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Subject Access in German-Language OPACs: A Survey

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In the German-speaking countries, in contrast with the USA, the development of Online Public Access Catalogues (OPACs) is still in a rudimentary stage. A discussion on theoretical foundations of online-adequate subject description has not taken place so far. The present report aims to present a survey of how, in the 14 systems of German university and public libraries, subject access is being applied in practice. Author

0. Introduction

In the German-speaking countries the following 14 libraries are equipped with a so-called Online Public Access Catalogue (OPAC):

Public Libraries (here municipal libraries)
- Stadtbibliothek (StB) Darmstadt
- Stadtbibliothek Ratingen
- Stadtbibliothek Speyer

University Libraries
- Universitätsbibliothek (UB) Bielefeld
- Universitätsbibliothek Heidelberg
- Universitätsbibliothek Karlsruhe
- Universitätsbibliothek Konstanz
- Bibliotheks- und Informationssystem (BIS) der Universität Oldenburg
- Universitätsbibliothek Saarbrücken
- Universitätsbibliothek Tübingen
- Universitätsbibliothek der Hochschule der Bundeswehr Hamburg
- Bibliothek der Eidgenössischen Technischen Hochschule (ETH) Zürich

Scientific Libraries
- Bibliothek des Deutschen Bundestages Bonn
- Bibliothek des Deutschen Patentamtes München

In the following it will be described how the subject retrieval components of these catalogues are designed (25). In Austria no OPAC systems have been realized so far, although planning papers have been drawn up (14).

The function of the present report is first and foremost a descriptive one. To the extent that evaluations are performed they do not pertain to rules or methods but solely to their application in each given case.

1. Access by Keywords

In this contribution, retrieval by keywords (taken from the title or supplements thereof) shall likewise be understood as a *subject* retrieval component. This is necessary, since OPAC users regard retrieval by keywords as subject access anyway and since in catalogues not presenting intellectually assigned verbal subject-description data (e.g. UB Karlsruhe, UB of the Bundeswehr) retrieval by keyword is regarded as a 'substitute for subject access'. However, the users are generally left in the dark as to the problematics involved in 'subject retrieval by keyword' - hence in a search in a non-controlled vocabulary. We should beware of the tendency to put retrieval by keywords on the same qualitative level as 'true retrieval by subject', and we should never succumb to the temptation of regarding retrieval by keywords as a substitute for subject description. Also to be borne in mind here is the frequently unrevealing nature of title formulations, especially in humanities literature and in popular scientific presentations.

A special problem in the field of retrieval by keywords results from the widespread use in German-speaking countries or regions of the regulatory manual on formal cataloguing 'Regeln für die alphabetische Katalogisierung' (RAK = Rules for Alphabetic Cataloguing). Numerous and detailed abbreviation rules - e.g. for supplements to subject titles - render this manual unsuited for application in online catalogues[2].

All systems installed so far in the Federal Republic of Germany offer retrieval by keywords. In most cases this access is restricted to the data from the title and its supplements. The OPAC of the Constance university library (UB Konstanz) (9) has a retrieval aspect which furnishes access by title keywords and author surnames. This does not permit e.g. of separate retrieval of publications by an author and of secondary literature on them. The OPAC component of the 'Data Libris' integrated library system (34) (originally called Speyer Libris) used in the Darmstadt, Ratingen and Speyer public libraries merely permits retrieval by character sequence, i.e. the data put in must be contained in the same form in the title, too, for the latter to be produced as a hit. Example: the title "Grundlagen der praktischen Information und Dokumentation" will be retrieved by input of "Information und Dokumentation", but not under "Information Dokumentation".

An interesting and so far unique approach in applying retrieval by keyword is employed by the library and information system of Oldenburg University (BIS Oldenburg). Here, the keyword-based search (OPAC component of the URICA system) is merely assigned an entrance function and does not in a single case lead to document hits. The hits displayed are those in the various retrieval aspects (e.g. 298 organizations containing this word, 534 subject headings containing this word, etc.). Further document retrieval then requires switching over from this screen display to the retrieval aspect desired.

The possibility of truncating individual keyword inputs is - implicitly or explicitly - offered by all OPACs. In all libraries, however, users are only insufficiently instructed in the application of this supporting function, and possible - undesirable - effects on the retrieval result are not pointed out to them. Truncation may be useful to include into a search different word forms (e.g. plural endings) of a search concept. Unless such application is carefully considered, however, the conceptual context is frequently lost sight of. Particularly in (university) libraries with multidisciplinary stacks this may lead to results beyond all proportions. Example of a search of this na-

ture in the OPAC of the Saarbrücken university library: In order to have a search include 'Autos', 'Automobile', etc., the truncated character sequence 'Auto' was put in. The result was a hit field of 374 keywords producing a total of I 779 document hits.

