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D.-G. Oh. Korean Decimal Classification (KDC): Its History, Development, Characteristics, and Future Prospect

Korean Decimal Classification (KDC):
Its History, Development, Characteristics,
and Future Prospect†‡

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Abstract: The Korean Decimal Classification (KDC) is a national standard classification system of the Korean library community published and maintained by the Classification Committee of the Korean Library Association. This article examines its general history from its advent to the latest edition (KDC 6), its usage, external characteristics including format and layout, internal principles and characteristics including outline and classificatory principles applied, general aspects of the schedule and the major tables, development and maintenance, and general evaluation. It concludes with some ideas and recommendations for future research and development.

1.0 Introduction

The Korean Decimal Classification (KDC) is a national standard classification system of the Korean library community published and maintained by the Classification Committee of the Korean Library Association (KLA). It is a basic bibliographic tool in Korea, because almost all public and school libraries, as well as some academic libraries in Korea have used it to classify their collections since its publication in 1964.

Nowadays, many libraries in many countries, especially national libraries, have introduced and used one of the global library classification systems, such as Dewey Decimal Classification (DDC), Universal Decimal Classification (UDC), Library of Congress Classification (LCC), and so on. Some nations that have previously maintained their own national classification systems have decided to discontinue them, to move to a major system because of the difficulties in maintaining their systems, as we can see in the example of Sweden (Hansson 1997; Svanberg 2011). Differently from these cases, KDC is a successful unique national classification system developed and maintained by the national library association in close cooperation with related parties and used by the library community nationwide.

This article examines KDC in various aspects, focusing on its historical background, general characteristics, main

schedules and tables, with a special regard to its latest sixth edition published in 2013. It will recommend suggestions both for KDC and for other national classification systems to develop and/or maintain national classification systems.

2.0 Literature review

Many classification systems have been developed and used as basic tools to help people organizing bibliographic materials systematically. Some of them have been sufficiently successful to be used internationally, even with a small initial start as in the case of DDC; some faded away after flourishing for some time as in the case of the previous Korean Decimal Classification edited by Bong-Suk Park (KDCP), and others have just disappeared without being used substantially as in the case of International Centesimal Classification (ICC) (Jeong 2002).

In this regard, it would be natural for most research about classification systems to focus on the more widely used international ones, such as DDC, LCC, UDC, and so on. Even without enumerating their classes, we can easily find many articles and books on those systems, investigating their histories, and major characteristics, as well as general introductions to use them, comparative studies with other systems, and so on.

In contrast, only a few articles have paid attention to some national classification systems, considering those published in international journals and books. One exception is Colon Classification (CC) developed by S. R. Ranganathan, because of its international fame and influences on classification theory and interest from related scholars. For some examples of research by Indian scholars: Satija has introduced and analyzed CC in various aspects, such as its general characteristics and practical guidance (2002a, 2017), and its implications and future (2002b, 2016); Chatterjee (2016) analyzes the mutual impacts between CC and UDC; Raghavan (2016) introduces the efforts and plans for revival of CC with special regard to the Sarada Ranganathan Endowment for Library Science. Most well-known Western English textbooks on library classification also include a chapter, section, or at least some sentences about CC, and some of them regard it as a general international scheme rather than a national one.

Upon the other so-called minor or national (including cultural or ethnic) classification systems, international research outputs are very much limited, even though there must be a good amount of publications in their own vernacular languages. Just to name a few examples, there are Goltvinskaya and Sukiasyan (1993) and Sukiasyan (2008) about Library-Bibliographical Classification (LBC, also known as Bibliothecal-Bibliographical Classification, BBK), the national classification system of Russia; Anyanwu

(1994) about the classification scheme of the National Library of Nigeria for Nigerian official publications; Zhang (2003) about Classification for Chinese Libraries (CCL); Elazar (2008) about *A Classification system for Libraries of Judaica*; and Cherry and Mukunda (2015) and Bosum and Dunne (2017) about the Brian Deer Classification Scheme dealing with Canadian indigenous people. Even though not a national classification system, Martínez-Ávila (2016) introduces the BISAC Subject Headings List developed for book sales in USA. Related to the above national classification systems, ISKO Encyclopedia (*ISKO Encyclopedia of Knowledge Organization*) deals with some of them in detail, e.g., LBC (Sukiasyan 2019), CLC (Bu 2019), Canadian Research and Development Classification (Legendre 2019), and so on. Articles focus commonly on system's history and development, general characteristics, suggestions for the future directions, and so on.

Concerning KDC, there are many articles and books published in the Korean language. Some of them are reported by Oh (2018) and can be searched from Korean Citation Index (KCI, www.kci.go.kr). Only considering English articles, Oh (2012b) has illustrated KDC's general characteristics and structure, and recommendation for future development. The same author analyzes KDC's revision process through cooperative efforts from the perspective of the classification committee chair leading the process (Oh 2018). This article will describe the system focusing on some additional aspects not included in the above articles. Choi (2018) investigates the cross-cultural adaptation of DDC in KDC especially regarding underlying socio-cultural perspectives.

As we can see from previous research, the international library community has not shared enough studies on, or even detailed information about, other national classification systems developed, used, and maintained in their respective countries. This article can be one example of investigating a specific national classification system in various aspects and suggest a good starting point to encourage similar research.

3.0 Brief history, development, and usage of KDC

3.1 Background to the advent of KDC

Before KDC appeared, there had been some domestic classification systems already developed and used in Korea, such as the Railway Bureau Library Classification (1920), the Korean Decimal Classification edited by Bong-Suk Park (called as KDCP, 1947), the Han-Un Decimal Classification edited by Jae-Chang Koh (1954), and the Kuk-Yeon Decimal Classification (1958).

