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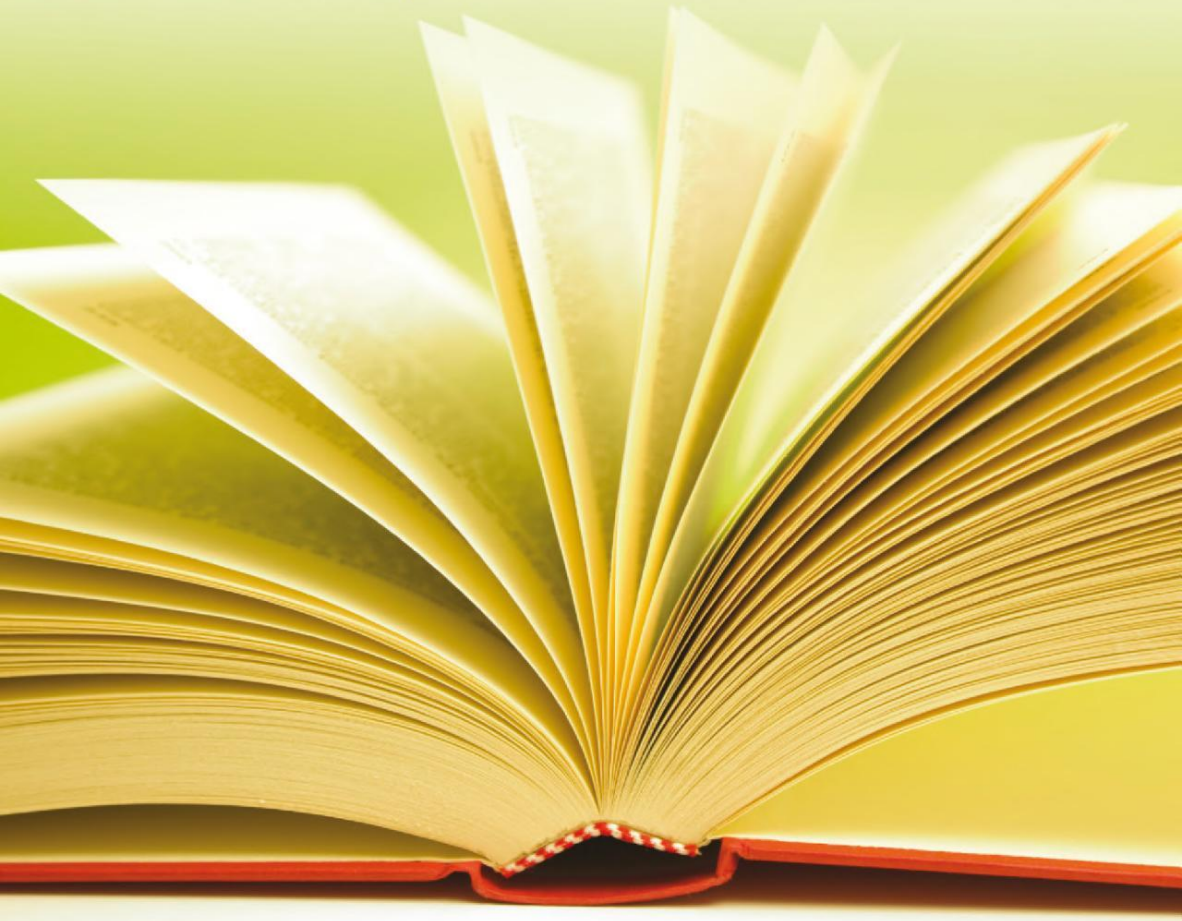
The Theory and Practice of the Dewey Decimal Classification System

Second edition

M. P. Satija



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Preface

Dewey belongs to all; it escaped from Amherst nearly a century ago. It has crossed oceans and penetrated continents ... (Joel C. Downing)

The system of library classification whose technique flashed into the struggling and enquiring mind of the 22-year-old Melvil Dewey on a May morning in 1873 is still the most popular and famous of the big three library classifications. Its use spread across America and then to the whole world soon after its publication in 1876. At present about 200,000 libraries and information centres in about 135 countries and more than 60 national bibliographies and other catalogues are using it to organise their bibliographic wares. The sun never sets on its ever spreading empire. It is now venturing to find uses in the cyber world. For example, the Webrary (*http://www.webrary.org*), and BUBL LINK (*http://bubl.ac.uk/link*) and the UK Web Library (*http://www.scit.wlv.ac.uk/wwlib*) are using it to organise and access their contents. Even a hotel, aptly named the Library Hotel, in New York[1] is organised on Dewey's system.

This book aims to introduce students and working librarians to the theory and practice of the DDC based on its Twenty-third Edition (published in 2011). The theoretical background it describes is brief when compared with the system's eventful history spanning nearly 14 decades. The mechanics of the system, how it has constantly evolved, how it is now governed and maintained, its layout and the processes

of subject analysis pertaining to documents in the context of the system are explained in detail in this revised and updated edition.

As the DDC is primarily an enumerative classification the major emphasis is on number location through the systematic hierarchy of schedules. With the growing provisions for number synthesis in the system this book lays more stress on number-building using the schedules and six auxiliary tables. A chapter has been devoted to each of these aspects, including one on multiple synthesis. Many typical examples have been taken up explaining the practice of number-building. The examples have been graded, and no background knowledge has been assumed on the part of the user. A separate chapter on the Relative Index explains the need for, structure and operation of this alphabetical key to the system. The chapter on the history of the DDC is further supplemented by a chronology given in Appendix 1. A small tutorial of 62 questions in Appendix 3 aims to test the learning of the readers, while the answers to these questions given in Appendix 4 provide a refresher course. A brief glossary explains the terms used in this book in layperson's language, while the select bibliography lists key references for scholars who want to delve further.

Though the book is aimed at beginners, working cataloguers may find it a useful and rewarding reading. It offers glimpses of the philosophical underpinnings and a complete course for training learners in the ropes of the DDC system. The graded process of number-building used in the book demonstrates the increasingly faceted structure of the system built on an enumerative foundation, and its advances towards deeper subject analysis and the classification of micro and non-print documents. To avoid clouding the issue with too many words the number-building has been depicted though equations and facet formulas. This stimulating approach may prompt the

readers to find out more of the nuances of the DDC system. The examples chosen, of necessity, are largely concocted to illustrate the classification of different subjects from all over the world and to demonstrate the versatility of the DDC. Nevertheless, the examples are not far from literary reality. The aim is to be amply illustrative and to introduce step by step and in a simple but clear way all the issues and methods that are involved in the DDC.

A note on the second edition

Since the publication of the first edition of this book in 2007 many noteworthy changes have taken place in the world of Dewey system, not least the publication of *DDC 23* in 2011. Some small and unannounced changes in number-building especially in the literature class warrant a revised book to be compatible with all the revisions and additions to be squarely in tune with *DDC 23*. Information has been included on new current user groups such as the European Dewey Users' Group and the International Dewey Users' Meeting to help readers keep in touch with the social environment of the system. The glossary has been enhanced, fine-tuned and spruced up. The bibliography has been brought up to date and a new section on useful DDC websites has been added. Question–answers have been edited in light of technical and organisational in-house changes of the DDC. Efforts have been made to make the text more explanatory and lucid. It is hoped that the new edition serves the students and practitioners of the DDC as usefully as did the earlier one.

Note

1. The Library Hotel, New York (*www.libraryhotel.com*) is a 60-room boutique hotel in New York City, located at 299 Madison

Avenue (at 41st Street), near the New York Public Library, Bryant Park and Grand Central Terminal. The hotel boasts a unique organizing principle: each of its ten guest floors has a theme, designated after a major category of the Dewey Decimal Classification (the 5th floor, for example, is the 500s, the Sciences), with each room as a subcategory or genre, such as Mathematics (Room 500.001) or Botany (Room 500.004). (Dewey categories 000, 100, and 200 are placed on the 10th, 11th, and 12th floors, respectively.) Other room themes include Erotic Literature (Room 800.001), Poetry (Room 800.003) and Music (Room 700.005). All rooms have a small complement of books and decorations that accompany the theme, with 6000 books overall throughout the hotel. Because of this classification scheme, the hotel owners were sued in 2003 by the OCLC. Later the OCLC reached an agreement with the hotel enabling it to continue using the Dewey system. (Wikipedia) *http://en.wikipedia.org/wiki/Library_Hotel*

Acknowledgment

This is the time and place to thank the many users and discerning reviewers of the previous edition. Their encouragement and constructive criticism has inspired and guided this new edition. Libbie Crawford, Product Manager, OCLC and Kemberly Lang, OCLC Archivist are profusely thanked for their help in providing current information on the DDC. Encouraging words from the present Editor-in-Chief of the DDC, Michael Panzer have given a boost to our morale. The immense faith of Glyn Jones in the value of this book has made this effort possible and Jonathan Davis and Neil Shuttlewood commendably did an intensive job in guiding this work and making useful suggestions to enhance its academic value. Both have my heartfelt thanks. Its shortcomings, if any, remain my sole responsibility.

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List of abbreviations

AACR2R	Anglo-American Cataloguing Rules 2nd Revised Edition
AIB	Associazione Italiana Biblioteche
ALA	American Library Association
BISAC	Book Industry Systems Advisory Committee (Subject Headings, 2012)
BNB	British National Bibliography
CILIP	Chartered Institute of Library & Information Professionals (UK)
CIP	Cataloguing in Publication
CORC	Cooperative Online Resource Catalog
CRG	Classification Research Group, London
DC&	*Decimal Classification, Additions, Notes, and Decisions*
DCD	Decimal Classification Division, Library of Congress (now Dewey Section)
DCEPC	Decimal Classification Editorial Policy Committee
DDC	Dewey Decimal Classification
DfW	*Dewey for Windows*
EDUG	European Dewey Users' Group
EPC	Editorial Policy Committee
ESS	Editorial Support System
FID	International Federation for Information and Documentation (now ceased)
IFLA	International Federation of Library Associations and Institutions
JITA	*Journal of Information Technology and Applications*
LAN	Local Area Network

LC	Library of Congress
LCSH	Library of Congress Subject Headings
MARC	MAchine Readable Catalogue
MeSH	Medical Subject Heading List
OCLC	Online Computer Library Center
RI	Relative Index
SLA	School Library Association
SUNY	State University of New York
T1–6	Tables 1–6 respectively
UDC	Universal Decimal Classification
USMARC	US MAchine Readable Cataloging
WASP	White Anglo-Saxon Protestant

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About the author

Dr M.P. Satija is Professor (retired) and UGC Emeritus Fellow in the Department of Library and Information Science, Guru Nanak Dev University, Amritsar, India. He is the author of *DDC: A Practical Guide*, 2nd edn (1996, OCLC) (co-author), *A Dictionary of Knowledge Organization* (2004, Guru Nanak Dev University, Amritsar, India), *The Theory and Practice of the Dewey Decimal Classification System* (2007, Chandos Publishing), *Users' Guide to the Sears List of Subject Headings* (Scarecrow Press, 2007) and the *Manual of Practical Colon Classification*, 5th edn (New Delhi: Ess Ess, 2010) in addition to more than 100 articles published in Indian and foreign journals. As well as other collaborators he has worked with two successive editors of the DDC, and for the last two decades has been a member of the Editorial Advisory Board of *Knowledge Organization*. Recently the author was appointed to the Advisory Board of the UDC Consortium (based in The Hague, Netherlands).

The author may be contacted via the publishers.

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1

A brief history of the Dewey Decimal Classification

Abstract: This chapter outlines the history of the DDC since its conception in 1873 which worked towards its first publication in 1876. Now in its 23rd edition (published in 2011); the DDC describes the mechanism and disadvantages of 'fixed location' classification systems prevalent before Melvil Dewey. In addition this chapter will review the features and changes in all previous editions, in chronological order, detailing their respective editors. Finally, the history and features of the abridged, school and the electronic editions of the system will be examined, and will highlight the DDC's major contribution to the science and art of classification – proving that it is the mother of all modern library classification systems.

