

James Duff Brown's *Subject Classification* and Evaluation Methods for Classification Systems

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Abstract

James Duff Brown (1862-1914), an important figure in librarianship in late nineteenth and early twentieth century England, made contributions in many areas of his chosen field. His *Subject Classification* (SC), however, has not received much recognition for its theoretical and practical contributions to bibliographic classification theory and practice in the twentieth century. This paper discusses some of the elements of SC that both did and did not inform future bibliographic classification work, considers some contrasting evaluation methods in the light of advances in bibliographic classification theory and practice and of commentaries on SC, and suggests directions for further research.

1. Introduction

James Duff Brown was a leader in the library world of late nineteenth and early twentieth century England and his *Subject Classification* (SC) made an important contribution to bibliographic classification theory and practice during his own time. Nevertheless, neither the man nor his classification system is well-known or well-researched in the literature of bibliographic classification. Previous work (Beghtol 2004) characterized Brown as a pioneer in library and bibliographic classification history. That research emphasized the significant contributions SC made to classificatory work in the twentieth century. Such a perspective, however, meant that various other avenues of research were not included. The present paper undertakes to address some of those omissions. To that end, Section 2 discusses SC itself: first, by summarizing the points made in the previous research and, second, by filling out the description of SC with discussion of elements that do not appear to have made any particular contribution to later bibliographic classification systems or theories. Section 3 concerns some of the analyses and criticisms of SC that were made by commentators in Brown's own time and after his death. A parallel is drawn between the evolution of bibliographic classification in the twentieth century and the critical methods used by the commentators. The paper concludes with brief discussion of unanswered questions and of further research directions.

2. Brown's *Subject Classification*

Brown created three bibliographic classification systems: the *Quinn-Brown* scheme (1898), the *Adjustable Classification* (1898), and the *Subject Classification* (1906, 1914, and 1939). Of these, SC is the most interesting and highly developed system, but the seeds of some of its devices are discernible in the two earlier schemes. There were three editions of SC. The first two were created by Brown himself, and the third was the second edition somewhat expanded and revised by Brown's nephew, J.D. Stewart. Two of Brown's concerns in creating SC are of interest in the light of later developments in bibliographic classification. First was his attempt to create methods of dealing with works that combined different topics from the same or

from different disciplines, that is, what we might now call “multi-topic” or “interdisciplinary” works. Second was his conviction that it was necessary to develop a “one-place” classification scheme in which a topic was not scattered among the various academic disciplines. These two contributions are discussed in turn.

Brown’s recognition of and interest in interdisciplinary works was unusual in his day, but he created a number of devices for ensuring that composite topics could be expressed in SC. Two of these are of particular interest here. First is Brown’s extensive development of synthesized notations. In SC, topics from the same main class could be synthesized notationally with a plus sign (+) interposed between two notations with the main class letter for the second topic removed. For example, a book entitled *Heat and Sound* can be notated as C200 [heat] and C300 [sound], i.e., C200 + 300 (1914: 19). Similarly, topics from different main classes can be synthesized notationally in the same way except that the main class letter for the second topic is not removed. For example, a book entitled *Logic and Rhetoric* can be notated with A300 [logic] and M170 [rhetoric], i.e., A300 + M170 (1914: 19). In Brown’s era, these kinds of notational syntheses were not available in any bibliographic classification except the *Universal Decimal Classification* (UDC). In addition, SC contained “Categorical Tables and Index: Tables of Categories, Forms, Etc., for the Subdivision of Subjects” (1914: 37-39). The Categorical Table is a list of elements that can be added to any division or subdivision in the schedules. These elements are preceded by a period (.) and cannot be expanded or synthesized. For example, Economics in the Categorical Table is .760. Thus, the economics of universities would be A180 [universities] combined with .760, i.e., A180.760 and the economics of musical competitions would be C798 [musical competitions] combined with .760, i.e., C798.760. In the third edition of SC, there are 980 entries in the Categorical Table. Although they are not all suitable for subdividing every class in the main schedules, the idea of combining any main schedule topic with any element from the Categorical Table appears to be unique in bibliographic classification practice.

