FEDERACION INTERNACIONAL DE DOCUMENTACION

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INTERNATIONAL CONGRESS OF DOCUMENTATION

SEPT. 21 - 24, 1970

I. b. 3

LA MISION DEL HOMBRE Y DE LA MAQUINA EN UN SISTEMA SELECTIVO INTERNACIONAL DE DISEMINACION DE INFORMACION

THE ROLE OF MAN AND MACHINE IN AN INTERNATIONAL SELECTIVE DISSEMINATION OF INFORMATION SYSTEMS

por
by

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NATIONAL COUNCIL FOR SCIENTIFIC AND TECHNICAL RESEARCH

BUENOS AIRES

1970

THE ROLE OF MAN AND MACHINE IN AN INTERNATIONAL SELECTIVE DISSEMINATION OF INFORMATION SYSTEM

Ways to Compile More Effective User Profiles, Based on ISI's Five Years of SDI System Experience.

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The objective of any selective dissemination of information (SDI) system is to alert its users to a maximum of relevant information at the lowest cost in terms of time and money expended. In pursuit of this objective, a number of complex SDI systems have been developed that use the most modern and sophisticated electronic data processing techniques. Furthermore, there is almost continuous research in progress to improve existing systems and develop new ones. Almost daily there are announcements heralding faster manipulation of larger and larger data bases. Input/output rates increase, core capacities grow larger, and ultra-complex search programs proliferate.

Unfortunately, such efforts have tended to enhance the role of the machine in an SDI system and to under-emphasize the role of man. The result is often a major gap between the inherent capabilities of the SDI system and the ability of the man to put these capabilities to good use. This disparity could quite correctly be characterized as a "communications gap."

In an SDI system, communication between man and machine is accomplished by means of a profile wherein the user attempts to describe his field of interest in terms that can be understood by the system. Through his profile, the user

"asks" the SDI system for information relevant to his interests. Ideally, the system "answers" in either of two ways. It may respond with "yes, there is information related to your profile, and here is a list of items you will find useful." Or, it may respond with "no, a search has been conducted and there is nothing you will find useful." The degree of accuracy of either response is, to a large extent, a measure of the effectiveness of the man/machine communication that has preceded the computer's search. Thus, if it is accurate to say "you can only get out of a computer what you put in to it," an equally accurate corollary is "once you put something into a computer, you can only get it back if you ask for it properly."

In operating it's own SDI system, ASCA®, for the past five years, the Institute for Scientific Information (ISI®) has been acutely aware of man/machine communication problems and has developed a number of practical approaches to their resolution.

THE ASCA SYSTEM

ASCA is an international, multidisciplinary SDI system that has been in successful operation since 1965. It is the first large-scale, computer-based SDI system commercially available to individuals or groups.

Each week the newly published scientific periodical literature is examined by ASCA and matched against each user's profile. When the ASCA system finds an item in the literature that coincides with one of the items in the profile (or a specified combination of profile items), this is referred to as a "hit." A weekly report is sent to each ASCA user listing all the hits related to his topic identified during the computer search of the current week's data base (Figure 1). Even if the literature does not provide any hits in a particular week, the user still receives a report to assure him that the data base was searched but no pertinent items found.

a s c a ®

AUTOMATIC SUBJECT CITATION ALERT

A SERVICE OF isi®

INSTITUTE FOR SCIENTIFIC INFORMATION
325 Chestnut St Philadelphia Pa 19106 USA

OCEANOGRAPHY

9399 ACCT NO
336 $ UNITS USED
0000 $ UNITS UNUSED

9399

REPORT FOR 5 JUN 70 PAGE 1

233.573 INDEXING TERMS FROM CURRENT SCIENTIFIC LITERATURE WERE PROCESSED FOR ASCA THIS WEEK

KUENZLER EJ
J PHYCOLOGY 6 7 70 33R N1 G 290
MARINE/ DISSOLVED ORGANIC PHOSPHORUS EXCRETION BY MARINE PHYTOPLANKTON

LEE RE FULTZ SA
J PHYCOLOGY 6 22 70 19R N1 G 290
MARINE/ ULTRASTRUCTURE OF CONCHOCELIS STAGE OF MARINE RED ALGA PORPHYRA-LEUCOSTICTA