Key words: *Abridged Dewey*, Dewey Decimal Classification (history), Dewey for schools, editions of the DDC, fixed location systems, modern library classifications, online classification, *WebDewey*.

In the aftermath of the nineteenth-century industrial revolution came the rise of capitalism, democracy and expansion of education; books and libraries began to be looked upon as instruments of social change. Democratised libraries were thrown open to all sections of society. To meet the new challenge and fulfil the expectations of a much aware society, libraries underwent many changes. Open access to the collection was introduced, thus allowing readers to browse

freely through stacks of books. This change required more scientific and efficient methods for the cataloguing, storage, location and re-shelving of books than had been practised up to that point in time.

The library classification systems – in fact the methods for arranging books – prevalent till the last quarter of the nineteenth century are now called 'fixed location systems'. These were so styled because though items in a collection were gathered into broad subject categories their location was fixed on the shelves until the next reclassification of the library. In such systems items were arranged according to their accession number within broad classes. For instance, say that Q represented physics, then Q2.3.14 would be the fourteenth book on the third shelf of the second book case for the physics books. Thus the number a book bore and the location it ended up in were accidental; they did not take into account the internal relationships of physics. This caused many difficulties. For instance, when the space allotted to physics was filled, new books had to be placed elsewhere (thus breaking the subject grouping), or a range located elsewhere in the library could be dedicated to physics, or the nearest range occupied by books of some other subject would have to be vacated, which would require giving new numbers to all the books shifted. Thus it was a problem of hospitality, to use modern terminology.

When Melvil Dewey (1851–1931) became a student assistant in the Amherst College Library in 1870, he was confronted with the problems attendant upon fixed location systems. His economizing mind hated the wastage and ordeal of reclassifying books. He turned to devising a notation that could secure subject collocation forever without ever having to reclassify. His arrangement was to be by subject, of course. Here there was no problem, as there were many ways to organise knowledge and several were in vogue. The problem was to discover a device that would mechanise such a system and locate the appropriate

place for a new book without disturbing other books on the shelves. The malady had been diagnosed, and Dewey knew that a cure was near. The problem possessed him day in, day out. He visited many American libraries (especially in New England and New York) in search of a solution, corresponded with many people and experimented with different kinds of notation. An elegant solution occurred to him early in 1873, not at his desk but in a church on a Sunday morning. Dewey recounted the event half a century later:

> For months I dreamd night and day that there must be somewhere a satisfactory solution. In the future wer thousands of libraries, most of them in charje of those with little skil or training. The first essential of the solution must be the greatest possible simplicity. The proverb said 'simple as a, b, c,' but still simpler than that was 1, 2, 3. After months of study, one Sunday during a long sermon by Pres. Stearns, while I lookt steadfastly at him without hearing a word, my mind absorbed in the vital problem, the solution flasht over me so that I jumpt in my seat and came very near shouting 'Eureka'! It was to get absolute simplicity by using the simplest known symbols, the arabic numerals as decimals, with the ordinary significance of nought, to number a classification of all human knowledge in print; this supplemented by the next simplest known symbols, a, b, c, indexing all heds of the tables so that it would be easier to use a classification with 1000 heds so keyd than to use the ordinary 30 or 40 heds which one had to study carefully before using (Dewey, 1920 – original simplified spellings have been retained).

On 8 May 1873, Dewey (then 21 years old) presented his idea to the Amherst College Library Committee, won its approval and set out to develop a classification for use by the students and faculty of the College. The organisation of knowledge that he chose to use was devised by William Torrey Harris for the St Louis Public School Library catalogue.

Dewey had invented a system that was mechanical, ductile and capable of arranging books according to their contents. Thus he had relieved book classification from the shackles of a purely arbitrary and accidental notation and saved his fellow librarians much labour and frustration. But beyond this, he had instigated a new era of bibliographic classification.

The scheme was applied to the library of Amherst College, and later published anonymously in 1876 under the title *A Classification and Subject Index for Cataloging and Arranging the Books and Pamphlets of a Library*. The booklet consisted of 44 pages, including the list of 889 three-digit numbers, introduction and the index. Dewey saw to it that several hundred copies were printed and distributed to strategic places. It received wide publicity in the same year when specimen classes and an even longer introduction were published in *Public Libraries in the United States* by the US Bureau of Education as a volume on the state of the art of librarianship intended to be available at the Philadelphia Conference of Librarians to be held that year. It is inevitable that he discussed the classification with the conference participants. Acclaim was instantaneous, though some feared it to be too excessively detailed to be useful to libraries. It was discussed again at the International Conference of Librarians held in London in 1877 although it would be a while before the British embraced the DDC.

As we have seen, the classification of books was mainly by subject before Dewey, and Dewey had borrowed an already existing system. A type of decimal notation was also being applied in some libraries. Even so, what Dewey did was new, fresh and marked a clean break with the past. Over and above the subject arrangement, the Indo-Arabic numerals used as decimal fractions to systematically mark the contents of books provided many far-reaching and unintended advantages. Besides providing infinite (always needed)

hospitality to new books and new subjects, the notation also depicted the hierarchy of subjects. The index of subject headings provided at the end of the First Edition has evolved into what is now known as the 'relative index', a tool that is almost as large as the schedules and indispensable for classifiers. Classification by discipline, depiction of hierarchy of subjects, provision of infinite hospitality and the relative index are considered to be Dewey's main and revolutionary contributions to library classification.

The Second Edition, entitled *Decimal Classification and Relative Index*, appeared in 1885. W.S. Biscoe (1853–1933), who had followed Dewey to Columbia College, assisted in its development. This edition was copyrighted by the Library Bureau, a library supply company founded primarily by Dewey in 1882. It was an important edition in many respects. In the schedules it was more than 11 times larger than the First Edition as far as the number of pages were concerned; it was much larger than that as far as printed numbers and numbers made possible by synthesis were concerned. Conceptually, it was hundreds of times larger. It demonstrated for the first time the potential of a notation composed of decimal fractions by extending numbers beyond three digits.

The Second Edition contained many changes. To ward off fear among librarians that the scheme was unstable and that each new edition might entail reclassification (thus displaying no net gain over fixed location systems), Dewey promised in the introduction that the numbers and their meanings were linked forever. Henceforth there would be no changes in the existing numbers, only numbers added for new subjects. The promise relieved classifiers and was the basis of an important policy, the well-known *integrity of numbers* policy, the ghost of which haunted the revision of the first 14 editions and is still felt. It continues to influence every revision, and is a weighty

consideration though not the overriding one. Keeping pace with knowledge is now the transcendent policy.

On the average 23 editions of the DDC have appeared at irregular intervals. In the early years the date of publication was based on when the previous edition ran out. Table 1.1 provides a thumbnail publishing history of the DDC.

While Dewey was alive he personally oversaw editorial production and controlled money matters. To be sure, a formal editor developed the DDC, dotting the i's and curling the q's. After the death of Dewey in 1931 the Thirteenth Edition was published in 1932 posthumously. By the Fourteenth Edition (1942) the growth had become lopsided and uneven, providing too little for some classes and too much for others; it was so large that many libraries not needing such detail began to complain in earnest. It was decided to bring out a streamlined edition. The Fifteenth Edition was contemplated as the 'Standard Edition'; it was intended for a collection of any size up to 200,000 documents; all classes were to be evenly developed and in a stable order. It appeared in 1951; it had been edited by Milton J. Ferguson after Esther Potter and her assistants at the Library of Congress had proved incapable of concluding the edition. Though an elegant publication it was worse than a failure: it was a disaster. It was reduced to one-tenth the conceptual size of its predecessor. In a spurt of modernisation the integrity of numbers policy was grossly violated. Relocations abounded – a thousand at least; synthesis of numbers, except by form divisions, was totally absent (a history or geography for most of the world could not have a DDC number built for it!).

It was the first real revision of the DDC since 1885, but it was not what librarians wanted. Sensing the failure, Forest Press hurried a revised Fifteenth Edition into print, but most of the revision occurred in the beefed-up index that replaced the unbelievably bad index that was in the Standard Edition (and

Table 1.1 A brief history on the publication of the Dewey Decimal Classification System

Edition	*Date*	*Pages*	*Copies*	*Editor*
1	1876	44	1000	Melvil Dewey
2	1885	314	500	Melvil Dewey and W.S. Biscoe
3	1888	416	500	Melvil Dewey and W.S. Biscoe
4	1891	466	1000	Evelyn May Seymour
5	1894	467	2000	Evelyn May Seymour
6	1899	511	7600	Evelyn May Seymour
7	1911	792	2000	Evelyn May Seymour
8	1913	850	2000	Evelyn May Seymour
9	1915	856	3000	Evelyn May Seymour
10	1919	940	4000	Evelyn May Seymour
11	1922	944	5000	Jennie Dorcas Fellows
12	1927	1243	9340	Jennie Dorcas Fellows
13	1932	1647	9750	Jennie Dorcas Fellows and M.W. Getchell
14	1942	1927	15,632	
15	1951	716	11,200	Milton J. Ferguson
15 Rev.	1952	927	11,200	Godfrey Dewey
16	1958	2439	11,045	Benjamin A. Custer and D. Haykin
17	1965	2153	38,677	Benjamin A. Custer
17	1967	2480	NA*	Benjamin A. Custer
18	1971	2718	NA*	Benjamin A. Custer
19	1979	3361	NA*	Benjamin A.Custer
20	1989	3378	NA*	John P. Comaromi
21	1996	4410	NA*	Joan S. Mitchell
22	2003	4076	NA*	Joan S. Mitchell
23	2011	4266	NA*	Joan S. Mitchell

* Information not available

which had been prepared by someone outside the DDC editorial office).

Reissuing the Fifteenth Edition in a revised version had used up a good deal of money and there was not enough to prepare the Sixteenth. To the aid of the DDC came the Library of Congress (LC), which agreed to support the production of the Sixteenth Edition provided (1) it could appoint the editor and (2) the Lake Placid Club Education Foundation would underwrite a reasonable amount of the editorial costs. This was agreed to, and David J. Haykin became the next editor of the DDC. He soon came into conflict with the Decimal Classification Section of the Library of Congress (where DDC numbers were assigned to LC cards), with the Editorial Policy Committee and with an advisory committee representing practising librarians since he was of the keeping-pace-with knowledge camp, but these groups were almost all solidly in the integrity-of-numbers camp. He was forced to resign in 1956, to be replaced by Benjamin A. Custer (1912–97). The eighth editor, though progressive by nature, was a diplomat by instinct and brought the Sixteenth Edition to conclusion in 1958 in the form that the integrity-of-numbers camp desired.

The Sixteenth Edition was in line with the Fourteenth, even though 45 per cent of the relocations made for the Fifteenth Edition were retained. Its size had grown to two volumes, the second volume containing the index and the table of form divisions. It continued the tradition begun in the Revised Fifteenth Edition of a binding colour that no other edition possessed: the Fifteenth Edition had been sea green, the Revised Fifteenth a grey blue, the Sixteenth brick red, the Seventeenth forest green, the Eighteenth bright blue, the Nineteenth grey with maroon cartouches, the Twentieth brick red, the Twenty-first blue and the Twenty-second green and black, and the Twenty-third maroon and black.

The Sixteenth Edition was important in many respects. It was

a confluence of conservative and progressive policies. Custer had preserved the best of the conservative spirit while at the same time accommodating the advances in knowledge by retaining half of the modernisations of the Fifteenth Edition and introducing the concept of the *phoenix schedule*. A phoenix schedule was a complete revision of an area, usually a division or several sections; the old schedule is removed and a new one instituted in its place retaining only the heading number; if a topic was at the same number in both editions, it was incidental. Phoenix schedules aimed at rectification of the schedules and tables in small but very potent doses, thus rendering the changes easily manageable. Since the Nineteenth Edition there have been no more than two phoenix schedules per edition. (What a phoenix may cover, however, varies considerably.) The phoenixes for the Nineteenth Edition were 301–307 Sociology and 324 The Political Process. The first phoenix schedules were made for 546 and 547 in Chemistry.

