Library of Congress Classification: Shelving Device for Collections or Organization of Knowledge Fields?

Abstract: In the literature on cataloging and classification published over the past 70 years, the Library of Congress Classification (LCC) has been described as a generally acceptable “library shelving device” and “shelf browsing mechanism” (Chan, 1990, 15). Indeed, the various classifiers never claimed that they developed LCC as a scientific system but rather as an utilitarian tool. Likewise, its critics rarely ever concluded that it is, in fact, a knowledge-based logical system, in which the records of a literate culture are organized: the various manifestations of recognized knowledge fields, corresponding to their scientific framework at a given point in history. With inception of the last LC Class, K: Law, whose design was no longer retrospectively tied to existing holdings of the library, classification has further evolved into a coherent concept classification. By freeing LCC from the constraints of its earlier function as shelf locator for American libraries (Chan, 1996, 9), its potential as a unique retrieval and navigation tool for electronically-stored bibliographic information will be realized.

1. The Genesis of the Library of Congress Classification

The LCC should not be contemplated as isolated from the general history or intellectual climate in the country, since the political history explains what is written and why, while the intellectual/cultural history explains what is collected and why, and is organized the way it presents itself today. It was no coincidence that the classes for Political History, Political Sciences, and Library Science were the first ones to be developed at LC.

1.1 Collection and Organization during the First Period ca. 1801-1861

In the United States, the periods of political history and historiography coincide with the first growth period of LC collections, topped with the introduction of a new general catalog in 1861.

After the war for colonial independence, historical accounts show the colonies’ progression from colonial independence to a nation. For that, one needed a common politico/legal system, but mostly: the creation of a common heritage, a common national history. The organization of a common bond were the efforts of a few men. Histories which they wrote subordinated the role of the individual colony or state to the story of the nation: recording and explaining the past of the country as a whole. The history of the Revolution was also to provide it’s justification: restoration of lost liberty and lost rights (Van Tassel, 1960, 32-34).

The years particularly interesting for the type of collections then forming at LC, were ca. 1815 to 1860, dominated by the popular historians; writing was guided by the desire to see the U.S. acquire “American character”, to teach patriotism and to educate; the latter interest was stimulated by the flood of immigrants (to 1848) from the “old country”, bringing advanced education which led to: building of schools, a big market for the flood of text books, and development of a curriculum of which American history was a central part (Van Tassel, 1960, 87-89). At the same time, one encounters the steadily rising number of local historical societies, including those in the new territories (frontier) which provided the historiographer with collections
of personal papers; accounts of lawyers, business men, pioneer settlers, colonial offices, etc.; and treatises on American institutions, including the frontier. Another phenomenon was the so-called DocuImania, the scramble for documentation. Collections that are building include government documents, treaties, laws, and legislative journals, official/diplomatic correspondence, all "Sources of history to its truth". In all this, the original colonies competed for acquisitioning of colonial documents from abroad (Van Tassel, 1960, 107).

The years from about 1830 on may be characterized as the years of the Romantic Nationalist. His mission was to spread the saga of freedom and hope of mankind for a better world. This period coincides with the *younger* (Heidelberg) *Romantik* in Germany: the academic youth movement during the 1848 Revolution; the growth of German nationalism (Vaterland) and early constitutionalism in German states; the revolutionary civic response to absolutism (as someone observed: George Bancroft's translation of democratic faith into German romanticism) (Van Tassel, 1960, 118-120); and, on the academic side, the cresting of the "Historische Schule".

### 1.2 The First Growth Period of the LC Collections

By 1861, with issuance of a new general catalogue, the collection had grown from 152 works to 79,214 volumes. We know from various accounts, such as annual reports, memoranda, and laws, what was collected, and from criticism of the collections of what was not collected. From 1808 on, collecting concentrated on laws and Congressional papers; in 1815, Jefferson's collection was acquired; since 1817, LC received copyright deposits; in 1836, the Secretary of War (in an address to the American Historical Society) advocated expansion of LC collections to all subjects of human learning "...to elevate it to an equality with those great repositories of knowledge which are among the proudest ornaments of modern Europe" (Cole, 1979, 16); since 1837, the Joint Library Committee supported international exchange of public documents; and, in 1853, Congress rescinded the law for international documents exchange (Cole, 1979, 23).