CITED AUTH GOLDBERG ED BIOL B 101 274 51
CITED BY CARPENTE.EJ
J PHYCOLOGY 6 28 70 12R N1 G 290
PHOSPHORUS REQUIREMENTS OF 2 PLANKTONIC DIATOMS IN STEADY STATE CULTURE

COOK PW
J PHYCOLOGY 6 62 70 11R N1 G 290
LAKE/ AN UNUSUAL NEW SPECIES OF DRAPARNALDIA FROM LAKE-CHAMPLAIN

LI WN SMITH DT
GEOPHYSICS 35 170 70 A 1R N1 F9622
SEA IDENTIFICATION OF SEA-FLOOR SEDIMENTS USING UNDERWAY ACOUSTICS

SCHINK DR GUINASSO NL CHARNELL RL SIGALOVE JJ
IEEE NUCL S NS17 184 70 19R N1 F9756
SEA RADON PROFILES IN SEA - A MEASURE OF AIR-SEA EXCHANGE

GRISMORE R WEITZ WE FOLSOM TR
IEEE NUCL S NS17 194 70 11R N1 F9756
OCEAN// COMPUTER EXPERIENCE WITH VERY LOW-LEVEL GAMMA ANALYSES OF OCEANOGRAPHIC SPECIMENS

CITED AUTH GOLDBERG ED CHEMICAL OCEANOGRAPH 1 164 65
CITED BY FOLSOM TR GRISMORE R
IEEE NUCL S NS17 202 70 11R N1 F9756
OCEAN// SURVEY OF OCEANIC FALLOUT TRACES USING CESIUM ABSORBERS

STEVENS DE MILLER LW
CALIF FISH 56 80 70 7R N2 G 325
RIVER/ DISTRIBUTION OF STURGEON LARVAE IN SACRAMENTO-SAN-JOAQUIN-RIVER SYSTEM

MCCASKIE G
CALIF FISH 56 87 70 1R N2 G 325
SEA SHOREBIRD AND WATERBIRD USE OF SALTON-SEA

CORDONE AJ
CALIF FISH 56 96 70 9R N2 G 325
LAKE/ INFLUENCE OF MOLYBDENUM ON TROUT AND TROUT FISHING OF CASTLE-LAKE

Figure 1. Typical ASCA user's Report Showing Partial List of Hits for One Week

There have been four generations of ASCA systems, with the present one called ASCA IV. The main differences between generations have been expanded journal coverage, new searching capabilities, and added conveniences for the user.[1, 2]

The ASCA Data Base

Over 2500 journal titles are covered by the ASCA system, with journals from practically everywhere in the world represented. Every field of science and technology is covered including:

Life Sciences

Chemical Sciences

Physical Sciences

Behavioral, Social, and Management Sciences

Agricultural, Food, & Veterinary Sciences

Engineering and Technology

Education

Great care is exercised to assure that the covered journals are the most significant in their fields. An editorial board composed of experts in the various disciplines seeks out and evaluates journals for coverage. Subscribers are also invited to recommend journals for consideration of the editorial board. Perhaps the most important journal selection tool, however, is the large-scale citation analysis ISI conducts on a continuing basis.

For almost 10 years, ISI has been keeping accurate statistics on how many times a given journal is cited by or cites other journals.* This information is important in determining the journals that are the most used and, therefore,

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* Previously, this data has not been available outside of ISI. In the near future, however, ISI will make its citation statistics available in a new publication called the Journal Citation Index.

have the most impact. Analyses of this type are used to identify journals that should be considered for addition or removal from coverage in the ASCA data base.

Each week, ISI creates a new searchable data base for the current issues of covered journals it receives. Each journal issue is processed from cover-to-cover. All original articles and most other useful items such as editorials and letters are put into the data base. Book reviews and ephemeral items such as advertisements and news notices are omitted. This results in a weekly data base that contains over 7,000 newly published items. It also means that within a year the profile of an ASCA subscriber is matched against over 350,000 items.

In creating the weekly data base, an average of 200,000 indexing terms are used. Like some other SDI systems, ASCA includes title words and phrases among these terms. However, ASCA is unique among SDI systems in that it uses word stems and terms derived by a technique known as "citation indexing."

