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**CALL NUMBERS, BOOK NUMBERS  
& COLLECTION ARRANGEMENTS  
IN EUROPEAN LIBRARY  
TRADITIONS**

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*“...books are put there [i.e.in a library] for no other reason than to be serviceable as need arises. This, however, is impossible unless they be classified and arranged according to subject matter, or in such other fashion as will facilitate their being found at specified places. I affirm, moreover, that without this order and arrangement a collection of books of whatever size, were it fifty thousand volumes, would no more merit the name of a library than an assembly of thirty thousand men the name of an army if they be not billeted in their several quarters under the orders of their officers, or a great heap of stones and building materials the name of a house large or small till they be properly put together to make a finished structure”*  
(from Gabriel Naudé, *Avis pour dresser une bibliotheque*, 1627 - English translation from 1950, pp. 63)

Throughout the long history of the library, there have been

many examples of methodical approaches to creating techniques, tools and knowledge that contribute to creating the library profession as we know it today. Collection arrangement and book labelling represent skills that are built into the very foundations of librarianship.

With the opening of each new library, with collection merging or moving, or when building open access to a collection from scratch, librarians continue to question the methods they inherited. They wonder whether there are more efficient, cheaper and more elegant solutions for labelling documents for quick location and re-shelving (Beguét & Hadjopoulou, 1996). Knowledge about and understanding of call numbering systems remains relevant in modern libraries for several reasons. Librarians have to have a good understanding of the details and functions of book labelling in order to make an informed decision on how much of the work required for book labelling and re-shelving can be saved or replaced by other methods of locating and presenting documents. Hasty or incompetent simplification of book labelling or its removal in order to cut the cost of book processing may have a knock-on effect on book locating and re-shelving and could diminish the value of open access to a collection. The automation of circulation and book label printing, or the possibility of creating an automatic system for book labelling emphasised the need to have and know the system and to be able to record, present and describe its rules for machine processing (Markey Drabenstott, Riester & Dede, 1991).

In the introduction of his recent book “Book numbers Indian and Cutter” referring to the reality of digitization and the establishment of virtual libraries, Satija (2008) notes that in the digital future, the need for book labelling and organization skills may become superficial. Indeed, if examining trends in librarianship from the 1980s, we can clearly see how some professional skills have been gradually moved from the core of the profession to specialised niches of activity. For some time now librarians have been graduating from library schools in the United States, United Kingdom and many other Western European countries with only a vague knowledge of cataloguing and

classification. We are already used to the fact that libraries outsource rather than employ cataloguers and we now also see more and more trades and industries replacing their special libraries with outsourced information searching services. So what is the point in discussing the skills required to efficiently label and arrange shelves, which are even more specialized and less respected than those required by cataloguing, classification or reference services?

There may be two reasons. The first is the fact that librarians pride themselves in being curators and facilitators of knowledge produced and amassed throughout the centuries by all professions and from all areas of human activity. Why should their own profession be an exception and why would they not attempt to record and preserve knowledge on some of their own practices, especially if these are in danger of disappearing? The second reason is that despite the waves of change brought about by digitization we know that it may still take some time before all physical document collections have disappeared. As long as the physical collection is in existence, even as a museum collection and as a last remaining niche of specialisation, we may need these collections to form an organized structure rather than a heap of books.

This paper will provide an overview of what book arrangement and labelling may actually consist of and how it has historically evolved. To complement the contribution of Satija (2008) in recording Indian practice in his recent book the author will pay special attention to the practices in European libraries.

### **Call Numbers throughout History**

The historical roots of book labelling and call numbering systems can be found in archaeological artefacts of the highly organized and professionally managed libraries of Mesopotamia dating back to the third millennium before the Common Era. Bushnell, for instance, writes about instructions from what is supposed to be the preserved remnants of a catalogue of the library in ancient Agadé<sup>1</sup>: “...the would-be borrower is told to write down on a piece of the papyrus provided for the purpose, his name and particulars of the work he would consult, when the librarian will

take down the tablet and hand it to him". Each of these tablets "had its special number and place and the whole was classified in a manner which puts some of our modern libraries to shame" (Bushnell, 1931, p. 25-26). Excavation of the ancient libraries, such as the one in Nineveh, discovered hundreds of thousands of clay tablets filed in the same order they were on the wooden shelves before these were burned down. The tablets were systematically organized and it is obvious that in order to maintain and manage this arrangement some system of labelling had to be in place. Bushnell also writes about a library from the ancient city of Larsa (now Senkereh): "Mr. Loftus brought from Senkereh a number of triangular contract tablets with holes and the angles. It is assumed that cords were passed through these holes in order to secure pieces of papyrus on the tablets. In some libraries this method was adopted to attach labels showing the class-mark, the book number, etc. of the tablet in the collection to which it belonged." (Bushnell, 1931, p. 28). When writing of a classification system comprising 120 classes, which was used by Callimachus for the arrangement of his catalogue, known as Pinakes, Norris (1939) comments that it is most likely that the same classification system was used in the physical arrangement of the Alexandrian library collection.