The linking together of several keywords through application of Boolean operators is not possible in all catalogues. Not, e.g., in those of the Constance university library or the Bundeswehr university library in Hamburg (31); here, searches can only be conducted when using a single search concept.

2. Access by Subject Headings and Strings

OPACs of West German libraries apply the most varied methods and rules of intellectual verbal subject description. The Speyer and Ratingen public libraries and the Bielefeld university library perform verbal indexing according to their own, internal subject-heading rules. In these three libraries individual subject headings are assigned to the document on a coordinating basis. Retrieval therefore likewise takes place according to the coordinating principle. Indexing and retrieval according to the coordinating principle for the indexing vocabulary is also applied in the OPAC of the Bundestag (West German parliament) library (18), (19). Indexing is performed using the 'Thesaurus für das Anwendungsgebiet Politik' (POLIANTHES = Thesaurus for the application field of politics). Thesaurus relationships have been integrated into the OPAC and can be explicitly included in the search through selection.

Strings according to the 'Regeln für den Schlagwortkatalog' (RSWK = Rules for the subject-heading catalogue)[3] (29) are applied for document indexing at the Darmstadt public library, the BIS Oldenburg and the library of the German Patent Office (26), (27). The degree to which this regulatory manual is applied varies, however. Thus, at the BIS Oldenburg only the basic string, but not the permutations provided for by the RSWK, has been incorporated into the catalogue. However, since in online retrieval access is possible to any link of a string, the permutations actually are not required in the OPAC. In the OPAC of the German Patent Office library the subject-heading list reproduceable on the screen shows, in addition to the basic string, also the permutation strings and the individual string links. Example:

...
16 TV image 1
17 TV image/Conference report 1
...

The document retrieved is the same one in both entries, which becomes apparent to the user only through the display of the document.

At the BIS Oldenburg the problematics of online retrieval by RSWK subject-heading strings (13) is solved by providing the possibility of retrieving individual string links according to the coordinating principle: the subject-heading strings are broken up into keywords. Subject-heading strings containing the subject headings searched for are displayed as the retrieval result. By selecting the desired strings from this display the user has a possibility to arrive at document hits. Differentiation between homonymous subject headings is possible only through including homonymous supplements into the retrieval input. Otherwise one will just have to put up with the homonyms in the display of strings.

The Saarbrücken university library (20) employs Eppelsheimer's subject catalogue method for the contents description of its stacks. The subject headings (individual headings or strings) retrievable via the OPAC are taken from the subject catalogue notation, with all entries following after the 'Allgemeiner Schlüssel' (General Key) being definded as subject headings. Retrieval by subject headings takes place in implicitly truncated fashion and produces as a first result a display of the subject headings assigned, with indication of the number of associated documents. Geographical concepts cannot be searched for by such a subject-heading retrieval process; they are made accessible by a separate retrieval aspect. By linking geographical concepts with subject keys, the search input can be formulated more precisely.

To facilitate use of the system and attain a certain error tolerance in a search using non-admissible vocabulary, an entrance vocabulary and a reference structure should be integrated. This is necessary in particular when a display of the verbal indexing concepts is not possible. The Speyer public library has stored synonyms and different spellings of the subject headings assigned, whose input will automatically, through an internal process, make the computer use the correct concept for its retrieval operation. The Oldenburg BIS system intends to incorporate into its OPAC the standard subject-heading file of the Deutsche Bibliothek including its relational structure and make it available for retrieval. This standard subject-heading file contains the indexing vocabulary as admissible according to the RSWK as well as non-admissible synonyms and quasi-synonyms from which reference is made.

Besides the libraries mentioned featuring OPAC systems with a verbal subject-description component, there are five libraries which do not offer their users such access (see the Table).

3. Access by Classification Schemes

An even more varied picture becomes apparent when looking at classificatory subject access. Neither in the classification systems used, nor in the manner of access to classificatory data is there a homogeneous landscape. It was especially in the selection of the classification system that home-grown traditions at the various libraries carried the day. Whereas in verbal subject description conversion to an OPAC sometimes went hand in hand with a shift to another regulatory manual (RSWK), classificatory subject description was always carried on unchanged. The reasons for this are obvious. At the three public ones among the five libraries concerned, only the 'Allgemeine Systematik für Büchereien' (ASB = General Classification System for Libraries), developed in the

1950s as a system for the shelving of books, has - likewise for reasons of tradition - found uniform application. For the domain of the public libraries, the wide use of the ASB[4] (17) in traditional catalogue forms permits one to predict a certain homogeneity in further introductions of OPACs as well.