Another important feature was the increased provision for synthesis by means of the *divide like* device. And for the first time a serious attempt was made to reduce American bias in order to move toward internationalisation of the DDC. It was an edition much nearer to the elusive idea of the Standard Edition than the Standard Edition itself was, and it was a phenomenal success. Custer was well versed in classification theory, especially that of S.R. Ranganathan and the Classification Research Group (CRG), London. With his organisational capabilities and classification expertise, Custer proved to be the saviour of the DDC after the debacle of the Fifteenth Edition. Custer's work signalled the beginning of its systematic rebuilding.

The success of the Sixteenth Edition entrenched Custer on firm ground. The Seventeenth Edition published in 1965 kept up the policy of modernisation. Integrity of numbers was placed on a back burner, and 150 Psychology was introduced as the

phoenix schedule. But much more important were the facilities made available for synthesis. This edition evinced the influence of the modern research in library classification done by S.R. Ranganathan (1892–1972) in India and by the Classification Research Group (established 1952) in London. For the first time the term 'facet' was used in the Introduction, and accordingly the scheme moved towards a more faceted nature. (Of course, the DDC had always employed facets; they were rudimentary and not so named, however.) The number of auxiliary tables increased to two, the second being the Area Table that had spun its substance from the history schedules of 930–990. Its index, however, did not meet the approval of the classifiers and soon a revised index was issued to pacify the restive librarians.

The Eighteenth Edition was published in 1971 in three volumes. Its size increased as a result of an increase in detail. It differed from the Seventeenth Edition in many respects, the most convenient being the replacement of *divide like* instructions by *add to* instructions. It was an achievement remembered fondly by Custer as he told of his 'sense of accomplishment on the day that two assistants and I brainstormed the old divide-like note into the new add-to note' (Custer, 1981: 148). Phoenix schedules were introduced for 340 Law and 510 Mathematics. Most important of all, the number of auxiliary tables was increased to seven. It was another step toward more faceted and full bibliographical classification. The tables were not new in substance but had been elaborately precipitated from some corresponding portions of the schedules. The new tables multiplied enormously the hospitality of the scheme and made number-building somewhat more mechanical and easier. Their use, however, was conditional and demand was made for their free use.

The requests were answered in part in the Nineteenth Edition (1979). It was the last edition edited by Custer, who retired in February 1980 with the title editor emeritus. The Nineteenth

Edition did not have much that was new in it: 301–307 Sociology was redone completely at numbers that had been vacant for several decades; the old 324 and 329 were combined to form the totally revised 324 The Political Process. The area number for Great Britain as a whole was shifted from 42 to 41, but that was merely recording a practice that had begun several years earlier when the new area tables for Great Britain were published in *DC&* (*Decimal Classification, Additions, Notes, Decisions*), 3: 3/5 in 1974. In 1982 a more detailed version of the 301–307 schedule was issued in response to criticism from the field that the schedule was too sparse and too sexist. An important innovation was the introduction of tables of precedence of classes here and there for deciding the preference of one facet over others in case a co-extensive class number was not possible. It proved a great aid in inter-indexer consistency.

A landmark for consistent DDC application practice came in 1982 with the publication by Forest Press of the *Manual on the Use of the Dewey Decimal Classification: Edition 19*, prepared by John P. Comaromi (the editor since February 1980) and his editorial team and classification staff. The manual explained the interpretations made by the staff of the Decimal Classification Division. Since the Sixteenth Edition no guide had been available, and the manual provided a far fuller explanation of the Library of Congress Decimal Classification Division (now Dewey Section) practice than has ever been published. Its widespread use provided more consistency and uniformity in the use of the DDC throughout the world. From the Twentieth Edition the manual became a part of the DDC itself.

The Nineteenth Edition was produced for the first time by computerised photocomposition. From the print tapes a computerised editorial support system (ESS) developed by Inforonics Inc. facilitated future revisions and editing. The

Twentieth Edition was published in 1989 by Comaromi and his editorial staff. Comaromi (1937–91) had been associated with the DDC in several capacities: he wrote the first full history of the DDC (1976), was the principal investigator in the Survey of the Use of the DDC in the United States and Canada (1974), was a member of the Editorial Policy Committee from 1973 to 1980 (its chairman for the last four years of his tenure), was a teacher of cataloguing and classification for 15 years, and became the editor of the DDC in February 1980 as the obvious choice. He had deep insights into the theory of knowledge organisation and users' needs for accessing knowledge in libraries. He died prematurely in November 1991 soon after the work on the Twenty-first Edition had begun and with him died many ideas and programmes to make DDC more scientific and user oriented.

The Twentieth Edition contained phoenix schedules for 780 Music prepared by two British experts Russell Sweeny and John Clews. It also incorporated the schedule for 004–006 Data Processing and Computer Science which had earlier been published as a separate fascicule. In the tables Table 3 was again split into three: T3A, T3B, T3C, which further eased number-building in the complex area of literature.

The Twentieth Edition (1989) set many trends. In July 1988 the Forest Press (incorporated 1932) was acquired by the Online Computer Library Center (OCLC), Dublin, Ohio, the largest ever bibliographic utility. The new owner ushered in an era of prosperity, research and innovations. It was a perfect match. 'OCLC provided Forest Press with the resources and skills needed to bring the DDC into an electronic era. Forest Press brought to OCLC the most widely used knowledge organisation system in the world,' recounted Peter Paulson (1928–2006), the Executive Director (1985–98) of Forest Press in an interview (Paulson, 1993).[1] The print edition, for the first time comprising four volumes (the Volume 2 schedule

was split into two), was the first to be edited and produced by the online editorial support system (ESS) outsourced from the private company Inforonics Inc. in 1984. It thus materialised the dream Pauline Atherton Cochrane and John Comaromi had of using computers to edit and operate the DDC. The pioneering and successful studies were done on the DDC tapes by Karen Markey, a student of Professor Cochrane. The edition is a database of the entire contents of the DDC system and is used to produce future editions and a variety of other products. By eliminating the clerical labour in editing it has reduced the production period from two years to six months.

John Comaromi, who was endowed with deep insights into the theory of classification, will be remembered for his fruitful efforts to bring simplification and ease of use to the DDC. The text improved in elegance, and the system in operation. Throughout more multilevel summaries were introduced in dense areas of the schedules and tables. Under each entry more detailed definitional and instructional notes were provided. The rewritten editor's instructions were simple and clear. Significant simplification was achieved by trimming the index to 730 pages from the 1216 found in the Nineteenth Edition without impairing its efficiency. All the *see* references were replaced by direct entries. It had 10 per cent more entries in 40 per cent less space. User convenience and efficiency were its hallmark achievements.

Another milestone in the history of the DDC was the release of the electronic version of the Twentieth Edition in 1993 on a CD titled Electronic Dewey. It contained schedules, tables, index and manual searchable by words or phrases, numbers and Boolean operations. An entry also showed hierarchy and frequently used LC subject headings associated with that Dewey number along with a sample bibliographic record. It was the first electronic version of any standard classification available commercially.

After the premature death of John Comaromi in November 1991, the new editor Joan S. Mitchell joined in April 1993 ('Dewey gets a new editor', 1993). Prior to this she was director of Educational Technology at Carnegie Mellon University and had held positions at AT&T Bell Laboratories and Hewlett-Packard. She joined the Dewey family in 1985 as a member of the Decimal Classification Editorial Policy Committee (DCEPC), eventually becoming its chairperson from January 1992 until her appointment as editor from which position she retired in January 2013. The Twenty-first Edition was released in July 1996 simultaneously in traditional print version (in four volumes) and CD-ROM version later renamed *Dewey for Windows (DfW)*. The CD version was then discontinued. It made full use of IT in its revision and interaction between DCEPC members. The newsletter *DC&* in print form was discontinued in favour of the electronic version on the Dewey webpage at *http://www.oclc.org/dewey* The new edition continued the simplification process set forth in the previous. The completely revised classes were 296 Judaism, 297 Islam, 350–354 Public Administration, 370 Education and 560–690 Life Sciences. A commendable effort had been made to reduce the Christian bias in religion by vacating 200–209 of its Christian contents to accommodate comparative religions. US bias was reduced in the terminology and structure of 350–354 Public Administration. The structure reflected modern thinking. The index was beefed up with 150 more pages over the previous edition. More terms and headings were added. Notes in the manual were also indexed to lead the classifiers to relevant discussions. In the index all the headings were de-inverted and for personal and geographic names AACR-2 specifications were followed. Its corresponding Abridged Thirteenth Edition was published the following year in 1997 both in print and electronic versions. It was the true abridgement in one volume of the Twenty-first Edition. The

abridged *DfW* was a Microsoft Windows-based LAN-compatible version endowed with many more facilities in searching and use.

The Twenty-second Edition was released in September 2003, though the electronic version now named *WebDewey* was released on schedule in July 2003. This edition, which marked two consecutive editions by Joan S. Mitchell, can safely be termed a child of network technology and reflects progress made in understanding users' approaches to the system. The revision received vital input from a commissioned survey of DDC use in the USA, UK and Australia conducted by George D'Elia. Some experts were outsourced and editors of other knowledge organisation systems, namely Dr Joseph Miller (*Sears List*) and Professor Ia C. McIlwaine (UDC), were also associated.

Table 7 was abrogated shifting its contents to T1–08 and the schedules 001–999. The manual was shifted to Volume 1, transferring parts of its notes to their respective entries in the schedules, thus adding to reference convenience. The manual is now clearer. Its flow charts, built-in numbers and *see also* references are of great help to the classifier.

Unlike the previous edition there was not any drastic revision, though 004–006 Data Processing had been updated. In 200 Religion, Christian bias was reduced further, while 341 International Law became Law of Nations. Mathematics (earlier completely revised in the Eighteenth Edition 1971) got substantial updates. Numerical Analysis, earlier a part of 515, was upgraded and shifted to 518. Dispersed aspects of Analytical Chemistry got converged at 543.1–543.8. Headings for 610 and 640 were slightly modified to reflect their modern scope.

In Table 5 the term *racial* was removed for the sake of political correctness. The Twenty-second Edition, the first of the millennium, did keep pace with the fast-expanding universe

of knowledge and changing information environment to map and organise it, and more.

The Twenty-third Edition (May 2011), last under Joan S. Mitchell's editorship, continued with changes highlighted by DDC 22 but could not incorporate them. Nevertheless it brought minimal changes covering global changes in the areas of computer science, medicine, geography, lifestyle trends and geographic divisions, religion (Islam and Orthodox Christianity) law, education, medicine and health, food and clothing, graphic arts, cinematography and groups of people. The relative index was incorporated with the latest built numbers. Structural changes were made to support machine display and classifier efficiency. The edition claimed to be 'easier than ever'.

Over more than a century the scheme has undergone 23 revisions (though some editions were virtually reprints) ranging from a period of two to eleven years. In size it has grown from a mere booklet of 40-plus pages to a robust set of four volumes of 4000-plus pages, and from some 787 three-figure numbers to tens of thousands of numbers, some of which extend beyond 20 digits! The number of devices for synthesis and instructions for their use are so large that no one knows how many million useful DDC numbers can be composed. From an enumerative scheme of limited scope it has grown to be a sophisticated machine for number synthesis to organise the huge universe of information.

Since 1958 when the Sixteenth Edition was published, the scheme has begun to keep pace with growing knowledge and its structure. Over about a century and four decades of its existence it has been read, researched, applied, reviewed, commented upon, commended and censured. It has attracted more literature on it than any other classification scheme. It has enjoyed popularity among librarians in all continents of the globe: the sun never sets on it. In its long life, it has passed

through many phases both bright and gloomy. In the 1950s in the United States it was considered a dead classification with an epitaph ready for it. Some adherents switched over to the Library of Congress system. It has survived many attacks and storms. Not only has it undergone technical mutation, it has changed masters and widened its bibliographic role, too. Its story is full of adventures and human interest, and has a moral. If institutions are lengthened shadows of the persons who created them, the Dewey Decimal Classification has consistently reflected the personality of the man of ingenuity, vision and will who created it and, though dead, still guides it in many ways, the invincible Melville Louis Kossuth Dewey.