In libraries throughout the middle ages, the order of books on the shelves in monasteries and cathedrals was by subject and occasionally by donors, as has been recorded in catalogues preserved from that time. But according to Bakewell (1972) the need to mark the location of books was not appreciated until the fourteenth century, and as he says, the various cumbersome methods were used to deal with independent works which were bound together in one volume. From Norris (1939) we learn about the methods and techniques of book locating and book labelling (*ordo locacionis*) which can be followed through the history of small monastery libraries in mediaeval Europe all the way up to the 19th century. The issue of book ordering found its place in the first theoretical foundations, examples of good practice, guidelines and instructions for collection arrangement from 16th -18th century such as those by Conrad Gesner, Andrew Maunsell, John Dury and Gabriel Naudé and Abbé Rosier (cf. Bakewell, 1972).

However, the question of book labelling as part of a wider set of issues in collection arrangement and book processing did not attract much attention until 19<sup>th</sup> century when the size of library collections created problems for the management and accessing of books. Libraries that did not have a practice of labelling books had to start introducing this method and librarians refusing to do so, attracted criticism from their peers. Also the old mediaeval methods of labelling books according to rooms, bookcases and shelves (fixed book number) created problems in growing collections.

The introduction of open access to library shelves in the middle of 19<sup>th</sup> century America and to a lesser extent the United Kingdom, virtually launched librarianship into the modern era. The arrangement of books in open access to shelves was the main goal for the founders of modern library theory: Melvil Dewey, Charles A. Cutter, Henry E. Bliss and James Duff Brown. Many great librarians of the time contributed to the discussion on book arrangement and call numbering systems published in the American "The Library Journal" and British "Library Association Record" from 1876 all the way up to the first decades of the 20th century. If we look into the papers by Jacob Schwartz (1878; 1879), John Edmands (1879; 1887), Melvil Dewey (1879; 1879a; 1897), Charles A. Cutter (1878; 1886;1887; 1887a), Horace Kephart (1897), James Douglas Stewart (1907), Henry E. Bliss (1910; 1912), William S. Merrill (1912), and William C. B. Sayers (1912), we will find that they took seriously, and discussed with great passion and conviction, issues that many modern librarians would consider somewhat trivial:

- Is the book format relevant for the ordering of books within a class?
- Should the call number be relative, and how is the interpolation of new books resolved: by decimal notation or jump number sequences?
- Should the books within the class be arranged in accession order, alphabetically or chronologically?
- If alphabetical, should the symbols used be letters, numbers or a combination?

- If chronological, what system should be used for chronological book numbers?
- What method should be used for creating the shortest book number?

The main focus at the time was to create a tool for the shortest possible call number. Thus Schwartz (1878), who offered a classification system combined with author number system, claimed that if one used his scheme, one could accommodate 500 million books using seven-digit numbers. However his and other systems offered at the time did not allow for unlimited interpolation of books, i.e. they were not based on a decimal system and did not survive the test of time.

It is largely due to these efforts and attention to detail that librarians worldwide have reached a common understanding of the importance of relative location and decimal ordering. Fifty years later, and with the same dedication, Ranganathan (1962; 1967) also devoted significant attention to book numbering, eventually offering his own system. Apart from Ranganathan's contribution, the work that reached international recognition and continued into the 20<sup>th</sup> century remained that of the American authors Melvil Dewey, Charles A. Cutter, Walter Biscoe, Henry E. Bliss, William S. Merrill and Bertha Barden. In the second part of the 20<sup>th</sup> century the subject became both exhausted and less fashionable after Lehnus and Comaromi's books were published in 1980 and 1981 respectively. Apart from Satija's articles and books (1987, 1990, 2008) there were very few comprehensive texts on the subject.

In 19<sup>th</sup> century Europe, issues of call numbering and book arrangement were not neglected. However these were addressed mainly as a set of instructions in library manuals or rules applied in large libraries by authors such as Martin Schrettinger (1829, 1834), Johan Georg Seizinger (1863), S. Comnos (1874), Léopold Delisle (1897, 1908) and Giuseppe Fumagalli (1890). Books devoted specifically to collection arrangement and call numbers did not start to appear until the 20<sup>th</sup> century when a number of titles by German but also Italian, French and Hungarian authors could be found. In addition almost every country in Europe published in the 20<sup>th</sup> century some manual in their national language that would give

instruction on book arrangement and how to assign call numbers.

### **Why Book Labelling?**

In the 1930s, Bertha Barden summarised the purpose of book labels, or as we professionally term them call numbers, in six points. Many of these are still relevant irrespective of library automation:

- To arrange books in order on the shelves
- To provide a brief and accurate call number for each book
- To locate a particular book on the shelf
- To provide a symbol for charging books to borrowers
- To facilitate the return of books to the shelves
- To assist in quick identification of a book when inventories are taken (Barden, 1957)

With respect to the useful collocation of documents on shelves, Satija (1990, p. 21) suggested that call numbers can be used to fulfil the following functions:

- Bring together all the books of an author within a given class, if the arrangement is alphabetical
- Bring together different editions and various copies of a book
- Bring together a host and all its associated books together on the shelves
- Bring together all the books by and on a prolific writer
- Depict the historical development of a specific subject if the book numbers are of a chronological variety

One can also add to this:

- Bring together biographical or critical works on a person, author, artist.