### 1.3 Early Organization of the Collections

Before Congress moved to Washington and established its' Library in 1800, Congress used the collection of the Library Company of Philadelphia. In Washington, a catalogue for the 900 plus works was issued in 1802, followed in 1808 by the third catalogue which, besides size, introduced for the first time *forms* as plans, state laws, journals of the House, House reports, executive papers, and gazettes. By 1812, the first *classed* catalogue was issued for the growing collections. It was the first subject approach according to the catalogue of the Library Company of Philadelphia which was used by Congress before the move of the government to Washington. The Philadelphia scheme was modelled after Francis Bacon’s *System of Knowledge Classification* (1605, modified by Jean le Rond d’Alambert, 1751 (Chan, 1990, 3-6). Before applying it to the approximately 3,076 volumes still subarranged by size, LC reduced the number of original classes from 31 to 18 (Cole, 1979, 6-10). Thomas Jefferson's classification scheme which had been introduced in 1815, was applied at LC in expanded form until the new classification was developed.

### 1.4 The Second Period of LC Collection Building and Organization, 1861-1910

In this time frame two different approaches towards the nation's history occur that deeply impact LC's collection and classificatory policies. *Critical* historical exploration (ca. 1866-1884)
established after the Civil War the national past as the basis for the reunion, which in turn became the justification for the Civil War. The scientific (seminar) method of study and writing of history came back to the US around 1884 with scholars trained in German seminars, where "government and international law" formed part of the history curriculum. This so-called new historical movement viewed history as a study and record of social evolution. The best of these scholars, viewing themselves as political scientists, would establish "Departments of History and Political Science" at American Universities. It is interesting to observe that the American Social Science Association lent its authority to the foundation of a new organization: the American Historical Association (Van Tassel, 1960, 171-176).

The expansion of the LC collections in this period was based on congressional requests for deposit of all documents by the states governors (1866), the formalized exchange of foreign government documents (1867-1875), and establishment of major collections either by bequest, gift, or congressional appropriation, among them the Chinese, Turkish, and Lincolniana collections (Cole, 1979, 30-42).

These historic accounts must be seen against the general historic-cultural background of the second half of the century, the citizens' century: Humboldt's declaration of Freedom of Learning and Teaching in Germany, accompanied by major achievements in the arts and sciences, and archeological endeavors of the German and the English in the Middle East, deepening the interest in antique/Hellenic studies and Roman law. Under Bismarck's leadership, the civilian government had taken on the mandate for education and welfare. A critical factor was the wealth-paired with the German Bildungsideal—of the new industrial upper and upper-middle classes, the bourgeoisie, which were to lay the foundation for public collections, mostly museums and libraries, as well as botanical and zoological gardens, open to all citizens. This was the time when the best of America's industrial upper class had their agents for buying and acquisitioning in Europe: the DuPonts, Frick, Vanderbilt, Morgan, and the Pittsburghers, to compete with the Continent. Most importantly, LC also had a permanent purchase agent in Europe (Cole, 1979, 25). And in 1892, the President approved a Congressional resolution to finally open the Library of Congress to the public.

It was around this time that the Library of Congress—with collections up to the one million mark—had undergone a major reorganizations into several departments, and Herbert Putnam (Boston Public Library) and Melvil Dewey (New York State Library) testified before the Joint Library Committee on behalf of the American Library Association emphasizing the need for a new classification system (Cole, 1979, 51). In 1897, with the new Library of Congress building ready for occupancy, Charles Martel (new Superintendent of the Catalogue Department) began preparation for the intended reclassification and exploration of available schemes, joined by J.C. Hanson, previous Superintendent of the Catalogue Department (Cole, 1979, 59-60). In 1898, during these preparations, Librarian Young proclaimed LC's mission: to collect "whatever illustrates American History . . . varied forms of American Growth, Theology, Superstition, Commonwealth, Building, Jurisprudence, Peace and War" (Cole, 1979, 64).