Among them, KDCP had been the most widely used and influential system before the advent of KDC. One of the

reasons was that its editor was one of the influential leaders in the modern Korean library community as an educator (lecturer at the National Library School), administrator (deputy librarian of the National Library of Korea), editor (KDCP and Korean Catalog Rules for Oriental Books), and advocate of library movement (initiating KLA). (For more information about Park and his contribution to Korean library community, see Oh 2012a). KDCP had been published by the National Library of Korea under the name of Classification Committee of KLA, with minor revision, and taught at the National Library School as a textbook.

Even though it had been used widely in the late 1940s and early 1950s, with its own merits beside the general ones of all decimal systems, including its arrangement of main classes and its reflection of Korean and East Asian bibliographic characteristics, its popularity had decreased drastically after the Korean War. Not only KDCP had its own disadvantages including limitation of its classification numbers to a maximum of four digits, but also its key person, the editor Park, had unfortunately been missing during the War. Moreover, DDC had been introduced at the formal library education course in Korea started in 1957 at Yonsei University, with support from George Peabody College for Education. This had made the Korean library community have more interest in DDC, and some libraries had started to use it. At that time, however, many Korean librarians had experienced hard times in applying DDC into their collections, most of which consisted of East Asian and Korean documents. They had realized that the Korean library community would be better to develop their own classification system, which could be applied more easily to their own collections reflecting their own literary warrants. It was very natural for them to request the reorganized KLA to develop a new system.

3.2 Brief history and development of KDC

Responding to the requests from the library community, KLA appointed its Classification Committee and initiated the development of a new system named KDC. It was developed with continuous revisions by the Classification Committee of KLA.

3.2.1 First, second, and third edition

During the preparatory stage, KLA gathered extensive opinions from the Korean library community about the order of the main classes and other related issues of a new system. After four Classification Committee members were appointed on February 1963, they discussed this and decided an order of main classes based on DDC, with consultation from the eleven advisory committee members. They decided to collocate the class Language together with the class Literature in KDC, after comparing and discussing various systems such as

DDC, EC (Expansive Classification), LCC (Library of Congress Classification), SC (Subject Classification), NDC (Nippon Decimal Classification). As a result, the main classes General works (000), Philosophy (100), Religion (200), Social sciences (300), Literature (800), and History (900) had the same notations with DDC, but Natural sciences (400), Technology (500), Arts (600), Languages (700) had notations different from DDC, since KDC first edition of 1964.

Each committee member dealt with some main classes and prepared drafts for them, with help from outside specialists and scholars. Based on the drafts prepared over a period of four months, all members discussed and checked all the text altogether. The index was made by each committee member for their own shared classes then integrated. After proofreading by the committee members, the first edition was published on May 1964 as a standard classification system for the Korean library community. It used Korean Hangeul (also written as Hangul) characters along with Chinese characters both in the text and the index. Where necessary, the corresponding English headings were also added.

Because the first edition was prepared and published in a very short time, it was inevitable that the system had some kinds of errors and deficiencies. The second edition, published on May 1966 just two years after the first edition, tried to correct the misprints and omitted letter(s), revise inappropriate part(s), expand new subject(s), include more detailed indexes, and so on. Therefore, there were not any big differences in the general aspects between the first and the second edition.

The third edition was published in 1980, fourteen years after the publication of the second edition, in order to respond to developments and changes in knowledge. It maintained the general structure and basic frameworks of the former editions and put emphasis on complements and improvements of previous deficiencies and inappropriateness of the system. Because of the time gap from the second edition, many new entries were added, and some were relocated or discontinued. This edition was published in two volumes including schedules and relative index respectively.

3.2.2 Fourth edition

The fourth edition was published in two volumes in 1996, sixteen years after the publication of the third edition.

In 1990, in order to reflect the various and numerous changes which occurred in those so long years, as many as fifteen new members both from the university and from the practical library field were invited to join the Classification Committee. They were regrouped into three subcommittees dealing with revisions of different main classes: namely Group A for the four main classes of General Works (000), Philosophy (100), Religion (200), and Social sciences (300), and the mnemonic tables (see 4.2.3 below); Group B for the

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two main classes of Natural sciences (400) and Technology (500); and Group C for the four main classes of Arts (600), Language (700), Literature (800) and History (900).

In 1992, before starting the revision, the Committee, with some new members, set out the general policies for revision as follows (KDC4, vol. 1, vii):

– Do not change the main classes, divisions, and sections, if possible.
– Arrange new items enough to reflect new trends in academic and scholarly development.
– Revise or expand the subdivisions, if necessary, maintaining the basic policy of third edition.
– Replace the inappropriate former items with new ones.
– Expand/subdivide the subdivisions in the rapidly changing areas including sciences and technology, etc.

Committee members performed the revision referring to the newest editions both of DDC (20th ed.) and NDC (9th ed.). The Committee tried to get feedback from the library community about the drafts suggested by the subcommittees. For example, these were published in the journal of KLA, no. 3/4 and 7/8, 1994 of *Library Culture*, and there was a public hearing during the General Conference (October 1994) of KLA. After the final general meeting of the Committee members in 1995, the subcommittee to integrate the drafts finalized the recommended version, and the subcommittee for indexing prepared the relative index. This edition had been prepared over a long period of time, based on explicit policies and trying to get feedbacks from the library community.

3.2.3 Fifth and sixth editions

The fifth edition was published in two volumes in 2009, thirteen years after the publication of the fourth edition, and the sixth edition was published in three volumes in 2013, just 4 years after the previous edition.

The Classification Committee, appointed in 2007 with ten members to prepare the fifth edition, first discussed and shared among members the general policies for revisions. They decided that all the text in the fifth edition should be basically in Korean Hangeul, with Chinese characters and English being added if needed. As in the case of the fourth edition, they tried to receive as much feedback as possible from the library community through the various reports in KLA journal, public hearings at KLA General Conference, and personal communications with librarians and scholars.

During the revision process, each member first worked on the revision of the main classes allocated to him/her. Then the subcommittees cross-checked and discussed progress, and at the final stage members discussed the final re-

sults all together. Notably, many subject specialists were invited to support the revision of some of subject areas, including technology and engineering, and arts (Oh 2018).

