The PRECIS Indexing System
K. G. B. Bakewell

The development and current application of the subject indexing system used by The British National Bibliography is described. This system allows the user to enter the index at any one of the significant terms which together make up a compound subject statement and there find entries for every subject statement in the index which contains this term, the proper context of the term being preserved in each case. Reference is made to a manual providing guidance in the construction of these index entries. Details are given of a small evaluation study carried out at Liverpool Polytechnic's Department of Library and Information Studies on an experimental index covering 584 periodical articles on management. Finally the future of the system is briefly considered.

The Development of PRECIS

When the British National Bibliography (BNB) began in 1950, it used a system of subject indexing introduced by the distinguished Indian librarian S. R. Ranganathan and known as chain indexing. The system was at first viewed with some scepticism by a number of more conservative librarians, but it quickly became established as the accepted method of producing a subject index to a classified catalogue. However it was not, for various reasons, ideal for a computerized system, and in 1971, when BNB had developed the MARC system in the United Kingdom and was also using computers for the production of BNB itself, chain indexing was replaced by a new system known as PRECIS.

PRECIS is an acronym for PREserved Context Index System, conveying the intention of allowing the user of an alphabetical subject index to enter the index at any one of the significant terms which together make up a compound subject statement and there establish the full context in which his chosen term has been considered. A full statement—a kind of précis—is therefore offered to the user under every term in the subject which the indexer considers significant enough to be used as an entry word.

The PRECIS system had its roots in reactions by the Classification Research Group (CRG) and others against traditional library classification schemes for a number of reasons, including their inability to cope with compound subjects and their unsuitability for machine retrieval. The North Atlantic Treaty Organization financed a CRG project for the development of a faceted classification, and by the end of the project (1969) three main components of a freely faceted scheme had been established:

1. An outline thesaurus with experimental hierarchical notation.
2. A set of relational operators with an inbuilt filing order.
3. Provisional rules for classing.

A feature of the scheme was the use of a unique notation for every concept, making it attractive for machine retrieval but producing quite formidable notations for the expression of compound subjects. For example, the notation for "Energy balance in the turbulent mixing layers of a gas" would be C35(5)q24(59)x75(599)y6(54)B27(546)r2.

PRECIS Today

The PRECIS system as used today retains all the essential features of this classification system apart from the notation:

1. The thesaurus consists of an authority file of terms, ensuring that the same subject is consistently indexed under the same form of words whenever it occurs. This thesaurus is "open-ended", new terms being admissible at any time once they have been encountered in the literature.
2. The relational operators (called role operators) indicate the function of the indexed term and determine its position in the string of terms representing the subject of the document. They are for the guidance of the indexer only and do not appear in the index entry. (See Figure 1.)
3. The rules for classing are embodied in the rules of English grammar. (It is interesting to note that, although the rules were based on the rules of English grammar, the system has since been applied successfully in a number of other languages including French, German and Danish.) The first process is to seek a term denoting action, then to look for the object of the action (or key system), which may be accompanied by a number of dependent...
### Main line operators

<table>
<thead>
<tr>
<th>Environment of observed system</th>
<th>0 Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed system (Core operators)</td>
<td>1 Key system: object of transitive action; agent of intransitive action</td>
</tr>
<tr>
<td></td>
<td>2 Action/Effect</td>
</tr>
<tr>
<td></td>
<td>3 Agent of transitive action; Aspects; Factors</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data relating to observer</th>
<th>4 Viewpoint-as-form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selected instance</td>
<td>5 Sample population/Study region</td>
</tr>
<tr>
<td>Presentation of data</td>
<td>6 Target/Form</td>
</tr>
</tbody>
</table>

### Interposed operators

<table>
<thead>
<tr>
<th>Dependent elements</th>
<th>p Part/Property</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>q Member of quasi-generic group</td>
</tr>
<tr>
<td></td>
<td>r Aggregate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concept interlinks</th>
<th>s Role definer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t Author attributed association</td>
</tr>
</tbody>
</table>

### Differencing operators

<table>
<thead>
<tr>
<th>(prefix by $)</th>
<th>h Non-lead direct difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>i Lead direct difference</td>
</tr>
<tr>
<td></td>
<td>j Salient difference</td>
</tr>
<tr>
<td></td>
<td>k Non-lead indirect difference</td>
</tr>
<tr>
<td></td>
<td>m Lead indirect difference</td>
</tr>
<tr>
<td></td>
<td>n Non-lead parenthetical difference</td>
</tr>
<tr>
<td></td>
<td>o Lead parenthetical difference</td>
</tr>
<tr>
<td></td>
<td>d Date as a difference</td>
</tr>
</tbody>
</table>