1.5 Development of the Library of Congress Classification (LCC) to 1948

After his appointment in 1899 as Librarian of Congress, Herbert Putnam focused on the development of the collections and of a new classification: according to his first statement to Congress, he found the collections to be defective and the classification meager, rigid and inelastic (Cole, 1979, 67).

The Dewey Decimal Classification was ruled out in its present form.

The classification Schema of the University of Halle (Germany), originally studied, was also
ruled out because it seemed "too strongly oriented on traditional German philosophical thought".

Charles Ami Cutter's Expansive Classification was selected as the prototype, however, with modifications in the notation structure, using a combination of letters and numbers (Chan, 1990, 21). The comparison between the various outlines for the LC Classification created up to 1904 and Cutter's classification, show that Cutter's main classes do not have any relationship to Bacon's or d'Alambert's systems, nor to the Jeffersonian outline, all Europe-oriented in their comprehension and division of knowledge into the principal three classes, history, philosophy and fine arts (poesy). Cutter already had separated Science, Mathematics (Pythagoras, Heraklit, Anaximander, etc.), and the Law (Jus naturae et gentium) from Philosophy. Hanson went beyond that: he broke up Class A (Philosophy and Religion) and, introducing double letters, created Classes B-BJ for Philosophy, and Classes BL-BX for Religion and Theology. Classes J-JX in the early version of LCC are already the Classes for Political Science. Class K: Law, had not been retained as a distinct Class but was incorporated into Class H, then Political Science. This was a troubling approach for later developments.

First to be drafted was Class Z (Bibliography and Library Science, 1898) for critical materials in preparation of the massive reclassification (Cole, 1979, 64), but first to be published (1901) were the Classes for the most extensive collections, History Classes E-F (History and Geography of the United States), followed by the draft of D (History of the Old World). Political Science Classes J to JX, in company of Naval and Military science (V and U) and some other classes, were published in 1910. This shows clearly two things: the follow-through with the mission statement of Librarian Young (American orientation) under Putnam (LC as "a bureau of information for Americana" [Cole, 1979, 70]); and the prevailing philosophical comprehension of history as an all-inclusive field in subject matters because historical studies have, in fact, provided answers to contemporary calls, closely tracking political, social, and economic developments. Thus, Classes E-F included boundary questions and treaties, both relating to the narrower subject of a state's territory and sovereignty, the recorded manifestations of U.S. westward expansion and territorial dominance over the Indian territories, works dealing with war and peace and the peace treaties as well; a whole regional development leading eventually to the formation of the OAS, a subject belonging by definition to International law, and geography. It also shows the encyclopedic character of the LCC from the beginning: to round out the schedules with information for the user, detailed encyclopedic notes introduced and illuminated each major chapter. This practice was retained for the 2nd edition (1913). By 1958 (3rd edition), all these notes were removed.

Legal history was never recognized as a discipline per se but formed part of general history. Therefore, eminent historic-legal sources were classed in Class D. Classes J-JX: Political Science, had absorbed official gazettes (a primary source of the law), legislative papers, texts of constitutions of the world together with constitutional history; and, in accord with the understanding of the time, international law was welded together with international relations, instructing the cataloger: in case of doubt, prefer D-F. Class K: Law, although in the final outline of the LCC reflected as a class, was never developed. Instead, many of the component classes of the LCC completed by 1948, had absorbed legal materials that one would have expected to serve as the basis for Class K. Law was considered a congeries of aspects of other disciplines and not a discipline in itself; in fact, it had become a form of other subjects (in particular Classes H, L and R) (Goldberg, 1986, 329).

Evaluation of the new classification proves that, despite various interpretations of statements uttered by library officials, LCC was from its inception a composite system: organization of a knowledge field by design, and library organization by application to the shelf. Richard S. Angel, Chief of the Subject Cataloging Division, in 1964 clearly distinguishes between LCC as a "complete system, embracing all areas of human knowledge, the various components of this
universe of knowledge having been allocated to the various schedules corresponding to well-defined areas and concepts by which the separate fields are taught and expounded, and on which developmental research is based", versus the provision of an "orderly arrangement of volumes which makes access to the collections useful and meaningful to qualified students, scholars, and staff" (Angel, 1964, 353-354).