Most importantly, if call numbers hold information about a subject class (class mark) they can assist in collection development and management as they will allow book acquisition and circulation statistics to be analysed by subject areas.

### **Types of Mechanical Document Ordering**

Irrespective of how books are going to be arranged, i.e.

grouped and presented on shelves there are only three methods of mechanical ordering of documents adopted in library practice:

- Order of accession - using a system known as ‘accession number’ or ‘*numerus currens*’
- Alphabetical order - using author name letters or author numbers
- Chronological order - using year or chronological code

### Accession Order and Numerus Currens (Accession Number)

The expression widely used in European libraries for creating book labels based on the order of acquisition, i.e. accession within a certain part of a collection, is *numerus currens* (Latin for ‘running’, i.e. consecutive numbers). This method used in the mechanical ordering of books may have different variants and may be applied to different combinations of call numbering elements. It may be used to order books within a book size format but also within a year, e.g. 1970/245 (the 245th book that arrived in the year 1970), or it can be used to arrange books with a subject class M/245 (the 245th book that arrived in class M).

Separating documents by book size format (2° Folio; 4° Quarto; 8° Octavo; 12° Duodecimo and 16° Sextodecimo) and then using *numerus currens* is a practical and frequently applied solution in arranging closed stacks of large libraries as this helps in saving shelf space. A book size format is usually denoted either by publishing standards symbols (2°; 4°; 8°; 12°; 16°) or by replacing these with capital letters or roman numerals, e.g. A, B, C, D, E or I, II, III, IV, V.

*Numerus currens* is sometimes applied in so called jump sequences. By applying the jump sequence technique, books can be arranged by size without using a book size symbol. To achieve this librarians prepare a sequence scheme for assigning numbers in advance, e.g.

Duodecimo	1 – 9,999
Octavo	10,000 – 19,999
Quarto	20,000 – 99,999

Folio 100,000 -109,999

Before the advent of automation, librarians assigning call numbers in this way would have notebooks prepared in advance which would help them check sequences but also note numbers that were occupied. They could also use a card shelflist (also known as topographic) catalogue for the same purpose.

One of the main inconveniences with the arrangement of books with accession numbers is in the fact that the same work would be scattered on the shelf depending on the time of their acquisition. This was especially inconvenient before library automation when users ordering books from the catalogue would have to make a note of the accession number of each copy of a title and the library staff would have to check different places on library shelves to see whether there is any copy of the work available.

### Alphabetical Ordering of Documents

In contrast to its present popularity, the alphabetical ordering of books was adopted relatively late by libraries. The method was said to be first introduced at the end of the 16th century by Andrew Maunsell, an English bookseller who ordered books in his catalogue by the author’s surname and anonymous books by title (Bakewell, 1972). The same practice was later adopted by the Bodlean library, and also suggested by John Dury in his “Reformed Librarie-Keeper” in 1650 (Dury, 1983).

The alphabetical arrangement of documents was very quickly embraced by librarians and is today considered to be the most logical and natural way of ordering documents. It is by far the most prevalent arrangement of books within classes in libraries with open access. The alphabetical order of books may be present in ordering books by the author, and then also works by an author would be ordered alphabetically by title.

In continental Europe, especially in countries following the German library tradition, the alphabetical arrangement of books was typical of special, institute libraries and reading rooms, i.e. only when there was open access to books. In public libraries this would be often the only or principle arrangement of fiction. It is interesting that Baader (1957) in his, otherwise, very detailed book

on call numbering methods did not give much prominence to alphabetical book ordering. He did, however, mention the Anglo-American tradition and two basic methods of book numbering in order to achieve alphabetical ordering:

1. creation of the book mark using the first letters of the authors surname, e.g.  
ARNOLD, Thomas ⇒ **ARN**
2. creation of the book mark by assigning an author number, i.e. finding an adequate code for the author's name using specially prepared author number tables.

Cutter-Sanborn	Cutter Three-
Three-Figure	Figure Author
Author Tables	Tables

ARNOLD, Thomas ⇒ **A658 Ar16**

Both methods allow the grouping of works by the same author under one notation and ensure the alphabetical sequence of authors within a class of documents. Each uses the principle of decimal ordering and they allow unlimited interpolation of new authors. Equally, for both systems to work one has to control the shelflist catalogue in order to verify whether the author already exists in the class, under which code and which codes are free for use. But most importantly both methods require an additional set of guidelines and rules to cope with the versatile nature of a document's authorship, embodiments or manifestations (Slavic, 1997).

The author number method has been part of the Anglo-American library tradition since the 1870s when this method started to be widely discussed in professional publications and continued to be supported by the creation of author number tables. The best known tables are those created by Cutter: Cutter Two Figure Author Tables, Cutter - Sanborn Three-figure Author Tables, and Cutter Three Figure Author Tables. Less known worldwide are author number schemes created by James D. Stewart, Charles R. Olin, William S. Merrill, also the Library of Congress Author Number Table and Special Codes by Bertha Barden.

