New Wine in Old Bottles: Problems of Maintaining Classification Schemes

Abstract: Editors of long-standing classifications have to adapt their schemes to totally different circumstances from those they were originally designed to suit. The need to retrieve information accurately in an online environment and a world dominated by the Internet is vital and contrasts with the basic linear approach for which these classifications were intended. The latter need still has to be satisfied, so ways of achieving both goals must be explored. The need for greater synthesis, clearly defined facets, with distinctive notation and a closely adhered to citation order is essential. An expressive notation is attractive in an online environment. Modern educational approaches make traditional structures meaningless and the current economic climate and expense of developing new publication formats is reducing revision budgets. Co-operation between editors and the use of one scheme, e.g., DDC, as a switching language between other schemes, e.g., UDC, thesauri and subject headings lists are one way forward. Existing co-operative projects and future plans between the editors of DDC, UDC and BC2 are discussed and the complementing of classification by a thesaurus is recommended.

1. Introduction

It has often been stated that there is the need for a new classification scheme every thirty years. This pattern actually was roughly achieved through the early part of the present century, but today we are here, in part, to celebrate the 120th birthday of the classification scheme that has a valid claim to be regarded as the standard method for subject retrieval, comparable to the ISBD for author title cataloguing.

But, we are also faced with a totally new situation from that which existed when that classification, and the others that were either derived from it or produced as an alternative to it, were created. We now find that the structures that we have traditionally used for books no longer hold good for a number of reasons which we shall look at in a moment, and the usual policy is to fall back on the familiar—words, normally in English, and even more frequently unsystematically organized.

Attempts have been made in the post-war period to devise new general classification schemes. In the 1960s the CRG in the UK spent several years on such a project (McIlwaine, 1993) which eventually saw the light of day in a different form—a verbal indexing system, PRECIS (Austin, 1984), which now itself has fallen into disuse. In the early 70s Unesco as part of its UNISIST programme, financed the construction of the Broad System of Ordering (BSO, 1978) as a switching language in an attempt to link various databases that were ordered in different ways. This has been revised, but has never been effectively put into use. The profession prefers to stick to the tried and tested and this means that there is a great onus on the traditional classifications to refurbish themselves to meet these new demands while at the same time causing as little disruption as possible to their existing frameworks.

Those of us who are concerned with editing classification schemes therefore have to try to find ways in which we can cope with the present and the future situation. The history of the Universal Decimal Classification provides an excellent example both of the problems and of the solutions that
have been attempted, with varying success. It is, itself, an attempt to make the original Dewey more flexible and accommodating to complex concepts and for “documentation” rather than the arrangement of library shelves. Dewey’s “divide like” approach was carried to its logical conclusion by Otlet and LaFontaine with the introduction of the facility to divide anything by anything through use of the linking colon. They added a whole range of auxiliary tables—six in addition to the colon facility in the first edition of the classification of 1907 (I.B., 1907)—and copied various other devices from Dewey, such as the practice of parallel subdivision which doubtless seemed brilliant at the time, but is now causing a lot of trouble. (See Fig. 1.)

2. Requirements of Present Day Situation

Today, we are faced with a situation where there is far too much information and far too little communication between those responsible for devising automated systems and putting up information on the Internet and those whose professional skill has traditionally been the organization of knowledge. Librarians and information workers make extensive use of online sources of information, but they are not making their expertise sufficiently indispensable to those who are creating the vast range of diverse data available to all and sundry. So, we need act quickly before it is too late. Editors and revisers of classification schemes have a difficult task because we now have to attempt to satisfy two very different types of need—those of our traditional users for (essentially though not exclusively) the shelf arrangement of libraries, i.e., a linear approach to knowledge, and the organization of bibliographical tools, and the needs of the Internet surfer where the consistent ordering of concepts has far less significance. It seems that the traditional schemes have much to commend them for this changing role and that there is little enthusiasm for new systematic approaches.