For a true and totally comprehensive history of Dewey's classification it is necessary to study the whole history of bibliographical classification. It inaugurated the modern era of library classification. Whatever form, shape and role the classification schemes of the future may take, the DDC will be there in whole or part. Dewey's invention of decimal notation, hierarchical classification by discipline and the relative index are enduring contributions to the science and art of library classification.

Appendix: history of other versions of the DDC

Abridged DDC

The origin of the abridged edition of the Dewey system goes back to 1894 when an outline of 192 pages based on the full Fifth Edition (1894) was issued for small public and school libraries of North America. The new editions of this abridged version were issued irregularly as and when any need arose. The Second Abridged Edition (1912) was based on the full Seventh

Edition (1911) and the Third Abridged Edition (1921) was based on the Tenth Edition (1919). The Fourth Abridged Edition was issued in 1929 after the full Twelfth Edition (1927). Since then abridged revised editions have appeared regularly following closely (sometimes simultaneously with) the publication of the new full edition.

In the beginning an abridged edition was not a strict abridgement but a close adaptation of the then current edition. That created problems of compatibility between the abridged and its parent full edition and in the availing of centralised cataloguing services by the users of abridged editions. The Abridged Sixth to Ninth Editions (1945/1953/1959/1965) were truly abridged from the Fourteenth (1942), Fifteenth (1952), Sixteenth (1958) and Seventeenth (1965) unabridged editions, respectively. The Abridged Tenth Edition (1971) again was not a strict and literal abridgement of the full Eighteenth Edition (1971). It was argued by the editors that an adapted edition was better suited to the needs of small libraries. In justification of the policy, this was mentioned (Abridged Tenth Edition, p. 1.):

> The present abridged edition in some places presents different classification policies and slightly different numbers from those in Edition 18 ... Recent abridged editions have been developed from the respective full editions upon which each was based on the premise that all libraries will grow in size indefinitely and that therefore, even the smallest library using the abridged Dewey should be able, as it grows, to expand and deepen its classification simply by lengthening the class number used .... The present edition abandons that position, and is addressed to thousands of general libraries that have no expectations of ever growing very big. It is not, therefore, in the strictest sense an abridgement of the full 18th edition, but a close adaptation of it.

Following protests and the realisation of the genuine

problems caused in the use of centralized cataloguing services the old policy of true abridgement of the corresponding full edition has been restored. Despite this, the Abridged Eleventh Edition (1979) differed slightly from the parental Nineteenth Edition (1979), especially in the use of multiple zeros for adding standard subdivisions. The Abridged Twelfth through Fifteenth Editions (1990/1997/2004//2012) are indeed true abridgements. Now the two versions are so compatible that as small libraries grow the abridged numbers can easily be expanded to full numbers as in the unabridged version by simply adding digits to the right of the class number.

DDC abridged versions, which are always single volumes, comprise an introduction, schedules, only four tables (namely 1, 2, 3 and 6) and index. It has shorter numbers (normally up to two digits beyond the dot) which are easy to remember and can easily be written on the spine of the document for shelving. Beside this, it is less expensive. In brief, it is efficient for a collection up to 20,000 books in a school or public library, and makes a good tool for teaching DDC. It is also used in subject headings for children, and also provides suggested class numbers to the headings in the celebrated *Sears List of Subject Headings*. The latter being in alphabetical order can also serve as a simplified index to DDC schedules. Since the last four editions, the growth of abridged editions has remained quite restrained, as is clear from Table 1.2.

These true abridgements, compatible with unabridged editions, are prepared from the full DDC database under the guidance of subcommittees comprising the ALA Subject Analysis Committee and the DC Committee of the Chartered Institute of Library and Information Professionals (CILIP). Electronic versions of abridged editions have been available since 1996. The abridged *WebDewey* 15 corresponds to the printed single-volume *Abridged Dewey 15* (2012).

Table 1.2 Growth of the Abridged Edition

Abridged Edition	*Total pages*	*Total pages of corresponding unabridged edition*	*%*
1 (1894)	192	471 (DDC-5, 1894)	41
2 (1912)	199	779 (DDC-7, 1911)	26
3 (1921)	184	940 (DDC-10, 1919)	20
4 (1929)	184	1234 (DDC-12, 1927)	15
5 (1936)	196	1647 (DDC-13, 1932)	12
6 (1945)	343	1927 (DDC-14, 1942)	18
7 (1953)	315	927 (DDC-15, 1952)	34
8 (1959)	495	2439 (DDC-16, 1958)	20
9 (1965)	594	2153 (DDC-17, 1965)	28
10 (1971)	529	2718 (DDC-18, 1971)	20
11 (1979)	618	3385 (DDC-19, 1979)	18
12 (1990)	857	3388 (DDC-20, 1989)	25
13 (1997)	1020	4126 (DDC-21, 1996)	25
14 (2004)	1109	4076 (DDC-22, 2003)	27
15 (2012)	1295	4266 DDC-23 (2011)	30

Dewey for schools

The *Abridged DDC* is too large a version for small public and elementary school libraries. Therefore, to meet the classificatory needs of school libraries in the UK, the first school version based on the Eighth Abridged Edition was co-published in 1961 by the Forest Press and the School Library Association of the UK. Its success prompted the second (1968) and third (1977) editions. Since then it has secured a safe niche in DDC history. The

Fourth Edition (1986) was an international edition termed the British and International Edition. The opportunity was taken to expand the scope of the book to secondary school and junior college libraries. The International Edition entails the reduction of the British bias to meet the needs of such libraries in English-speaking countries outside the British Isles. To become international, it had to shed some of its hitherto simplicity, as admitted by the editor (Section 3.4, p. 4). It is forewarned that the scheme is not designed to be used directly by younger readers. They will essentially be needing the help of trained staff to interpret the schedules. Though the British bias of the first three editions has been reduced the fundamental bias at its core – the WASPish bias – still remains in the genes of this 'baby' (as it is nicknamed) of the DDC family. However, for more than two decades nothing has been heard on this score. However, a differently named Primary School Classification Scheme (2004) claimed to be based on the DDC was made available by the SLA on a CD-ROM to its members.

Electronic versions

The role of classification in organising and accessing databases and e-information was recognised far back in the 1960s but it took time to recognise the role of computers in designing or editing classification systems themselves. In the early 1980s, encouraged by Peter Paulson, executive director of Forest Press, Pauline A. Cochrane and the DDC editor John Comaromi considered the feasibility of an online DDC as an end product. At that time the DDC was already available as a machine-readable database from which the Nineteenth Edition had been printed. Later Karen Markey carried out successful research in this area which led to the commissioning of Inforonics Inc. by Forest Press in 1984 to develop an online

editorial support system for the DDC. Ultimately called the ESS, it was successfully used in editing the Twentieth Edition (1989). The acquisition by the OCLC of Forest Press in 1988 inaugurated an era of activated research in electronic products and organising hypermedia, bringing the computer resources and skills of the OCLC to the most popular knowledge organisation tool. After experiments and field-testing in January 1992 the first end-user electronic version of the DDC called Electronic Dewey was issued on a CD-ROM in 1993. It was an updated DOS-based database of the Twentieth Edition's (1989) schedules, tables, index and manual for use on a standalone microcomputer and provided advanced online search. It could be searched by key words or phrases, subject headings, index terms and Boolean operators. Captions could be browsed and hierarchies could be displayed. An entry also showed frequently used LC subject headings appropriate to that Dewey number along with sample bibliographic records, and offered a personal notepad to record local decisions.

The electronic version of the Twenty-first Edition named *Dewey for Windows (DfW)* developed at the OCLC Office of Research was released simultaneously with the traditional print version (in four volumes) in 1996. It was a Microsoft Windows-based LAN-compatible version on a CD-ROM which provided a Windows interface. The ESS database was used to produce both the print and CD-ROM format, in full and abridged versions.

This was an annually updated enhanced database of an improved version of Electronic Dewey with augmented index and had many improved facilities to search, browse and display. The electronic edition based on the Twenty-second Edition termed *WebDewey* was available only on the internet to bona fide annually licensed users. It is updated quarterly. The CD version was withdrawn, perhaps as a result of unresolved piracy problems. *WebDewey* has many additional features,

although so far there is no provision for any expert system for automatic synthesis of numbers following *add to* instructions.

Abridged WebDewey is an enhanced web-accessible version of *Abridged Dewey*. *WebDewey* includes all editorial updates approved since the publication of the print edition, LC subject headings that have been intellectually mapped to the Dewey numbers and mapping between Dewey numbers and subject headings.

Notes

1. Peter J. Paulson (1928–2006) joined the Forest Press in 1985 and served as executive director till his retirement in 1998. A tireless promoter of the worldwide use of the DDC he strongly supported Dewey translation in many languages of the world. He was instrumental in preparing the DDC for the electronic age.

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2

Governance and revision of the DDC

Abstract: This chapter details the governance and administration of the Dewey system with specific regard to the organisation that owns the system. Historical perspectives, the various joint committees and other institutions involved in deciding policies are presented, allowing for the current setup and machinery that is used within the revision and maintenance process. This chapter will also focus on the role of the DC Editorial Policy Committee, describes the organisational status and functions of the Dewey Section of the Library of Congress for assigning Dewey numbers to books acquired globally by the LC, and the role of various groups such as the European Dewey Users Group (EDUG) and the International Dewey Users Meeting. Finally, the method for major and minor revisions with help of software ESS 4.0 (the official program for implementing the revised edition) is highlighted.

Key words: DCEPC, Dewey Section/LC, editorial process, EDUG, ESS 4.0, governance of the DDC, revision of the DDC.

The Dewey Decimal Classification is not merely a tool, it is an established institution of the library profession. Without it, it is difficult to envisage the face of our discipline. Indeed, this institution has survived mostly on its organisational strength. R.K. Olding (1967) aptly wrote some time ago that: 'Its next greatest asset is that Dewey provided for a self-supporting

agency charged with the responsibility of perpetuating his classification by keeping it as up-to-date as possible.'

During his life Melvil Dewey oversaw everything like a dictator. Nevertheless, he never hesitated to enlist the help of experts, employing one or more of his trusted lieutenants to be 'editor' under his supervision – first W.S. Biscoe, then Evelyn May Seymour and then Jennie Dorcas Fellows. His only aim was to make the scheme more useful to the profession. The DDC is indeed the 'lengthening shadow' of its creator. The only corporate body involved after its first publication by the Amherst College Library Committee was the Library Bureau—a library supply company established by Melvil Dewey in 1882. The Bureau published the DDC and held its copyright from 1922 to 1958. The first external corporate body that tried to influence the course of the DDC was constituted in 1916 by the American Library Association (ALA) as the 'Decimal Classification Advisory Committee' to represent the interests of the profession. This advisory committee proved to be ineffective and was later dissolved. By 1931 the ALA had again become active to oversee the development of the scheme, resulting in the formation of the Advisory Committee in 1937. In 1922 the Lake Placid Club Foundation was chartered by New York State over to which Dewey signed all copyrights of the DDC. The Foundation was to publish the DDC and invest all the profits accruing from its sale for the betterment of the system. In 1933 Forest Press was incorporated as an organ of the Foundation to take over the publishing and marketing of the DDC. Forest Press has been very active in controlling the DDC. However, in 2003 Forest Press was retired by OCLC which had acquired it in July 1988 for a rumoured sum of US$3.8 million.

After the debacle of the Fifteenth Edition in 1951, the ALA set up a special Advisory Committee on the Decimal Classification to protect the interests of librarians. In 1953 it was given its present name, the Decimal Classification Editorial Policy

Committee (EPC), as a joint committee of the Foundation and the ALA. Now it is a ten-member international committee representing the ALA, the Library of Congress (LC), the OCLC and includes classification professionals from the UK, Canada, South Africa and Australia.

The administration of the DDC rests on three pillars: the DCEPC, the OCLC and the Library of Congress. It is further supported by international Dewey user groups.[1] In 1930 the LC started giving DDC numbers on its catalogue cards, a service which it had begun in 1901. Anticipating the service, the editorial office moved from the Lake Placid Club to the Library of Congress in 1927. It still remains there, and by an arrangement in 1953 the LC became directly involved in editing the DDC.

