Needham 1964

Chapter 10
The Alphabetical Subject Catalogue

1. The Alphabetico-Direct Catalogue

Here we are concerned with subject headings of the kind found in Dictionary Catalogues (see also page 220). Traditionally the main feature of this kind of catalogue as we have seen (Chapter 6) is that it uses as subject headings terms in natural language using the natural form of phrase, e.g. ELECTRICAL ENGINEERING and CHILD PSYCHOLOGY rather than ENGINEERING, ELECTRICAL and PSYCHOLOGY, CHILD. The headings file alphabetically and there is some collocation of related headings – of *concretes* mainly, as opposed to the traditional disciplines and aspects (Economics, Engineering, Law, etc.) collocated by the classification scheme.

This is partly because in natural speech and in thought we tend to place the 'concrete' first, e.g. Pig breeding, Cotton industry, Theatre management, etc., and partly because, in their desire to avoid *class entries* like those in classified catalogues using the traditional schemes, dictionary cataloguers have deliberately collocated 'concretes' rather than disciplines. Cross references serve to guide the reader from a heading to a related heading, e.g. PHYSICS *see also* NUCLEAR PHYSICS, ECONOMICS *see also* FINANCE, MANAGEMENT *see also* THEATRE MANAGEMENT. The student should consult CBI under the traditional disciplines to discover the extent to which related headings are dispersed, and under 'concretes' (e.g. STEEL, UNITED STATES, RAILWAYS) to discover the extent of collocation.

There are thus two basic problems to be considered in the construction of the alphabetico-direct catalogue:
   (i) The exact form of the heading;
   (ii) The system of cross references.

The Creation of Headings and References through the Use of Classification Schemes

References in the alphabetico-direct catalogue are based on classification. Thus, references from a broad subject to a narrower one (e.g. ENGINEERING *see also* ELECTRICAL ENGINEERING) or from one coordinate subject to another (e.g. NOVEL *see also* SHORT STORY) and so on, involve classification whether overtly recognized as such or not. It may be that such references are not always made with explicit reference to a classification scheme, but then they are likely to be relatively unsystematic – classification is not thereby avoided. And quite apart from the reference structure, the creation of headings is itself classification: to accept as a heading the term BOOKS is to recognize a class, and the allocation of entries to that heading is classification. The question therefore arises: is it possible to make such headings and references by using a classification scheme in a manner analogous to the making of subject index entries? Ranganathan[1] and Coates,[2] among others, have suggested that this is possible – though modifications have to be made.

Suppose that headings and references were to be made for a document on Electrical engineering, classified by DC at 621.3. The chain for this would be:

600	Technology	
620		Engineering
621.3		Electrical

Clearly the direct heading (one using the natural form of language) in an alphabetico-direct catalogue would be ELECTRICAL ENGINEERING. This document is also to some extent a document on Engineering and Technology; readers wanting documents on either of these subjects may be interested to know of its existence – just as those wanting documents on Electrical engineering may consult the catalogue under a broader heading like Engineering. Therefore the heading must be connected to related headings by the following references:

ENGINEERING *see also* ELECTRICAL ENGINEERING
TECHNOLOGY *see also* ENGINEERING

Note that references are made *one step at a time* – not, for

example, from TECHNOLOGY directly to ELECTRICAL ENGINEERING, short-circuiting ENGINEERING. This is the only economic method. To jump steps would result in dozens and even hundreds of references from broad headings – if followed consistently a reference would have to be made from every class heading to every narrower heading; if not followed consistently, the reader would never be quite sure that he had not missed an important heading. This principle has unfortunately been ignored in practice.

Here is another example for a document on Inorganic chemistry, classified at 541:

Chain:
500	Science
540	Chemistry
541	Inorganic

The direct heading for the document is clearly INORGANIC CHEMISTRY and the following references will be needed:

CHEMISTRY *see also* INORGANIC CHEMISTRY
SCIENCE *see also* CHEMISTRY

Note that references *down* the hierarchy are usual in alphabetico-direct catalogues; upward references (e.g. INORGANIC CHEMISTRY *see also* CHEMISTRY, CHEMISTRY *see also* SCIENCE) are less frequent. The practice stems from Cutter's Rule (187) – see page 216. There is little logical reason for it, and unless upward references are made, no one can claim that a reader can discover documents on all the ramifications of a subject to the same extent as by the classified catalogue.

From these examples it is possible now to frame a preliminary rule on the making of headings and references by chain procedure:

(a) *Construct the main heading by using the last term in the chain, qualifying it by such other terms from the superordinate links in the chain as are necessary* (e.g. in the above examples ENGINEERING and CHEMISTRY are added respectively to ELECTRICAL and INORGANIC to form a comprehensible heading).

(b) *Make reference to it from the next superordinate link in the chain and make reference to that link from its superior, and so on, thus constructing a chain of references modulating one step at a time.*

In this way the catalogue will answer requests for documents on a specific subject and at the same time reveal relationships between subjects; if desired, *upward references* can just as easily be made (CHEMISTRY *see also* SCIENCE).