The use of library classifications for organizing material on the Internet has not been ignored. The British Standards Institution, who holds the copyright for all English language versions of the UDC has an advisory committee that meets regularly and consists of people with an interest in UDC, representatives of professional organizations such as the Library Association and Aslib and recently it has added three other members. These are the people responsible for the BUBL bulletin board with which you may be familiar, for a Social Science network centred on the University of Bristol and a member of a research team in the Computer Science Department at the University of Leeds. All of these are using the UDC as an approach to organizing information online. (See Fig. 2.) There is no reason why more than one system should not be used, for example BUBL is experimenting with using LCSH in addition to the UDC-based subject trees as a means of retrieval.

3. Changes Needed in Traditional Schemes to Meet Today’s Needs

As far as the existing general schemes are concerned, there are two problems. One is the need for conformity. The second is the need for revision in certain parts of all of them. Ranganathan identified the need for conformity when he posited his facet formula and identified the familiar five fundamental categories of PMEST. These we have developed into what we now call the “standard citation order”. Dewey embodies this in the instructions given in “add” notes and in the general instructions to users on the use of standard subdivisions. It also gives advice on choice between facets in its “Tables of preference.” Since this order is also recommended in the international standards for thesaurus construction, we should probably do more to advocate its use universally.

The UDC is as much at fault as any in this regard, since it has always been “all things to all men” and this is why we are now attempting to produce fully faceted revisions with a recommended citation order, together with examples of combination in the tables, and advice to editors to provide
synthesized numbers in the index where they represent compound concepts or terms that are likely to be sought. (See Fig. 3.)

Many regard this, quite rightly, as a loss of autonomy for the individual and a dilution of one of the scheme's most attractive features—its adaptability to a very wide range of circumstances. To those who wish to retain an independent approach, there is no need to follow the recommended order if another seems preferable, but it is at least made clear that in doing so they are not conforming to the recommended practice. Even though a structure is not apparent to the searcher in an online situation, it is essential if the indexing language used is to work effectively. Hence the recent attempts to make the structure of LCSH conform better to a systematic approach (Subject Subdivisions Conference, 1992) and the basis of MESH on a series of tree-structures, to give but two instances.

Notation is a major problem. It is a topic that has seen various changes in fashion. Dewey, and UDC in his wake, thought that a notation that expressed the structure of the classification was essential. Ideal though this may have been in theory, it has broken down constantly and is subject to frequent disruption by new developments in knowledge. In the 1950s Vickery wrote an influential series of articles in the Journal of Documentation (Vickery, 1952-1959) on notation which resulted in it becoming fashionable to consider notation simply as an ordering device and to look for no further enhancement of its function. The schemes produced by the CRG at this time provide plenty of examples—the British Catalogue of Music (British National Bibliography, 1960) scheme, for instance, with its long strings of capital letters—and this view is still held by Mills and can be seen in practice in the current Bliss revision.

Nowadays, however, the wheel is turning and we are reverting to the view that there is some value in an expressive notation, because in an online environment it enables one to search up and down a hierarchy, provided that the notation is reflecting a true hierarchy. There is the additional attraction of being able to rely upon a consistent, clearly identified, marking of a topic so that one can have confidence that one is locating all the available information on that topic. This is much easier to achieve. The problem with relying on notation to express hierarchies is that, because we are using old frameworks, there are many, many places where what is notated as if it were a hierarchy is in fact no such thing. We are also hamstrung by having a small notational base. The UDC's way round the brevity of Dewey's decimals was to introduce a centesimal notation for long arrays. This is quite wasteful of notation and it has not, in fact, been very widely implemented. Further complications are to be found in the practice of parallel subdivision that shortens notations but conceals the relationship of concepts. This is why we are trying to edit out many such examples in UDC, so as to facilitate retrieval of a concept universally on the same piece of notation. The revision of class 9 demonstrates this very clearly. (See Fig. 4.)

