled clients and prepared legal documents.
- Nov. 1997 – Nov. 1998 **Research Attorney** – Johnson County District Court, *Olathe, Kansas*. Researched and wrote draft opinions for county judges in mostly civil (non-criminal) cases. Assisted with trials and evidentiary motions.
- May 1997 – Nov. 1997 **Law Clerk** – Law Offices of Daniel L. Watkins, *Lawrence, Kansas*. Conducted legal research and drafted transactional documents such as contracts and articles of incorporation.
- Aug. 1995 – May 1997 **LexisNexis Student Associate** – University of Kansas School of Law. Provided training on the LexisNexis legal and news database. Maintained a dedicated computer lab. Answered student questions and distributed promotional materials.
- May 1995 – Aug. 1996 **Research Assistant** – Prof. Stephen R. McAllister, U. of Kansas Sch. of Law.

TEACHING EXPERIENCE

- **Information Visualization** School of Library and Information Science, *Wayne State University*. (Fall 2014). Will revise course content and teach online. (Network, Temporal, Geospatial, and Topical Visualization Techniques, Information Graphics, Distance-Similarity Metaphor).
- **Data Analytics** School of Library and Information Science, Wayne State University. (Spring 2014). Revised course content and taught online. (Big Data, Pattern and Trend Detection, Data Types, Quantitative Statistics, Data Mining Tools and Techniques).
- **Reference** Department of Information and Library Science, School of Informatics and Computing, *Indiana University—Bloomington*. (Information Seeking and Search Strategies, Selection and Evaluation of Reference Sources, Question Negotiation, Ethical Aspects).

Fall 2012 — (16 students). 10 out of 13 valid responders checked “yes” to the statement “Overall, I would recommend this instructor to others.”
- **Computer Based Info. Tools** Department of Information and Library Science, School of Informatics and Computing, *Indiana University—Bloomington*. (XHTML, Access, Excel, UNIX)

Spring 2013 — (14 students). 11 out of 13 respondents checked “yes” to the statement “Overall, I would recommend this instructor to others.”

Fall 2012 — (30 students). 12 out of 17 valid responders checked “yes” to the statement “Overall, I would recommend this instructor to others.”

Fall 2011 — (19 students). 14 out of 16 respondents checked “yes” to the statement “Overall, I would recommend this instructor to others.”
- **Online Searching** Department of Information and Library Science, School of Informatics and Computing, *Indiana University—Bloomington*. (Information Seeking and Search Strategies, Controlled Vocabulary and Thesauri, Collection Development and Licensing, Federated Searching).

Fall 2006 — (19 students). 6 out of 18 valid responders checked “yes” to the statement “Overall, I would recommend this instructor to others.”

Fall 2005 — (12 students). 8 out of 8 respondents checked “yes” to the statement “Overall, I would recommend this instructor to others.”
- **Supreme Court as an Institution** (Fall 2009). This was a seminar that I co-developed and co-taught on empirical and model-based approaches to understanding the work of the United States Supreme Court. Maurer School of Law, *Indiana University—Bloomington*. (Models of Judicial Behavior, Appointment and Confirmation, Agenda Setting, Advocacy, Opinion Writing, Dissent).

- **Legal Research Topics** (Aug. 2000 – Aug. 2012). Class-length guest lectures on topics such as: Administrative Rules and Regulations, Formbooks and Drafting Aids, Lexis and Westlaw, Cases, Statutes, Legislative and Regulatory History, Secondary Sources, Social Science Resources, Treatises, Court Rules, Citators, etc. Maurer School of Law, *Indiana University—Bloomington*.

GRANTS

- Law School Admissions Council (LSAC) (\$159,511) – January 1, 2007 to December 31, 2008. One of five co-Principal Investigators on a grant to do a longitudinal, bibliometric study of legal scholarship based on data from the *Index to Legal Periodicals*. This work was titled *The Production, Content and Consumption of Legal Scholarship, A Longitudinal Analysis* and is still ongoing with several publications being collaboratively written. With the approval of the LSAC, I was added as one of the principal co-investigators after the initial award of the grant. This was in response to my extensive involvement with the planning and execution of the research and subsequent write-up. This work resulted, in part, in the dataset for my dissertation.