On becoming deeply alarmed by the failure of the Fifteenth Edition the ALA recommended the Foundation to entrust the responsibility of editing the classification to an institution like the Library of Congress. It was no longer considered private property. The aim was to make the DDC responsive to the needs of American libraries. With the approval of the Foundation the Executive Board of the ALA Division of Cataloging and Classification met with Luther Evans, the Librarian of Congress, in April 1953. After discussions they reached an agreement signed in November 1953. Under the agreement the responsibility for publishing continued with the Foundation, while the editorial responsibility passed over to the LC. The editor and editorial staff were to be selected mutually by the two parties. Financially, Forest Press would pay differentially – as much as it could afford. Currently, two assistant editors are employees of the LC while the (chief) editor and one assistant editor are employed by the OCLC. Now all editorial expenses are borne by the financially sound OCLC.

After many mergers and name changes the Decimal Classification Division (DCD) under the headship of the

editor became a part of the Processing Division of the Library of Congress in 1968. The DCD is a small unit in the Cataloguing Directorate of the LC. Recently it has been renamed the Dewey Section which is a part of the General Division of the Library of Congress. The editor works as a principal technical authority under the advice of the DCEPC. The editor divides time between the OCLC office and the DC section of the LC in Washington. In December 1986 the dual job of the editor was split by appointing an independent chief of the Decimal Classification Division. The four assistant editors in the Dewey Section assign DDC numbers, at the rate of eight titles per hour, to more than 110,000 titles annually while the Section develops and maintains the DDC and other aids for applying it and assists others in its use.

Revising the classification

Any living and relevant classification system has to revise itself periodically, the need for revision being pretty self-evident. The various editions have appeared ranging from a span of two years between the Eighth (1913) and Ninth (1915) Editions to twelve years between the Sixth (1899) and Seventh Editions (1911). Now the frequency of revision seems to have settled at seven years, though the delayed 23rd edition appeared after eight years. In the beginning an edition was revised after all the copies were sold out, but a more legitimate reason for a new edition is to keep pace with the ever-growing volume of knowledge. A new edition:

- accommodates new subjects at their proper places (or at least tries to do so);

- expands the existing numbers wherever required and relocates wrongly placed subjects to their logical places;
- removes or reduces in detail obsolete subjects; and
- upgrades some sidelined subjects to give them due status and space. Above all terminology is updated to keep pace with the international usage of English language.

Some genuine work has been done to serve the international community by reducing the Christian and American bias and enhancing the position of some non-Western subjects. The last three editions support this claim. Above all every edition tries to assimilate new advances in the general theory of classification. This feature has become progressively more visible over the last few decades. Since the Seventeenth Edition more and more provisions have been made for number synthesis through facets, facet indicators, special tables, innovative devices and clear citation order. The editor's introduction is rewritten and simplified to make it more comprehensive and classifier friendly. Inter-indexer consistency is enhanced by providing more notes in the schedules, tables and manual. The relative index is always a little changed structurally, and new ideas are even experimented with to simplify it and make it more encompassing.

Responsibility of revision

The revision of the DDC is a continuous process. No sooner is the new edition released than work on the next starts without a pause. It begins with a planning retreat for the new edition. The DCEPC meets twice a year to consider closely the proposals for amendments and extensions submitted by the Dewey Section of the LC. In today's IT environment many more electronic

meetings are held nowadays. EPC members do not usually initiate any proposal though there is not actually a ban on this. During the preparation of the Twenty-second Edition the EPC went into overdrive. To take one example, on the EPC's own initiative and proposal the notes in the manual were shortened and simplified by the editors. The EPC consulted many reviewers and outside experts from different sectors and constituencies and listened to presentations from invited experts on knowledge organisation like Francis Miksa and Nancy Williamson. Again on its recommendation, pretesting some of the revised schedules was organised in different libraries in England, Asia and the US.

The Dewey Section is the executive organ which prepares draft proposals in its office at the Library of Congress. Not only does the Section draft the proposals and amended schedules it is also its single largest user. Here the Dewey assistant editors under the supervision of the Section chief classify more than 110,000 titles every year in all subjects and languages for use in MARC records and CIP data. Nowadays the editors search the Internet and databases to discover current trends and literary warrant in areas of revision, consult other knowledge organisation tools in that area and get clues from the weekly list of Library of Congress Subject Headings. The sources mentioned here are not exhaustive, simply illustrative. Literary warrant enables the editors to take a close note of current trends in every branch of knowledge. The literary warrant principle ensures that no number exists in the DDC for a topic unless there are several publications. The Section is thus a well-equipped laboratory – an enviable advantage and opportunity available to no other classification system except the Library of Congress.

A new edition is prepared on the basis of the preceding one and assimilation of all separate publications and updates that had been issued since the previous edition. The publications

were the result of the policy of continuous revision that the erstwhile Forest Press put out after publication of the Nineteenth Edition (1979). Two such publications 301–307 Sociology and 044–066 Data Processing and Computer Science were subsumed in the Twentieth Edition. For a long time no separate publications have been issued as the *WebDewey* is updated quarterly. Formal and informal criticism of the previous editions is considered seriously. The major guide for revision is the experience gained at the Section in using the edition. For this purpose it maintains a DDC shelflist, a file of entries for most of the publications classified by the current edition and arranged 001–999. The shelflist is a sure guide to suggest where revision, expansion or reduction should take place. Drafts of the new edition are prepared by the Section where DDC experts classify books and other publications under the guidance of the editor. The chief editor is assisted by assistant editors, and occasionally a DDC specialist well versed in the topic is brought in from outside. Now the EDUG and the International Dewey Users Meeting held annually in conjunction with IFLA's world library congress make their valuable input.

Major revisions

The degree of revision a part of the classification is to undergo is a policy matter. It is therefore decided by the OCLC on the approval of the DCEPC. The degree of expansion, which is subject to literature constraints, is a technical question. It is decided by the editors. What is to receive complete revision is determined by the EPC and the OCLC. The most important and perilous part of the revision process is the complete revision of a division (e.g., 510), a discipline (e.g., 560–590) or section (e.g., 297). Formerly called a phoenix schedule, it is the total

revision of a small part of the schedule with little or no reference to the previous schedule except for the base number. This was a new concept of revision introduced by Benjamin Custer for the first time in the Sixteenth Edition. Now the term 'phoenix' has been dropped in favour of 'complete revision', though the concept and the process continue in the same way. In such a revision of a division, all sections and their subdivisions are usually given new meanings. In normal revisions, a class number stripped of its meaning is kept vacant for several editions to avoid synonymous class numbers – which defeat the purpose of any classification. Termed 'starvation policy' in the UDC, it is disregarded in these complete revisions. The vacated numbers are reused immediately for new topics. The availability of the notation thus freed up provides a good opportunity and facilitates total restructuring of that part.

This small but complete revision can be compared to a 100-metre race – running as fast as possible for a short distance. It is a way to overhaul the DDC in small but potent doses. Though this method throws to the winds the policy of integrity of numbers, it helps to keep pace with the growth of knowledge and, more importantly, with its restructuring to rectify previous mistakes. It is an instrument of compromise between the two opposing forces of modernisation and number integrity. Such schedules are only introduced when the existing treatment of a class in the DDC fails woefully to accommodate current knowledge: the subject order is out of tune with current thinking and details are lacking. In DDC 23 there is no such complete revision.

Methods for complete revision

The decision to make any drastic revision is announced far in advance of publication, sometimes one or two editions earlier,

to prepare the profession psychologically and administratively for the impending far-reaching change. Extensive deliberations over an extended period of time are made by EPC and OCLC members (earlier by the Forest Press Committee) to decide the part of the schedules and the auxiliary tables to be given a complete overhaul in the coming editions(s). It is an extensive task. New schedules are usually prepared by the Dewey Section, though some outside expert may be commissioned for the groundwork, as was the case with 780 Music prepared by Russell Sweeny.

Even at the preparatory stage a large number of librarians and scholars are consulted on general order and sticky points. For the revised schedule of 350–354 Public Administration (incorporated in the Twenty-second Edition) the then (UK) Library Association Decimal Classification Committee conducted a survey in 1983 to discover the preferences of librarians for the citation order. For the Twenty-second Edition, as already mentioned, George D'Elia (of the State University of New York (SUNY)) was commissioned to make a survey of DDC users in the USA, Canada, the UK and Australia. This international survey led to improvements in geographic areas, laws, political systems and parties, languages, literature, area table and historical periods. Before finally incorporating a major revision it is widely circulated for preview and criticism by subject experts and testing by the librarians using the DDC. For the Twenty-second Edition the Religion reschedule was tested at the Hong Kong Baptist University Library and the British Library, and Mathematics 510 was tested at two British university libraries.

Preliminary drafts are submitted to the EPC for examination, discussion and approval. At its biannual meetings the committee discusses in depth all aspects of the proposal and considers the desires of the worldwide user community. The EPC may approve or propose changes or may postpone

its decision to get more information and time for discussion. However, the final word lies with the OCLC, which is primarily concerned with publishing, marketing and administrative matters. Thus the preparation of a new edition not only involves scientific and political consensus, but also inputs from the various leaders of librarianship.

In the past the text of an edition used to be frozen two or three years before the actual date of its publication. But with a computerized editorial support system in place since 1986 this is reduced to the six months required for printing and binding. Today's fourth-generation ESS, based somewhat on the open source MARC Format for Classification Data (1991), is a much more enhanced version of the original, first used in 1986. In ESS 4.0 records for schedule and table numbers and manual records use the classification format, while records for the relative index headings and mapped headings use the authority format. The system enables the editorial staff in the Dewey Section and researchers at the OCLC to edit, update and study the classification database quickly and efficiently. It can also produce exhibits for advisory committee meetings and the layout for final printing.

The electronic edition may be released earlier. The print version is distributed by the OCLC and its network of commercial book distributors throughout the world. The product manager for the DDC (presently Libbie Crawford) manages the business operations of the DDC, which encompasses *WebDewey*, print production, translation agreements, licensing agreements for Dewey, and distribution around the world of the standard edition (meaning the full English edition) of the DDC. Distribution includes marketing and advertising. Also the product manager, along with the editor-in-chief, formulates long-term strategy for marketing the classification

Implementation of the new edition

Revision being a continuous process, the proposed and final changes are announced regularly. In the past this was achieved by means of the irregular periodical *Decimal Classification Additions, Notes and Decisions (DCAND)*, popularly known as *DC&*, which began in January 1959. With the launch of the website *http://www.oclc.org/dewey*, revisions and news about the DDC are now posted every quarter, and also brought to notice through the *OCLC Newsletter*. The OCLC website is a mine of information for Dewey users. Prerelease webinars are organised to highlight new changes. The Dewey blog posted by one of the editors also brings news and discusses pending changes. *WebDewey* is updated on an ongoing basis. *Dewey Decimal Classification News* is distributed twice a year at the ALA biannual conference and is also available on the Dewey homepage. The Dewey/OCLC stall at these ALA conferences brings new services and products to the notice of participants at what they call 'Dewey Breakfast Updates'. The quarterly *OCLC Newsletter* also includes news and features related to the scheme.

Revisions are both detested and feared by librarians when it comes to implementing them. That is why it is said that revision is a double-edged sword which cuts both ways: if you revise you die; if you do not, you surely die anyway. It is an offputting task. To help classifiers in switching over to the new edition, each new edition provides a ready reckoner giving new numbers for the previous numbers. In a computerised catalogue it is now a matter of keyboard commands. For manual libraries, Ranganathan's method of osmosis which suggests reclassification of documents only in active circulation is helpful in switching over to a new edition.