Other references will also be needed:

(i) From *synonyms*, e.g. VERSE *see* POETRY; WIRELESS *see* RADIO.

(ii) From other *related headings* – in particular closely related coordinate subjects not found in the chain, e.g.:

> DRAWING *see also* PAINTING
> ECONOMICS *see also* COMMERCE
> COUNTERPOINT *see also* FUGUE

(such references are usually made in both directions, e.g. COMMERCE *see also* ECONOMICS, FUGUE *see also* COUNTERPOINT in addition to those above).

In practice *modifications* are necessary if the method is to prove successful, for there are times when the last term in the chain will not be the sought heading for the particular subject. Study the following chain for a document on the Birds of Britain:

> 590   Zoology
> 592/599   Systematic
> 598.2   Birds
> 598.2942   Great Britain

By strict adherence to the method outlined above, the heading would be:

> GREAT BRITAIN: BIRDS

– but this is not the sought order of terms; the term BIRDS is the significant one and the heading should be:

> BIRDS: GREAT BRITAIN

Notice that this problem does not arise in the case of subjects which can be stated in a single term (as CHEMISTRY) but only in the case of headings with several terms – and in particular in compounds where there is no 'natural' phrase in common use to guide us as to the order of terms (as there is in INORGANIC CHEMISTRY). *Somehow modifications have to be made in such cases to bring the significant term into the main filing position.*

Can such modifications be made according to some prescribed method or must the determination of the final order of terms be a subjective judgement on the part of the cataloguer? Coates has outlined a possible method. He examines various compound subjects, for example: the manufacture of plastic toys; the design of concrete office blocks; heating in public libraries.

He suggests that the three most important elements in compound subjects can be called: Thing, Material, Action. These are the basic blocks from which compounds are built. In the first example, *toys* are Things, *plastic* is a Material, and *manufacture* is an Action. Each of the main elements of the above subjects can be analysed in this way. Coates suggests that in seeking compound subjects, readers automatically use the *significance order*:

Thing – Material – Action.

Thus the above subjects should be represented in the catalogue as follows if it is to meet the requirements of users:

> TOYS: PLASTIC: MANUFACTURE
> OFFICE BLOCKS: CONCRETE: DESIGN
> PUBLIC LIBRARIES: HEATING

Other examples of headings conforming to this pattern are:

> CHILDREN: PSYCHOLOGY
> FLOWERS: FERTILIZATION
> FACTORIES: INSPECTION
> HOUSES: WOODEN: INSURANCE

Thus, whenever chain procedure results in an order which fails to reflect this significance pattern, *the chain must be modified accordingly.* Here are some examples of modification of this kind:

> *Chain:*
> 669   Metallurgy
> 669.1   Iron, Steel
> 669.14   Production

Here the heading PRODUCTION: IRON AND STEEL would be modified to IRON AND STEEL: PRODUCTION in order to bring the Material before the Action and the result is a sought heading.

Chain:

636	Livestock, Domestic animals
636.7	Dogs
636.7082	Breeding

Again BREEDING: DOGS should give way to DOGS: BREEDING (i.e. THING: ACTION).

Further modification would be necessary if the last link in the chain were a Place, Period or Form division or a Form heading. Usually such links would be suppressed and used only as subdivisions in the heading (as in BIRDS: GREAT BRITAIN and SCIENCE: ENCYCLOPAEDIAS). However, an exception might be made for those subjects such as History and certain Social sciences where Place is a primary concept and should be retained as the main filing element, e.g. GREAT BRITAIN: HISTORY; GREAT BRITAIN: TRAVEL AND DESCRIPTION.

Thus chain procedure can be used for the creation of headings and references in the alphabetico-direct catalogue, though some modification will be necessary. The account of these modifications has been simplified here; other problems will undoubtedly arise, in particular when a compound contains two Things, or two Actions or two Materials. In this case an examination of the *relationships* between the terms might furnish a clue; Coates examines some twenty different types of relationship and sets out a relationship table, prescribing various solutions for each type.

It should be noted that this method does not always provide the traditional forms of heading: by and large phrases and sentences are avoided and the heading usually consists of terms separated by colons or some such device. Many cataloguers will object to them on the grounds that headings like TOYS: PLASTIC: MANUFACTURE; OFFICE BLOCKS: CONCRETE: DESIGN, etc., do not represent the 'public's habitual way of looking at things' and that they are not common phrases. But there are *no* common phrases for such subjects, and yet readers request material on such matters. What other solution is possible save a class entry under TOYS or OFFICE BLOCKS leaving the reader to search through all documents on such broad subjects for the specialized one required? The problems that arise from the use of phrases and sentences are in-

surmountable, and though the results of chain procedure might appear 'odd' it should also be remembered that modification has resulted in the key word being the main filing element. The reader will search for this element in the first place and once in that area of the catalogue should find the specific subject required without difficulty. References will of course be made from other terms in the compounds if not already covered.

The principles outlined by Coates have been put to good effect in *British technology index*, and students should examine this bibliography carefully as an illustration of some of the points made in this chapter.