General outlines of the final drafts were presented at the public hearings during the General Conference of KLA on October 2008 to report progress and take feedback from the library community. The new edition was published in January 2009, just after the relative index had been prepared.

Work to prepare a sixth edition started in 2011, just two years after the publication of the fifth edition, when Dr. Tae-Woo Nam, former chairperson of the Classification Committee, became the president of KLA. There had been some complaints from the library community about the fifth edition, including misprints in both text and index. Publication of the new 23rd edition of DDC in 2011 also provided another motive for requesting revision of the current edition.

Ten newly appointed Committee members discussed and set out the general policies for revision in order to formalize and perform the allocated works efficiently, after assigning the revision of one of the ten main classes to each member. The guidelines are as follows (KDC 6. vol. 1, x; also cited from Oh 2018):

– Main classes and divisions of KDC 5 should be maintained, except for those needing urgent revisions.
– Revision of auxiliary tables and mnemonics of notation should be consistently maintained.
– Descriptions throughout schedules should be made consistently, and the terminology should be up-to-date.
– Classes related to North Korea should be properly reflected and added in the schedule.
– Errors and mistakes in transcriptions of the 5th edition should be corrected and complemented.
– Number-building techniques should be introduced where applicable, and various appropriate notes should be added.
– Corresponding Chinese characters to the Korean Hangeul of the headings should be given in parentheses where they are needed to clarify the meaning.
– Both the Korean geographic area table and the Korean historical period table of KDC 5 should not be maintained as separate tables anymore but incorporated into the Area table and related parts of the schedules.
– Options should be explicitly introduced by the word "Option:" in the notes.
– If possible, the sixth edition should be published with an abridged edition and manual and be prepared with consideration of the future development of a thesaurus.

Of course, additional policies for the classification system were also prepared, including the introduction of more analytico-synthetic methods, various types of notes, and indentation in the relative index to display the hierarchy more clearly. Guidelines for selecting index terms were also specified in detail and shared among the members. The guidelines include those related to the selection of index terms (personal names, geographic names, names of nations, synonyms of major preferred terms, etc.), forms of the terms (including inverted terms), letter by letter arrangement, and so on.

During the revision, specialists from subject areas were invited to advise and help the members, including those from the areas of education, mathematics, technology, and so on. Members of the task force to support the revision from the National Library of Korea each checked the final draft and gave feedback to the Committee. (For more information about cooperative works for KDC 6, see Oh 2018).

Even though preparation of the basic drafts for the revised versions of each main class was allocated to each member, the Committee met more than 17 times to discuss progress with other members. After the final drafts of the schedules were edited, all members joined together to proofread each page with the publisher. Each member first prepared the index terms from the main classes allocated to him/her, then the subcommittee for the relative index edited and prepared the final draft. The manual was also prepared in the same way. The sixth edition in three volumes was published in July 2013.

3.3 Usage of KDC

Because KDC is a standard library classification system in Korea, the National Library of Korea as well as most of the public and school libraries use it. The analysis on data from the National Library Statistics System of 2018 (Korea, Ministry of Culture, Sports and Tourism 2019) shows that 1,002 (99.5%) out of 1,007 public libraries that have specified which classification systems is used have reported to use KDC to classify their CJK collections (The remaining three use self-developed systems, and two of them use DDC). 1,000 (99.3%) libraries use KDC to classify Western collections (the remaining five use DDC, and two of them use their own systems) (see Table 1). Even though there are no exact statistics, almost all school libraries are known to use KDC, because their size is too small to choose any other system.

In the case of university and college libraries (2016), out of 462 libraries, 258 (55.8%) of them use KDC and 163 (35.3%) use DDC to classify their CJK collections. On the other hand, only 179 (38.7%) libraries use KDC and 237 (51.3%) use DDC to classify Western collections (Korea, Ministry of Education 2017) (see Table 2).

System	1986		2009		2018	
	CJK Collection	Western Collection	CJK Collection	Western Collection	CJK Collection	Western Collection
KDC	97.7% (84)	80.3% (49)	99.1% (541)	97.8% (534)	99.5% (1,002)	99.3% (1,000)
DDC	0% (0)	8.2% (5)	0.2% (1)	1.5% (8)	0.2% (2)	0.5% (5)
Others	2.3% (2)	11.5% (7)	0.7% (4)	0.7% (4)	0.3% (3)	0.2% (2)
Libraries Surveyed	86	61	546		1,007	

Table 1. Usage of KDC in Korean public libraries. (Adapted from the table in Oh (2020), *Introduction to Library Classification*. Daegu: Taeilsa, 316.)

System	2001		2010		2016	
	CJK Collection	Western Collection	CJK Collection	Western Collection	CJK Collection	Western Collection
KDC	45.3% (68)	26.0% (39)	43.2% (73)	23.7% (40)	55.8% (258)	38.7% (179)
DDC	52.0% (78)	71.3% (107)	54.4% (92)	73.4% (124)	35.3% (163)	51.3% (237)
Others	2.7% (4)	2.7% (4)	2.4% (4)	2.9% (5)	8.9% (41)	10.0% (46)
Libraries Surveyed	150		169		462	

Table 2. Usage of KDC in Korean academic and college libraries. (Adapted from the table in Oh (2020), *Introduction to Library Classification*. Daegu: Taeilsa, 316.)

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KDC numbers are included both in KORMARC (Korean Machine Cataloging) data (056 field) of the online catalog and in CIP (Cataloging in Publication) data, both of which are provided by the National Library of Korea. Therefore, small libraries can do derived or copy cataloging using these data to make their own catalogs.

Most of the departments of library and information science in Korea include KDC-related subjects as a major section on cataloging and classification courses, along with major systems such as DDC (Noh and Satija 2016). The National Library of Korea has provided both online and offline training programs about KDC for librarians (Oh 2018). Of course, major textbooks in the subject areas deal with it as one of the important library classification systems.