### Connectives

<table>
<thead>
<tr>
<th>(Components of linking phrases; prefixed by $)</th>
<th>v Downward reading component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>w Upward reading component</td>
</tr>
</tbody>
</table>

### Theme interlinks

| x First element in coordinate theme |
| y Subsequent element in coordinate theme |
| z Element of common theme |

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Fig. 1.—Role Operators used in PRECIS
elements. The order of terms achieved by the operators is based on the principle of context dependency, each term setting the next term into its obvious context.

For example, the subject "The assessment of library school students in polytechnics" would be written by the indexer as

1) polytechnics (representing the key system)
2) (p) library schools (representing a part of the key system)
3) (p) students (representing a further part)
4) (2) assessment (representing the action)

Computer instruction codes are then added to the string and the computer "shunts" each term through the following three basic positions in the index:

<table>
<thead>
<tr>
<th>LEAD</th>
<th>Qualifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td></td>
</tr>
</tbody>
</table>

giving the following entries for the example quoted above:

Polytechnics
Library schools. Students. Assessment
Library schools. Polytechnics
Students. Assessment
Students. Library schools. Polytechnics
Assessment
Assessment. Students. Library schools. Polytechnics

Two terms are not written as adjacent components of a string if the first serves only to establish the class of concept to which the second belongs (for example, Birds. Penguins). In such a case only the second, more specific, term is included in the string, a see also reference being made to this term from the first. The terms which are semantically related to a newly admitted term (such as synonyms, superordinate terms, etc.) are determined from dictionaries, thesauri, etc., and a number is assigned to such terms in a machine-held file so that the computer can automatically extract and manipulate them as required. Cross-references are made in the traditional manner—see references from synonymous terms and see also references from superordinate to subordinate terms, for example:

Swine see Pigs
Mammals
\textit{see also}
Pigs
Animals
\textit{see also}
Mammals

The PRECIS Manual

The description above is just the bare bones of the PRECIS system. There is a great deal more to it than that, as can be seen by reading a very full article by the man primarily responsible for the development of the system, Derek Austin.\textsuperscript{3} More recently Austin has followed up this excellent article with a comprehensive manual which makes the construction of PRECIS indexes within the capabilities of every indexer in the country.\textsuperscript{3}

At first sight the 551 pages of this manual might be off-putting. It does, however, provide a very clear and thorough survey of the development of PRECIS, the construction of PRECIS entries, computer manipulation of PRECIS strings, and the construction of see and see also references. There are useful sections on the automatic construction of feature headings, some management aspects of PRECIS, and problems requiring further investigation. The appendices include some foreign-language examples, a useful feature in view of the interest shown in PRECIS by indexers from a number of overseas countries.

The manual's guidance is provided in thirty-nine steps and the would-be indexer can work through these at his own speed. At various intervals the text is broken up with a series of exercises allowing the reader to test his understanding of the instruction given and his ability to write PRECIS entries. Fortunately, answers are provided at the end!

The reader of The Indexer may well ask whether the PRECIS system has any relevance to book-indexing. The answer is provided in the manual, which contains two PRECIS-style indexes, one covering the examples used and the other covering the text. The indexes are not perfect—I detected a number of omissions—but they are very good and do illustrate the feasibility of PRECIS as a system for producing book indexes—provided enough space has been allotted to the index!

Evaluating PRECIS

We may, after reading the manual, be able to construct PRECIS entries but we do not know

The Indexer Vol. 9 No. 4 October 1975
enough about user reactions to PRECIS indexes. At Liverpool we have always paid a great deal of attention to the PRECIS system and our teaching methodology has been explained elsewhere. For their final project in the practical indexing session of the B.A. course we ask students to produce a “mini-catalogue” using any recognized system of subject indexing, and it is interesting that 11 of the 24 students graduating in 1975 chose to use PRECIS.