It might be objected that the successful use of a classification scheme in this way will depend on the quality of the scheme, even when modifications are made. There is obviously a great deal of truth in this. Two basic weaknesses are possible. First, the *terms* used in the schedules may be unsatisfactory for the alphabetical catalogue. Schedule terms are not primarily chosen with indexing in mind and they may constitute an unsatisfactory basis for the job. We have already seen that references from synonyms will have to be made and other refinements may have to be introduced into the vocabulary. Take for example the following sequence from DC (17th ed.):

329	Practical politics
329.02	Political parties
329.022	Nomination of party candidates
329.0221	By convention
329.0222	By caucus
329.0223	By direct primary
329.0224	Boss dictation

Each of these will need modification before use with an alphabetical catalogue. In the first place, even supposing that we accept each division, the terms will have to be converted into a suitable set of nouns to represent the classes:

329	Politics, Practical
329.02	Parties
329.022	Candidates. Nomination

329.0221	Conventions
329.0222	Caucus
329.0223	Primary, Direct
329.0224	Boss direction

Again, a decision will have to be taken as to the acceptable generic level of the vocabulary: are we going to use every term in the schedules (even when revised) as a heading? In the above example we could decide to ignore all steps beyond 329.02, using PARTIES, POLITICAL as the heading for all documents on nomination, conventions, caucus, etc. If we do this, then we shall have to make references from the unused terms, e.g.

NOMINATION: POLITICAL PARTIES *see* PARTIES, POLITICAL

Such a step will avoid undue alphabetical scatter of closely related material. On the other hand, in a library with many documents on these subjects, it will lead to an undifferentiated build-up of entries at the broad heading. To avoid this we might use the divisions as subheadings:

PARTIES, POLITICAL: CANDIDATES: NOMINATION
PARTIES, POLITICAL: CANDIDATES: NOMINATION: CAUCUS
etc.

Apart from the terms themselves, a second disadvantage might arise through weakness in the classification *structure*. Enumerative schemes, as we have seen, very often consist of confused application of several characteristics of division. For example, in DC at 025, Library economy, division is primarily by function, giving rise to:

025.3 Cataloguing
025.4 Classification

Within 025.3 there is a division 025.33, Subject cataloguing. At 029, Indexing and documentation, we find 029.5, Indexing. It is clear that modifications of the kind already discussed will do nothing to provide a set of clear headings and references for a book on subject indexing when the basic structure of the scheme is as unsatisfactory as this. What is needed is wholesale re-casting of the schedules.

Lists of Subject Headings

If we were to conclude that classification schemes, in their present state, were inadequate as a basis for alphabetical subject cataloguing, we might try the alternative of creating a separate list of headings and references for the purpose. What are the essential features of such a list?

(i) It should list all acceptable terms representative of simple concepts.

(ii) It should make references to these terms from those that are unacceptable – e.g. synonyms and specific terms below the agreed generic level (as shown above). These are often referred to as lead-in terms.

(iii) It should reveal through a series of cross references the hierarchical relations between terms – e.g. LITERATURE *see also* POETRY.

(iv) Beyond this standardization of the basic vocabulary and relationships it should provide a citation order for the creation of compound headings consisting of terms from the list strung together. Such a citation order might be based on the standard order of Vickery, the significance order and relationship table of Coates, etc.

A list of subject headings is not, of course, a retreat from classification itself, but merely from strict adherence to any existing scheme. The determination of subject terms, the creation of references, and the analysis of categories and citation orders, are all familiar classificatory procedures. Indeed, an essential step prior to the alphabetical listing of acceptable terms would be the listing of categories of terms, and this would bear close resemblance to the sets compiled in the creation of a faceted classification. Only after such a step can the systematic network of references be made.

Perhaps the best example of a systematic list of this kind is the English Electric *Thesaurofacet*.[3] Terms are first presented in the form of a faceted classification which displays the generic relations between them and from which compound subjects can be synthesized. The thesaurus* part of the scheme acts as

* *Thesaurus:* a term commonly used for lists of subject headings, especially those compiled for use in post-coordinate systems and mainly restricted to simple subjects – rather than a mixture of simple and compound subjects.

an index to the classification schedules and displays further relationships between terms in the manner of a subject-heading list. The two parts of the *Thesaurofacet* can thus be regarded as complementary. It can be used in both pre- and post-coordinate systems.

A well-known engineering thesaurus is the *Thesaurus of engineering scientific terms* (Engineers Joint Council). Others are cited at the end of Chapter 11.

Traditionally, however, lists of subject headings are much more confused, enumerating simple and compound subjects in the manner of the older classification schemes, providing few rules for compounding subjects, and elaborating a network of references that all too often display little systematic organization. The most widely used general lists are Sears and Library of Congress.