Second, Brown’s idea of a “one-place” classification for each “concrete” subject grew out of his conviction that the best place for a topic was at the place where it would be constantly needed. For example, a work on the Rose might consider the topic from various standpoints, such as “Biological, Botanical, Horticultural, Historical, Geographical, Ethical, Decorative, Legal, Emblematical, Bibliographical, Poetical, Musical, Sociological, and so on to any extent” (1914: 8), but the place of constant need would be in botany. For this reason, Brown tried to create a system in which these kinds of subjects would not be scattered throughout a discipline-based classification. Instead, he tried to bring all works on a concrete topic together notationally so that, for example, at E917 for Coffee “must be collected everything related to coffee, regardless of standpoint, form or other qualification... but it must not be put under such headings as Tropical Agriculture, Beverages, Crops, Foods, Drugs, Ethics, Bibliography, Customs, or any other general head” (1914: 20). Subsequently, Coffee could be subdivided by the elements of the Categorical Table. For example, the economics of Coffee would be E917.760 by analogy to the examples discussed above.

These two contributions of SC have been reinvented by later classificationists. Notational synthesis is relatively commonplace now in most bibliographic classification systems (although less so in the *Library of Congress* than in others). Although Brown’s specific devices have not always been adopted in their entirety, the idea of expressing more than one element of a work was expanded and refined in Ranganathan’s concept of analytico-synthetic classification, and the work of the Classification Research Group (CRG) expanded the influence of the idea. Similarly,

Brown's idea of a one-place classification, in which works on a "concrete" topic would not be scattered among the disciplines, influenced the idea of the "Phenomenon Class" in the second edition of the *Bliss Bibliographic Classification* (BC2). In BC2, one has the option of choosing to class one phenomenon (e.g., the Horse) in one place, regardless of the discipline to which the work would ordinarily belong in a discipline-based system. More detail on the contributions Brown made to future bibliographic classification research is available in Beghtol (2004).

In addition to these important contributions, SC has other elements that have not been adopted by later bibliographic classificationists. First, Brown believed that "every science and art springs from some definite source and need not, therefore, be arbitrarily grouped in alphabetical, chronological or purely artificial divisions, because tradition or custom has apparently sanctioned such usage" (1914: 11). In addition, in his view, the "old distinction between theoretical and applied science is gradually disappearing from all modern text-books" (1914: 11). For these reasons, he argued, an application of a science should follow that science. These views produced some awkward juxtapositions (e.g., music as a subdivision of acoustics and horse-racing as a subdivision of the biology of horses) that were heavily criticized. For example, Sayers wrote that "to place this divine art [music] after Acoustics and to call it a Physical Science is to ignore its functions and history entirely, and is equivalent to arranging a Gothic cathedral with granite simply because it is built with this material" (Sayers, 1915-1916: 50). Similarly, Mills objected to the integration of theory and application because "Mechanics and Electricity and Magnetism are separated by topics such as Rococo architecture, Railway season tickets and Piracy" (1964: 105).

Second, Brown paid considerable and enthusiastic attention to various somewhat mechanical methods of subdivision and their possibilities. For example, nearly a quarter of the Introduction to all the editions of SC is taken up with examples of six different methods of producing author numbers (i.e., cutter numbers), and other methods for producing title or book numbers, copy numbers, and book size markings. In case a scientific library wanted to adopt a chronological arrangement for books in any one class, Brown developed the Extended Date Table, which progressed year by year from 1450 (notated "aa") to 1920 (notated "sc"). He considered his Extended Date Table superior to the more well-known Biscoe Date Table, which Brown also included in SC. One of Brown's methods of subdividing appears to be relatively untried. He suggested various methods of indicating the point of view of a book on "Controversial Subjects". Because "the *pros* and *cons* of Vegetarianism, Slavery, Roman Catholicism, Temperance, and hundreds of other subjects may require indication in large libraries" (1914: 32, original emphasis), he suggested preceding the notations for these works by marking them either with an * for *pro* and ** for *con* or with an "a" for *against* and an "f" for *for*. This anteriorizing device would bring together each point of view for books on the same topic and cause them to be shelved together. Presumably, a book treating both sides of a question equally would be placed in the appropriate notation with no anteriorizing device and would thus follow books on different sides of the question on the shelf. Similarly, Brown suggested that notations on books for children could be anteriorized with a "j" for *juvenile* or "c" for *children* or with a "g" for *girls* and a "b" for *boys*, but he considered this an "unnecessary refinement" (1914: 32).