In 1973 a number of Liverpool students participated in a small evaluation study, carried out with the cooperation of the PRECIS team of investigators at the British Library Bibliographic Services Division’s Subject Systems Office. This team had indexed in depth a number of periodical articles on management, the articles concerned being those covered by Anbar Management Services Abstracts, vol. 10, nos. 11 and 12 (July/August 1971), and Personnel + Training Abstracts, new series, vol. 1 no. 1, October 1971. Thirty copies of the index, covering 584 journal articles, were kindly supplied to us, and this enabled us to give one copy to each student participating in the exercise. These students consisted of 20 second-year students for the Library Association General Professional Examinations, specializing in indexing, and five postgraduate students. Three members of staff also took part in the exercise.

The procedure adopted in the experiment was that two members of staff (myself and the departmental research assistant, Mrs. D. M. Allchin) produced 100 questions from the data base, which it was felt represented “typical” enquiries handled by a management information service. Each searcher was asked to attempt to answer four questions via the PRECIS index, indicating the results and the time taken on a special form (see Figure 2).

The following were the results obtained:

<table>
<thead>
<tr>
<th>Number of questions</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of items located</td>
<td>83</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Search times</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 minute</td>
<td>34</td>
</tr>
<tr>
<td>1-2 minutes</td>
<td>28</td>
</tr>
<tr>
<td>2-3 minutes</td>
<td>8</td>
</tr>
<tr>
<td>3-4 minutes</td>
<td>6</td>
</tr>
<tr>
<td>4-5 minutes</td>
<td>5</td>
</tr>
<tr>
<td>more than 5 minutes</td>
<td>2</td>
</tr>
</tbody>
</table>

The important question is why were seventeen items not located? Seven failures were due to inadequate searching and two could be blamed on ambiguity in the formulation of the question. This leaves the following eight which are attributed to inaccurate or incomplete indexing:

1. “The use of exhibitions to promote sales.”
   Indexed as
   Exhibitions
   Planning
   but the searcher ignored this entry because “sales promotion” was missing from the string.
2. “Creativity in management.”
   Indexed as
   Lateral thinking
   Applications
   without reference from “creativity”. (The term “lateral thinking” was used in the title of the article.)
   An article entitled “Clearing the jungle of management obscurity” was not located at all.
4. “Sensitivity training.”
   An article entitled “Human relations: lessons learned” was indexed as
   Canada
   Accounting firms. Inter-partner relationships. Improvement. Role of psychologists
   Sensitivity training was specifically mentioned in the abstract and should have had an entry in the index.
5. “The reason for the breakdown of contractual joint ventures.”
   An article entitled “Joint ventures in the multinational company” was indexed as
   Firms
   American-owned firms. Partnerships with foreign firms
   A reference from “Joint ventures” to “Partnerships” would have assisted location, since there was, of course, also an entry under “Partnerships”. The absence of an entry under “Multinational firms” is unfortunate, although not relevant to this particular enquiry.
   An article entitled “Power networks in the appraisal process” was indexed as
   Managers
   Performance appraisal
LIVERPOOL POLYTECHNIC
DEPARTMENT OF LIBRARY AND INFORMATION STUDIES

SUBJECT

SEARCH STRATEGIES (please state briefly and continue on another sheet if necessary)

RESULT (Abstract nos. and keywords etc. found)

TIME TAKEN (in minutes)

COMMENTS

SIGNATURE ........................................

Fig 2. Search sheet for PRECIS evaluation study

The Indexer Vol. 9 No. 4 October 1975
A reference from "Appraisal" to "Performance appraisal" would have assisted location.

7. "The development of interactive skills."

An article entitled "Developing interactive skills" was indexed as

Managers
Training: T-group method—Study examples: British Overseas Airways Corporation & International Computers Ltd.

The inclusion of "interactive skills techniques" in the string might have been useful.

8. "The role of the professions in management."

An article entitled "Industry, society and the professions" was indexed as

Accounting as a profession
Social responsibility

An entry under "Professions" seems to have been called for as the article dealt with "the Professions generally and the accounting profession in particular." Even if the article had dealt solely with the accounting profession, a general reference from "Professions" would have been helpful.

Some students also commented on the absence of expected entry terms in the case of successful searches. For example:

1. An article on "EDP security arrangements" was traced under

Security measures. Computer systems

but the expected entry or reference under "EDP" was missing.

2. An article on "estimating the size of markets" was indexed as

Industrial markets
Size. Estimating. Lorenz distribution

but, as the searcher commented, there should surely have been an entry under "market research".