Use of Citation Indexing

Citation indexing is a relatively new method of organizing the contents of a collection of documents in a way that overcomes many of the shortcomings of the more traditional indexing methods. It is based on the simple concept that an author's references to previously published information identify those parts of the earlier work that are pertinent to the subject of his present document. The bibliographic descriptions of these references are commonly called citations, and a citation index is a structured list of all the citations in a given collection of documents.

A primary advantage of citation indexing is that it identifies relationships between documents that are often overlooked by subject indexing. It is also very effective at cutting across arbitrary disciplinary boundaries to retrieve related information.

The first application of this indexing concept was Shepard's Citations, a legal reference tool that has been in use since 1873.[3] More recently, ISI has used citation indexing to organize the world's periodical scientific literature. This work has taken the form of the Science Citation Index®.[4, 5, 6]

From its inception, ASCA has had the capability to retrieve current information through user profile questions based on citation indexing. This capability has been extremely helpful to users who have topics that do not lend themselves to word profiles. Citation indexing also avoids semantic problems that occur when a user's topic involves ultra-complex descriptors or nomenclature that is subject to rapid change.

Types of ASCA Profile Questions

At the present time, the following basic types of questions can be utilized on an ASCA profile:

Cited Reference Questions: A cited reference is any previously published item that is referred to by an author of a current item. To use this type of question, the user supplies a citation for an earlier item that he knows is related to his profile topic. When any article in the data base for the current week references the specified previous item, a hit will occur. The rationale behind this is that if a current item cites a previous work related to the user's topic, there is a high probability that the current item will also be related to that topic. In ASCA, cited references may be an article, book, monograph, thesis, dissertation, or patent.

In an international SDI system, cited reference questions are particularly effective in overcoming translation and idiom problems. In America, for instance, we speak of "specific ion electrodes." The Germans, however, refer to the same thing as "membrane electrodes." Thus, an American using the word phrase SPECIFIC ION ELECTRODES as a profile question would be likely to miss German

articles dealing with "membrane electrodes" and vice-versa. If, however, a user in either nation provides as a cited reference question the citation EISENMAN SCIENCE 126 831 1957, the semantics problem will be eliminated and articles by German and American authors can be retrieved. The explanation is that the Eisenman paper is considered a key paper in the field, and there is a high probability that it would be referenced by any current author in any nation writing about this topic.

This ability of cited reference questions to retrieve relevant articles that are frequently missed by subject-heading or title-word questions is supported in a study by Abbot, Hunter, and Simkins.[7] For a topic involving "imidazole chemistry," ASCA cited reference questions produced more than twice the number of relevant references than were found by term questions.

Cited Author Questions: These represent the same concept as the cited reference question, except that the user supplies the name of an author who has previously published material related to the user's topic. Any current item that cites any previous item by the specified author will cause a hit to occur. This is generally a less precise question than the cited reference question.

Cited Journal Questions: Again, the same rationale as cited reference and cited author questions, except that user provides the name of a journal that publishes articles likely to be related to his topic. Thus, any current item that references the specified journal is likely to be of interest to user. This type of "cited" question will probably have the broadest results.

Source Author Questions: Enable the user to keep abreast of work performed by known authors in a given field. Every newly published item by the specified author will cause a hit. Hits will occur whether or not the specified person is the first author.

Organization Questions: Enable the user to monitor current publications of universities, institutes, industrial firms, or any other organization that is likely to perform work of interst. This question causes hits for all items published by anyone in the specified organization.

Source Journal Questions: Alert the user to all items published in the current issue of the specified journal. Usually appropriate when user cannot obtain a given journal on a regular or timely basis.

Type 1 Word Questions: Enable the user to find all current items with a specified single word in their titles.

Phrase Questions: Cause hits for all current items with a specific phrase in their titles. A phrase is defined as any string of consecutive words totaling no more than 37 characters (e.g., RADIATION DAMAGE). If the specified phrase words appear separately or out of sequence, a hit will not occur.

Initial Stem Questions: Locate all current items with a title that contains a word beginning with a specified fragment (e.g., ABNORM will cause a hit for ABNORMAL).

Terminal Stem Questions: Locate all current items with a title that contains a word ending with a specified fragment (e.g., CILLIN will cause a hit for PENICILLIN).