As editors, we need to take account of what we want of our classifications and we have to remember that we have a duty to our traditional users as well as wanting to make our schemes attractive to the modern information world. We do, of course, want to use them as the tool for retrieving recent information immediately, but we also need to retain their traditional use in many contexts. Just because libraries have computerized catalogues they do not necessarily throw out all their nineteenth century works that may be needed by history, literature or even social science students. Therefore the works that were classified 120 years ago by Dewey's scheme still, in some cases, have to be organized today. We should not overlook that totally. Additionally, we have to remember the innate conservatism of our users, and as an editor of a classification scheme I mean the classifiers as the users. They are more resistant to change than anybody else. We publish an annual Extensions and corrections to the UDC in which we always ask for comment and contributions for future issues. Invariably, the only comments that I ever receive relate to numbers that have been changed. We do not change numbers in order to irritate our users, we change them in order to produce a sounder arrangement and one that we feel, after due consultation with specialists, will be of greater benefit to
more people. We will never produce a perfect classification, even for one moment in time for one particular place, so we have to be pragmatic and forget some of our idealism, and this is difficult, and unacceptable to some people. The best we can do is to aim for a workable order that is predictable. It is precisely this that a structured notation which permits the searching on one symbol for one concept, or the use of a predictable arrangement for compound concepts, such as that embodied in the standard citation order, aims to achieve.

We are also faced with the problem of a more “woolly” approach to knowledge. The clear division of life into compartments, instilled from one’s early days at School, when one learnt Mathematics or Latin or History, and one had a common understanding and expectation of what these disciplines comprised has gone. Young children now have an “integrated day” in which they are encouraged to develop their independent approaches to schoolwork. Universities offer courses in Women’s Studies, Environmental Studies, or degree programmes that are made up of individual “pathways” selected by the student, across a very wide range of disciplines. The result of this is the personal loss of a structural base on which to begin the quest for knowledge, the eventual outcome may become the replacement of traditional structures by others that so far have eluded the general classification schemes for obvious reasons. So a systematic approach via well known signposts begins to appear less appropriate.

4. Possible Solutions

We try to cater for this more unpredictable approach by building synthetic devices into our classification schemes. Here, from the outset the UDC further developed the trend already inherent in Dewey’s scheme. The increased use of synthesis does make for much greater flexibility and eases the problems of accommodating new combinations. The problem is that in our classifications it has not been developed consistently, and now it cannot be without upsetting the entire structure, and thereby pleasing no-one. So, for example, in the UDC we have a Common auxiliary of materials. This was not in the original classification—it was thought of as a good idea much much later. Consequently, there are many places in the tables of the scheme where the same concept is enumerated with a different notation. Stone, for example, as a material rather than an entity, or an era (as in Stone Age) has the notation 032.5, but as a building material it is 691.2, as a deposit in geology it is 553.5, structures using stone in engineering are 624.012.1, in art as a substance painted upon it is 75.023.12, while in graphic arts it is 76.023.2 and as a stone block for printing it is 681.652.2. We are at present attempting to revise the Special auxiliary subdivisions of class 7. In order to eliminate the use of different numbers in 7 for individual materials, therefore, the following instruction will appear:

For building materials, at 72, denote kinds of material by 691...

Example(s) of combination:
72.023.691.2 Architectural use of natural stone
For materials in other contexts, use Table 1k-03 - Common auxiliaries of materials, e.g.,
7.023.1-032.4 Precious metals. Including: gold, silver
7.023.1-032.5 Stone. Including: marble

This means that in future stone as a material in any of the fine arts, e.g., as a surface for painting, as a material for sculpture, as a tool in the graphic arts, and so on will always have the notation from the common auxiliary of materials, and the same will be true for all other materials. That is just one example, selected at random and it is far from atypical. Almost all the classes where stone appears as a material have other materials, similarly listed in the common auxiliary and similarly enumerated with a range of different notations.
Superficially, it might seem a reasonably straightforward task to "clean up" these anomalies, but actually it is not, because they are not isolated instances but examples of a problem for a whole range of materials, or whatever, throughout a number of classes. The end result is a total reorganization across many classes. This can only be done slowly and after plenty of preliminary warning.