AWARDS AND HONORS

- (2012). 2nd Place, ALISE (Association for Library and Information Science Education) Doctoral Student Research Poster Competition, 2012 ALISE Annual Conference, Dallas, Texas, January 18. (Out of 47 participants.)
- (2009). Co-Recipient of the Best Presentation Award (\$100 for each of 3 prize winners), SLIS PhD Research Forum, Bloomington, Indiana, Oct. 17.
- (2007). Co-Recipient of the Best Presentation Award (\$100 for each of 4 prize winners), SLIS PhD Research Forum, Bloomington, Indiana, Oct. 16.

PUBLICATIONS

- **Journal Articles**
 - Hook, P. A. (2007). The Aggregate Harmony Metric and a Statistical and Visual Contextualization of the Rehnquist Court: 50 Years of Data. *Constitutional Commentary*, 24(1), 221-264.
 - Hook, P. A., (2002). Creating an Online Tutorial and Pathfinder. *Law Library Journal* 94:2, 243-265.
 - Hook, P. A., (2002). Law Librarians Can Help You Save Money and Do Better Research. *Illinois Bar Journal* 90, 373-375.
- **Chapters in Books**
 - Hook, P. (2014). Evaluating the work of judges. In B. Cronin & C. R. Sugimoto (Eds.), *Beyond bibliometrics: Harnessing multidimensional indicators of scholarly impact* (pp. 345-364). Cambridge, Massachusetts: MIT Press. [Invited submission.]

- Hook, P. A. and Börner, K. (2005). Educational Knowledge Domain Visualizations: Tools to Navigate, Understand, and Internalize the Structure of Scholarly Knowledge and Expertise. In Amanda Spink and Charles Cole (eds.) *New Directions in Cognitive Information Retrieval*. Springer-Verlag.
- **Conference Proceedings**
 - Hook, P. A. (2007). *Domain Maps: Purposes, History, Parallels with Cartography, and Applications*. Proceedings of the 11th International Conference Information Visualisation (IV '07), Zurich, Switzerland, July 4-6, pp. 442-446. (Refereed).
 - Hook, P. A. (2007). *Visualizing the Topic Space of the United States Supreme Court*. Proceedings of the 11th International Conference on Scientometrics and Informetrics (ISSI 2007), Madrid, Spain, June 25-27, pp. 387-396. (Refereed).
- **Newsletter Articles.** 23 in *Res Ipsa Loquitur: Newsletter of the Indiana University Law Library* (2001-2007). The following are representative:
 - Hook, P. A. (2007). Subscription to CCH Content Greatly Expands Library's Online Offerings. *Res Ipsa Loquitur: Newsletter of the Indiana University Law Library* 18:2 (Nov.) (Online).
 - Hook, P. A. (2006). Future Unpublished Decisions Now Citable, A New Rule Goes Into Effect. *Res Ipsa Loquitur: Newsletter of the Indiana University Law Library* 17:4 (Dec.) 3.
 - Hook, P. A. (2001). Archiving the Web: Why it Matters to Attorneys. *Res Ipsa Loquitur: Newsletter of the Indiana University Law Library* 12:3 (Nov.) 1.
- **Book and Program Reviews**
 - Hook, P. A. (2002). Review of Teaching Legal Research and Providing Access to Electronic Resources. ed. by Hill, Gary L., Dennis S. Sears, and Lovisa Lymen, *Reference and User Services Quarterly* 41:3, 297.
 - Hook, P. A. (2002). Speakers Provide Blueprint for Online Tutorials That Satisfy Librarians, Faculty and Students, review of AALL Annual Meeting Program H-2: "Using Online Tutorials to Teach Legal Research," *AALL Spectrum Magazine* 7:1 10, 31.
- **Other Publications**
 - Hook, P. A. & Morgan, J. (2009). Regulatory History: Process and Documents, in *Training Resource Kit for the 17th National Legal Research Teach-In*, eds. Gail A. Partin and David E. Lehmann. Available at: <http://www.aallnet.org/sis/ripssis/TeachIn/2009/index.html>
 - Hook, P. A. (2003). Online Exercises and Learning Modules at Indiana University—Bloomington, in *Training Resource Kit for the 11th National Legal Research Teach-In*, ed. Gail A. Partin. St. Paul: West Group, 87-99.