This was, however, merely a restatement of the observation of F.H. Wagman (Director of the LC Processing Department), already made in 1949 at the AALL Annual Convention, that "the Library of Congress must maintain an encyclopedic classification of knowledge" (Goldberg, 1986, 332). Translated into theoretical terms and classificatory structure, this means: systematic-hierarchic chain of concepts or textual elaborations of a knowledge field or topic condensed into captions and arranged from the most general (General works) and broadest to the most specific and refined term or definition in descending order, a logical, deductive method grounded in late 18th century European philosophy (Wieacker, 1967, 193; the principal representant is Christian Wolff, the head of German Enlightenment philosophy). Applied to the LCC it means, a systematic arrangement of related concepts or subjects, expressing by way of indentation their relationship in the hierarchical structure to each other.

The adopted alphanumeric notation system for the LCC is a composite system utilizing letters and Arabic numerals. Main classes are denoted by a single or double capital letter; for classes D and K also triple letters denote subclasses. Within each main class or subclass, the integral numbers 1-9999 are used for subject division, with generous amount of free numbers for future expansion. This Class number assigned to each caption is the numeric expression (code) of a phenomenon, fact or intellectual information defined by natural language or subject-typical terminology in the caption. In other words: it is coded information denoting the order of subjects in the schedule. It was originally decided not to use decimal numbers; later, the decimal extensions of integral numbers were introduced for new subjects. The addition of a "work specific" Cutter number for the book in hand (the "book Cutter") on a subject outlined in the schedule converts the systematic class number to the call number (or shelf locator). After the first set of letters and numbers, the second set, the Cutter numbers, preceded by a period, follows. Serving here, as example, are the Rules of procedure of the European Parliament:

<table>
<thead>
<tr>
<th>Class number</th>
<th>KJE</th>
<th>Subarrangement</th>
<th>AI 8</th>
<th>Book number</th>
<th>E97</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class number</td>
<td>KJE</td>
<td>Subarrangement</td>
<td>AI 8</td>
<td>Book number</td>
<td>E97</td>
</tr>
</tbody>
</table>

[=Community Law] [=integer number for European Parliament] [=Form Division IX for Rules of procedure] [=Main entry]

Extensive referencing from the systematic location of fact, event or topic to the actual location for bibliographic reasons is introduced and widely applied from the first Class on.

2. Final Stage of Library of Congress Classification Development. Interdisciplinary and Comparative Classification

The Annual report of Librarian MacLeish, in 1940, states that the Library's collections are "preeminent in American history, bibliography, library science, publications of learned societies, economics, political science and social science", but "weak in specific fields of European literature, social sciences, history, education, modern anthropology, and most technology" (Cole, 1979, 110). This marks the beginning for new collection and selection policies, the new canons of public services, followed through by Librarian Luther H. Evans. His Library of Congress "Mission in Europe" for obtaining "multiple copies of European publications for the war period" for
distribution to American libraries and research institutions accounted for an unprecedented expansion of LC's collection, due to the massive inflow of foreign, predominantly legal materials between 1945 and 1949 (Cole, 1979, 121). Of special importance were German laws and all related materials for the study of Germany's past role in the European theater, now the Territory under Allied Occupation. This would finally lead to development of the last component Class of the LCC: Class K for the law.

2.1 Policies and Principles for Law Classification Development

In 1949, the LC Classification Committee recommended to the Librarian to develop the law classification scheme based on the methods and principles that have governed the construction of all other schemes. In May of the same year, during the Annual Convention of the American Association of Law Libraries (AALL), the guiding principles for Classification of Law were worked out, later to be published as the Interim Report of June 10, which has remained the governing document for the development of Class K, accompanied by a first outline of the entire Class. The report defined for the first time the types and categories of what constitutes "law materials" and has since set the demarcation line, retrospectively and forward, between Class K and other Classes. However, opinions were greatly divided over several issues: (1) should the schedule be based on the actual library holdings; or (2) should it be developed on a strictly theoretical basis? The latter was ruled out by the Committee on Development of Class K, since the Library had considerable experience in classifying existing collections. (3) From the outset, it was not certain, whether LC would ever make a commitment to reclassify its legal materials.