All the above shows that KDC has been very popular in the Korean library community as one of the basic bibliographic tools. Also, it is a "national" system, in the sense that it has been used nationwide by most public and school libraries in Korea through continuous maintenance by the national library association of KLA, and that it reflects the bibliographic and other related characteristics of Korea and nearby areas.

4.0 General characteristics of KDC and its maintenance

KDC as a general classification system has its own characteristics in both external and internal aspects, in addition to the common characteristics of other decimal classifications.

4.1 External and layout characteristics

The latest edition, KDC 6, has three volumes: Vol. 1 includes the Preface by the President of KLA, the Report from the Classification Committee explaining the general process and policy of the revision, the Introduction including general comments about the library classification and practical uses of the system, six kinds of Mnemonic Tables, Summary of the Schedule (10 main classes, 100 divisions, and 1,000 sections), Explanatory notes on the schedule, and the main schedule from 000 to 999; Vol. 2 includes the relative index; and Vol. 3 includes the manual.

Figure 1 shows two typical pages, both even and odd, of the main schedules of KDC 6.

In the pages of the schedules, the classification number of the last section of the page is specified in the margin of the left upper side of even pages and the right upper side of odd pages. In the middle of the upper margin, even pages
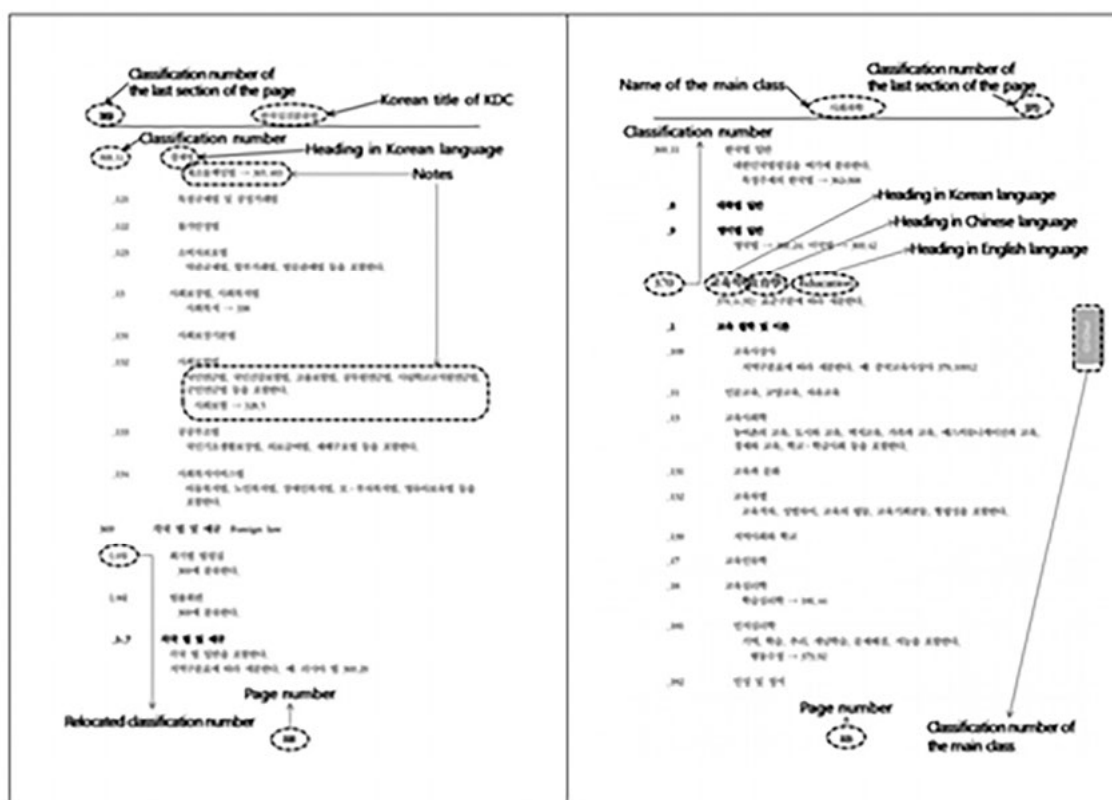

Figure 1. Typical pages of the main schedule of KDC 6 (Vol. 1). (Adapted from the figures in Oh (2020), *Introduction to*

include the Korean title of KDC, and odd pages include the name of the main class of the page, as marginal titles. The main class number is also specified on the right side of each odd page in white characters in a black box, in order for the readers to locate the class easily.

Each entry in the schedules is composed of a KDC number, a heading for the number, and if necessary one or more notes, as in DDC. Related to the classification number, the first three digits are specified only once in the number column, discontinued or relocated numbers are enclosed in square brackets, and optional numbers in parentheses.

In addition to Korean language headings, most of main classes, divisions, and sections, and, if considered helpful for users, some subdivisions, have respective corresponding English headings. Most of main classes and divisions, and some of sections and subdivisions have the corresponding Chinese heading in parentheses also, as in the class 370 of Figure 1. These reflect the general practices in Korean traditional ways to qualify the similar or related subjects or topics. Headings are indented according to their hierarchical ranks.

Various kinds of notes are added if necessary to provide more detailed additional information related to the heading, even though some entries do not have any note. They include: those defining the headings; those explaining the changes in the numbers and/or headings; those indicating related, optional, or relocated numbers; those identifying

the included topics in "standing room"; those enumerating some typical examples; and so on.

Figure 2 is a typical page of the Relative Index in two columns of KDC 6, as included in Vol. 2. It is basically in Korean language arranged letter by letter by Korean alphabetical order, namely by Korean Hangeul, even though it includes an English index too. KDC 6 has newly introduced indentation in the arrangement.

In the pages of the index, the first two letters in the first index term of the page are specified in the margin of the left upper side, and the first two letters in the last index term of the page are specified on the right upper side of the page, as in many language dictionaries. In the middle of the upper margin, even pages include the Korean title of KDC, and odd pages include the Korean name of Relative Index.