CONFERENCE PRESENTATIONS, PAPERS AND POSTERS

▪ Refereed

- Hook, P. A. and Plucker, J. (2013). *The History of the Psychological Study of Creativity: An Empirical and Bibliographic Analysis*. Paper presented at the American Psychological Association (APA) Annual Convention, Honolulu, Hawaii, Aug. 3. [Delivered by Plucker.]
- Hook, P. A. (2013). *The Structure and Evolution of the Academic Discipline of Law in the United States: Generation and Validation of Course-Subject Co-Occurrence Maps*. Poster presented at the ALISE/Jean Tague-Sutcliffe Doctoral Student Research Poster Competition, ALISE (Association for Library and Information Science Education) Annual Conference, Seattle, Washington, Jan. 23.
- Hook, P. A. (2012). *The Structure of Law: Domain Maps from 40,000 Course-Coupling Events and a History of an Academic Discipline*. Poster presented at the ALISE/Jean Tague-Sutcliffe Doctoral Student Research Poster Competition, ALISE (Association for Library and Information Science Education) Annual Conference, Dallas, Texas, Jan. 18.
- Hook, P. A. (2008). *Visualizing the Continuity of Government—A Network Approach to Cabinet Level Positions*. Poster presented at The Harvard Networks in Political Science Conference (NIPS), Cambridge, Massachusetts, June 13.
- Hook, P. A. (2007). *Network Derived Domain Maps of the Work of the United States Supreme Court: 50 years of Co-Voting Data and a Case Study on Abortion*. Talk and poster presented at the International Workshop and Conference on Network Science (NetSci 07), Queens, New York, May 22.
- Hook, P. A. (2006). *Network Derived Educational Visualizations of the Work of the United States Supreme Court*. Talk given at the NetSci International Workshop and Conference on Network Science (NetSci 2006), Bloomington, Indiana, May 24.
- Hook, P. A. (2006). *Network Derived Educational Visualizations of the Work of the United States Supreme Court*. Poster presented at Law in the Age of Networks: Implications of Network Science for Legal Analysis, Champaign, Illinois, March 10.
- Hook, P. A. (2006). *Instructional Visualizations of the Work of the United States Supreme Court*. Poster presented at the ALISE (Association for Library and Information Science Education) Annual Conference, San Antonio, Texas, Jan. 17.
- Hook, P. A. (2005). *Educational Knowledge Domain Visualizations: Tools to Navigate, Understand, and Internalize the Structure of Scholarly Knowledge and Expertise*. Talk given at the 101st Annual Meeting of the Association of American Geographers, "Mapping Humanity's Knowledge and Expertise in the Digital Domain," Denver, Colorado, April 6.

▪ Non-Refereed

- Börner, K. & Hook, P. A. (2006). *Mapping the Structure and Evolution of Science: Cyberinfrastructure Challenges and Knowledge Management Opportunities*. Talk given

- at Panorama des Recherches Incitatives en STIC (PaRISTIC 2006), Nancy, France, Nov. 23. [Invitation to give keynote extended to Börner, delivered by Hook.]
- Börner, K. & Hook, P. A. (2005). *Knowledge Domain Visualizations: Tools to Navigate, Understand, and Internalize the Structure of Scholarly Knowledge and Expertise: An Emerging Field of Information Cartography*. Talk given at the Fifth Annual AISTI Mini-Conference ("Seeds of Transformation for Digital Libraries"), Santa Fe, New Mexico, May 25. [Invitation to give keynote extended to Börner, delivered by Hook.]
 - Börner, K., Boyack, K., & Hook, P. A. (2005). *Mapping the Disciplinary Diffusion of Information*. Talk given at the Fifth Understanding Complex Systems, Champaign, Illinois, May 17. [Delivered by Hook.]