It should be noted that the author number tables, on their

own, do not provide a solution as to how to deal with various ordering issues arising from the different natures of authorship, language, orthography or problems with the variants of an author's name. They initiated, however, the creation, recording and sharing of some of the rules on how to actually apply author numbers for the creation of complete book numbers (author mark, work mark, edition mark, volume mark, copy mark) and how to denote different inner and outer forms of work presentation, binding or volumes. Although, initially, starting as in-house guidelines in large and (inter)nationally important libraries, soon these rules found their deserved place in library textbooks and once published found their application in other libraries worldwide (Cf. Baader, 1957; Lehnus, 1980; Comaromi, 1981).

The method of labelling using only the first letters of the author's surname, does not require any additional tools and is therefore attractive to many libraries. The most common practice is to take the first three letters of an author's surname or work's title. Because of its obvious but deceiving simplicity there is not much published or shared literature recording best practices or standardized rules. To illustrate the principle and potential issues with this method we will show examples from a large public library in Croatia where research on book numbers was conducted in 1990s (Slavic, 2007). As the main pressure on call numbers comes from the most common, i.e. most frequent surnames, this is an obvious point of concern. In this library such is the case with the common Croatian surname 'Horvat' in the class of Croatian poetry 821.164.2-1. The first author in this class will get a book number consisting of the first three letters HOR. Every other surname starting with 'hor' such as Horvatiaë, Horvatoviaë etc. will get an additional letter to differentiate it from Horvat, thus Horvatiaë will become HORV and Horvatoviaë will get author mark HORVA. Every author with the same surname, e.g. Horvat, is distinguished by the initial letter(s) of his/her forename:

accession

order

- |    |              |       |
|----|--------------|-------|
| 1. | Horvat, Ivan | HOR   |
| 4. | Horvat, Ana  | HOR.A |

- |    |                  |       |
|----|------------------|-------|
| 3. | Horvat, Dario    | HOR.D |
| 2. | Horvat, Mladen   | HOR.M |
| 5. | Horvat, Vladimir | HOR.V |

As shown in the example above, the problem arises if e.g. **Ana** Horvat, who should be alphabetically the first author on the shelf, arrives as the fourth author in the class. The only notation available for her is HOR.A which places **Ana** after **Ivan** Horvat who has already occupied the notation HOR. This problem with the accuracy of the alphabetical order is the main disadvantage when using letters instead of using author numbers.

The same situation is easier to resolve correctly using an author number. When the first author with the surname Horvat arrives, one checks the author tables and finds that surnames starting with Hor should be assigned number H811 (see excerpt from the author table below). The next author with the same surname will use the same base number with an additional digit from 0-9 to differentiate the authors. The next author will get the digit 5, e.g. H8115, thus allowing for subsequent authors in this class to be placed in the correct alphabetical order using a lower or higher digit. When later we get a surname which falls before the author occupying the base number H811, we again check the author tables to find the closest preceding number (in this case this is H799 reserved for surnames starting with Hopt). We use this number adding to it a digit 5 to make sure that we can interpolate new authors before and after. In building a correct sequence we can add as many digits as necessary following the principle of decimal interpolation.

<i>Accession Order</i>	<i>Shelf Order</i>	<i>Cutter - Sanborn Three-figure Author Table</i>
		:Hopt 799
4.	Horvat, Ana	:Hor 811
2.	Horvat, Darinka	:Horl 812
1.	Horvat, Ivan	:Horn 813
3.	Horvat, Mladen	:Hornb 814
5.	Horvat, Vladimir	:Horne 815

From the example above, it is obvious that the advantage of author number over a simple letter system is the power to maintain an accurate alphabetical order in the sequence. An obvious disadvantage is the fact that we need to purchase and use the tool to do so. Another disadvantage relates to the user un-friendliness of the call number - but this is something that can be endlessly argued about. Those disliking author numbers argue that when used alongside a class mark, an author number may appear visually less distinct and thus may make re-shelving that little slower. But this objection entirely depends on the type of classification notation used and of the design of the book label<sup>2</sup>.

### The Illusive Brevity of Author Numbers

The main argument behind the application of author number tables is the creation of short author symbols. And this, indeed, may be the case when using two-digit tables in smaller classes of smaller libraries.

But when one chooses Cutter's author number tables, for instance, driven primarily by the brevity of the book numbers, there are two important issues to take into account: the size of the collection and the geography, i.e. language and cultural environment of the collection. Once we have to cope with larger collections that contain a larger number of authors and consequently a larger number of anonymous works, we have to use three digit tables and this means that the starting base for an author number is on average four digits. But most importantly, Cutter tables were created primarily for American surnames and the English language. The alphabetical distribution of surnames across alphabet and consonant/vowel frequencies may be somewhat different in other languages which as a consequence may produce longer author numbers. For instance in Croatian a large number of authors will be placed under the letter K, with very common surnames starting with KR, KRV, KRS, KRT - and this would be highly atypical in any English speaking country. Satija (1987), for instance, reported on a study by the National library in Calcutta demonstrating that Cutter tables are unsuitable for Indian names and that it is often the

case that Cutter numbers have to be expanded to six and seven digits. This is why the National library developed their own author tables in 1961. For the same reasons, Indian authors Gopi Chand Makkar, Sayyed Basiruddin, and Asa Don Dickinson developed different author tables more suitable for Indian libraries (cf. Satija, 1990, 2008).