Index terms include most of the major terms in the headings and notes of main schedules and mnemonic tables, synonyms of them, English acronyms, and other terms to be regarded as being helpful to the users (KDC 6, Vol. 2 xii).

4.2 Internal principles and characteristics

KDC has, in its basic principles, many common characteristics with other decimal classification systems including DDC. For examples, it has a schedule expanded by decimal system and using Arabic numerals, has a relative index ar-

Figure 2. Typical page of the Relative Index of KDC 6 (KDC 6, Vol. 2). (Adapted from the figure in Oh (2020), *Introduction to Library Classification.* Daegu: Taeilsa, 331.)

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ranged by Korean alphabetical order (of course, it includes a very small number of English entries), and maintains hierarchical structures and mnemonic characteristics in notations in many cases (for more information about these characteristics, see Oh 2012b and 2018; for more explanation about notation and its mnemonics, see Gnoli 2018). But it also has some of its own characteristics reflecting the specific bibliographic situations of Korea and the CJK books and materials.

4.2.1 Outline of the schedules of KDC 6 and their characteristics

KDC as a decimal classification system has basically adopted the same general structure as DDC following the lines of Bacon and Harris (Comaromi 1976, Wiegand 1998, and Miksa 1998), and maintains the general ten divisions of knowledge and disciplines in main classes. But the order of them in KDC is different from DDC because the class Language is moved to a location close to the class Literature, from 400 in DDC to 700 in KDC. As a result, the classes of Natural science (400), Technology (500), Arts (600), and Language (700) have different numbers from those of DDC. Of course, there are many differences in the divisions, sections, and subdivisions of KDC from DDC, because the former is influenced by various other systems too. For example, LCC has been referenced for the expansions and arrangement of social sciences (300), UDC for those of medical sciences (510), KDCP for those of Korean and Oriental subjects, NDC for those of Japan and Oriental subjects, etc. (Oh 2012b). Table 3 shows an outline of the 100 divisions of KDC 6.

Compared to the divisions of DDC, those of KDC 6 have some differences. In General works (000), KDC 6 has the divisions of General collected essays in 040 and of Materials of province in 090. Since KDC 5, the subjects related to computer systems and computer sciences including both of hardware and software are arranged in 003-005. In Philosophy (100), Oriental philosophy (150) precedes Western philosophy (160), and especially, the class Chinese Classics (140) is established as a separate division. In Religion (200), various religions of the world are arranged as divisions, including Buddhism (220), Christian religion (230), Taoism (240), Chondoism (250; a religion originated in Korea), Hinduism (270), Islam (280), and so on, and this makes it possible to introduce the mnemonic table for religion. In Social sciences (300) following the general order of LCC in the divisions, the classes Customs, Etiquette, Folklore (380) and Military science (390) are established as in NDC. Sociology and social problems are arranged in 330, and Business administration (325) is included as a section of Economics (320). In Natural sciences (400), the subjects related to pure and physical sciences are arranged first and then those of life sciences follow them. The order of divisions is different

from DDC because KDC 6 moves the class Astronomy (440) close to Earth science (450).

In Technology (500), Agriculture (520) precedes Engineering (530) reflecting the Korean situation when KDC was developed. The division of Construction and architecture (540) includes various buildings construction and architecture which are separated in DDC. In Arts (600), two divisions of Calligraphy (640) and Stage performance, Museum arts (680) are established, while the class Drawing is included in the division of Painting, design (650). The order of divisions in 600 is somewhat similar to that of DDC, but many parts of the general subdivisions of this class maintain similarity with those of NDC to some extent.

Especially the main classes of Language (700), Literature (800), and History (900) are arranged to reflect and give local emphasis to the Korean and East Asian situations. In the arrangement of nations, the orders of "Korea, China, Japan" and "United Kingdom (English), Germany (German), France (French), Spain (Spanish), Italy (Italian)" are maintained across classes. Based on these arrangements, mnemonic tables are used in these classes: namely both of Languages and Subdivisions of individual languages in 700, both of Languages and Subdivisions of individual literatures in 800, and Geographic areas in 900, as explained in detail in 4.2.3. In addition, General history (910-960) precedes Geography (980) and Biography (990), differently from DDC.

4.2.2 Classification by discipline supplemented by subject

KDC follows the general principle of classification by discipline, as in the case of other major systems including DDC, LCC, CC, etc. This means that even the same subject (phenomenon) may be classified in more than one place (Chan 1981, 223). But strictly speaking, KDC 6 should be said to classify the materials by discipline in general cases, but "some classes are collocated by or incorporated into subject(s), as in Subject Classification (SC)" (Oh 2012b, 75) (for more detailed explanation about phenomena, subject and disciplines, see Hjørland 2017, Hammarfelt 2019, and Gnoli 2020).

These kinds of incorporated subjects encompass not only those of divisions but also those of sections and subdivisions (see Table 4). For example, KDC 6 collocates all the subjects related to construction of buildings and architecture in the class 540 Construction and architecture which are separated in 690 (Construction of Buildings) and 720 (Architecture). The class 004 Computer science includes all the subject of it including hardware in general, software in general and hardware technology and engineering which in DDC are distributed in 004, 005, and 621.39 respectively.

Even though this principle has not been followed very strictly in all disciplines, recent editions including KDC 6 have tried to apply it at least to the level of the 1,000 sections.