Therefore, since it seems that, for the foreseeable future, a "make do and mend" approach is favoured by the community that we try to serve, we have to adopt a pragmatic approach to revision. How can this best be done? One possibility is to give serious consideration to one classification scheme as the standard, in much the same way as the ISBD is regarded as the standard for descriptive cataloguing. The obvious candidate for such a role, as I said at the beginning, would be the Dewey Decimal Classification, at least for the English-speaking world, and probably for many other parts of the globe as well. Such usage would permit an agreed minimum for subject description that could then be extended as required through use of another or other systems, for example the UDC. These two schemes make a good starting point for such an experiment because of their common origin. In order to accomplish this, it would be necessary to examine the two schemes and to co-ordinate the broad framework more closely than is at present the case. Clearly, it would work a great deal better with some classes than with others. However, even in a fairly specific and troublesome section of the scheme, such as 621, the broad outline does not differ too impossibly, as Fig. 5 demonstrates, though as one progresses to five digits under 621.3 the variations become greater. There might well be possibilities for mapping a UDC structure on to the Dewey base, in the same way as Ranganathan envisaged the basic classification and depth schedules for the Colon classification.

At present, there are places where DDC is more detailed and more up to date than UDC, though to some extent UDC's superficially out of date appearance in certain classes masks the facility for creating numbers for emerging concepts which can frequently be done through synthesis. To develop an approach whereby the flexibility of UDC could be built on to the structure of Dewey would require close editorial co-operation and agreement in the development or amendment of the scheme, at least to an agreed minimum level. It would also require where the increased flexibility and synthesis of UDC was employed, the need for a clear citation order that was rigidly adhered to along the lines outlined earlier.

The editors of Dewey and the UDC have not closed their minds to such co-operation and to the need for developing the two classifications along more closely integrated lines. One place where we thought that this might be done is in the Area Table and we have great hopes that before too long we may be able to publish a joint Area Table, agreed at least to the level of nation state. With this in mind, when UDC prepares its Area Table for annual publication, we consult with the Decimal Classification Office and keep them informed of what we are proposing to do. Two years ago we revised the Area subdivisions for Australia and for South Africa. The UDC Area Table for Australia was distressingly brief, consisting of only about eight subdivisions. That for Dewey was considerably larger, and there is also in existence a special expansion for Australia that was developed for local use. In expanding our table for Australia we consulted both with Washington and with the Australian member of the Editorial Policy Committee, Giles Martin and we received a great deal of helpful advice. In general outline, apart from one or two instances which seem to be deeply rooted in the historical organization of the continent, such as a main number for Central Australia we kept broadly to the same structure of DDC. (See Fig. 6.)

We based our arrangement on more recent census information that the Dewey table, which has led to a few towns being collected under a different "Including note" from that in DDC, but by and large the overall structure and notational symbols are very similar and there would not be too great a problem in co-ordinating the two tables at a future date, if that were felt to be worth while. This is, with all due respect to any Australians here, only a very small part of the whole, but it does demonstrate that there is no major problem to closer integration between the child and its parent scheme.
We would like to extend this across to the whole Area Table. There seems great good sense in the two classifications sharing a table, and indeed in promoting such a table as a standard for wider use, since there are many instances where a current listing of notations for nation states could be useful. The principal stumbling block at the present time lies in Eastern Europe, where unfortunately the two classifications diverge quite significantly. UDC is used extensively in this part of the world and, of course, to alter an area number does mean upsetting the entire collection in many libraries who use the classification as a means of shelf arrangement. Class 9, which is the most affected by any such change, will occupy a large proportion of a general library’s collection. It is also a class that has recently been revised in UDC. We therefore feel that we do have to pay some attention to this problem and are seeking ways of resolving it.

At the present time the publishers of general schemes have a tendency to invest more money into experimenting with new formats in which to publish and in developing tools to assist with the application of the classification in an online environment. This is all very necessary, but the product that is being subjected to these developments must be right also, and this means a constant programme of revision. Both the development of new formats and the production of revised classes are costly. Revision must be at two levels, the overall tidying up that has to go on in order to maintain any scheme, and the “bottom up” revision of the type that DDC has just undertaken for the life sciences and that Professor Williamson will be referring to in relation to Medicine in the UDC. I would like to think for a moment about the latter.