The development of the first K class was caught up in this point-counterpoint argument for 20 years, both outside and inside LC. The resulting shift in development patterns was due to the shift in classification policy. Firstly, the planned creation of a "virtual law collection" on which the development of Class K would be based, i.e., a shelf list consisting of new acquisitions and bibliographic data, extracted from the shelf list of Classes A-Z for the older materials buried in such classes, was abandoned as "dragnet operation". Subsequently, for the first time in classification development at LC, reclassification of an entire collection, the retrospective conversion of law materials, was ruled out. This policy is since restated in each published K schedule. Secondly, highest in the order because it governs the structure of Class K, was the jurisdictionality policy, which would provide the outline for all its subclasses. It was recognized that the differences in legal systems, nomenclature, public policies and intellectual tradition from one jurisdiction to another would not allow for superimposing of concepts and nomenclature valid only for one jurisdiction onto another. Thus, arrangement by jurisdiction takes precedence over other criteria such as subject. Jurisdiction, therefore, will form the principal hierarchy (Goldberg, 1986, 332-334). Thirdly, already with the first group of classes for the Common law countries, classificatory technique had resorted to model schedule development (the first schedule, Class KF: Law of the US was the model for the other Common law schedules and tables), however, only in approximate, broad use of patterns without a common number base, and not strictly symmetric. With creation of KK-KKC: Law of Germany, the model for Civil law jurisdictions, the derivation technique was introduced, the use of one schedule as the number, pattern, and, as far as possible, terminology pool for creation of a related Class, KKA Socialist Law of East Germany. For that, comparative study would determine common principles underlying both systems; as a result, harmonized/analogous class detail based on the legal doctrine shared by both jurisdictions could be created. As an example from constitutional law:
Fourth, the *regionalism principle* was an outgrowth of a further restriction in development of the class: not all jurisdictions could be accommodated with their own classification. Thus, another formula had to be invented to create some organization for the rapidly growing foreign law collections.

Customary, a region has been defined (geographically) as an area in which historical, religious, and socio-economic or ethnic similarities, as reflected in laws in the area; and where cultural, scientific, and economic interests have led to regional integration and organization. In both cases, further refined model schedules and symmetric uniform tables, applicable to the largest number of jurisdictions in that region, were the product of comparative pattern and concept analysis.

This principle had been adopted for the first time during development of the schedules KI-KKZ (Law of Europe) (Goldberg, 1987, 69-72) and applied since to all regions of the world (Europe, Asia, Africa, Pacifica). Harmonization and approximation technique was applied to develop a jurisdictional schedule for regional organizations as well, first for the European community, and—further refined—for the Antarctic Regime and other international organizations (Library of Congress, 1993, Introduction; Goldberg, 1993, 88-133). By these methods, second and third generations of schedules or tables could be derived from one model.

### 2.2 Perimeter of Classes. Adjustments. Revisions

Implementation of the vast Class K, stage by stage, has demonstrated that classification is the conceptual structure and complex policy framework for development and maintenance of large collections. Classification sets not only the perimeters within a particular class for its subclasses, but delineates the demarcation to other classes, especially to neighboring classes as H (Social Science) and J (Political Science). It is in the overlap areas, the “grey zones” of classification, that policies emerge as consequence—or prelude—of periodic major changes as new knowledge fields emerge or established ones mature; such occurrences have been handled not only by numeric expansion in a particular classification for new or specific aspects, or by refinement of the scope of a class, but by major shifts of whole subclasses (cancellation and merger of one subclass into another) and extensive re-developments. Although LC never encouraged the use of LCC as a general American classification, it could not prevent that LCC in fact became the preferred library classification. The voiced concerns by libraries which adopted LCC for “stable shelf arrangements”, prompted Library officials repeatedly to restate: that adopting libraries must sufficiently understand those aspects of the LCC itself; its development, revisions and application (Welsh,
1968, 242-245; statements were made during Welsh's years as Director of the Processing Department at LC).