No.	Divisions	No.	Divisions
000	General works	500	Technology
010	Books, Bibliography	510	Medical science
020	Library & information science	520	Agriculture
030	General encyclopedia	530	Engineering, technology, etc.
040	General collected essays	540	Construction and architecture
050	General serial publications	550	Mechanical engineering
060	General societies	560	Electrical, comm. & electric engineering
070	Newspapers, journalism	570	Chemical engineering
080	General collected works	580	Manufactures
090	Materials of province	590	Human ecology
100	Philosophy	600	Arts
110	Metaphysics	610	[Unassigned]
120	Epistemology, etc.	620	Sculpture, plastic art
130	Systems of philosophy	630	Crafts
140	Chinese classics	640	Calligraphy
150	Orient philosophy and thought	650	Painting, design
160	Western philosophy	660	Photography
170	Logic	670	Music
180	Psychology	680	Stage performance, museum arts
190	Ethics, moral philosophy	690	Amusements, sports & physical training
200	Religion	700	Language
210	Comparative religion	710	Korean language
220	Buddhism	720	Chinese language
230	Christian religion	730	Japanese & other Asian languages
240	Taoism	740	English
250	Chondoism	750	German
260	[Unassigned]	760	French languages
270	Hinduism, Brahmanism	770	Spanish languages & Portuguese language
280	Islam, Mohammedianism	780	Italian languages
290	Other religions	790	Other languages
300	Social sciences	800	Literature
310	Statistics	810	Korean literature
320	Economics	820	Chinese literature
330	Sociology and social problems	830	Japanese & other Asian literature
340	Political sciences	840	English & American literature
350	Public administration	850	German literature
360	Law	860	French literature
370	Education	870	Spanish & Portuguese literature
380	Customs, Etiquette, Folklore	880	Italian literature
390	Military science	890	Other literatures
400	Natural science	900	History
410	Mathematics	910	Asia
420	Physics	920	Europe
430	Chemistry	930	Africa
440	Astronomy	940	North America
450	Earth science	950	South America
460	Mineralogy	960	Oceania and Polar regions
470	Life science	970	[Unassigned]
480	Botany	980	Geography
490	Zoological science	990	Biography

Table 3. Outline of KDC 6.

Subjects	KDC Number	DDC Number	
Computer Science	004	Computer science; computer programming, programs & data; Special computer methods	004-006
		Computer engineering	621.39
Gardening	525.9	Garden crops (Horticulture)	635
		Landscape architecture	712
		Therapeutic use of gardening	615.8515
Construction & architecture	540	Construction of buildings	690
		Architecture	720
Design	658	Industrial art and design	745.2
		Pure & applied design	745.4
		Specific commodity or art form	in each subject
Religious Music	672	Religious music in general	203.7
		Religious music in each religion	in each religion

Table 4. Some examples of topics classified by subjects. (Adapted from the table in Oh (2015), *Theory of Classification*. Daegu: Taeilsa, 207.)

4.2.3 Mnemonic tables and notational synthesis

"Mnemonic tables" in KDC are named like that in order to emphasize their mnemonic characteristics and are equivalent to Auxiliary Tables in DDC. KDC 6 has six kinds of mnemonic tables: (1) Standard subdivisions, (2) Geographic areas, (3) Languages, (4) Subdivisions of individual languages, (5) Subdivisions of individual literatures, (6) Subdivisions of individual religions. Two former tables of KDC 5 (Korean geographic areas and Korean historical periods) are incorporated into Geographical areas table and related parts (911.01-.082) of the schedules in KDC 6.

Generally speaking, kinds and expansions of many mnemonic tables in KDC are similar to those of DDC and/or NDC. For example, Standard subdivisions, Geographic areas, Languages, Subdivisions of individual languages, and Subdivisions of individual literatures are basically benchmarked from the ideas of DDC. Specifically speaking, many of the numbers in Subdivisions of individual languages and in Subdivisions of individual literatures are almost the same as DDC and/or NDC, as Oh (2012b) has summarized for the expansions of each table in detail.

In spite of the above facts, KDC has its own characteristics in mnemonic tables and related applications of them. First of all, it makes Geographic Areas and Languages have mnemonic value by maintaining the orders of "Korea, China, Japan" and "United Kingdom (English), Germany (German), France (French), Spain (Spanish), Italy (Italian)"

in both tables (see Figure 3). This means that it has local emphasis on Korea and East Asia, and that has changed the order of "Italy (Italian), Spain (Spanish)" of DDC into "Spain (Spanish), Italy (Italian)" reflecting the literary warrant of Korea. It can also make it possible for the classes Language (700), Literature (800), and History (900) to have mnemonics in their divisions, as in Table 5.

Another point is that KDC has established a unique table named Subdivisions of individual religions. As we can see in Table 3, KDC arranges major religions in the divisions of the class Religion, reflecting the Korean situation where various religions including Buddhism, Christianity, and so on co-exist (Oh & Yeo 2001, 76-77). So, it is possible to establish and apply the numbers of Subdivisions of individual religions as a facet of religion, as explained below. This table expands the numbers as follows: -1 Religious doctrines, -2 Founders and leaders, -3 Sources and scriptures, -4 Religious life and practice, -5 Missions and religious education, -6 Religious organization, -7 Public worship and other practices, and -8 Sects and dominations. It is very interesting that KDC introduced this mnemonic table as early as 1964 in its first edition which is similar to the special auxiliary in Class 2 of UDC (Broughton 2000; McIlwaine and Mitchell 2006; UDC 2020).

Basically, a notation or notations from these mnemonic tables are added to a base number to make synthesized numbers based on analytico-synthetic principle (Hjørland 2013), as in any other decimal classification system includ-
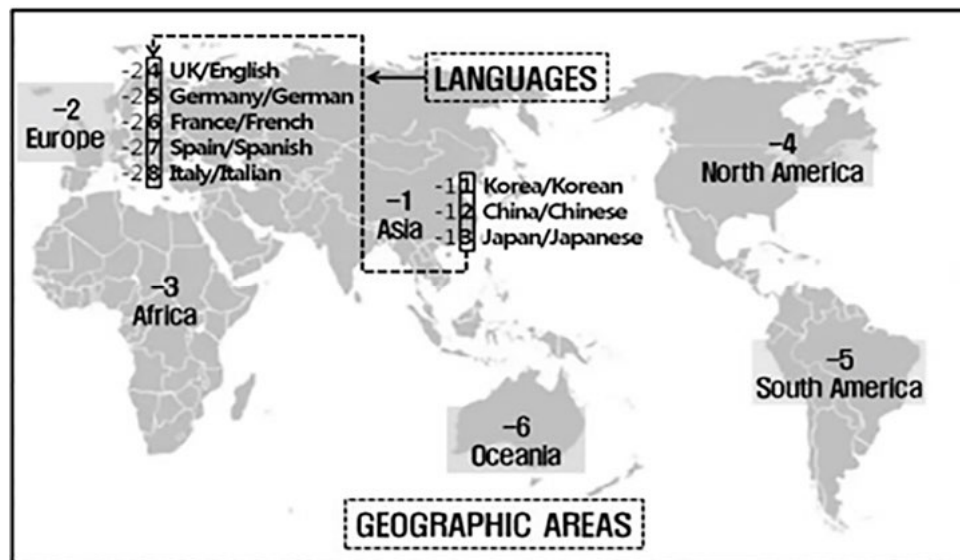
Figure 3. Mnemonics between Geographic Area and Languages. (Adapted from the figure in Oh (2015), *Theory of Classification*. Daegu: Taeilsa, 235.)