As you may know, the UDC has entered into a mutual agreement with the Bliss Bibliographic Classification whereby, after payment of a royalty and on condition the origin is acknowledged in any published revisions, the structure of the Bliss Bibliographic Classification may be used as the basis for the revision of a class in the UDC. This application is fairly advanced for Medicine, and the Mathematics class is now in the early stages of being similarly employed. In a sense, this is simply legitimizing a state of affairs that has been unacknowledged for years, since all revisers of classifications do and must look at what has already been done and will inevitably either borrow ideas or learn from the mistakes of others. It does seem to me, however, that at a time when funding is short and such little money as there is frequently needed to develop the format of publication, there is scope for much more cooperation between the editors of classification schemes and their editorial boards. It does not make sense for two or three separate sets of people to spend a great deal of time in developing new classes independently. It would be sensible to pool resources, both financial and technical, and build one new, mutually agreed, revised class as a common research project. There would be great benefit in having a core structure that was common across several indexing languages. It could then be translated into a variety of notational symbols (or words) to convey the meaning. If an agreed basic structure could be developed, there would be no reason why further detail could not similarly be grafted onto the basic classification, in the same way as I demonstrated earlier with UDC and DDC. We could also provide the added facility of a thesaurus as UDC is doing in its current revisions, so as to accommodate the users who prefer the purely verbal approach. In time, given the range of languages in which editions of DDC and UDC exist, this could be extended to a multi-lingual facility.

This would mean paying more attention to the index than is frequently the case with the various editions of the UDC. Unlike UDC, the DDC editions are always centrally produced by those responsible for revising the scheme. The UDC Master Reference File (the machine-readable master version at the Hague) does not exist in hard-copy and has no index. Therefore, indexes are entirely at the discretion of a publisher in the individual language, either one of the six members of the Consortium of publishers whose property it jointly is, or some other organization publishing under licence. The Master Reference File at present exists only in English but the hope is that a German version will be created in the very near future. This will provide the potential for the production of a bilingual index, with the added possibility of French also, since a French Medium Edition (CDU, 1990-1995) was
published in 1990-95, complete with index. The conversion of these three indexes into a multi-lingual
thesaurus with the link to the classification, and a tie in with the Dewey Decimal Classification and its
many language editions, could provide a very valuable retrieval tool and one that would commend
itself to the current climate. Searching via natural language is clearly much more user friendly and any
measure that can combine this facility with the increased recall that a systematic structure gives is
clearly to be commended, whether in an individual library's OPAC or in the deeper morass of the
Internet.

5. Conclusion
The present European tendency as exemplified by Germany or the Netherlands, of using a basic
classification for the shelf arrangement of libraries and undertaking detailed subject searching by
means of an independent thesaurus is less helpful, as it is language dependent whereas a root system
based on a classification that could be expanded has far greater universal appeal. Cutter attempted
this a hundred years ago. Perhaps we should think about reinventing that wheel too.

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Libraries Journal Suppl. 25). London: Institute of Education Library, University of
London. Contains a full account of the proceedings of the Classification Research Group
and a bibliography of related publications.
Subject Headings system: report from the Subject Subdivisions Conference, ed. by M.
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<td>611.1 Angiology. Cardiovascular system. Blood vessels</td>
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<tr>
<td>611.2 Respiratory organs</td>
<td>611.2 Apparatus respiratorius. Systema respiratorium. Respiratory system</td>
</tr>
<tr>
<td>611.3 Digestive tract organs</td>
<td>611.3 Apparatus digestorius. Systema digestorium Digestive system. Alimentary canal</td>
</tr>
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</table>

... |

| 612.1 Blood and circulation | 612.1 Blood. Cardiovascular, circulatory system |
| 612.2 Respiration | 612.2 Respiration. Breathing. Respiratory system |
| 612.3 Digestive organs | 612.3 Alimentation. Eating. Digestion. Nutrition |

... |

| 616.1 Diseases of the cardiovascular system | 616.1 Pathology of the circulatory system, blood vessels. Cardiovascular complaints |
| 616.2 Diseases of the respiratory system | 616.2 Pathology of the respiratory system. Complaints of the respiratory system |
| 616.3 Diseases of the Digestive system | 616.3 Pathology of the digestive system. Complaints of the alimentary canal |

etc.