The example of Class K also demonstrated that only after freeing the development of the class from the strictures of reclassification of existing collections or conservation of existing number structures, could the Class mature to a system for organization of a knowledge field. The freedom to borrow principles developed by legal scientists—the high level of abstraction and the working method of formal logic—has allowed for a strong hierarchical order of concepts and subjects. Techniques, as analytical exegesis, and tools for comparative study, as approximation, harmonization, analogous interpretation, and synthetic construction (guided by references to parallel hierarchies), were kindred methods adopted for the development of Class K.

The detailed enumeration of topics and definitions, represented in the captions in scientific language is another important factor: the more advanced or experienced the expected user is thought to be, the more detail is commanded by the index (Moys et al., 1993, 2, 19).

2.3 The Electronic Version of the Library of Congress Classification

Several factors in the most recent history have made new in-depth study of the LCC necessary and have indeed lead to a better understanding and renewed interest in this classification system: the conversion to the USMARC Format for Classification; the needed standardization for indexing procedures before the merger of indexes to the classes A-Z into one integrated LCC index; and identification and harmonization of common underlying patterns in related schedules or groups of schedules in preparation for, or during, revision of the LCC.

Most important during the conversion of LCC to the electronic format was the evaluation of existing or projected classificatory strategies, including model creation for common divisions (form, geographic, or period) and concept/subject divisions, based on experience gained by development of the newest class, Class K. Pattern adjustments, the harmonization of old and new or parallel patterns and pattern conformity, realignment of hierarchies, standardization and updating of terminology, and generous introduction of LC subject headings into the captions are all critical and usually do not effect number structures of old existing collections.

It is interesting to observe that the last two K subclasses that close gaps in the LCC, will rectify classification practices rooted in the ideological perception of the "history complex" and policies dating back to 1901. The two new schedules: KZ (Law of Nations) and JZ (International Relations) will—upon implementation at LC—substitute for the schedule JX (International Law, Foreign Relations, Diplomacy), the last subclass of J: Political Science. JX, first implemented in 1910, has been devoid of many pertinent subjects that have since been incorporated in the history schedules D-F.

Several classification techniques which allow for comparative classification and approximation either of two classes or of particular subject fields (subdivisions) in related classes have recently been tested during the development of two new classes, JZ and KZ. To finalize the design of the new schedules, a thorough JX collection survey based on subject/pattern analysis of the JX schedule was produced. Simultaneously, an extensive shelf list examination of the History classes E-F (America), and Class D (History General and Old World) was conducted to recover subjects for incorporation in the new schedules, while numbers in the schedules D-F will be closed. The subjects stemming from materials classed originally under the old JX, and legal subjects in schedules D-F to some degree, are now distributed between the two new classes.

The two schedules are devised in subject arrangement and number structure, so as to compliment each other, allowing for discretionary placement of works, especially document collections, in either class depending on an individual library's point of emphasis or collection
policy. The old JX can serve as a concordance (and at LC: shelf locator, since it is not envisioned at present, to re-label and move the collection) while the new numbers—after they have been linked to the original JX numbers—will eventually allow for systematic search and retrieval.

3. Conclusion

Despite such statements made by Librarians of Congress (in particular, Herbert Putnam, at the inception of the LCC, and Luther Evans, during the planning state of the Law Classification) that the LCC is not intended to serve as a general classification for American libraries, the LCC, in fact, has become the preferred classification for libraries and educational institutions in the United States and for many institutions abroad. Their voiced concerns for stability of shelf arrangements by classification has, in the past, markedly inhibited the inventive remodelling of the LCC. Ultimately, all efforts will have to concentrate on the envisioned function of the electronic LCC as an on-line retrieval tool. For on-line browsing and navigation of electronically stored information, including the segregation of whole portions of one class and transfer to another, a knowledge-based, field-specific structure of the classification is of utmost importance. So, also, is the separation from the shelving function.

Notes

1. In Spring 1949, the Librarian of Congress appointed a Committee on the Classification Schedule for Law to study theoretical and administrative problems. At the same time, AALL appointed a Committee to Cooperate with LC on Law Classification. In May 1949, the two committees developed the principles for the Classification of Law, to be announced during the 42nd Annual Convention of AALL of the same year, and henceforth known as the "Interim Report of June 10, 1949."

References