When comparing the length of author numbers using the Cutter-Sanborn Three-Figure Author Table and Cutter Three-Figure Author Table with simple letter methods in the class of Croatian poetry in a public library with around 300,000 books - no advantage in using Cutter numbers was evident, as illustrated in the class segment below (Slavic, 1997).

	<i>authors mark using letters</i>	<i>Cutter-Sanborn Three-Figure Author Tables</i>	<i>Cutter Three- Figure Author Table</i>
ADAMLĚ, Stanislav	ADA	A198	Ad15
ADELSBERGER, Ferdinand	ADE	A231	Ad34
ALAUPOVIĚ, Tugomir	ALA	A323	Al25
ALFIREVIĚ, Frano	ALF	A387	Al28
ALIĚ, Salih	ALI	A398	Al425
ANDRAŠEC, Florijan	AND	A553	An245
ANDRIJIĚ, Zdenka	ANDR	A573	An285
ANGJELINOVIĚ, Danko	ANG	A588	An455
ANTOLOGIJA dubrovaĚke lirike	ANT	A634	An88
ANTOLOGIJA dubrovaĚke lirike / ed. D. PavloviĚ	ANTp	A634p	An88p
ANTOLOGIJA hrvatske lirike	ANTO	A6345	An885
ANTOLOGIJA hrvatskog djeĚjeg kajkavskog pjesništva	ANTO.D	A6347	An887
ANTOLOGIJA hrvatske poezije XX. st.	ANTO.H	A63455	An8855
ANTOLOGIJA hrvatske poezije : od KaĚiaĚa...	ANTO.HP	A63457	An8857
ANTOLOGIJA hrvatske poezije : od najstarijih...	ANTO.HPN	A63458	An8858
ANTOLOGIJA hrvatske poezije : od XIV st. do...	ANTO.HPO	A63456	An8856

ANTOLOGIJA hrvatskih pjesama u prozi	ANTO.HPP	A6346	An886
ANTOLOGIJA nove Ěakavske lirike	ANTO.N	A6348	An888
ANTOLOGIJA nove hrvatske kajkavske lirike	ANTO.NH	A63485	An8885
ANTOLOGIJA novije hrvatske lirike	ANTO.NHL	A63486	An8886
ANTOLOGIJA novije kajkavske lirike / ed. M. K.	ANTO.NK	A63487	An8887
ANTOLOGIJA novije kajkavske lirike / ed. N. P.	ANTO.NKp	A63487p	An8887p
ANTOLOGIJA poezije bunjevaĚkih Hrvata	ANTO.P	A63488	An8888
ANTONĚIĚ, Antun	ANTONĚ	A635	An894
ANTUNOVIĚ, Tomislav	ANTU	A636	An895
ANTUŠIĚ, Pero Mate	ANTUŠ	A6365	An896
ARBANAS-Maksimov, Katica	ARB	A658	Ar16

From this research it transpires that the argument about the brevity of the author number is not valid if the author tables are applied outside the language environment for which they were originally designed. Any such system should be tested not only on authors surnames but also in large classes that may contain anonymous works in which the first word of the title occurs frequently, e.g. 'anthology', 'collection', 'report', 'proceedings', 'standard' etc.

### What is a Surname?

We mentioned earlier that author tables do not represent complete guidelines for resolving book numbers. For instance, they cannot help in establishing who the author is in numerous cases, when authorship is not clearly stated (official reports, corporate documents, legal documents, collective works, anonymous publication etc.). In addition, even in cases when the author's name is present it may not be obvious which word in the name should be selected, e.g. Sergio Rodríguez López Manuel or Lin Chan Siu Chun or Erik Jan Van der Linden or mediaeval authors such as Dante Alighieri or Leonardo da Vinci.



To overcome this problem the most widely adopted principle in devising an author mark (either by letters or by author number) is to follow bibliographic practice and to look for the heading of the catalogue description. The first word of the heading of the bibliographical description is usually the most useful access point and the best choice for devising a book number. When the heading is the author's surname then we will create what is an author number proper. Similarly and by following one's country's national cataloguing rules for anonymous works, the heading may be either the title or the editor. So, one should note that, in principle, national cataloguing rules will guide and help create rules for book numbering practice, as they will draw attention to issues that are already well known and handled in the process of catalogue heading selection. Here are some widely known problems:

- When the heading is the author's surname we may experience the following issues: special characters ä, ö, ü that have to be treated differently depending on whether the names are German, Hungarian, Turkish etc. Surnames with permanent attributes, e.g. *Mc, Mac, S., St., Saint, Hadji*, etc. Surnames that can contain apostrophes, dashes, accents and special characters such as Ø, Ç, ß, Æ, Ñ, Ò, Ù, Ý etc
- With anonymous publications, when the same word appears at the beginning of many titles, e.g. *Anthology of...*, *Collection of...*, *History of...*, *Introduction to...* etc.
- With corporate authors, when there may be a large number of different publications having exactly the same heading. In these kinds of publication, a decision also has to be made about abbreviations for distinctive elements (e.g. congress, conference, seminar, workshop etc.)
- With formal headings when there are a large number of different publications starting with the same geographical entity
- When collocating biographies and critical works under the name of the person in question, rather than under the author of the work, whose name may appear in the heading

### Work Mark

We mentioned earlier that we may also create a book number which will collocate, distinguish and order all works by an author. The most frequent way of denoting this is by using an initial letter of the first word of the title, e.g.