Fig 1. Use of "parallel subdivision" to express the same concept in a different context, in DDC and UDC.
BUBL WWW Subject Tree - Arranged by Universal Decimal Classification

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BUBL WWW Subject Tree - Arranged by Universal Decimal Classification

0 - Reference Works
001 - Research
003 - Writing, Semiotics ...
33 - Economics
330.342 - Development Studies
331 - Labour, Work, Employment, Jobs, Vacancies
339.5 - Conservation of Natural Resources
34 - Law and Legislation
343 - Crime, Criminal Law and Criminology
347 - Copyright, Intellectual Property
35 - Public Administration, Government
355 - Military Art and Science, War, National Defence, Armed Forces
36 - Social Relief, Welfare, Insurance
362.65 - Disability Issues
369.4 - Community and Youth Studies

Under each number are listed appropriate sources:

BUBL Subject Tree: UDC

362.65 - Disability Issues
  Disability
    BUBL Gopher Resources on Disability
...
  Computers and Disability
    Documents on computers and disability issues
  Deaf Education
...
  Disabilities Access
    Includes news from the magazine Disability News, and many other resources

Fig. 2: Example of UDC Subject Tree on BUBL
Prehistory. Prehistoric remains, artefacts, antiquities.
Interpretation and synthesis of the material relics of ancient humans,
their culture forms and civilizations
Example(s) of combination:
903.63 Archaeological, prehistoric, protohistoric periods and ages
903-03 Materials of remains and artefacts
For enumeration of materials see Table 1k-03
Example(s) of combination
903-032.42 Gold
903-033.64 Earthenware
903-034.4 Copper

Special auxiliary subdivisions
Three different auxiliary tables may be used at this point, each with
its own distinctive notation. The citation order (reverse of the filing
order) is: (1) type of culture and level of civilization, (2) materials and
techniques, (3) shape and form of remains. These concepts are
introduced by ' to express the shape and form of remains, 0 to
express the materials from which objects were made and ' (apostrophe)
to express the type of culture and level of civilization. All
these may be used together, if required, or each may be used
independently, according to need.

Example(s) of combination:
903.21‘12.05 Metal tools of hunting peoples
903.23‘15.02 Wheel-made pottery of nomadic peoples
903.5‘16 Burial remains of advanced farming cultures
903.25-032.42 Gold ornaments
903.26‘14.08-035.3 Carved wooden objects of worship of pastoral
peoples

903-4 Shape and form of remains
903-4 = 62-4
Example(s) of combination:
903-422.11 Round objects
903-462 Tubes
Prefer special subdivisions after .01.08 where available, e.g. 903.01, not
903-494.2 for flaked objects

- 903.01 Stone and bone objects according to shaping method. Including: Flaked,
chipped, polished objects
- 903.02 Pottery according to method of manufacture. Including: Moulded,
ring-formed, wheel-made pottery
- 903.03 Glass according to method of manufacture

Principal divisions
- 903.2 Artefacts
- 903.21 Tools, Implements
- 903.22 Weapons
- 903.23 Vessels, Jars, Urns, Bowls
- 903.24 Clothing

Fig. 3: Example of instructions on citation order in UDC revision
The history of individual countries and peoples is expressed through the use of Table Ie 'Common auxiliaries of place', Table Ig 'Common auxiliaries of time' and, where appropriate, Table If 'Common auxiliaries of race, ethnic grouping and nationality', for peoples who possess a common history but cannot be geographically limited, e.g. the Hittites, the Jews, Gypsies. Where a number is given in the Common auxiliaries of place, e.g. (367) 'Regions of the Slavs', that number should be preferred.

For medieval and modern history, see 94(100)*01/94(4)...

Example(s) of combination
+ 94(100) World history (chronological summation of facts)
+ 94(100)*.../05* Ancient history in general. History of ancient peoples
+ 94(100)*05/...* Mediaeval and modern history in general
+ 94(100)*1914/1919* First World War, 1914-19
  If preferred, place under History of Europe at 94(4)*1914/1919*
+ 94(100)*1939/1945* Second World War, 1939-45
  If preferred, place under History of Europe at 94(4)*1939/1945*
+ 94(3) History of the ancient world
  Alternatively class areas of the ancient world with the history of their modern counterparts