Brown's contributions to bibliographic classification theory and practice were significant, although their importance for future work was not, of course, recognized at his time. He was an energetic and tireless advocate of libraries and librarianship, of open stack public libraries, of classified catalogues and of shelf classification. His enthusiasm for these subjects and many

others was shared by a number of counterparts on both sides of the Atlantic. Brown's contributions have not been widely recognized, however, perhaps because of the atypicality of some of his views during his own time and because SC was not revised adequately to accommodate later literary warrant.

3. Evaluation of Classification Systems: The Example of SC

Wilson (1972) distinguished between the top-down "universe of knowledge" bibliographic classifications devised before the mid-twentieth century and the bottom-up "universe of concepts" bibliographic classifications that followed from the work of Ranganathan and the CRG in England. One aspect of this change can be detected in the change in the title of SC from *Subject Classification, with Tables, Indexes, etc., for the Subdivision of Subjects* in the second edition (1914) to *Subject Classification for the Arrangement of Libraries and the Organization of Information, with Tables, Indexes, etc., for the Subdivision of Subjects* in the third edition (1939). Thus, the concept of the organization of information was added to the concept of arranging books in a library during the same period in which universe of concepts bibliographic classifications were starting to replace universe of knowledge bibliographic classifications. It is interesting, then, to trace briefly the history of differing opinions of SC through this process of change in classificatory thinking during the first part of the twentieth century. This section uses the work of two commentators on SC to exemplify this change. The first commentator whose work is regarded in this way is W.C. Berwick Sayers (1881-1960) and the second is Jack Mills (1918-).

W.C. Berwick Sayers, who taught generations of future classificationists and bibliographic classification researchers, including S.R. Ranganathan and many of the members of the CRG, was a student and colleague of Brown's. Sayers dedicated his *Canons of Classification* "TO THE MEMORY OF JAMES DUFF BROWN A CONSUMMATE LIBRARIAN AND TEACHER AND THE GENEROUS HELPER OF ALL LIBRARY STUDENTS" (1915-1916, n.p.). Malhan (1978: 54) believed that Brown's *Manual of Library Classification and Shelf Arrangement* (1898) may have been the first book on classification that Sayers read. Sayers himself wrote, among other things, *Canons of Classification* (1915-1916) and *A Manual of Classification for Librarians*, with five editions between 1926 and 1975, the last two of which were revised by Arthur Maltby.

Sayers' *Canons of Classification* (1915-1916) begins with a chapter establishing fourteen canons that, in his view, should replace the comparative method of judging bibliographic classifications against each other. This comparative method, although valuable, "is external and inconclusive; it is without regular method, rules, or criteria, and it results usually in a discussion of notations" (1915-1916: 26). Using the canons as an evaluative mechanism, on the other hand, allows one to discuss each classification without comparing it directly to other systems and to evaluate it according to Sayers' canonical principles. The fourteen canons are divided into four sections: General; Terms; Generalia and Form Classes and Divisions; and Notation. These four sections may be summarized as follows (1915-1916: 42-43, *passim*):

General

1. The classification should be comprehensive...
2. It should follow in its form the order of ideas, history or evolution.

3. ...characteristics used must be essential in relation to the purpose for which the classification is intended.
4. Characteristics must be consistent...
5. Characteristics should be mutually exclusive...
6. It should commence with terms of wide extension and of small intension and proceed to terms of small extension and great intension.
7. ...the [hierarchical] steps should be gradual,...thus exhibiting perfect coordination of subjects.
8. The enumeration of parts should be exhaustive.

Terms

9. Names...must be used in one sense throughout, and indicate characteristics of the same kind or order.
10. Terms must not be critical or express an evaluative opinion of the subjects they denote.

Generalia and Form Classes and Divisions

11. [The classification] must be equipped with artificial Generalia and Form classes and divisions to accommodate composite works, works in which the form predominates over the subject, and works in which specific subjects are treated from particular points of view.