OTHER PRESENTATIONS AND POSTERS

- Hook, P. A. (2012). *The Deaning of American Law Schools: Metrics and Networks from 1927 to 2011*. Talk given at the 2010 SLIS PhD Research Forum, Bloomington, Indiana, Oct. 6.
- Hook, P. A. (2012). *The Structure of Law: Topic Maps from 112,000 Course-Subject Co-Occurrences and a History of an Academic Discipline*. Talk given to the eHumanities Group, Royal Netherlands Academy of Arts and Sciences, Amsterdam, Netherlands, March 22.
- Hook, P. A. (2010). *The Association of American Law Schools (AALS) Dataset: the American Legal Academy—1922 to 1989: Subject Mappings*. Talk given at the 2010 SLIS PhD Research Forum, Bloomington, Indiana, Oct. 16.
- Hook, P. A. (2010). *Taxonomies of Mapping: An Insight-Need and Cognitively Informed Review of Domain Mapping Elements*. Paper presented for elevation to doctoral candidacy, Bloomington, Indiana, June 17.
- Hook, P. A. (2009). *An Expert Seeding Approach to Mapping a Knowledge Domain: Processing Over a Million Citations on a Desktop Computer to Arrive At a Co-Citation Map Aggregated to the Author Level*. Talk given at the 2009 SLIS PhD Research Forum, Bloomington, Indiana, Oct. 17.
- Hook, P. A. (2008). *2007 Term of the United States Supreme Court: Visualizing Co-Voting Data*. Poster presented at the 2008 IV Lab Open House, Bloomington, Indiana, Oct. 27.
- Hook, P. A. (2008). *Longitudinal Analysis of Mobility within the American Legal Academy—1922 to 1989: Visualizations, Network Dynamics, Trends, and Emergent Hierarchies*. Talk given at the 2008 SLIS PhD Research Forum, Bloomington, Indiana, Oct. 11.
- Hook, P. A. (2008). *Evolution of American Legal Topics: Metrics, Visualizations, and the History of a Discipline—the AALS Data*. Talk given at a Legal Education Lunch to the faculty of the IU School of Law, Bloomington, Indiana, March 18.
- Hook, P. A. (2007). *The Association of American Law Schools (AALS) Dataset: Visualizations, Informetrics and the History of a Discipline*. Talk given at the 2007 SLIS PhD Research Forum, Bloomington, Indiana, Oct. 16.