Notes

1. Dewey user groups. Though copyrighted in the US as a proprietary system and trademark of the OCLC the Dewey is *de facto* a world heritage. From the early beginning various library organisations have asserted their concerns for its maintenance and to give direction to its growth to serve not only the changing needs of libraries, but also the universe of knowledge organisation in general. The DDC proprietors have always sought the cooperation and formal involvement of library and information professionals. Now there are many formal and organised groups in place to contribute to its good health. Apart from the longstanding Dewey Committees of the American Library Association (ALA) and the United Kingdom's Chartered Institute of Library and Information Professionals (CILIP), the International Dewey Users Meeting (formally known as Dewey Translators' Meeting) started in 2003 at the IFLA World Library Conference in Berlin. Made up of between 40 and 50 members, including EDUG members, it is a forum to discuss a broad range of items of interest to DDC users especially translators. Its meetings are held annually on the sidelines of the IFLA general conference. The European Dewey Users Group (EDUG *www.slainte.org.uk/edug.index.htm*) established in 2007 works in partnership with the OCLC in the promotion of DDC use in Europe. It is a forum to exchange experiences with European users. It formulates proposal for submission to the DCEPC for use and translations of the Dewey in Europe. At the moment it has four active working groups for law, education, archives, and technical issues.

3

Introduction to the text in four volumes

Abstract: The layout of the print edition of the DDC in four volumes is described herein and the content of each volume is summarised. Volumes 1 through 4, over the course of their publication history follow a similar style of presentation, and include an introduction to the content and organisation of the knowledge; however, the description of the content and organisation of schedules were new additions to Volumes 2 and 3. This chapter will also present the content of entries and the content that comprises each of the four volumes. The importance of the manual presented in Volume 1 is also stated prior to the various types of notes appended to each entry being explained. Finally instructions for number-building and the addition of subdivisions from six auxiliary tables outline the role of dots and spaces in a class number.

Key words: auxiliary tables, entries, manual of DDC, number-building instructions, notes, print edition, schedules of the DDC, summaries of knowledge.

Since the Twentieth Edition (published 1989) the print versions of the DDC (full edition) have continued to be in four volumes. The four volumes of the Twenty-third Edition, forming a total of 4276 pages (the Twenty-second Edition had 4076) (including prefatory material) have been organised as follows:

- *Volume 1*. The first volume comprising lxxxv + 779 pages begins with the prefatory material by the chair of the DCEPC (pp. xi–xiii) and an 18-page section on 'New Features in Edition 23' (pp. xxi–xlii). The Introduction (pp. xliii–lxxi) to the DDC is a sort of operational manual including its theory and philosophy and has been further simplified in this edition. The Glossary of Terms and Concepts (pp. lxxiii–lxxxv) offers a brief explanation of the terms in the theory and preface of the DDC. The rest of the pages are devoted to the manual (pp. 5–175), six auxiliary tables (pp. 177–761) and a ready reckoner of relocated and discontinued numbers between the Twenty-second and Twenty-third Editions (pp. 763–779).

- *Volumes 2–3*. These two volumes are devoted to the schedules of classes. Volume 2, comprising xvi + 1291 pages, lists classes 001–599. The schedules are preceded by three major summaries, namely Ten Main Classes (First Summary), One Hundred Divisions (Second Summary) and One Thousand Sections (Third Summary). These summaries help to visualise at a glance the mapping and structure of the universe of knowledge or its offshoots as depicted in the DDC. In fact the summaries, both in theory and practice, have been so useful that the editors have carried summaries to lower levels (multilevel summaries) in the schedules and tables. Volume 3 of 1140 pages contains schedules of classes 600–999. The schedules are arranged in 001 to 999 numerical order, and the section number is always printed twice at the left and right top of every page as it is convenient to scan the schedules by class numbers. Schedules have been defined as: 'The series of numbers constituting the notation for the ten main DDC classes and all their subdivisions.' This is in fact a hierarchical, relational and detailed burgeoning of the Ten Main Classes. This may be called the *terra firma* of

the system, for to learn the practice of the DDC is to learn to operate it. The schedules are in the form of entries. The DDC Glossary defines an entry as a 'self-contained unit consisting of a number or span of numbers, a heading, and often one or more notes'. Each entry contains a class number on the left, and on its right is given the caption (i.e., the verbal content of the number). The subordination and coordination relations among the subjects are shown by the length of the class number on the left and the shifting of indention of the captions to the right. Under many of the class numbers there are a variety of explanatory and instructional notes. These notes are essential to assign and build a correct and consistent class number.

- *Volume 4*. The relative index (see Chapter 14).

Types of entries

All the approximately 30,000+ entries in the schedules may be divided into six categories.

1. Ordinary entries (current and to-be-used headings)
2. Unusable headings (not-to-be-used number)
3. Unassigned numbers: numbers without a heading
4. Optional entries: providing alternative numbers
5. Hook numbers[1]
6. Centred headings.

Ordinary entries

The majority of entries in the schedules are ordinary entries: a number with a corresponding heading which may or may not have notes or instructions. These are applied numbers.

Unusable headings

As a consequence of revision, a class may be relocated to some other place or discontinued. Such a part number is enclosed within square brackets. For example:

296[.06] Organisation and management [of Judaism]
Do not use; class in 296.6

(See also the sections on discontinued and relocation notes in this chapter.)

Unassigned numbers

A division or a section in whole may be empty of any meaning. Termed an unassigned number, it is enclosed in square brackets along with a note indicating the edition when it was last used or assigned any meaning. For example:

[476] [Unassigned]
Most recently used in Edition 18

It means that section 476 has remained vacant since the Nineteenth Edition. Some numbers have so far never been assigned, e.g. [009] [Never assigned]. There are some 86 vacant sections in the Twenty-third Edition.

Optional numbers

Some numbers in the schedules are optional giving a choice to libraries to use that or an alternative number given in such a type of entry.

Wherever another place for a subject is available, this is indicated with a note 'Option: Class with ...'. This is an option which is not used by the Dewey Section of the LC, the official laboratory of the scheme. But if it suits any individual library this option may be made use of. For example, under 016 Subject bibliographies and catalogues may be read: (Option: Class with the specific subject, plus notation 016 from Table 1, e.g. bibliographies of medicine 610.16). Some critics feel that in such options the value of a system as a tool of standardisation is eroded. Optional numbers are enclosed within parentheses. For instance, at '(848.99) French language literatures not requiring local emphasis', one finds a note that the use of this number is optional for libraries. Under such notes the official preference (i.e., the class number used by the Dewey Section of the LC) is also given. For example, after the instruction under (848.99), the official preference (i.e., 'Prefer 840–848 for all French language literatures') has also been indicated.

Hook number entries

Some numbers in the hierarchy of subdivisions have no specific meaning – a concise heading which could specifically mean a subject. Instead it could be a sort of peg on which many other classes could be hooked by following an instruction given there. These numbers have headings such as 'miscellaneous ...', 'others ...' or 'specific'. In chain-indexing such links give out unsought headings. For example:

265.9 Other acts (of Christian rites)

265.92 Consecration and dedications
265.94 Exorcism

The first is a hook number, and has only vague meaning. The other two specific numbers are hooked on it. However, this type of entry is of no practical consequence for classifiers. In fact it is a hospitality device to accommodate miscellaneous small topics.

Centred headings

Sometimes a subject, instead of being assigned a single class number, is spread over a span of numbers, the two terminal numbers being connected by an enrule. These centred headings or entries may occur at the section level or at its subdivisions. These are always given at the centre of the page, and on the left margin the symbol '>' indicates a centred heading:

>383–388 Communications and transportation
>384.1–384.6 Telecommunication

It is a clear breakdown of hierarchy to provide a larger space for expanding the number. Under such entries, a single class number is always indicated for comprehensive works on the topic. Under 384.1–384.6 may be read the instruction: 'Class comprehensive works [on telecommunication] in 384'. Hence the proper class number for telecommunication is 384. The device of centred headings is useful for the hospitality and brevity of notation.

Notes

The schedules and tables comprise entries. Each entry apart from number/notation and its corresponding verbal heading

in natural language (showing relative hierarchy by indentions) contains many types of notes to guide a classifier. These various types of notes help the classifier in understanding the officially intended interpretation of the heading with regard to what it should contain and what not. The ultimate aim is to achieve uniformity and consistency in applying the DDC system and provide some guidance in designing classified catalogues. There are in all 17 kinds of notes divided into four categories, as follows.

Scope and content notes

These include definitions and what should be classed under that entry.

Definition note

Such a note gives a brief but clear definition of the class. Only a few entries contain such a note (e.g., '*see* at 321.03 Empires and 139 Phrenology').

Scope note

This note states and illustrates the scope of a class. It limits the heading to the characteristics listed in the note. For example:

172.2	[Ethical] Duties of the state
321.04	Proposed regional and world unions
	Unitary or federal
658.042	Partnerships
	General and limited

Under 172.2 in the schedule can be found explicitly enumerated an array of duties that governments have towards their citizens.

The second example means that both unitary or federal unions are classed here. In the third example, only general and limited partnerships are allowed at number 658.042. That, of course, may be all that there is, in which case the scope note need not have been given. But if there were other kinds of partnerships, they would not be classed at this number.

Number built note

Some numbers are found synthesised in the schedules which the classifier could otherwise have done by following instructions. In such cases the source of the synthesised number is given. For example:

294.663 Founders of Sikhism: Number built according to instructions under 290

In addition there are also some more ready-made numbers in the schedules, especially the ten main classes synthesised with standard subdivisions (e.g., 603 Dictionaries, etc. of Technology).

Former heading note

In some cases, the number, its contents and meaning remain the same but its verbal heading is changed to be in tune with current terminology. In such cases the previous heading in given with the note 'Former heading: . . .'.

Variant name note

Synonymous terms are given in such notes, and these terms are also included in the relative index (e.g., 146.4 Positivism, or 641.865 4 Cookies).

Class here note

In an entry, sometimes some topics are enumerated preceded by the instruction 'Class here . . .'. As such topics are in fact generally broader than the class number, so they are to be placed there only for convenience. For example, under 343.08 Regulation of trade (Commerce), besides the inclusion note one reads the instruction: 'Class here commodity exchanges and exchange transactions'. The tenor of such notes is clear.

It also includes the note to place interdisciplinary and comprehensive works there.

Inclusion notes

These types of notes indicate some additional subtopics which are to be classed under that heading.

Including note

Some subtopics are a part of a given number though only temporarily. These are placed with the broader number because they do not possess their own number yet. They are given standing room. For example, 513.211 Addition contains the note: 'Including counting'. It means that counting is not essentially a part of addition, and yet it does not have a separate number of its own. Hence such a subject has been given standing room till it gets its own number. No standard subdivision is to be added to such included topics. Some entries may have two 'including notes', especially in the case of Taxonomy 570–590.

Cross reference notes

These notes refer in part or whole to some other number.

Class elsewhere note

These are in direct contrast to 'class here' notes. When a topic seemingly forming a part of a class belongs elsewhere, a note is given in the form: 'Class ... in ...'. For example, 181.12 Philosophy of Japan has a note 'Class Shinto philosophy in 181.09551'. This also includes the related note 'Class comprehensive works in ...' and 'Class interdisciplinary works in ...'.

See reference

When seemingly a part of a class is given an independent number then the classifiers are directed to that number. It begins with 'For ... see ...' (e.g., in 191 Philosophy of US and Canada, we find a note '*For Middle American and Mexican philosophy, see 199.72*' [italics in original]).

See also reference

This obviously refers to a related independent number for a comprehensive search. For example:

676.2845 Vulcanized and parchment papers
See also 685 for parchment prepared from the skin of an animal [italics in original]

Such references are given on a reciprocal basis as a similar note under 685 refers to 676.2845. In a classified catalogue 'see also' references may be prepared under both class numbers.

A 'see also' note may also refer to more than one class (e.g., 'See under 153 Conscious mental processes and intelligence').

Notes that explain changes or irregularities

Such notes are of a historical nature. They especially help classifiers who switch to the new edition from the previous one. These are as follows.

Revision note

If in the new edition a class is partially or completely revised a revision note is given under that class.

Discontinued number note

Apart from some numbers given in square brackets which have no subject meaning, numbers recently discontinued are also given in square brackets. Such discontinued numbers are invariably accompanied by a 'class elsewhere' note indicating the new number for that subject. For example:

343[.084] Marketing [trade law] – number discontinued; class in 343.08

clearly means that this specific number has been merged with its broader class 343.08 Law of Regulation of Commerce. Its purpose is to mark changes between two successive editions to help classifiers to switch from the old to the new edition.