+ 94(416) History of Northern Ireland
+ 94(417) History of the Irish Free State and Republic of Ireland
+ 94(420) History of England and Great Britain
  Class here the history of the United Kingdom as a whole. For the history of the countries of the UK individually, see 94(411), 94(415) and 94(429) (as well as 94(420)). See also 94(41) and the note there.
+ 94(420)*.../1066* Prehistory, Roman and Anglo-Saxon period
+ 94(420)*1066/1154* Norman kings, 1066-1154
+ 94(420)*1154/1399* House of Plantagenet, 1154-1399
+ 94(420)*1399/1485* Houses of Lancaster and York, 1399-1485. Wars of the Roses, 1455-1485
+ 94(420)*1485/1603* House of Tudor, 1485-1603. Tudor and Elizabethan periods
+ 94(420)*1714/1837* House of Hanover, 1714-1837. Georgian and Regency periods
+ 94(420)*1837/...* Victoria and House of Windsor, 1837-
+ 94(420)*1837/1901* Victoria, 1837-1901
+ 94(420)*1901/1910* Edward VII, 1901-1910
+ 94(420)*1910/1936* George V, 1910-1936
+ 94(420)*1936* Edward VIII, 1936
+ 94(420)*1936/1952* George VI, 1936-1952
+ 94(420)*1952/...* Elizabeth II, 1952.
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<thead>
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<th>UDC</th>
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<td>Steam engineering</td>
<td>UDC 621.1 Heat engines in general, generation, distribution and use of steam. Steam engines. Boilers</td>
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<td>621.2</td>
<td>Sound and related vibrations</td>
<td>UDC 621.2 Hydraulic energy. Water power. Hydraulic machinery</td>
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<td>621.3</td>
<td>Electric, electronic, magnetic,</td>
<td>UDC 621.3 Electrical engineering</td>
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<td>communications, computer engineering;</td>
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<td>lighting</td>
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<td>621.4</td>
<td>Heat engineering and prime movers</td>
<td>UDC 621.4 Heat engines (except steam engines)</td>
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<td>Pneumatic, vacuum, low-temperature</td>
<td>UDC 621.5 Pneumatic energy, machinery and tools. Refrigeration</td>
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<td>technologies</td>
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<td>621.6</td>
<td>Fans, blowers, pumps</td>
<td>UDC 621.6 Fluids handling, storage and distribution plant and techniques</td>
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<tr>
<td>621.8</td>
<td>Machine engineering</td>
<td>UDC 621.7 Mechanical technology in general: processes, tools, machines, equipment</td>
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<tr>
<td>621.9</td>
<td>Tools and fabricating equipment</td>
<td>UDC 621.8 Machine elements. Motive power engineering. Materials handling. Fixings. Lubrication</td>
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<tr>
<td>621.31</td>
<td>Generation, modification, storage,</td>
<td>UDC 621.9 Working or machining with chip formation. Abrasive working. Hammers and pressers: including Cutting. grinding. Thread-forming</td>
</tr>
<tr>
<td></td>
<td>transmission of electric power</td>
<td></td>
</tr>
<tr>
<td>621.32</td>
<td>Lighting</td>
<td>UDC 621.30 sp auxiliaries...</td>
</tr>
<tr>
<td>621.33</td>
<td>Electric power transmission for</td>
<td>UDC 621.32 Electric light sources</td>
</tr>
<tr>
<td></td>
<td>railroads</td>
<td></td>
</tr>
</tbody>
</table>
621.34 Magnetic engineering