- Hook, P. A. (2007). *History and Development of Domain Maps: With a Focus on the Topic of Law*. Talk given at Monroe County Public Library (MCPL), Bloomington, Indiana, May 11, in conjunction with the *Places & Spaces* exhibit.
- Hook, P. A. (2006). *Ideological Alliances on the United States Supreme Court: Visualizing Co-Voting Data*. Poster presented at the 2006 IV Lab Open House, Bloomington, Indiana, Oct. 30.
- Hook, P. A. (2006). *Knowledge Domain Visualizations: Research Interests*. Talk given at the Science Forecast Maps Workshop, New York Hall of Science, Queens, New York, Oct. 26.
- Hook, P. A. (2006). *Ideological Alliances on the United States Supreme Court: Visualizing 50 Years of Co-Voting Data*. Talk given at the 2006 SLIS PhD Research Forum, Bloomington, Indiana, Sept. 16.
- Hook, P. A. (2006). *Knowledge Domain Visualizations: Tools to Navigate, Understand, and Internalize the Structure of Scholarly Knowledge and Expertise*. Talk given at the Workshop on Modeling the Structure & Evolution of Science, Bloomington, Indiana, May 21.
- Hook, P. A. (2006). *Knowledge Domain Visualizations: Tools to Navigate, Understand, and Internalize the Structure of Scholarly Knowledge and Expertise*. Talk given at "Hot Topics, Hot Tapas!" 2006 Spring Program of the Indiana Chapter of the American Society for Information Science & Technology (I-ASIS&T), April 11.
- Hook, P. A. (2005). *Knowledge Domain Visualizations: Research Interests*. Talk given at the Places & Spaces Informal Meeting on Mapping Science, Philadelphia, Pennsylvania, Dec. 1.
- Hook, P. A. (2005). *Educational Knowledge Domain Visualizations: Tools to Navigate, Understand, and Internalize the structure of Scholarly Knowledge and Expertise*. Poster presented at the 2005 IV Lab Open House, Bloomington, Indiana, Oct. 3.
- Hook, P. A. (2005). *Instructional Visualizations of the Work of the United States Supreme Court*. Talk given at the 2005 SLIS PhD Research Forum, Bloomington, Indiana, Sept. 24.
- Hook, P. A. (2004). *The United States Supreme Court: Visualizations and Metrics (60 Years of Data)*. Talk given at the 2004 SLIS PhD Research Forum, Bloomington, Indiana, Sept. 18.
- Hook, P. A. (2004). *The United States Supreme Court: Visualizations and Metrics (60 Years of Data)*. Poster presented at the 2004 IV Lab Open House, Bloomington, Indiana, Sept. 10.

WORKS IN PROGRESS

- Hook, P. (In Preparation). *Longitudinal Study of the Syndetic Structure of the Course-Subject Canon of the Domain of Law (1931-2012): Using Networks to Visualize Thesauri*.
- Hook, P. (In Preparation). *Law School Course-Subject Canon in the United States: A Longitudinal, Metric Analysis*.

- Hook, P., Morriss, A., & Arewa, O. (In Preparation). Longitudinal Survey of American Legal Journal Articles (1928-2005): Subject Trends, Bursts, and a Functional Categorization of Over 7000 Index to Legal Periodical Subject Headings.

ADDITIONAL CONFERENCE ATTENDANCE AND EDUCATIONAL EXPERIENCES

- (2012). iConference 2012: Culture, Design, and Society. Toronto, Canada Feb. 7-10, including financially supported participation in the Doctoral Colloquium (Feb. 10).
- (2011). JSMF Workshop on Standards for Science Metrics, Classifications, and Mapping. Bloomington, Ind., Aug. 11-12.
- (2011). JSMF Workshop on Modeling and Mapping Science. Bloomington, Ind. March 21.
- (2009). Annual Meeting of the American Association of Law Libraries (AALL) in Washington, D.C. July 24-28.
- (2009). "Presenting Data and Information." Edward Tufte. Indianapolis, Ind. Aug. 24.
- (2009). Indiana University Librarian's Day, Indianapolis, Indiana, May 15.
- (2009). What's Law Got to Do With It (a conference exploring the interplay between law and other influences on judicial decision-making), Bloomington, Indiana, Mar. 27-28.
- (2006). Science Forecast Maps Workshop, N.Y. Hall of Science, Queens, New York, Oct. 25-26.
- (2006). 99th Annual Meeting of the American Association of Law Libraries (AALL), "Pioneering Change." St. Louis, Missouri, July 9-12.
- (2006). Workshop on Modeling the Structure & Evolution of Science, Bloomington, Indiana, May 21.
- (2005). Places & Spaces Informal Meeting on Mapping Science, Philadelphia, Penn., Dec. 1-2.
- (2003). 96th Annual Meeting of the American Association of Law Libraries (AALL), "Maximize Today, Envision Tomorrow." Seattle, Washington, July 12-16.
- (2002). 95th Annual Meeting of the American Association of Law Libraries (AALL), "Creating Connections." Orlando, Florida, July 20-24.
- (2002). 12th Annual Conference for Law School Computing (CALI), Chicago, Illinois, June 20-22.
- (2002). Indiana University Librarian's Day, "Directions in Teaching, Research, and Library Services," Indianapolis, Indiana, May 17.
- (2002). AALL Workshop, "Boot Camp for Teachers of Electronic Research," Cincinnati, Ohio, April 18-19.
- (2002). Indiana Chapter of ASIST Spring Program. Professor Katy Börner (SLIS), "Visualizing Knowledge Domains," April 4.