821.111-3 class:*English literature*

JOY author:*James Joyce*

p title: *A Portrait of the Artist as a Young Man*

This is again a situation in which we would check a bibliographic description. However, when doing so we will soon realize that if we want to collocate the same work or distinguish different works of an author we may need some additional rules. For instance, in the following situations:

- Work mark for the title that may be translated from the original in a slightly different way, hence the initial word may not be the same for different translations of the same title
- Work mark for a series of books (often fiction) that all begin with the same word e.g. *Maigret and the Killer, Maigret and the Idle Burglar, Maigret and the Ghost, Maigret and the Coroner, Maigret and the burglar's wife* etc.
- Work mark for publications by corporate authors (e.g. number of a conference, number of a congress, year of congress and conference etc.)
- Work mark for the publication under formal headings, e.g. title of the law, section of the law, year, status of the document etc.

In the previous two sections we have illustrated some of the reasons why there is a need for recording rules and having a system of call numbering in order to achieve a predictable alphabetical ordering. This is the reason why in addition to various existing author number tables many libraries and librarians had to develop more detailed rules.

### Chronological Ordering

Arranging documents within a class by year of publication

is the system very much justified in scientific, special and research libraries. This can be very simply achieved by writing the year of publication on the book label e.g.

<i>in formal arrangement</i>	<i>OR</i>	<i>in systematic arrangement</i>
A - book size	005.1	- class mark
2008 - year	2008	- year
34 - accession number	15	- accession number

Walter Stanley Biscoe (1853-1933) was the first to introduce and promote the idea of chronological tables. The solution proposed in his scheme was to replace the millennium and decades with a letter followed by the year in the decade thus resolving the notation for years with a two digit symbol, e.g.

V	1950-1959
W	1960-1060
X	1970-1979
Y	1980-1989

thus:

V5 is 1955

W6 is 1966

X1 is 1971

etc.

His scheme became very popular not least because it was recommended for use by Dewey in the then second edition of his classification. The main drawback of Biscoe's table was that it was not developed beyond 1999. Other widely known chronological schemes were those devised by William S. Merrill, James Duff Brown and S. R. Ranganathan.

### Shelf Arrangement

Historically, there are two types of shelf arrangement requiring two different methods of book labelling:

- **Fixed arrangement** – where books are labelled according to the shelf to which they belong, as was the case in libraries before the 19<sup>th</sup> century

- **Relative arrangement** – where each book is labelled according to the surrounding books, i.e. the book that precedes and the book that follows, which is an approach adopted by modern library practice since the 19<sup>th</sup> century

Book labels in a fixed arrangement are nowadays of interest mainly to researchers in library history, especially late mediaeval libraries and libraries from the 16<sup>th</sup> to 19<sup>th</sup> centuries. The system of 'fixed' call numbers, some of which can still be found in rare collections, usually consisted of three elements: *i*) number of the bookcase (possibly Roman numeral), *ii*) mark denoting the shelf (possibly letter) *iii*) accession number (usually Arabic) a book within that shelf.

It is relative shelf arrangement that is the standard arrangement for modern libraries. Ranganathan stresses this when defining a call number as a "number denoting the exact relative position of a document in a library (relative to other documents and not relative to shelves) and position of its entry in its catalogue" (Ranganathan, 1967, pp. 519).

With the relative positioning of books, the following two arrangements and two corresponding types of call numbering systems coexist:

- Collection arrangement based on **formal criteria** only (accession number, alphabetical ordering, chronological ordering)
- Classified or **systematically arranged** collections, i.e. in which the arrangement is primarily based on a books content, followed by some formal arrangement within the subject class

<i>call number in formal arrangement</i>	<i>call number in systematic arrangement</i>
R - reading room	R - reading room
A - book size	004 - class mark
34 - accession number	DOS - author mark
	p - title mark

Call numbers in a formal arrangement are mechanical and unrelated to a book's content. Their purpose is merely for the

storing and accurate locating of books. The order of books on shelves in these libraries does not make sense to users. A call number in a systematic arrangement, however, holds information about the book's content; it can reveal the author and often indicates the title. As books using this method are grouped by subject, this arrangement is relevant whenever there is a need to support subject shelf browsing. Hence, this explicit and content-revealing type of call number used to be termed *signatura loquens* (Lat. 'speaking' call number) - as opposed to a call number using a mechanical and meaningless accession number which is described as *signatura mystica* (Lat. secretive call number).