SEARS LIST OF SUBJECT HEADINGS

First published in 1923, the 9th edition by B. M. Westby appeared in 1965. It is published by H. W. Wilson and modifications and additions in the successive editions are often based on the headings in the Wilson indexes. At the same time, it is founded on the Library of Congress list and avoids conflict with this larger code, its aim being to provide a list more suited to the needs of small and medium-sized libraries. Many specific headings found in Congress are rejected, with consequent recommendations for *class entry*, i.e. entry under broader subjects, e.g.:

PLANE GEOMETRY *see* GEOMETRY
PUBLIC LIBRARIES *see* LIBRARIES
PUNCHED CARD SYSTEMS *see* INFORMATION STORAGE AND
    RETRIEVAL SYSTEMS

The reason given for this is that smaller libraries will not require such specialized entries – in other words, if the library has only one or two books on Plane geometry, it is better to file entries for them with other books on Geometry, than to make the specific entry and refer: GEOMETRY *see also* PLANE GEOMETRY.

The same argument lies behind the frequent equation of non-

synonymous subjects, e.g. RELIGIOUS HISTORY *see* CHURCH HISTORY; though this is less excusable here for most medium libraries will have books on religious history other than Christian. The great danger behind this argument – as for all advocacy of broad headings or broad classification – is that all libraries, whatever their size, serve readers with specialized interests and their needs are not catered for.

The *scope* of the headings is stated to be 'the most commonly used scientific and technical subjects, names of chemicals and mineral substances . . . Most of the principal languages and literatures are included. Special names of other chemical substances (etc.) . . . should be added as needed.' Form headings are also included, e.g. ESSAYS, ENCYCLOPAEDIAS AND DICTIONARIES, etc.

Certain classes of headings are omitted: persons, places, systematic names in botany and zoology, names of individual battles, birds, fishes, flowers, fruits, treaties, trees, vegetables. Under JESUS CHRIST, SHAKESPEARE, UNITED STATES, CHICAGO, OHIO, are given the subdivisions that are to be used for other headings of the same type.

Headings usually take the *form* of plural nouns, though there are exceptions: the singular noun is occasionally used to differentiate between subject and form heading – SHORT STORY and SHORT STORIES; ESSAY and ESSAYS; and place may be used adjectivally for the arts, literature, religion and philosophy, e.g. ENGLISH LITERATURE; PAINTING, AMERICAN. (The adjectival form precedes subject only in the case of Literature headings.)

Compounds and phrases are included in the list, though further compounding is not recommended except by the use of some common and special subdivisions – ADDRESSES AND ESSAYS, BIBLIOGRAPHY, BIOGRAPHY, HISTORY, etc., which are separately listed at the beginning of the list and can be applied at any point. Period and place can also be added to any heading, though there are restrictions on the latter: in certain subjects place takes preference over subject, e.g. in travel and description, history, and some social sciences such as economic conditions, e.g. GREAT BRITAIN – ECONOMIC CONDITIONS, GREAT BRITAIN – HISTORY, etc.

The headings are essentially direct, but some manipulation

is found to give collocation (i.e. class headings), e.g. EDUCA-
TION, ELEMENTARY; EDUCATION, HIGHER; LIBRARIES,
CHURCH; LIBRARIES, COUNTY.
The headings have certain limitations:

(i) Arbitrary selection of compounds.

(ii) Inconsistencies in form: LIBRARIES, SPECIAL *but*
MUSIC LIBRARIES; EDUCATION, HIGHER *but* PROFESSIONAL
EDUCATION, TECHNICAL EDUCATION; EDUCATION OF
WOMEN *but* NEGROES – EDUCATION.

(iii) Some headings are vague and without scope notes to
define them: ROBBERS AND OUTLAWS; CRIME AND
CRIMINALS; ROGUES AND VAGABONDS. (However scope
notes are frequently found, e.g. ECONOMIC POLICY: *Use for
works on the policy of governments towards economic problems.*)

(iv) The headings use American terminology – not, of
course, a fault, but a limitation from the point of view of the
British librarian, e.g. RAILROADS.

(v) There are some curiosities, e.g. RADICALS AND
RADICALISM *see* ANARCHISM AND ANARCHISTS; RE-
FORMERS; REVOLUTIONS. And MARXISM *see* COMMUNISM;
SOCIALISM.

References. See and *see also* references are indicated. Under each
heading the *see also* references away from that heading are listed
first and these should be carefully studied as they might be
preferable headings for the document in question. They are
followed in turn by the *see* and *see also* references to the
heading:

> HEAD
>   *see also* BRAIN; EAR; EYE; FACE; HAIR; NOSE; PHRENOLOGY
>   X   SKULL
>   XX BRAIN
> i.e. if an entry is made under HEAD
>   a *see* reference is required: SKULL *see* HEAD
> and a *see also* reference: BRAIN *see also* HEAD

These references are based on no easily observable principle
and have the following *limitations:*

(i) There is little modulation, whole steps of division being
short-circuited and an odd assembly of terms being frequently
found: e.g.: LAW *see also* JURY, JUDGES. And MANNERS AND

CUSTOMS *see also* CASTE, DUELLING; SOCIAL CLASSES;
TRAVEL; WOMAN – HISTORY AND CONDITIONS OF WOMEN.
Under EDUCATION we find references to subjects taught,
types of school, special methods, etc.