Relocation note

When in a new edition, as a result of relocation, a subject, partially or wholly, gets a different number its previous number is also given at the new place. The former class

number is enclosed within square brackets with the prefix 'formerly'. For example:

720.475 Waste technology (Architecture)
[*formerly* 720.28]

But when a number is partially relocated then the newly independent number is also given indicating its previous place with a note '[*formerly also* . . .]'. For example:

720.1 Philosophy and theory of Architecture
[*formerly also* 721.01]

This is a brief history of the classification of this topic in the DDC related to this revision. It is given in the beginning of a drastically revised class and explains the extent of revision in the newly revised schedule.

Do not use note

This kind of instruction is used when the regular place of a standard subdivision is shifted wholly or partially to some other number. If a number is wholly shifted then such a number is enclosed in square brackets. Such entries begin with a caveat 'Do not use; class in . . .'. For example:

362[.09] History, geographic treatment, biography.
Do not use; class in 362.9

If it applies to a partial number then the number is not enclosed in square brackets, for example:

069.0288 Maintenance and repair of museums
Do not use for maintenance and repair of museum objects; class in 069.53

See manual note

The manual now shifted to Volume 1 (pp. 1–175) has become a vital part of the DDC system. Its importance in interpreting the correct and officially intended meaning of classes and notes in the schedules and tables cannot be gainsaid. But it is only to be referred to occasionally rather than read as a whole. Therefore in the schedules and tables classifiers are frequently referred to the relevant sections of the manual where it is arranged in T1/T6, 011–999 order. This note appears in the form '*See manual* at . . .'. There are many of these notes. Entries in the schedules and tables are frequently linked with the manual in Volume 1 of the Twenty-third Edition. This is not a cross reference but a sort of scope or discriminatory note for the guidance of the classifier referring to similar or analogous subjects. In the Twenty-first Edition most of the 'see manual' references were converted to 'see also' references in the schedules, thus the size of the manual got reduced for simplicity. For example, at 305.9 Occupational and Miscellaneous Social Groups, we find a reference '*See manual at 305.9 vs 305.5*'. (See also 'scope notes' and 'see also' reference notes).

Standard subdivisions are added . . . note

A new type of note clarifying explicitly the addition of a standard subdivision to a class number was introduced in the Twenty-first Edition (1996). It usually appears under a class number with a compound heading and explains to which part the standard subdivision, if needed, is to be added. For example:

636.73 Working and herding dogs
Standard subdivisions are added for working and herding dogs together, for working dogs alone

It is implied from this note that standard subdivisions cannot be added to 636.73 Herding dogs. Probably herding dogs will get an individual number in some future edition.

Number-building notes or instructions

This sort of note is central to the grammar of the DDC and the backbone of the synthetic apparatus in the system. Almost every class number in the DDC can be further extended whether there are immediate instructions or not. For example, the standard subdivisions of Table 1 may be added to any class number. In addition to such intrinsic provisions many class numbers are provided with 'Add . . .' notes which may further be subdivided into two kinds.

Instructions specific to a number

Under many a class number are provided instructions for extending a basic number with some other numbers or part thereof of a class number existing elsewhere in the schedules or tables. For example, under 547.1 Physical and Theoretical Chemistry is given the instruction 'Add to base number 547.1 the number following 541 in 541.2–541.3 . . .'. Such instructions are invariably illustrated with at least one example.

Instructions common to a series of numbers

Sometimes a series of cognate class numbers are further extendable by another set of numbers. Instead of providing individual instructions, for convenience and simplicity, as well as for brevity of the schedules, instructions are provided at one place, while all the headings of the class numbers to which such instructions apply are marked with an asterisk. At some places instead of an * the symbol † is used. Then at the foot of

that page a footnote is given for the meaning of the asterisk. For example:

547.4 *Aliphatic compounds
547.41 *Hydrocarbon
547.411 *Paraffins (Alkanes)
547.412 *Olefins (Alkenes)
547.413 *Acetylenes (Alkynes)

In a footnote on the same page is given the instruction:

* Add as instructed under 547

On going to class 547 one reads the detailed instructions: Add to notation for each term identified by * as follows:

04 Special topics
044 Theoretical chemistry
045 Physical chemistry
046 Analytical chemistry

We can synthesise a large variety of class numbers with such provisions. For example: Analytical chemistry of hydrocarbons

$$547.41 + 046 = 547.41046$$

Physical chemistry of aliphatic compounds

$$547.4 + 045 = 547.4045$$

Such instructions have implicitly provided a citation order for the various facets and have enhanced the number-building power of the system. In addition, there are instructions under many a class number to add from any of the six tables.

All these and other instructions must be carefully followed and implemented to build a correct class number.

Dots and spaces

It is generally forgotten that all the numerals used in the DDC behave like decimal fractions. The decimal point has not been put at the beginning: it is supposed to be there. But when a number gets lengthened beyond three basic digits a dot[2] is inserted between the third and the fourth digit. This dot is only a pause and must not be misunderstood as a decimal point. It has no purpose except to break the monotony of numerals. For the same reason, if a class number extends beyond six digits a space is left between the sixth and the seventh digit, and again between the ninth and the tenth digit, and so on. In this pattern, a space is left after every three digits coming after the dot. For example, the class number for 'Supergravity' is transcribed as 530.142 3. Similarly, the class number for 'Thyristors' is transcribed as 621.381 528 7. These spaces and dots give relief to the eye and facilitate short-term retention of the class number in the memory – during the passage from the catalogue to the stacks.

Notes

1. Hook numbers are always a single number, not any span of numbers. For example, 547.42-.48 Other [Aliphatic] compounds comprises a clubbed series of numbers which can be individualised by using the *add to* device (e.g., 547.437 Carboxylic acid, which is an aliphatic compound).
2. In his April 2013 post on the Dewey Blog the new Editor-in-Chief, Michael Panzer, has indicated that the dot in the class number may be replaced by a comma which is an internationally more acceptable convention. Hence in future editions the class number for Supergravity may be 530,142 3.

4

Basic plan and structure

Abstract: Describing the basic plan for the mapping of knowledge in the DDC, this chapter rests on the pre-existing division of knowledge developed by Francis Bacon's three categories of Reason, Imagination and Memory.[3] The chapter begins by introducing the features and uses of notation of Indo-Arabic numerals that were used decimally. The advantages and problems of using such a notation are then described, which depicts the hierarchy of knowledge in the DDC from 10 main classes into 100 divisions and 1000 sections, technically termed as the First, Second and Third Summary of knowledge, respectively. The knowledge is patterned into arrays and chains to make a finely weaved web of knowledge, in order to better describe the notational procedure for accommodating new subjects as they emerge.

Key words: Francis Bacon, disciplines of knowledge, division of knowledge, hierarchy of subjects, hospitality, main classes, notation, summaries.

Classification by discipline

The DDC is a general classification system which aims to classify documents of all kinds falling in any knowledge domain. It places the contents of a document in one of the three great Baconian divisions of knowledge, namely Reason or Science 100–600, Imagination 700–800 and the Record

of Events and Conditions 900. These three great divisions are divided into nine main areas of knowledge that are themselves divided into disciplines or subdisciplines (Maltby, 1975: 129).[1] This division of knowledge into the nine main classes mirrors the educational consensus prevalent in the late nineteenth-century Western academic world. The DDC thus scatters subjects by discipline, and the subjects are subordinated to discipline. Subject literally means a topic. A subject may occur in almost any discipline. For example, the subject 'metals' may turn up in metaphysics, religion, the social sciences, the natural or physical sciences, technology or the arts, and may appear several times within the same discipline. Thus there is theoretically no single class number for any subject.

A discipline provides a context for a subject. John Comaromi wrote that 'using disciplines to define main classes was a widely used practice in the nineteenth century. It is not surprising that the DDC was conceived as a discipline-based system' (1983: 142–3). It does not mean, however, that we cannot collocate the various disciplines dealing with a single subject; this is easily done through the relative index, and the notes in the schedules invariably provide a single class number for a multidisciplinary topic or a document dealing comprehensively with a subject. The relative index reverses the process of classification and brings together the distributed relatives of a topic. However, there are several exceptions to the order of discipline–subject subordination. It is wisely said that classification by discipline is good in itself only when not carried to extremes.

Before Melvil Dewey there were classification systems based on the subject contents of books and a sort of decimal notation was employed by many. He had no ambition to improve upon the subject orders that the various existing systems provided. His problem was different (and practical): he wanted to invent a device which could mechanise shelf arrangement and at the

same time provide an appropriate place for incoming new subjects without disturbing the established order. He did not ponder much upon the order of the main classes, though the order of the DDC mirrors the academic consensus of its time, as already said. The DDC, true to the times and country of its origin, is a practical scheme. Some have said that a consideration of its theoretical grounding, its sources and the order of its main classes is not a profitable exercise. This assertion is not totally true.

Critics have correctly noted an imbalance in the development of the DDC. But if some disciplines, such as the sciences and the various technologies, received lesser representation in the original plan which still continues intact, the explanation is that in those days these disciplines carried only that much weight in the overall academic field. Neither Melvil Dewey nor anyone else could have discerned in the 1870s the shift of emphasis to the sciences and technology after two world wars any more than we are able to say with any degree of certainty what academic interests will be a century hence. Dewey borrowed his basic plan from William Torrey Harris, who had devised the classification for the St Louis (Missouri) Public School Library catalogue. (In those days most catalogues were arranged according to a classification scheme rather than by the alphabet.) Harris was a Hegelian scholar.[2] Therefore some historians trace Hegel's influence on the DDC through him (Comaromi, 1976: 25–9). Whatever the case, the fact is that the scheme now, through its various devices, options and revisional techniques, endeavours to reflect the current consensus of scholars in both the order and collocation of subjects.

Notation

Originality lies not in its intellectual structure but in the notation Dewey used to represent it. Notation has always been

underrated by theoreticians and overrated by practitioners and library users. Classificationists invariably pronounce that intellectual structure must precede the assignment of notation; this is probably an ideal worth expressing but not holding. In reality the notation one employs determines intellectual hierarchy and subdivisional capabilities. If one develops a system without bearing in mind the notation to be used, a misshapen classification is bound to happen. Dewey fitted his structure to his pre-chosen notation, which is one of the reasons the DDC has been so successful.

One wonders why librarians had not used the notation that Dewey hit upon long before he did so. It is like asking why the all pervasive gravity was not discovered by anyone before Isaac Newton. The answer is simple: the idea is not a straightforward one and a mental leap of considerable distance had to be made. Dewey wanted to avoid the wasteful practice of reclassification whenever the library expanded beyond its quarters. The answer to that problem was to tag the subject contents of books rather than the physical items. In fact the tagging practices of those days did include a rough subject specification in the number; the practice, however, also included the location of the physical item within the particular category. Dewey himself recommended representing both size and accession order numbers in the class number. The futility of such a practice soon dawned on him, however. With the arrival of Cutter author numbers, the class number stood alone and unencumbered by location devices that were physical rather than intellectual.

The ten main classes of the DDC are assigned the notation 0 to 9, from .000 000 1 to .999 999 9 so to speak. The ten main classes ought to be transcribed as follows:

0.0 Generalia
0.1 Philosophy and related disciplines

0.2 Religion
0.3 Social sciences
0.4 Languages
0.5 Pure science
0.6 Technology
0.7 The arts
0.8 Literature
0.9 General geography, biography and history

But in practice, for ready comprehension and simplicity of notation, the first zero and the decimal point are not shown, but they are understood always to be there. Instead a decimal point is put after the first three digits. This is a mathematical nonsense, of course – such a point is never placed between the digits of a decimal fraction. The point, in fact a dot, is placed here to break up a number so that the mind can grasp its parts more readily. It has a mnemonic value only. Experience with telephone numbers tends to support the assumption. Nevertheless, the point presents a riddle: the point is where it is not, and not where it should be.

Another semantically hollow convention is the minimum of three digits in every class number. If a class number stops short of three digits, the required number of zeros is used to make three. For a main class we have to add two extra zeros, for division by one. But true to mathematical conventions no decimal fraction may end with a zero after the point; they are redundant and probably misleading (inasmuch as they suggest to novices that the DDC notation is made up of ordinal integers rather than of ordinal decimal fractions).