The link between call numbers and classification, i.e. systematic or classified book arrangement, was not truly established until the second part of the 19th century. A large number of public libraries in America with open access to shelves were opened during this time and this created the need for tools that would ensure both a logical sequence of subject and an intuitive sequence of books within the class. The introduction of a systematic shelf arrangement, and systems of call numbers related to it, is attributed to Melvil Dewey. It could be said that once a systematic arrangement was introduced, its advantages were such that many librarians in the Anglo-American library tradition never looked back to mechanical, formal and less user-friendly methods.

In 19th century Europe, and all the way up until the 1950s and 1960s, however, the majority of libraries were managed as a three-part system consisting of reading rooms, rooms with catalogues and closed stacks. Users would go to the catalogue room and search the collection through alphabetical, title or systematic catalogues and would hand the call number of the desired work to the counter, waiting for the book to be brought from the closed stacks. Open access to shelves was only present in reading rooms for a selected number of reference books and could be found in smaller academic and public libraries. Closed book stacks with formal book arrangement according to the size and accession numbers are still present in almost all old national and university libraries in Europe. Nowadays these libraries have expanded their reading rooms and their closed stacks have been extended with

larger open access areas. In closed stacks, to save space, books continue to be arranged by size and by some other formal principle, most often an accession number.

It is worth noting that in spite of how it may appear looking at the library shelves, document classification has always had an important role in European libraries. Due to differences in languages and scripts across Europe, classification was often recognized as the most efficient way of subject access in cross-European information integration. Classification's main purpose is, however, that of providing subject access through a systematic catalogue and many European libraries manage classification of books for systematic catalogues separately and independently from call numbering. This may be so even if the entire collection is arranged systematically. Selection of a class mark for a call number is ruled by the requirements a class mark has in enabling subject browsing and although this class mark may be derived from the complete and detailed classification number representing the book content it can often be much shorter or even different<sup>3</sup>.

### Formal Shelf Arrangement and Formal Call Numbers

We speak of formal collection arrangement when documents are ordered according to some external criterion such as: *a*) the physical form (format, size, type of binding); *b*) formal descriptive characteristics of the document (author, title, language, script, year of publication or publisher); *c*) library orientated information: accession number/acquisition number, acquisition year.

The most common methods of formal call numbering are the following:

- **Combination of book size mark and numerus currens**, i.e. arrangement of books within a book's size format in the order of accession. Book size can be expressed by symbol or numerus currens, can be in jump sequences; each sequence being reserved for a different book size
- **Combination of book size and chronological order**, i.e. books within a certain book size format would be arranged by year of publication and very often by numerus currens within a year

- **Numerus currens on its own** – this mechanical arrangement on its own is often adopted by archives and smaller libraries with closed stacks
- **Alphabetical arrangement by author/title on its own** - often in fiction collections and in public libraries
  - \* Using first letters of the authors surname or title
  - \* Using author numbering systems

### **Systematic Shelf Arrangement and Call Numbering Systems Applied**

The systematic or classified arrangement of books is the oldest known method of book arrangement. Even when chained to shelves or locked into bookcases of mediaeval libraries, books have most often been grouped by their content. But not until relative book arrangement and the introduction of modern classification by Dewey were we able to make full use of this logical and user-orientated principle.

But assigning a class mark to a book is not all that we have to do. The very moment a library chooses a systematic arrangement of books, the focus moves from the class number, i.e. classification, to how to order books within subject classes. This is why, in library traditions in which a systematic arrangement is the dominant way of book arrangement, it is practical to talk about book marks or book numbers, at a level below the class mark. At this point again book numbers will be designed based on one of the following methods of ordering: accession number, alphabetical or chronological. These are described in more detail in section 4 of this paper.

It is worth noting that the number of classes chosen for the shelf display will influence the length of the book numbers. If there are fewer classes, the class mark will be short but the book mark will have to be longer to accommodate a larger number of documents. Here again one can note a slight difference in practice between Anglo-American in which classification is used mainly for shelf arrangement and European libraries which often have detailed systematic catalogues allowing users to search and browse a subject classification to a very fine detail. Class marks used on a shelf in

European libraries generally aim towards maintaining a ‘coarser’ grouping of subjects. The assumption is that users having specific information needs will search the catalogue. Those who are uncertain as to what they are looking for will browse shelves and thus need not be distracted by the fine class subdivision.

Some guidelines suggest that a class on the shelf may have up to 50 titles.

This is very different from Anglo-American practice which applies classification (e.g. Dewey) to the greatest possible detail, thus forming classes on the shelf that may contain as little as one or two titles.