(ii) There are inconsistencies, e.g. under EDUCATION there
is a reference to EDUCATION OF WOMEN, but none to
EDUCATION OF PRISONERS or NEGROES – EDUCATION
though such headings are to be found. Again under DISASTERS
there are references to SHIPWRECKS; RAILROADS – ACCI-
DENTS, but not to AERONAUTICS – ACCIDENTS, though
there is such a heading. Such inconsistencies are again the
result of insufficient classification, and readers can never be
sure that all headings relevant to their enquiries have been
found.

In short, the structure, though vaguely based on classification
– insofar as references are made from general to special subjects
and between coordinates – is rudimentary.

LIBRARY OF CONGRESS. SUBJECT HEADINGS

A system for a particular library, but, like the Library of
Congress Classification scheme, it has been widely adopted in
other libraries. It follows Cutter's precepts in most important
respects, and has headings and references similar to Sears
(which is based on it) – it also has similar limitations. It is
perhaps preferable to Sears for large general collections. The
problems caused by enumeration of stock subjects are larger in
scale – see, for example, the references under EDUCATION
and INDIANS OF NORTH AMERICA. The layout is like Sears:
headings being followed by references using the same symbols
to indicate *see* and *see also* (X and XX). Supplements are issued
every six months which indicate new headings and revisions.

AUTHORITY FILES

Lists of subject headings and, in fact, all index languages can
be regarded as 'authority files'. By ticking off headings and
references as used, the cataloguer can see at a glance when
cataloguing a document which references need to be made and
which are already in the catalogue.

Incidentally, authority files should also be made for all forms of catalogue; a file of cards may be used to record decisions made in author cataloguing, and in making a classified catalogue a file of cards showing what index entries have already been made for each class number will be invaluable, e.g.:

821(DC)
    Poetry: English literature
621.396 (UDC)
    Radio: Engineering
    Wireless *see* Radio

Cutter's Theories

Cutter's *Rules for a dictionary catalog* was first published in 1876, the 4th and last edition appearing in 1904. Though overtaken by more recent theory the rules still form the basis of much current practice, and for this reason – and because it cannot be said that all the problems Cutter deals with have been solved – they are still important.

Choice of heading

As we have seen there are two essential problems in the alphabetico-direct catalogue: choice of heading and the display of relationships between headings. Cutter was interested principally in the first of these and of the twenty-eight rules that are concerned with subject cataloguing, only two deal with the latter.

Cutter's main rule is 161: *enter a book under its specific subject (directly) and not under its containing class.* So far so good. The concept of direct specific entry is fundamental. But Cutter's definition of 'specific subject' is different from ours (page 97). For him it is a subject that can be *named*. In other words it does not include compounds tailor-made to fit the subject of the book. For example, he cites the subject: 'movement of fluid in plants' and states that as there is no recognized term for this subject, the document must be filed under the heading BOTANY (PHYSIOLOGICAL). Thus he dismisses the fundamental problem of compound subjects by ignoring it. No longer are there any great problems of term order in headings.

But note the cost: documents tend increasingly to be about these unnameable subjects, and to record them under their broad containing class – for despite the wording of the rule the definition of specific subject results in this – is of little help to the reader, who will be forced to search through many documents on the general subject in order to discover those on the specific subject sought. This will hardly do in any library today, but the more specialized the stock and the enquiries received the less satisfactory will it be. It is probably true to say that the reliance on nameable subjects as envisaged by this rule has led to the neglect of the overriding problem of term order by succeeding generations of cataloguers. Only comparatively recently, with the development of special libraries and the increasing chaos of catalogues based on this principle, has the problem been given the attention it deserves. In older textbooks on subject cataloguing the idea of nameable subjects is implicit and it is normal practice still in many libraries to avoid compound headings. A glance through the Library of Congress *Books – Subjects* will reveal that rather than formulate compound headings double or treble entry under each of the subjects in the compound or under a class heading is preferred. Thus in the July-Sept., 1963 volume we find:

(i) *The yeomen of Tudor and Stuart England*, by A. J. Schmidt, under:

  (a) COUNTRY LIFE – ENGLAND
  (b) ENGLAND – SOCIAL LIFE AND CUSTOMS
  (c) YEOMANRY (SOCIAL CLASS)

(but *not* GREAT BRITAIN – HISTORY – TUDOR, *or* GREAT BRITAIN – HISTORY – STUART, though these headings are in this volume).

(ii) *Bibliography on meteoric radio wave propagation*, by Meteorological and Geoastrophysical Abstracts, under:

  (a) METEORS – BIBLIOGRAPHY
  (b) RADIO WAVES – BIBLIOGRAPHY.