Notation

12. [The classification] should be furnished with a notation which provides a shorthand sign for every topic classified.
13. The notation should be pure...
14. [The notation] should be elastic, and so constructed as to permit the re-division of any number or the intercalation of any new one without disrupting the sequence.

Sayers' preferred method for evaluating a bibliographic classification system, then, was a top-down approach in which each system would be evaluated on the basis of each canon. Each of the four systems he described in *Canons of Classification* (*Subject, Expansive, Dewey Decimal, Library of Congress*) was discussed in relation to the canons, although not necessarily in the order in which the canons were presented, not necessarily in detail, and not necessarily by relating the issue under discussion to the canon by which it was being evaluated. In addition, Sayers added issues that had not been explicitly addressed in the canons. For example, his discussion of SC ends with a section on whether we can arrive at a "final" (i.e., standard) classification. Sayers believed that any scheme can be a final classification if it fulfills two criteria: comprehensiveness and hospitality. Hospitality is of less concern to Sayers than comprehensiveness, however, because he believed that "classification is not dependent upon the fluctuations of knowledge to the extent that many would have us believe" (1915-1916: 59) and that "whatever happens the broad divisions of classification will remain essentially unchanged, although they may alter their order, or require adjustment" (1915-1916: 60). Nevertheless, Sayers refrained from deciding whether any bibliographic classification system is or can be final. He pointed out that

owing to its comprehensiveness the Subject Classification may be the standard system, only to be met by the statement that the Expensive and Decimal systems are equally comprehensive. Here, then, the personal equation enters, one man prefers Dewey, another Cutter, another the Princeton or Perkins scheme, and so on. The reasons may be good or bad for these varying views; my point is that they are more personal than scientific. (1915-1916: 60).

Thus, Sayers advocated an evaluative approach in which general top level principles were laid down and specific systems were discussed in relation to these principles. This approach was commensurate with the kind of hierarchical systems Sayers was used to evaluating, i.e., universe of knowledge systems in which a number of main classes were established at the top level and subsequently subdivided appropriately. In addition, however, he realized that this method would not necessarily produce a decision in favour of the superiority of one or another system. Instead, personal preferences were, in the end, the basis for one's judgment about the value of a system.

We may take Sayers discussion of the Generalia classes of SC as an example of his methods and conclusions based on his canons of classification. The canon for Generalia and Form classes was cited in full above. The Generalia class is the first main class of SC, and Sayers was "startled somewhat" to find that this class includes Education, Logic, Mathematics, Geometry, Graphic and Plastic Arts and General Science (1915-1916: 46). Sayers continued

Hence the logical scheme seems to have been outraged at the start; for in an exact scheme it is clear that no specific topic can appear in Generalia. It seems to us that the theory that these subjects [Education, Logic, etc.] are general and pervasive is open to grave question....Strangest of all is the contention that Graphic and Plastic Arts are pervasive. It can be assumed that illustrations and models are used in all arts and sciences, but the assumption will not bear the question: are they vital inherent parts of them? It is perfectly evident that Painting and Sculpture are means of recording things, correlatives of Writing, and should have been placed, as one able critic of the scheme has remarked, in juxtaposition to Literary Record and labeled Pictorial Record. (1915-1916: 46-47, passim).

Sayers' final judgment about SC was that "the future is with the general idea expressed in Mr. Brown's scheme. The pity is that he has so far outraged his own theory in Generalia" (1915-1916: 59). Thus, Sayers appealed to the principles set out in his canons to evaluate bibliographic classification schemes and applied a top-down deductive approach to his analyses of the systems. This approach was appropriate to the common method by which bibliographic classifications were constructed in his day.

Jack Mills was an active and well-regarded teacher of library science, cataloguing and classification. He was a student of Sayers', an active member of the CRG, and, like Sayers, wrote a textbook, *A Modern Outline of Classification* (1964). In addition, Mills was the driving force behind the second edition of the *Bliss Bibliographic Classification* (BC2), which he undertook with other members of the CRG. BC2 is widely regarded as embodying many of the advances in classificatory thought during the first half of the twentieth century, including faceting, extensive notational synthesis, and retroactive notation. In contrast to Sayers, Mills' discussion of SC may be said to exemplify the kind of universe of concepts classification systems that followed from S.R. Ranganathan's development of analytico-synthetic faceted bibliographic classification systems.