Mnemonic Tables		Main Classes in Schedule		
Areas	Languages	700 Language	800 Literature	900 History
-11 Korea	-1 Korean	710 Korean	810 Korean	910 Korea
-12 Japan	-2 Japanese	720 Japanese	820 Japanese	920 Japan
-13 China	-3 Chinese	730 Chinese	830 Chinese	930 China
-24 UK	-4 English	740 English	840 English	940 UK
-25 German	-5 German	750 German	850 German	950 German
-26 France	-6 French	760 French	860 French	960 French
-27 Spain	-7 Spanish	770 Spanish	870 Spanish	970 Span
-28 Italy	-8 Italian	780 Italian	880 Italian	980 Italy

Table 5. Mnemonics among Geographic Area, Languages, Language (700), Literature (800) and History (900). (Cited from the table in Oh. 2012b. Developing and Maintaining a National Classification System. *Knowledge Organization* 39(2), 77.)

ing DDC. Taking an example from the table of Subdivisions of individual religions, the number of the subject of "Bible" can be synthesized by adding the number -3 (Sources and scriptures) to the base number of 23 (Christian religion) (for more examples of synthesized numbers of these types, see Table 6).

In addition, there are many examples of notes instructing to add a number or numbers from the schedule to any other base number in KDC 6. For example, some notes specify that an entire number (001-999) of the schedules can be added to a base number, such as a note of "Subdivide by subject like 001-099" in 078 Newspapers in specific subjects. According to this note, an entire number can be added to the base number 078 to obtain a number for the newspaper of that subject.

In order to classify a book on "Educational Newspapers", the process will be: "078 (base number) + 370 (Education) → 078.37" (any final "0" after the decimal point is deleted as in the case of other decimal systems).

In other cases, fraction(s) of number(s) from other parts of the schedules can be added to a base number according to a note specifying that. For example, there is a note saying "Subdivide like 350.1-.5" in 371.1-5 General administration of education. According to this note, the number of "Personnel administration of education" will be synthesized as: "371 (base number) + 3 (the number following 350 in 350.3 Personnel administration) → 371.3".

Even though the notes and instructions are not yet well developed as they are in DDC, KDC has continuously up-

Religions	Base No.	-1 Doctrine	-2 Founder	-3 Source	-4 Life	-5 Mission	-6 Org.	-7 Worship	-8 Sect
Buddhism	22	221	222	223	224	225	226	227	228
Christianity	23	231	232	233	234	235	236	237	238
Taoism	24	241	242	243	244	245	246	247	248
Chondoism	25	251	252	253	254	255	256	257	258
[Unassigned]	-	-	-	-	-	-	-	-	-
Hinduism, ...	27	271	272	273	274	275	276	277	278
Islam, ...	28	281	282	283	284	285	286	287	288

Table 6. Specified synthesized numbers using subdivisions of individual religions. (Adapted from the table in Oh (2015), *Theory of Classification.* Daegu: Taeilsa, 255.)

graded them to maintain consistency and to make the explanations easier edition by edition. In this regard, it must be a good strategy to benchmark the cases of well-established general classification systems such as DDC, UDC, and so on, in the future edition of KDC.

4.3 Development and maintenance

The latest edition, KDC 6, was published in 2013, with help and support from various groups of persons and organizations, as reported by Oh (2018) summarized below.

First of all, the Classification Committee of KLA have played the key role in revising the system. Nine members of it have tried to upgrade it through hearing from users and reflecting feedback information in the revision. They had many meetings among themselves and open hearings for relevant parties in the library community, in addition to their work for the revision, and publishing related articles in professional journals.

The National Library of Korea (NLK) as a center for bibliographic control in Korea has continuously cooperated with the Committee in various aspects. Not only did the head of Division of National Bibliography join the Committee as a member, but NLK has also provided various kinds of feedback information acquired both within the library and from the public libraries nationwide, using their networks and other systems supporting the library community. Especially at the final stage of the revision, NLK has established a Task Force Team to support the Committee, and its members have checked all the pages of the final version one by one. In addition, NLK has provided both online and offline courses for KDC in their training programs for library practitioners.

Many subject specialists have also cooperated with the Committee in the revision of both KDC 5 and KDC 6. Even though their cooperation has basically started from their individual personal relationships with Committee members as a kind of voluntary service, they have contrib-

uted very much in supplementing the knowledge gaps of the Committee members about various subjects. KLA has sent formal invitation letters to them, and their names have been listed in the report by the Committee published in the schedules, in order to thank them, even though not paying any financial rewards to them.

Especially at the final stage of the revision, the role of the editorial and publishing team is always very important. During the revision for KDC 6, the Committee and the team have cooperated very closely. Members of both groups have met many times to check all the pages of the draft together. This process has made it possible to save time and money and to upgrade the layout of the pages of the schedules and index.