- (2001). 94th Annual Meeting of the American Association of Law Libraries (AALL), “New Realities, New Roles.” Minneapolis, Minnesota, July 14-19.
- (2001). Annual Meeting of the American Association of Law Libraries (AALL) Pre-conference, “Conference of Newer Law Librarians.” Minneapolis, Minnesota, July 14.
- (2000). 93rd Annual Meeting of the American Association of Law Libraries (AALL), “Gateways to Leadership.” Philadelphia, Pennsylvania, July 15-20.

RESEARCH INTERESTS

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| <ul style="list-style-type: none"> ▪ Information Visualization ▪ Educational Use of Domain Maps ▪ Spatial Navigation of Bibliographic Data (in which the underlying structural organization of the domain is conveyed to the user) ▪ Social Network Theory ▪ Knowledge Organization Systems | <ul style="list-style-type: none"> ▪ Bibliometrics / Scientometrics ▪ Legal Bibliometrics and Informatics ▪ Legal Bibliography ▪ Information Policy / Privacy ▪ Information Diffusion ▪ Legal Aspects of Intellectual Property ▪ History of Information ▪ Information Infrastructures |
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SERVICE ACTIVITIES

- **National Committee Membership**
 - American Association of Law Libraries (AALL) Access to Electronic Legal Information Committee (AELIC) (Member & Webmaster) (2001 – 2003).
- **Campus and Local Committee Membership**
 - Bloomington Library Faculty Council (Member) (elected position) (2008 – 2010).
 - Bloomington Library Faculty Council (Secretary) (appointed administrative position) (2009-2010).
 - Bloomington Library Faculty Council, Constitution and By-laws Committee (Member: 2009-2011) (Chair: 2010-2011).
 - Bloomington Faculty Council, Technology Policy Committee (Member) (2009-2010; 2010-2011).
 - Bloomington Faculty Council, FAR Implementation Committee (Member) (2010-11).
 - Bloomington Library Faculty Council, Elections Committee (Chair) (2007 – 2009).
 - Indiana University Librarians Faculty Review Board (Alternate) (elected position) (2007 – 2009).
 - Doctoral Student Association (DSA), PhD Forum Student Coordinator (2007, 2008).
 - IU Digital Projects Review Committee (Member) (2008). [Provided policy input as to which project submissions the Digital Library Program should prioritize.]
 - Bloomington Library Faculty Council, Constitution and By-Laws Committee (2003 – 2004).
 - Law School Instructional Technology Committee (Member) (2001 – 2003).

- **Boards**

- Places & Spaces Advisory Board (2005 – present). See <http://scimaps.org/>

- **Reviews**

- Reviewed five poster submissions for iConference 2014 (March 4-7, Berlin, Germany).
- Reviewed articles for the *Journal of the American Society for Information Science and Technology* (Jan. 2009, March 2012, & April 2013).
- Reviewed an article submitted to the *Journal of Digital Libraries* pertaining to a special issue on “Information Visualization Interfaces for Retrieval and Analysis.” Co-Editors: Katy Börner and Javed Mostafa. (Fall 2004).

PROFESSIONAL MEMBERSHIPS (past and present)

- American Associations of Law Libraries (AALL)
- AALL, Academic Law Libraries Special Interest Section (ALL-SIS)
- AALL, Research Instruction and Patron Services S.I.S. (RIPS-SIS)
- Association for Library and Information Science Education (ALISE)
- American Society for Information Science and Technology (ASIS&T)
- Bar Associations (Illinois, Kansas, and Missouri)
- Indiana Chapter of ASIS&T
- Indiana University Librarians Association (INULA)

REFERENCES

Dr. Katy Börner, PhD

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Associate Dean

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Prof. William Henderson, J.D.

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