Mills expected *A Modern Outline of Classification* (1964) to give students several advantages in their study of subject analysis and bibliographic classification

(i) By stressing the fundamental structural elements which make up a classification system, it should make it easier to assess the effectiveness of existing schemes; (ii) Awareness of the facet structure of subjects should enable a rational and consistent approach to be made to the problems of practical classification in any given scheme; (iii) Effective assistance to readers...requires...an awareness of the pattern of the subjects being explored and of trails which may need to be pursued...if all relevant aspects of a subject are to be traced; faceted classification provides the framework for this; (iv) By attempting to distinguish the more valuable features of older theories and solutions, and to incorporate the single, integrated presentation of the modern theory of library classification, it is hoped that dead wood can be more easily recognized and regarded (1964: vii).

In this passage, Mills clearly stated his strong preference for the faceted analytico-synthetic schemes that dominated the bibliographic classification world during the last half of the twentieth-century. His evaluative method was to subject each system to analysis based on the most advanced classification theory available to him. In addition, however, he pointed out that ...the operation of classification is an inductive one of building broader classes from narrower classes, working from the particular to the general—from the particular problems of Labour Economics to the general class Labour Economics....Nevertheless, it is found in practice that library classifications usually appear to be constructed by the opposite process of division—working deductively from the general to the special....The reason for this is mainly that it is easier to begin from accepted main classes of knowledge like Chemistry, Economics, [etc.]...for these constitute the framework within which knowledge is studied and written about....Nevertheless, this method has certain dangers, for it tends to make classes appear rigid and exclusive when they are nothing of the kind (1964: 7, *passim*, original underlining).

In contrast to Sayers, then, Mills preferred a bottom-up structural approach to the evaluation of bibliographic classification systems, and this approach is consistent with his expressed admiration for analytico-synthetic faceted systems. He also acknowledged, however, that the inductive and deductive approaches to creating and evaluating classification systems are not mutually exclusive. This view was appropriate to the transitional period between universe of knowledge and universe of concepts bibliographic classifications that Mills can be taken to represent. Nevertheless, instead of establishing canons or principles against which to measure a bibliographic classification system, Mills preferred an analytic method that would allow him to evaluate bibliographic classification systems consistently on the basis of their structural features, especially their use of faceting.

Mills' discussion of SC conformed to his decision to base his evaluative method on structural analysis, and he applied this method both to the theories of SC and to its specific content. For example, in his general objection to Brown's one-place theory for concrete topics, Mills wrote, "The practical result...is that, in the SC, the class Gardening loses its Plant facet, Architecture loses most of its Building facet, Economics loses its Industry and Business facet, Literary history loses its author facet" (1964: 104). For particular classes, Mills noted, the Categorical Table sometimes provided an admirable separation of different facets of the subjects, but

in other respects...SC displays the same mixing of characteristics of division as other enumerative schemes. E.g., in Architecture (B300)...[we find] incidental inconsistencies, typical of what is likely to happen when the facet structure is ignored: the subordinating

of some areas to the Kind of Building (e.g., of Kitchens to Houses) but listing others (e.g., Naves, Altars) in a separate facet. Yet Kitchen is common to many kinds of buildings whereas Nave is peculiar to churches (and would justifiably come in a differential facet) (1964:109-110, *passim*).

In addition, Mills used other concepts that arose from Ranganathan's examination of classification for evaluating SC. For example, the section entitled "Deciding the rest of the chain" (1964: 114, original underlining), assumes a detailed knowledge of Ranganathan's development and method of chain indexing. Mills also relied occasionally on H.E. Bliss' concept of scientific and educational consensus to critique SC. For example, Mills attributes certain aspects of the "unhelpful order" of SC to "its ignoring of 'consensus'" (1964: 109) because Brown's idea of a "concrete" implies that "the same person will study, for example, the geology of coal, its chemistry, its mining, the economic organization of its industry, etc." (1964:109). Similarly, "'Consensus' on the whole clearly regards the 'general' subjects (Architecture, Economics, Gardening, etc.), and not the concretes, as the focus of attention" (1964:115-16).