3. The student who found an article on "the influence of the Fulton Report on the attitudes of civil servants to their work" under

Civil Service. Great Britain
Personnel. Young persons. Attitudes to workings conditions.—Surveys

said "As a result of the PRECIS indexing method the above abstract is indexed under 'attitudes', 'personnel' and 'young persons'. It seems debatable whether anyone would look under these headings for material on this subject, whereas they would be very likely to look under 'Fulton' or 'Fulton Report'." (The title of the article was "Fulton and morale").

What did the experiment achieve? It ensured that students used the PRECIS index, and there is no better way of becoming acquainted with the system. It indicated that some students need more guidance from their tutors in the formulation of search strategies. And it provided feedback for the PRECIS team, the most obvious lessons being the need for adequate cross-references and the danger of being over-influenced by the wording of the title when making index entries.

Last but by no means least, it gave some indication of the reactions of students to the subject indexing system used in our national bibliography. Not all students completed the "comments" section on the search form, but the fact that 81% of the questions were answered satisfactorily in less than five minutes is a clear indication that their reaction was generally favourable. The following are among the comments which were made:

"No trouble". (This comment, or something similar like "Simple" or "Marvellous", occurred a number of times.)
"Indexing is perhaps a little too deep."
"Simple when best lead term found, but long series of entries at 'computer systems' is not helpful." (This comment came from a student searching for material on the use of computers to design office layouts.)
"This method appeals to me more with each example."
"Has a lot of keywords for which a searcher might look and enough references to guide the searcher to entries."
"Time was mostly consumed thinking of keywords to look up rather than searching, where entries were reasonably clear."

The Future of PRECIS

PRECIS has been successfully used in The British National Bibliography for more than four years and has also been adopted for The Australian National Bibliography and The British National Film Catalogue. It is anticipated that it will be used for British Education Index from January 1976. One would expect that it will be adopted as the method of compiling the
British Museum Subject Index, especially now that the BNB has been absorbed into the British Library as the Bibliographic Services Division. Its future looks rosy indeed, but we do need to know more about the reactions of users to the system: so often they are ignored while we indexers happily experiment!

Acknowledgement

I am grateful to Derek Austin and Jeremy Digger for advice given during the preparation of this article.

References.

5. Personal communication from Derek Austin and Christine Shaw.

Some 19th Century Indexes

When I read Mary Kendall’s article on 19th-century book indexes I looked at one or two old books I have but, alas, only one of them has an index at all, but this one surprised me by the fact that the index is so modern in style. The book is Ancient Mysteries Described especially the English Miracle Plays, by William Hone, 1823. The index is presumably by the author and I wonder whether he was a publisher, as it is printed for William Hone, 45 Ludgate Hill, London.

I have looked through the index carefully and find no “lack of specificness in choice of entry words”, to quote Mary Kendall. The entries are run-on where suitable, with semi-colons between subheadings as in modern indexes and no stop at the end.

There are never more than two undifferentiated page entries, comparing favourably with the modern example I append.

The few see entries are as now, e.g.,

Joachim see Ann and Joachim
Owlglass see Howleglas

(incidentally, in the text he is Howleglas [Ulen-spiegle])

It is interesting that proper names are entered in strictly alphabetical order and not hierarchically as now,

Mary I. revives the Boy Bishop
Mary St., at Hill
— , Offer (Overy)
— Virgin, her education

Some of the entries intrigued me, so I looked them up and was surprised to find that “Cruickshank, Mr. George, his talents as an artist” referred to the illustrator of the book, although his name does not appear on the title-page. The author says, “Corineus and Gogmagog . . . they are drawn by Mr George Cruickshank whose extraordinary talents have been exercised on my more original fancies . . . I cannot but express my astonishment that a pencil which commands the admiration of every individual qualified to appreciate art, should be so disregarded . . .” I thought he was much later.

Whifflers, to my surprise, come from whiffle, a small flute, whereas I had thought this to be one of Lewis Carroll’s inventions.

The following entry, “Press, the, its effect in promoting the Reformation. Preached against,” has a very modern sound, especially as the relevant passage cites the Tatler of May 14th 1709 and the Spectator of March 16th 1711. Could one substitute Referendum now?

Following Mary Kendall’s example, I cite from a history book published 1956, reprinted 1967, paperback 1972:

Acre (twelve undifferentiated page entries)
battle of, see battle of Acre
bishop of, 91
siege of, 25n, 70, 70-1, 161

V. C. FINDLAY