Division of main classes

Thus the main classes are notationally transcribed as:

000 Computer science ... & generalia works
100 Philosophy and psychology
200 Religion
300 Social sciences
400 Language
500 Science
600 Technology
700 Arts and recreation
800 Literature
900 History and general geography

At best, the order of the main classes represent a mix of Baconian and Hegelian philosophy adulterated by the practical exigencies of organizing a collection of books for active use. Study reveals, however, that W.T. Harris, who devised the intellectual structure that Dewey used for his classification, thought that Bacon's structure was a good one.

Each of the ten main classes has been subdivided further into what are technically known as divisions. Each main class has ten divisions including a general division that is the class itself subdivided into characteristics peculiar to itself or applicable to all of the nine divisions. We have, therefore, ten main classes and 100 divisions. It means a main class also works as a division, for example:

600 Technology
610 Medicine and health
620 Engineering
630 Agriculture
640 Home and family management
650 Management and auxiliary services
660 Chemical engineering
670 Manufacturing
680 Manufacture of products for specific uses
690 Construction of buildings

Each of the 100 divisions has been further divided into ten Sections. A division also acts as a section, the generalia section that precedes all others. For example, 610 Medicine and health has been divided as:

610 Medicine and health
611 Human anatomy, cytology and histology
612 Human physiology
613 Personal health and safety
614 Incidence and prevention of disease
615 Pharmacology and therapeutics
616 Diseases
617 Surgery and related medical specialties
618 Gynecology, obstetrics, pediatrics and geriatrics
619 [Unassigned]

Continuing the decimal pattern, each section can be divided into what we may call subsections, all being four-digit numbers:

614.1 Forensic medicine (medical jurisprudence)
.3 Incidence of injuries and wounds
.4 Incidence of and public measures to prevent disease
.5 Incidence of and public measures to prevent specific diseases ...
.6 Disposal of dead

Here 614 is not divided into nine subdivisions though a generalia subsection can be added by the classifier through the use of standard subdivisions in Table 1. Not all sections require nine subdivisions; it is as simple as that. Problems for the editors crop up when more than nine are needed, as is the case for 616 Diseases.

Subdivision may continue until literary warrant no longer exists; that is, 614.51 can be divided down to 614.512

Clostridium infections, and this to 614.5128 Tetanus. There subdividing the topic is stopped, though there may be subdivisions of the literature on the topic: a dictionary of public health dealing with tetanus 614.512 803 (in German 614.512 803 31).

The DDC has been criticised for its rigidity of division by 10 at every step of its division. Division by ten has been likened to the procrustean bed. The major argument put forth by critics is that knowledge does not proliferate into any fixed number of branches at each stage of development. The growth of knowledge is not at all conditioned by any decimal or metric system. This division is rigid, and an artificial mould into which knowledge has been structured through force reminiscent of Procrustes.[4] This criticism is well known. Here the notation has assumed the role and structure of a master as it dictates its own conveniences. It warps the structure of knowledge that the DDC tries to represent, and does so despite Dewey's assertion in the Second Edition (1885) that he had not 'sacrificed utility in order to force subjects on the decimal procrustean bed. The decimals have been used as servants, not as masters.' Utility may not have been sacrificed, but philosophy was.

Whatever the philosophical loss, the arrangement is working very well. Henry E. Bliss (1870–1955) was of the considered opinion that the overall sequence of subjects is not of much importance if every subject has a niche of its own in the schedules. After all no one uses the shelf arrangement of books in a library to learn the evolution and structure of a discipline. Dewey believed the same. The belief seems to have been borne out; there has been little difficulty with the DDC on account of its forced decimalism (other than long class numbers, which is an evil that dogs every system using a notation with a narrow base, here a mere 10). Nevertheless, numerous advantages have accrued from its application. It imparts a regularity and symmetry in pattern to the structure

of the classification, thus promoting a powerful mnemonic capability. The decimal notation is simple to understand and apply; it provides infinite hospitality; it shows subordinate and coordinate relations among subjects; can be used equally for broad or deep classification of the same subject. Its numerals are universally acceptable transcending narrow national linguistic prejudices.

Chain structure

As noted above, the scheme is hierarchical in nature. It not only collocates the related material but also finely depicts through its notation the whole–part relations of subjects. It can be argued that Melvil Dewey knew that the hierarchical pattern that the DDC so accurately and easily depicts would stem from the notation he chose. Whatever the case, it is an asset of the DDC which later classificationists have admitted borrowing from this pioneering system. Progressive specificity is made visible by the lengthening chain of digits. Every progressive step of denuding a topic is accompanied by the addition of at least one digit to the immediately superior number. For example:

300	Social sciences
330	Economics
332	Financial economics
332.1	Banks
332.114	Central banks
332.110 95	Central banks of Asia
332.110 954 9	Central Bank of Sri Lanka

The subjects denoted from 300 to 332.110 954 9 build a chain of concepts as they are in progressive subordination. In

the schedules the chain of decimal digits is not depicted typographically, as it is otherwise quite discernible through the increasing length of the class number at each step; that is, the subordination of terms is shown through the change of indentions to the right at every step. Chain analysis provides a mental ladder to arrive at a specific subject as each rung takes us nearer to our area of search by a progressive narrowing. (An added dividend is that hierarchical notation is highly susceptible to computerized browsing, truncation and searching as the searcher can easily move up or down the hierarchy.)

Array structure

An array is a sequence of mutually exclusive entities of equal rank having the same immediate ancestry and arranged in some logical and predictable order. The main classes, divisions and sections of the DDC are three different level arrays of classes. Array formations can be carried forward to any depth. For example, all the subsections (four-digit class numbers) of a particular section form their own array (i.e., the class numbers 531.1 to 531.9 form an array of 531 Mechanics). Quantitatively speaking, all the equal digit class numbers, all originating from the same genus, form an array. Genealogically speaking, all the children of a father form an array, while the family lineage forms a chain. Genealogical charts, also called family trees, provide chains and arrays at the same time because they are two-dimensional charts. Classification schedules, because they are linear, cannot provide chain and array structures at a glance.

Pattern in DDC structure

The order of an entity in an array is not so important as its being listed in the array in the first place. Nevertheless, the order

of the elements of an array tells us what is most important in the array and reveals the structure of the class the array represents. Over the years, *pari passu*, increasing synthesis in the DDC has emerged with some recognized pattern in arrays.

The first subdivision of an array is generally given over to generalia topics, and the last division usually either expounds the historical and geographical treatment of the subject or is reserved for the rest of the unaccommodated topics, which are dumped together as 'others'. Thus the 9 'Others' represent a great hospitality device within the scheme. The array of the ten main classes (the first division of the universe of knowledge in the DDC) well illustrates this pattern, as the first division 000 denotes generalia subjects and the last 900 represents geography, history and other subjects. The pattern at the macro level is repeated at the micro level – ontogeny recapitulates phylogeny.

To illustrate the above array pattern from 320, we see that the 320.0 array represents the generalia topics of political science, and the 320.9 represents the historical and geographical treatment of the subject. If we investigate a little more the texture of an array, especially in the third summary, we will see that the second and third sections of a division are generally made to represent the energy facets and the rest of the sections in the array represent the personality facets. This can be illustrated from the array of 630 Agriculture. Here 631 and 632 are two sections (dealing with the problems of agriculture). These action facets can be added to the other sections and their subdivisions (i.e., 633–635, which represent the personality (produce) facet of 630 Agriculture). The above pattern can be seen in 370 Education, 540 Chemistry, 580 Botany, 590 Zoology and 610 Medicine; it can be seen elsewhere and almost everywhere. Such a pattern in the texture of the DDC is not widespread due to its early foundations, but is something that the structure of the DDC tends to reflect in the face of increasing

synthesis and reapportionment of the classes for modernisation where possible.

Hospitality to new subjects

The hospitality of classification is defined as its ability to accommodate ever emerging topics at their proper places without dislocating already existing ones. The longevity of a classification system is directly proportionate to the efficiency of the hospitality devices employed. Hospitality devices are of two types: just in case (long term and preplanned) and just in time (improvised and local).

Decimal notation can be extended hierarchically almost endlessly. Decimalism provides almost infinite hospitality upon the given base. It is deterred somewhat only by other practical realities: theoretically there is no limit to the further elongation of a class number to any point demanded by coextensiveness of the subject. A newly emerged independent topic hitherto forming an indistinguishable part of an already existing one may be easily accommodated at the end of the chain by adding another digit to the class number of the parent topic. It is as easy as stretching an elastic cord.

Hierarchy makes it possible to adapt the DDC in any library whether small, medium or large. Small libraries can cut short the number from the right of the string of digits. The Abridged Edition is the compendium of numbers that details how far to the right the truncation may go. That is to say, the abridged version of the DDC gives shortened numbers drawn from the full edition. (The brief numbers, of course, are never to be fewer than three.) Apart from this, the DDC numbers are segmented in the WorldCat and MARC (machine-readable catalogue) records. Two segments are shown by prime marks, and the slash shows the end of the number from the abridged edition.

A particular library may use the first segment, or both segments depending upon the nature of the library and the size of its collection. The library may choose to disregard segmentation entirely. For example, of the segmented class number 621.39/814 027 2 a library may use either 621.39 or the entire class number 621.398 140 272. As per the LC Dewey Section the first segmentation mark represents the number from the abridged edition or it could be the beginning of a standard subdivision number. There are never more than two segments in a class number now, as a result of a recent policy change. *WebDewey 2.0* numbers show segmentations. Segmentation is only shown on CIP data, MARC tapes, WorldCat database or the printed catalogue cards produced and distributed by a centralized cataloguing agency (Mitchell, 1995b). Segmentation is not shown while writing a segmented class number on a document or its surrogates.

One serious disadvantage of the purity of notation inherent in the use of decimal fractions is that the accommodation of a new subject in an array is not easily achieved. If a new and independent subject emerges in between, and coordinates with, for example, classes 510 Mathematics and 520 Astronomy, it is impossible to allocate an appropriate place for such a subject. To avoid such a situation, one course of action is to leave some gaps in the notation that describes an array. For example, in the array 541–549 of Chemistry, 544 and 545 have been left unassigned. If ever a new major branch of chemistry is developed, space is available. The only problem is that the branch may not fall logically between analytical and inorganic chemistry.

In the third summary (the third level of subdivisions in the Twenty-third Edition) there remain 86 unused classes; these are shown in the schedules by having their three-digit figures enclosed in square brackets. Some of these gaps may be used in the future. Moreover, gaps exist in all the arrays onward at

any remove; the more remote an array, the greater chance it has of finding a home for a subject. The leaving of gaps is not a science – it is an art for its day. It is to postpone the crash. And the day may come when all the gaps are filled, but new subjects continue to emerge. We turn our back upon them at own peril. Gaps are few in main class 600 Technology, where subjects still emerge dynamically. Moreover, the chains there have already been elongated to the limit of tolerance. Another way to account for emerging fields is to redo several contiguous divisions, as had been done for 550–559 and 611–612 for the Twenty-first Edition, and 297 Islam for the Twenty-second.

The DDC is not the same as it was when published more than 140 years ago. It has undergone constant changes and opened itself to the latest developments in classification theory and information science. During its existence it has shown its mettle in the arena of bibliographic classification with its growing popularity. What has remained stable is its basic plan, its notation and its desire to serve librarianship and organise this big world.

Notes

1. James Duff Brown (1862–1914), a noted British classificationist, tried the other way and failed. He attempted to gather all aspects of a topic in one place. For this purpose, he divided all the entities in the universe into two categories: concrete and process. The concrete category took precedence in the citation order; all its processes (abstract concepts related to it) were attached to it in subordination. The resulting collocations were outlandish at times and jumbled most of the time. For instance, at iron would be gathered iron oxides, iron trains, iron tools, iron industry, clothes iron and tea strainers. Brown's scheme failed for several reasons, not least being his extraordinary citation order. In modern librarianship the subject catalogue or the subject index does what Brown tried to do with his classification.