(iii) *Fatigue of aircraft structures*, by the Symposium on Fatigue of Aircraft Structures, Paris, 1961, under:

  (a) METALS – FATIGUE – CONGRESSES
  (b) AEROPLANES – CONGRESSES

(iv) *A photographic study of the origin and development of fatigue fractures in aircraft structures*, by J. Longson under:

(a) AEROPLANES – MATERIALS

(b) METALS – FATIGUE

Apart from the expense involved in this, as each of these headings is more general than the subject of the book, none is really satisfactory. The person wanting the compound will certainly find it under whatever element in the compound he looks up, but he will still have to search through many general books before coming to it, and the person seeking the general subject only will have to weed out many specialized entries. (Don't confuse this with the entry under two specific headings of a book on two specific subjects, such as Birds and Reptiles.)

Having thus avoided the fundamental problem of compound headings and citation order Cutter is left with the vague and unacceptable notion of nameable subjects. However, he recognizes that this will often demand headings consisting of more than a single term. In fact, in 174 he distinguishes the following forms of heading:

(a) *Single words*, e.g. Botany, Economics;

(b) *A noun preceded by an adjective*, e.g. Ancient history, Capital punishment, Moral philosophy;

(c) *A noun connected to another noun by a preposition*, e.g. Penalty of death, Fertilization of flowers;

(d) *A noun preceded by another noun used as an adjective*, e.g. Death penalty, Flower fertilization;

(e) *A noun connected with another by 'and'*, e.g. Church and State;

(f) *A phrase or a sentence*, e.g. Women as authors, Insects as carriers of plant disease. (Does Cutter here violate his rule for nameable subjects?)

Each of these may have *form and period subdivisions* – though in the case of country he makes a rule that country should never be used as a subdivision (165) – a rule that has been ignored in practice.

Now as these are acceptable 'definite' or 'nameable' subjects the rule should now be: enter under these words as they stand. But it is not so easy: some phrases and combinations of terms do not start with a significant filing word, so 175 makes the following qualification:

'Enter a compound subject-name by its first word, inverting

the phrase only when some other word is decidedly more significant or is often used alone with the same meaning as the whole name.'

Unfortunately, though he tries to pin down the meaning of 'significant' more closely, he fails to do so. He discusses the possibility of making a definite rule by always inverting to bring the noun* to the front but easily proves this not to be the significant term in every case (e.g. Canal, Alimentary). Prevost has much more recently accepted this on the grounds that at least it is a definite rule.

Thus Cutter opens the door to compounds and phrases of all kinds – so long as they are 'nameable' – and also opens the door to inversion, but gives no rule for this. The result is that catalogues based on these rules display a bewildering variety of forms of heading.

We said earlier that the problems arising from the use of phrases and sentences are insurmountable. Having now seen the nature of these we can ask whether the problems are less than those arising from the alternative use of simple terms in prescribed order such as result from the use of modified chain procedure. (It should be remembered that though the compounds may not be the kind of combinations used in real life, the significance order assures us of getting the sought term to the fore.) *The main disadvantages of phrases are:*

(i) *Filing:* where there are phrases, compounds, local divisions, and so on, there may be six or more separated sequences under one term.

(ii) The natural speech compounds have many almost *synonymous forms*, e.g.:

(a) Industrial relations; Capital and labour; Employer – employee relations; Labour relations;

(b) Electric distribution; Electric power transmission; Electric transmission; Electricity – Distribution; Power transmission, Electric; Transmission and power;

(c) Insects – injurious and beneficial; Diseases and pests; Economic entomology; Injurious insects – Pests, etc.

It is doubtful whether the enquirer's choice will correspond

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* Cutter's attempt to solve cataloguing problems by grammatical methods (see also the forms of heading above) is interesting. Contrast Coates' prescription.

with that of the cataloguer on each occasion. Moreover when phrases like: Industrial relations; Arbitration, Industrial; Collective bargaining; Employers' representation in management; Labour contract; Personnel management; are used – as they frequently are (see Sears' *List of subject headings* for examples) – then the scattering of very closely related material is almost certain. Cutter may well have recognized this but avoided the use of terms separated by colons or dashes because he could find no satisfactory formula for arrangement by significance.

To sum up: Cutter introduced the idea of specific entry but in a limited sense, relying on nameable subjects. He advocated the use of a variety of forms of heading and allowed inversion but without giving a principle for inversion. Phrases present more problems than they solve; if inversion is also used the problems are multiplied. The chances of the reader finding the subject at the first attempt become remote. The only satisfactory solution is analysis into elementary elements and synthesis based on citation order using classification and significance formula.

The rules so far discussed – 161, 174, and 175 – are the main ones. Others should be noted by the student in particular: Language (167), Synonyms (168), Antonyms (171), and Country (164 and 165).

Related subjects (Rules 187 and 188)

Cutter stressed that the catalogue should be *syndetic,* that is, it should include a system of references relating the subjects scattered by the alphabetical arrangement.