Thus, both Sayers' and Mill's preferred evaluation methods for bibliographic classifications were primarily predicated on the type of system each admired, expected to encounter, and felt comfortable applying. Neither man, however, followed his evaluation method rigidly. For example, Sayers considered the notation "clear and limitlessly elastic," even though it is not pure (1915-1916: 55), and Mills complained that Brown had not established a filing order for synthesized notations (1964: 112). Thus, in their discussions of SC, both Sayers and Mills found things to like and things to dislike, and these opinions were not always based on their preferred evaluation methods. In spite of their criticisms, however, their respective treatments of SC implied that each thought Brown's work worthy of study and analysis by students and practitioners.

4. Some Unanswered Questions and Future Directions

James Duff Brown's contributions to bibliographic classification and to other aspects of libraries and librarianship have not been fully documented and evaluated, and this paper has undertaken to address some of that neglect. It is clear from this brief account, however, that a number of important questions remain. Perhaps the most important is the question of the extent to which notational synthesis was understood and practiced before Ranganathan's analytico-synthetic concepts were introduced, interpreted by the CRG and embraced in the theories and practices of bibliographic classification. The implications of the understanding of notational synthesis in the application of top-down universe of knowledge bibliographic classifications need to be incorporated into our evaluations of the extent to which bottom-up universe of concepts classifications introduced new concepts and practices. One approach to this question would be to study the various early editions of UDC to describe the evolution of the notational synthesis that appeared in them and, further, to undertake to find out how much and what knowledge of UDC was available in England and North America at the end of the nineteenth century and the beginning of the twentieth. Another approach is to study the early editions of the *Dewey Decimal Classification*, the *Library of Congress Classification*, and the first edition of the *Bibliographic Classification* for the presence of notational synthesis, the rationales and descriptions given for it, and the criticisms that arose because of it. Still another future direction would be to analyze more carefully the writings of important classificationists and classification

commentators in order to determine the extent of the parallel between a critic's commentaries and the important bibliographic classifications theories that arose at the same time. Some of these avenues of research are planned for the future.

References

Beghtol, Clare. 2004. "Exploring New Approaches to the Organization of Knowledge: James Duff Brown". Special Issue: Pioneers in Library and Information Science. *Library Trends* Spring: 702-718

Brown, James Duff. 1898. "Adjustable Classification." In Brown, James Duff, *Manual of Library Classification and Shelf Arrangement*, pp. 97-160. London: Library Supply.

Brown, James Duff. 1898. *Manual of Library Classification and Shelf Arrangement*. London: Library Supply.

Brown, James Duff. 1906. *Subject Classification, with Tables, Indexes, etc., for the Sub-Division of Subjects*. London: Library Supply.

Brown, James Duff. 1914. *Subject Classification, with Tables, Indexes, etc., for the Subdivision of Subjects*. 2nd ed. rev. London: Grafton.

Brown, James Duff. 1939. *Subject Classification for the Arrangement of Libraries and the Organization of Information, with Tables, Indexes, etc., for the Subdivision of Subjects*. 3rd ed. rev. and enlarged by James D. Stewart. London: Grafton.

Brown, James Duff and Quinn, J. Henry. 1898. "Quinn-Brown Classification." In Brown, James Duff, *Manual of Library Classification and Shelf Arrangement*, pp. 60-61. London: Library Supply.

Malhan, Inder Ver. 1978. "James Duff Brown and His Contributions." *Herald of Library Science* 17 (1) January: 53-58.

Mills, Jack. 1964. *A Modern Outline of Library Classification*. 4th impression. London: Chapman & Hall.

Sayers, W.C. Berwick. 1915-16. *Canons of Classification Applied to "The Subject", "The Expansive", "The Decimal", and "The Library of Congress" Classifications: A Study in Bibliographical Classification Method*. London: Grafton.

Wilson, T.D. 1972. "The Work of the British Classification Research Group." In *Subject Retrieval in the Seventies: New Directions*. Ed. by Hans Wellisch and T.D. Wilson, pp. 62-71. Westport, CO: Greenwood Publishing in conjunction with the School of Library and Information Services, Univ. of Maryland.