At scientific universal and special libraries, the use of classification systems (in many cases shelving systems) specific to the given library predominates. The two exceptions are the Saarbrücken university library (Eppelsheimer method[5]) (32) and the library of the German Patent Office, which - in addition to a home-grown system - employs the International Patent Classification (IPC) for the classification of technical literature.

The manner of application (and hence of access) depends first and foremost on the structure of the notational system of the given classification system and of the volume of the data stored (are, in addition to the notation, verbal designations included as well?).

Only expressive notations permit, through shortening or lengthening the retrieval input, the narrowing or widening of the hit field. By truncating expressive notations, determinable segments from the classification may be searched for.

Example:
(* = truncation sign)(21)

		titles
NO B*	= mechanical engineering, electrical engineering	(5896)
NO BV*	= high-frequency technology, electronics	(1756)
NO BV1	= high-frequency technology, general	(72)
NO BV1*	= high-frequency technology	(298)
NO BV10	= radar	(52)

In a segmented-out domain (in the example, e.g. NO B* = mechanical engineering, electrical engineering) a further verbal search within this conceptual context may be possible. Through this application, homonym problems in verbal searches may be considerably reduced. The precision of the retrieval result with respect to the intention of the query may, through such use of classification systems in online retrieval, be increased.

Enumerative notational systems (Constance university library) merely permit searches with respect to a specific class or contents thereof.

A particularly decisive aspect for the user-friendliness of retrieval with the aid of classificatory data is the possibility of access by the verbal designations of the classification. Retrieval by notation has – for all its brevity and easy memorability - a major shortcoming: the user must first consult the tables of the classification to find the notation he is looking for and can only then embark on his document retrieval operation proper. Now if this search for the notation can be conducted at the screen, as in the OPACs of the Bielefeld and Saarbrücken university libraries, this is comparatively comfortable. In their majority, however, the systems realized so far do not offer this possibility (see Table); rather, the notation must be looked up in printed lists or even at the bookshelves.

Investigations from the United States (8) (22) (23) show that the classificatory search possibility is accepted if the possibility of a verbal entrance into the retrieval process is provided. In the German Federal Republic only the Constance university library has so far equipped its OPAC with such a retrieval possibility by integrating the subject-heading index into the classification system.

This is a fit point to give our attention to the ETHICS-OPAC of the ETH Zürich (10) (16) (33). The ETH classes its holdings with the aid of the Universal Decimal Classification (UDC), whose roughly 50 000 notations cover some 350 000 descriptive subject concepts. Retrievals can be conducted through the input of notations or of subject concepts. Searches are performed via search trees.

After the search input, the user is shown displays of the alphabetic subject index or the systematic subject index. Hopping between these screens can be performed at any retrieval stage. A third display possibility is the representation of the subject index environment including the conceptual relations pertaining to a subject concept. Here the UDC is understood as a thesaurus. From these screens the user arrives through selection at document hits.

By the search input of verbal designations a user arrives at results without needing to have even the slightest knowledge of the UDC or of its application possibilities in online retrieval.

A discussion on the use of and the requirements to be imposed on classification schemes in OPACs has not taken place so far in any emphatic way in the German Federal Republic. Contributions generally deal with the concrete application in a realized system, with fundamental questions hardly being gone into. Exceptions are the contributions by W.Gödert (11-13) and H.J.Hermes (15).

4. Linkage of Several Retrieval Aspects

The linkage of several retrieval aspects in a search - hence the multidimensionality thereof - is one of the chief advantages of the OPAC over conventional catalogs. Not all of the systems realized in West Germany offer this function (cf. The Bundeswehr unversity library in Hamburg and the Constance university library). The OPAC of the Saarbrücken university library permits linkage only at the second step; after a specific number of hits for a given search concept has been exceeded the user is requested to formulate his query more precisely through further inputs.

5. Searching in Displays

In conventional catalogue media one of the commonest search methods is the sequential browsing of the data. For the OPAC, too, it means a considerable improvement of its effectiveness when subject description data (e.g. a list of the subject headings assigned, or the tables of the classification) are made amenable to such a sequential search, into which the user can enter at any point defined by him.