Continuous support from the headquarter members of KLA and their attention to the system should not be disregarded, because revision is a complicated time-consuming work taking a long time. They have helped the Committee not only in administrative and other clerical aspects but also in financial aspects. After publication of the revised version, KLA has taken the role of publisher to distribute copies and to get feedback information, including complaints, suggestions, reports of errors, and so on.

The Classification Committee of KLA has been an important standing committee not only having responsibility for revising KDC but also getting feedback from the library community. Based on various cooperative efforts with other groups and continuous support from the parent and related organizations, including KLA and NLK, the Committee will be prepared for revision for further editions.

4.4 General evaluation of KDC

KDC has been through continuous and varied evaluations from the Korean library community because of its merits, some of which are listed below (Oh et al. 2014, 18-19; Oh 2015, 216-218; Yoon 2010, 205).

Most of all, it must be a practical system for Korean libraries reflecting local emphasis for Korea and East Asia. It has been widely used especially in the public and school libraries in Korea. It has been continuously revised to maintain its currency and reflect feedback information from users, with responsibility and support from KLA, an official representative organization of the Korean library community. Cooperative support from various related groups and organizations including NLK providing various training programs for KDC must also be an advantage for it, as discussed in 4.3.

It has many of the common characteristics of decimal systems which can be regarded as merits. For example, it adopts a simple pure notation of Arabic numerals used world-wide and having a self-evident sequence; it provides a relative index which "brings together different aspects of the same subject scattered in different disciplines" (Chan 1981, 26); it uses a hierarchical structure wherever applicable in the notation which can express relationships of the classes and help search for related materials; and so on. It makes use of various mnemonics including six kinds of tables. It includes various and detailed explanations and annotations about the system in general, the schedules and tables, using the introduction, notes in the schedule, and the manual. It also contains some options to allow individual libraries to make their own decisions based on their situations.

It is possible for libraries to acquire cataloging information based on central bibliographic services available from the KORMARC data or e-CIP data of the National Library of Korea and to do derived or copy cataloging to save time and money.

KDC cannot be without demerits or weaknesses, some of which might come from the nature of decimal systems in general, and others from its own limitations (Oh 2012b, 79; Oh et al. 2014, 19; Oh 2015, 218-219; Yoon 2010, 205-206).

It has the same intrinsic limitations as other decimal notational systems restricting the hospitality of the subdivisions of classes to nine at each rank. Some expanded detailed areas of subjects might have inconveniently lengthy classification numbers, even though the expansion by decimal system in KDC is infinite in principle. Locations and placements of some subjects, especially of newly emerged ones, have been criticized as inappropriate, because of either the problems in hospitality of numbers or of lack of remaining appropriate space to allocate subject in the same array.

KDC has not been revised periodically at regular intervals. This should be improved in order to maintain the currency of the system and reassure users about the future publication of new editions.

There is the lack of an abridged edition and of a web version, which are popular in other major classification systems including DDC. They would help KDC to respond to the requests especially both from small libraries and from new generations of librarians. In addition, any project to create linked data for KDC can be recommended as in the case of NDC (Nakai et al. 2016). An improved homepage and possibly a KDC blog can be good channels to communicate with users. All these efforts must be good improvements for KDC to respond to the changes of the Internet age.

5.0 Concluding remarks: prospects for KDC and recommendations for future development

It seems evident that KDC will continue to survive as a national standard classification system in Korea, at least for a considerable period of time, as we can easily guess from the above discussion. However, in any jungle of markets, the weak always die out and only the strong will survive through competition. KDC will not stay safe under the good name of "national classification system" supported by "national library association" named KLA. Now it is the time to respond properly to the users with high quality and reasonable services to meet their needs and wants, especially by strengthening the merits and improving the weaknesses discussed in 4.4, considering various theoretical aspects of knowledge organization (Hjørland 2016).

KDC is one of very few cases of a successful national library classification system. For this reason alone, it deserves to be investigated more, not only in order to be benchmarked by other nations or organizations considering the development of a new system or improvement of an existing one, but also to do any kind of research about it as a case study or comparative study with other systems.

Nowadays, we have been experiencing the big pressures of efficiencies and cost savings which rationalize and support the logic and arguments of the mainstream or the majority. Almost all types of libraries must be confronted with this issue. The world of library classification and knowledge organization systems is no exception. We have witnessed so much increasing worldwide influences of major classification systems such as DDC based on its stronger market powers. In this situation, "for some nations, it might be an easier and a better decision to use any international system, rather than having to deal with the many difficulties of maintaining their own systems" (Oh 2012b, 80). However, we should remember that it is not always better to follow the mainstream. As Miksa suggests, it is very difficult for any classification system to be "the one best classification system that will serve all purposes" (1998, 81). And, in reality, all knowledge organization systems "are cultural and temporal in their making" (Satija 2017, 304) and become "cultural artifacts that directly reflect [...] cultural concerns and contexts" (2009, 1045), and also "classification as a cultural artifact serves an epistemological role as disseminator of the culture it embodies" (Smiraglia 2014, 21). Comaromi

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and Satija (1985) also noticed the social bearings of library classification when they review the history of Indianization of DDC. So if their bibliographic and other related situations are different from others, they should respond to their own local situations appropriately.

There must be good considerable reasons and something special about any successful survivor in the market. KDC also must have them. In this regard, other national systems can study those ideas from the Korean case involving the development and maintenance of national bibliographic tools, including lists of subject headings, MARC formats, etc., in general as well as those of classification systems in particular. Even major classification systems such as DDC can also discover some suggestions from KDC for improvement, including ideas for local emphasis for other countries or regions. In today's age of globalization, cooperative efforts with, and benchmarking from, other counterparts or concerned partners, even though they may seem little, are indispensable both for worldwide international organizations and for smaller national ones. For example, a project from IFLA which produced a study and analysis of national subject heading lists focusing more on vocabulary problems (Lopes and Beall 1999) can suggest some ideas for equivalent similar ones in the area of national classification systems. Through the continuous efforts described above, these can continue to be competitive organizations with good prospects.

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