621.36 Applied optics and paraphotic engineering

621.37 Testing and measurement of electrical quantities

621.38 Electronics and communications engineering

621.39 Computers

621.35 Electrochemical technology

621.36 Thermoelectricity. Electric heating

621.37 Technique of electric waves, electromagnetic waves, oscillations, pulses

621.38 Electronic devices. Electron tubes. photocells. Particle accelerators. X-ray tubes


Fig 5: Comparison of 621 in DDC and DDC
Australia. Commonwealth of Australia
Western Australia
+ (941.1) Perth
Including: Armadale, Belmont, Canning, Cockburn, Fremantle, Gosnells, Kwinana, Melville, Nedlands, Rockingham, Stirling, Subiaco, Wanneroo
+ (941.2) South West, Great Southern, Midlands and Central
+ (941.21) South West
Including: Bunbury, Bridgetown, Busselton, Collie, Mandurah, Maujumap
   For Perth Metropolitan District, see (941.1)
+ (941.23) Lower Great Southern
Including: Albany, Broomehill, Denmark, Gnowangerup, Katanning, King, Kojonup, Pallinup
+ (941.25) Upper Great Southern
Including: Boddington, Coobaling, Narrogin, Wickepin, Williams Midlands
+ (941.27) Including: Carnarvon, Geraldton, Wiluna
+ (941.3) Pilbara
Including: Dampier, Karratha, Mount Magnet, Newman, Pannawonica, Paraburdoo, Port Hedland, Roebourne, Tom Price, Wickham; Barrow Island, Bernier and Dorre Islands, Dick Hartog Island
+ (941.4) Kimberley
Including: Broome, Derby, Halls Creek, Kununurra, Wyndham
+ (941.7) South Eastern
Including: Boulder, Coolgardie, Esperance, Kalgoolie, Kambalda, Norseman
! (942) South Australia and the Northern Territory
+ (942.3) South Australia
+ (942.31) Adelaide
Including: Elizabeth, Gawler, Noalunga, Salisbury
+ (942.35) Yorke and Lower North
Including: Clare, Kadina, Maitland, Moonta, Wallaroo
+ (942.36) Eyre
Including: Ceduna, Cleve, Port Lincoln, Tumby Bay
+ (942.37) Northern
Including: Quorn, Leigh Creek, Peterborough, Port Augusta, Port Pirie, Whyalla
+ (942.9) Northern Territory
+ (942.91) Southern district
Including: Alice Springs
   Class here Central Australia (a term still in general use but of specific administrative meaning only between 1926 and 1931; today the term "Central Australia" usually refers to Alice Springs and an area of about 700 km radius around it - generally a major tourist destination)
+ (942.95) Northern district
Including: Arnhem Land, Jabiru, Katherine, Litchfield, Tennant Creek; Groote Eylandt, Melville Island, Bathurst Island
+ (942.96) Darwin
Including: Palmerston
+ (943) Queensland

Fig. 6: Section from Area Table for Australia
(a) In UDC
Australia

Class here *Great Dividing Range

SUMMARY

- Western Australia
- Central Australia
- Queensland
- New South Wales
- Victoria
- Tasmania
- Australian Capital Territory
- Outlying Islands

Western Australia

Perth metropolitan district
Including Fremantle

Southwestern district
Including Albany, Bunbury, Collie, Geraldton, Kalbarri, Manjimup, Merredin, Narembeen, Northam, Kalbarri, Nelson and Hay, Nornalup, Stirling Range National Parks; Darling, Stirling Ranges; Blackwood, Greenough, Swan Rivers

For Perth metropolitan districts, see —9411

Northwestern district
Including Carmavon, Port Hedland; Barrow Island, Bernier and Dome Islands, Cape Range National Parks; North West Cape; Dampier Archipelago; Dirk Hartog Island; Hamersley Range; Ashburton, Gascoyne; *Murchison Rivers; Lake Austin

Kimberley district
Including Broome, Derby, Wyndham; Bonaparte Archipelago; King Leopold Ranges; Fitzroy, Ord Rivers

North central district
Including Lake Naboru
Class here Gibson, Great Sandy, *Great Victoria Deserts
Class Great Victoria Desert in South Australia in —94238

South central district
Including Coolgardie, Kalgoorlie, Wiluna; Lakes Barlee, Carey, Carnegie

Southern district
Including Esperance, Norseman; Cape Le Grand, Esperance National Parks; Archipelago of the Recherche

Central Australia

South Australia

Adelaide metropolitan district

Central district
 Including Angaston, Clare, Gawler, Mannum, Murray Bridge, Port Noarlunga, Port Pirie, Salisbury, Strathalbyn, Victor Harbour; Chaunceys Line Reserve National Park; Mount Lofty Ranges

For Adelaide metropolitan district, see —94211

Eastern district
Including Barmera, Berri, Loxton, Renmark; Tailem Bend; Billiton; Mount Rescue Conservation Parks; Lake Alexandrina
Class here The Coorong

*Class parts of this physiographic region or feature as instructed under —4-9

Fig. 6 : Section from Area Table for Australia

(b) in DDC