### **Call Numbers: Elements and Design**

From Ranganathan (1967) and later Comaromi (1981) we learn that the expression “call number” entered American library terminology from a period when users did not have access to shelves and had to “call” a book from the closed stack.<sup>4</sup>

It is usual practice to view ‘call numbers’ as consisting of the following elements (Ranganathan, 1967; Lehnus, 1980; Comaromi, 1981; Satija, 1990):

- **Collection mark** (whether explicit or implicit) which indicates to which collection or which part of a collection within a library a document belongs, e.g. reading room only, borrowing overnight, textbooks, etc. In principle, a book can be moved from one collection to another and can be placed in temporary collections when part of an exhibition or seasonal arrangement (Ranganathan, 1967: pp. 154). A collection, temporary or permanent, can be denoted by the colour of label, or by different kinds of symbols, e.g. the letter ‘R’ could be used to mark a reference collection, reading, reading room, or even rare books. When the symbol of a collection is missing this usually means that the notion of the collection is implied, i.e. the book belongs to the main collection.
- **Class mark** – denoting the subject area to which a document belongs

- **Book number** – “any device, simple or complex, systematic or arbitrary, used to sub-arrange books within a given class is known as a book number” (Satija, 1990: pp. 19). It can be also understood as a collection of symbols identifying the work itself, its authorship, embodiment, manifestation and its physical representation. When fully and expressively structured it may consist of the following elements:
  - \* *Author mark* – denoting the author or title if the work is anonymous
  - \* *Work mark* identifying the titles by the same author or identifying anonymous works with the same title by denoting the secondary authorship
  - \* *Edition mark* – edition of the work
  - \* *Volume mark* – if the work is published in more than one volume
  - \* *Copy mark* – denoting individual copies of a work

If a collection is not classified and arranged systematically, a call number will, obviously, not contain a class mark. Similarly if books are occasionally displayed in open access and sometimes taken to closed stacks they may contain two call numbers: one for open access and one for closed stacks. This is the practice in some large national and university libraries across Europe. Because of having to manage meaningless and mechanical codes, as well as systematic arrangement codes, libraries in continental Europe do not usually separate the notion of *book number*, i.e. the symbol for the book within a larger class, and *author mark* (symbol assigned to the author) from the one of *call number*, i.e. the summary notation on the book label.

Libraries often have to make decisions about a book labelling system, either because they are about to build one from scratch or change the existing system. The choice will depend on the library's needs, user needs, type of arrangement (systematic, formal or both), size and type of the collection, and functions that are going to be built on the call numbering systems with respect to circulation and collection management. These will determine how to fit the call number assignment within the book processing.

Specifically, librarians will have to decide whether their call numbers will be *a*) individual, i.e. be different for each copy of the work or *b*) a group call number, i.e. all the copies of the same title (or edition) would have the same call number.

The design of a call numbering system will include a decision on the number of elements and type of symbols and the way they will be combined. Baader (1957) records different examples of good practice in selecting symbols that avoid confusion, making labels easier to read and file etc. With library automation, many problems in symbol confusion (e.g. I and 1, or O and 0), or number length have become less relevant. Many useful devices such as the use of capitals and lower case letters to make a distinction, and the use of symbols and punctuation marks, however, started to cause problems in online shelf list catalogues (Howard, 1990; Kniesner, 1995; Marker, 1996).

When a library has open access, and thus the possibility to have a complex and structured call number, it is up to individual libraries to decide how many elements will be used in creating call numbers and what would the necessary minimum be to support the efficient management, shelving and presentation of the collection. Large special, research and academic libraries with open access tend to use more structured and more complex call numbers. The general trend, however, is to simplify call numbers to the minimum number of elements necessary to support required functions. This is a logical consequence of library automation and funding cuts that affected the number of staff available for book processing. Needless to say, a call numbering system in place may be a telling sign of whether a library is (or was) staffed by trained librarians.

## Conclusion

This paper provided an overview of the issues in book arrangement and book labelling. Good practice examples, tools and knowledge have been exchanged across international boundaries throughout the history of libraries. This was especially the case in the nineteenth and twentieth centuries when many library traditions converged, especially across the regions that once formed part of larger empires or that shared the same language. English language

was the factor that has united library practice in many countries; hence we often speak of Anglo-American library practice. Because of language barriers and a larger number of countries in Europe, one does not normally speak about a single European library tradition. In spite of this, a similarity in library practice can be found in some areas of collection management in many European countries and call numbering is one of these areas.

When Peter Baader published his excellent book “Standortbezeichnung in Bibliotheken” (Location Designation in Libraries) in 1957 he had an abundance of literature in both Anglo-American and European practice to draw upon. But the content of his book and the way he addressed the issue of book labels; discussing mechanical ordering, choice of symbols (decimal, fractions, letters, numbers), and the way he paid equal attention to call numbers in the formal and systematic arrangement of books, is very typical of the European library practice. The reason for this is that the three-part library systems with closed library stacks remained dominant in the majority of European countries until the second part of the 20<sup>th</sup> century. In Anglo-American libraries call numbering methods have been discussed mainly in relation to the systematic arrangement and open access to shelves.

Once open access started to be introduced more widely in European libraries, the arrangement of books within the class was chosen based on various combinations of national traditions and remained a matter of localized practice and in-house rules not all of which found their way into library textbooks (Slavic, 1997). When dealing with systematic arrangement in open access, European libraries have all adopted the good practices introduced and tested long ago in Anglo-American librarianship: classification (Dewey, UDC or other) and structured book numbers within class arrangement. Still, European librarians will be more familiar with the practice of double call numbers: one for closed stacks and one for open access, and would consider both of them equal relevance in collection management.

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