Rule 187. Make references from general subjects to their various subordinate subjects and also to coordinate and illustrative subjects. Such references should be made one step at a time, though he qualifies this by saying that intermediate links may be jumped if no material exists on these in the library, thus opening the way for the chaotic reference pattern found in existing lists of subject headings (see below). Clearly this rule implies classification – for how else does one recognize subordinate and coordinate subjects? Cutter recognizes this for in 188 he suggests that a *synoptic table* of subjects could be constructed to present to the reader so that he might discover for himself related

headings. He elaborates: 'In a way, this has been done already by the tables and indexes of two well-known schemes of classification – the "Decimal" and the "Expansive" which offer to the persistent enquirer – the only one who would ever use such tables – an opportunity to push his investigations into every ramification of his subject.'

Rule 188. Make references occasionally from specific to general subjects. This is not recommended by Cutter and cataloguers have followed his example and omitted to make references from, say, Physics to Science, though the arguments against this are vague and clearly such references would be most useful if made consistently and one step at a time according to a system of classification. In his examples Cutter goes well outside the normal chain and thus weights his argument by dubious examples.

The Alphabetico-Direct Catalogue: Summary

The use of verbal headings of any kind, under which entries for documents are filed, is immediately intelligible to the reader. If the headings are also direct, shaped according to everyday usage, an even greater advantage is apparently gained, for all information on the required subject will be found immediately by turning to the relevant heading. In practice two factors militate against this immediacy of access:

(i) Documents are published on subjects that cannot be expressed in a single word or accepted phrase;

(ii) Readers require documents on subjects that cannot be expressed in a single word or accepted phrase.

In such cases the chances of the heading chosen by the cataloguer coinciding with the one sought by the reader tend to become remote.

To reduce the effects of these two factors, cataloguers have used the following methods:

(i) *Multiple entry* under each term in the compound so that under whatever term the compound is sought the document will be found (see Library of Congress examples above, page 213). The disadvantages of this procedure are:

(a) it bulks the catalogue and thus reduces ease of use;

(b) it only reveals the precise compound indirectly because

the reader has to search through all documents catalogued under the particular term in order to find the one required;

(c) it does not help the person searching the catalogue not for the compound but for the subject under which the compound has been placed, because he will have to extract the general from the more specialized documents housed there.

(ii) *Entry under a more comprehensive term*, e.g. a document on Syncro-mesh gear-boxes in motor-cars would be entered under MOTOR VEHICLE ENGINEERING. This solution has the disadvantages associated with (i) plus the further disadvantage that it presupposes the reader will be able to name the relevant general head. Nevertheless it is a solution often adopted (see the headings in Sears' *List*) because it results in the collocation of documents on related subjects. In this, however, it has a further disadvantage: it is very difficult to decide when to adopt the broad heading. If number of entries on the subject in the catalogue under that heading is the criterion then the librarian must be prepared to re-catalogue regularly because the situation will change as the library grows.

(iii) Undoubtedly *specific entry* is more satisfactory than either of these solutions; the use of chain procedure and some kind of significance formula as described by Coates, will greatly assist in the production of sought headings. By the avoidance of phrases there is less confusion.

The problems associated with the linear arrangement of compound headings have already been discussed in terms of the classified catalogue (pp. 193ff). No matter how carefully the citation order is chosen some readers will be badly served. For example, the heading:

GEOGRAPHY: EXAMINATIONS

will suit the geography specialist, but not the person wanting information on examinations. For the latter a cross reference might be made:

EXAMINATIONS: GEOGRAPHY *see* GEOGRAPHY: EXAMINA-
TIONS

Even so the search might be extensive if references to several headings had to be followed up.

A solution is full multiple entry of compounds (not to be confused with the partial kind referred to above) – e.g.:

GEOGRAPHY: EXAMINATIONS
and EXAMINATIONS: GEOGRAPHY

Complete *permutation* of terms is clearly too expensive; *rotation* is a possible answer, or *SLIC indexing* – but when compounds are made up of several terms expense will still be a deterrent. The earlier discussion of these matters on pp. 193ff is relevant here. The alternative offered by post-coordinate indexing will be considered in the next chapter.

Although the alphabetico-direct catalogue does not collocate the subjects collocated by the classification scheme, it does result in a degree of grouping – particularly of 'concretes' scattered by the classification. In this sense it offers a useful *supplementary order* to the one on the shelves and provides a useful basis for displays (see Chapter 17). The use of direct entry does, however, scatter much related material through the alphabet and only a good network of references can help the reader to find various aspects of his subject. Such references are also necessary because, as we have seen, readers look up the wrong terms.

References must be based on a classification scheme, modulating one step at a time, otherwise they will be too arbitrary and will multiply to such an extent that their value decreases rapidly (cf. the suggestions that references should be largely cut from the Library of Congress catalogues).

The production of an alphabetical catalogue may involve the cataloguer in additional work as compared with the classified catalogue because the selection of headings from a list is a separate and distinct task. Moreover, maintenance is likely to prove more onerous: changes in terminology are easily accommodated by the provision of new index entries in the classified catalogue, whereas in the alphabetical catalogue a change of subject heading may involve the alteration of many entries. Again, filing can become highly complex (see Chapter 16).

The *printing* of parts of the catalogue is less satisfactorily

achieved than in the classified catalogue where homogeneous groups are ready-made.