A further increase in user-friendliness is achieved

	1 Access since	2 System developm.	3 Author	4 Keyword	5 subject heading access	6 classif. access	7 6+ verbal access	8 comb. of mult. aspects	9 truncation
StB Darmstadt	1989	Data Libris	+	+	RSWK	ASB	-	+	+
StB Ratingen	1990?	Data Libris	+	+	own SH rules	ASB	-	+	+
StB Speyer	1986	Data Libris	+	+	own SH rules	ASB	-	+	+
UB Bielefeld	1988	CD-ROM outside developm.	+*	+*	own SH rules	Syst. of the library	- -	+ +	+ +
UB Heidelberg	?	UB	+	+	-	-	-	-	+
UB Karlsruhe	1988	UB	+	+	-	Syst.of library	-	+	+
UB Konstanz	1987	UB	3 & 4 in one aspect		-	Syst.of library	+	-	+
BIS Oldenburg	1987	URICA	+	+[2]	RSWK*	* -	-	+[3]	+
UB Saarbrücken	1986	UB	+	+*	SH from Eppelsh.	Meth. Eppelsh.*	4	+[5]	+
UB Tübingen	1990?	Norsk Data	+	+	6			+	+
UB der Bundeswehr Hamburg	1987	UB	+	+	-	Syst. d.Bibl.	-	-	+
ETH Zürich	1987	ETH	+	+	-	UDC*	+*	+	+
Bundestags-Bibliothek Bonn	1986	HEBIS Bibl.	+	+	Thesaurus POLIAN THES*			+	+
Deutsches Patentamt Bibliothek	1987	Bibl.	+	+	SW* nach RSWK	Syst. d.Bibl. /IPC[8]	-	+	+

Table 1: Survey on the Subject Access in 14 German-language libraries

* Possibility of display in these retrieval aspects.
1 Developed and marketed by the Micobuss company.
2 Search by keyword in the URICA-OPAC does not produce document hits. It functions an an entrance procedure into the other retrieval aspects.
3 Not in the first retrieval step.
4 The verbal designations from the Eppelsheimer notation can be displayed on the users' help screens.
5 Not in the first retrieval step.
6 Pertinent planning data were not available.
7 Incl. the thesaurus relationships.
8 International Patent Classification: Only for technical literature.

when the possibility is provided to continue the search from these displays, e.g. by selecting suitable subject headings from them. In the OPAC of the Saarbrücken university library the user, after having put in his implicitly truncated search concepts, is guided in every single case to a display (keyword, subject heading, subject catalogue notation). Suitable selections from this display will then lead to the display of document hits.

In the OPAC of the Bielefeld university library, on the other hand, it is possible, after the input of a search concept, to press a key for obtaining an excerpt from a list of concepts which will then be superimposed on the retrieval screen as a window. These lists can be browsed through both forward and backward.

6. User Help Devices

Screens displaying help to users frequently are not placed at the latters' disposal at the relevant points of the retrieval stages. These help devices then need to be read through, by way as an introduction of sorts, prior to starting a search (e.g. at the Constance and Saarbrücken university libraries).

A detailed description of such retrieval-supporting functions as truncation and Boolean linkages (implicit or explicit) is not offered to the user in any catalogue. Such a necessary description should in any event also include a warning against undesirable effects of the application of these functions.

While written operating instructions alongside the user terminal may facilitate the initial getting-acquainted, they cannot replace a help function via the screen. These user help devices should also include a universally identical marking of functional keys as well as an explanation of their meaning in a top or bottom line on every screen.

7. A Summing-up

Subject access in the OPACs described has been determined so far by the subject description tradition of the given library. A fundamental, theoretically well-founded discussion on a subject description system adequate to online retrieval is hardly, if at all, taking place in the German Federal Republic. The elaboration of the RSWK catalogue during the first half of the present decade testifies to this. At a time when in the United States detailed studies on OPAC utilization (22) (24) and projects on the application of classification schemes in OPACs (7) (8) (23) (35) were going on, a regulatory manual was developed here in Germany on which Ch. Bossmeyer says: "It is my personal opinion that with RSWK we have introduced a regulatory manual and developed a data processing procedure for a moribund catalogue form and that the future belongs to the online user catalogues" (3).

Although this fundamental discussion still has not been started yet, contributions are now available which strive to improve retrieval in OPACs in closest-match searches or in the fuzzy-quantity approach (1). Without online-adequate subject description these attempts strike one as premature, however.

Notes:

1 This trend regrettably is noticeable in present-day literature (30).
2 Since the beginning of 1989 the Deutsche Bibliothek no longer applies these abbreviation regulations.
3 In its currently valid version this regulatory manual was published in 1986. Since the beginning of 1986 the Deutsche Bibliothek has been offering RSWK data as an extraneous service.
4 According to a 1982 poll of West German public libraries, 84% of them apply ASB. The 'Einkaufszentrale für öffentliche Bibliotheken' (EKZ = Central Purchasing Office for Public Libraries) has extraneous ASB data in its list of services offered.
5 The Eppelsheimer subject catalogue method is also called 'Mainzer Sachkatalog' (Mainz Subject Catalogue) after the city where it was first applied (in 1929).
6 This of course is not possible in the case online-oriented screen processing.

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