Clearly catalogues destined for *international use* are more satisfactory if notation is used.

The Dictionary Catalogue

The dictionary catalogue is made up of author, title, subject, and form entries interfiled in one alphabetical sequence. In Chapters 1–4 we considered the problems of author entries, in Chapter 5, title entries, in this chapter we have considered subject entries (alphabetico-direct, the kind used in the dictionary catalogue) and in the next chapter we shall consider form entries. The comments made in these chapters are relevant to the dictionary catalogue – and the sections on the Alphabetico-direct catalogue are concerned with the problems that cause the dictionary cataloguer most trouble (textbooks on the dictionary catalogue invariably deal mainly with subject headings). Students considering the dictionary catalogue should in particular note the conclusions above.

Advocates of the dictionary catalogue claim that it is as simple as ABC – and certainly there is no preliminary psychological barrier against its use (as we are sometimes persuaded exists in the case of the classified catalogue). However, the subject approach has limitations arising from the use of natural language terms in alphabetical sequence, as we have seen. Given a more carefully planned procedure for dealing with subject headings and references, much could certainly be said in favour of the dictionary catalogue, for although it can never be as satisfactory a collocative record as the classified catalogue, it does offer a different subject arrangement from the one found on the shelves: concretes are collocated – and this includes the collocation of material by and about an author. (Note that in libraries which use the dictionary catalogue, classification is a matter of shelf arrangement only; this accounts for the neglect of classification in the USA where the dictionary catalogue predominates.)

Filing problems become increasingly significant as dictionary catalogues grow. The alphabet is not quite so simple as it may seem (see Chapter 16), and when in one sequence are found

headings for all types of entry, the user is soon liable to lose his way – for an example, see the entries under, say, UNITED STATES in the five-year cumulation of the *Cumulative book index*, and imagine the difficulties that would arise if all the entries, headings and subheadings were transferred onto cards, where guiding is less easy. The problem of filing becomes particularly acute when one name can be used as author, title, subject (e.g. London, Birmingham, Liverpool, Hull, etc.) and it has been discovered in tests that readers frequently fail to distinguish between subject headings and title headings.

Because of the filing problems, there have been several experiments to divide the dictionary catalogue[4] into two or more sequences. The following methods have been tried:

(i) Two sequences: (a) Author/Title (b) Subject/Form
(ii) Three sequences: (a) Author (b) Title (c) Subject/Form
(iii) Three sequences: (a) Name catalogue* (b) Subject catalogue (c) Title catalogue

2. The Alphabetico-Classed Catalogue

On page 93 we gave an example of alphabetical headings which attempt to overcome the limitations of collocation in the alphabetico-direct catalogue without resorting to the use of notation in the manner of the classified catalogue. The alphabetico-classed catalogue is a compromise, and its weaknesses have led to its disuse in most libraries; an example can be seen in the *Subject indexes* of the London Library and the British Museum.

Its *limitations* can be summarized as follows (the examples refer to the list given on page 93):

* There are several versions of the *name catalogue*. In general, it contains all entries which have a proper name as the main filing element in the heading. Thus it can be viewed as an author catalogue to which have been added entries for documents about the authors (personal and corporate), as well as all material about other persons, and corporate bodies. Entries under place names (except when the name is the filing word for a corporate body, e.g. London University) are often excluded from the name catalogue and kept in the subject catalogue itself, though this practice is rarely understood by readers.

(i) *It collocates only through subordination* – coordinate classes must be arranged alphabetically according to natural language terms and inevitably related material is separated, e.g. as we have already pointed out, WIRING cannot be placed before INSULATION, MECHANICAL before ELECTRICAL, etc., given the subordination in the example.

(ii) *Moreover the limited collocation is achieved only at a price:*

(a) *Headings no longer reflect natural language order* (contrast the earlier headings for the alphabetico-direct catalogue) and so immediacy, one of the main advantages of using words as headings, is lost. An *index* of all subordinated terms, and *see also* references linking related coordinate subjects such as WIRING and INSULATION, will be needed.

Example of index entry:

SWITCHGEAR *see* ENGINEERING : ELECTRICAL : SWITCHGEAR

Example of reference in main sequence:

ENGINEERING : ELECTRICAL : INSULATION
 see also ENGINEERING : ELECTRICAL : WIRING

(b) *Headings are excessively cumbersome.* The above examples are simple subjects; compound subjects such as 'Wiring methods in prefabricated steel framed houses' would result in grotesque headings.

(iii) *Finally, choice of headings presents grave problems.* The cataloguer must make strict rules on the degree of subordination: e.g. whether all aspects of Engineering are to be subordinated to the heading ENGINEERING as in the example, or whether, in order to reduce the length of headings, ENGINEERING is to be used only for Engineering in general, a *see also* reference then being made to link this with the various sequences starting at ELECTRICAL ENGINEERING, MECHANICAL ENGINEERING, etc. Again, should a subheading EQUIPMENT be placed between ENGINEERING : ELECTRICAL and SWITCHGEAR? As we have stressed, a system of classification is vital.

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