Floating Stem Questions: Locate all current items with a title that contains a specified fragment in any position whatsoever. (e.g., the floating stem MYCIN will cause hits for titles containing such words as MYCINOGEN, AUREOMYCINASE, and STREPTOMYCIN.)

Type 2 Combination Questions: Cause hits for all current items with titles that contain two or more specified words or stems, regardless of sequence.

Negative Term Questions: A hit can be prevented from occuring by the user specifying negative words or stems. All current items containing a negative term in their titles will be rejected even though they include a positive term.

Chinese Menu Questions: These questions have their origin in the custom of arranging menus in a Chinese restaurant in two columns from which the customer selects various combinations of dishes. In ASCA, groups of words are used rather than columns of oriental foods. For a hit to occur, the title of a current item must contain at least one term from each group. The two terms may appear in any order or combination whatsoever. Thus, if a profile contained the following Chinese Menu entries

A	B
BARIUM	SULFIDE
CALCIUM	CHLORIDE
STRONTIUM	NITRATE

such combinations as BARIUM and NITRATE, or STRONTIUM and CHLORIDE, or CALCIUM and SULFIDE would all cause hits.

NEED FOR A MIDDLEMAN

The preceding description should make it quite clear that ASCA is a large, sophisticated system that can search and manipulate its data base in hitherto unprecedented ways. From the point of view of the user, however, he could care less about the details of our data base, or how clever ISI has been in devising such a range of search questions. He wants output from us that solves his own personal information problems, and is not at all interested in how we go about doing this. The average user of an SDI system does not even like to fill out the profile form. He expects the machine to somehow read his mind and

automatically determine his needs. In fact, in the early days of ASCA, it was not unusual to receive orders without any entries on the profile at all. We would write letters, send telegrams, and telephone to get them to fill out their profiles. Some would, but there were a few who insisted that ISI do it for them.

From these experiences, it became evident to us that most users want someone to help them. They prefer to talk to a knowledgeable human being in familiar, natural language rather than talk directly to the machine in the language of profile terms. It also became clear that rather than threaten the position of the documentalist or librarian as the source of information services, SDI systems really presented an opportunity to enhance this position.

Historically, libraries and information centers have played a rather passive role within their parent organizations. They are usually quite content to perform an archival function and wait for their clients to come to them. As I see it, this has not been a satisfactory approach for some time now.

The documentalist of today must play an active rather than passive role. He must leave the confines of the library and interact directly with all members of the organization. Present and future information problems must be sought out and defined. He must then search for and identify new solutions in terms of information systems. Potential users must then be acquainted with these systems and helped to use them. In effect, the documentalist should serve as a "middleman" between the information problems of his clients and the available information solutions.[8]

With an SDI system, once the job of informing clients of its possible application to their problems is accomplished, the on-going work of the documentalist primarily becomes that of helping compile and upgrade user profiles. Generally, this work consists of the following major areas:

1. Gaining familiarity with the technical character and capabilities of the specific SDI system to be used.
2. Identifying the specific needs of the user and relating them to the capabilities of the system.
3. Defining the user's knowledge of his field of interest in terms of his familiarity with its jargon and literature practices.
4. Applying library and information science techniques to the user's topic to develop and select profile items that will fully utilize the system capabilities.
5. Editing the selected profile items so they will effectively conform with the input requirements of the SDI system.
6. Monitoring information feedback to users to spot problems and make suggestions.

Whether they realize this or not, documentalists have been performing most of these functions anyway. It is only that previously they were applied in connection with more prosaic information systems such as printed indexes.

A good example of a practical application of the middleman concept is ISI's Group ASCA. With Group ASCA, various users in an organization submit their profiles through a designated individual who, in turn, forwards the profiles to ISI. This middleman may be anybody in the organization, but usually turns out to be the documentalist. Each week, the ASCA reports are sent in a single package to the middleman who then makes internal distribution to the individual users. A single bill is sent to the middleman and all other administrative matters are handled through him.

Several benefits arise from this arrangement. Because of the reduced handling costs on the part of ISI, the minimum fee for a group subscriber is over 60 percent lower than for individual subscribers. Special training on SDI

in general as well as on the ASCA system is provided by ISI to the middleman free of charge. Since the middleman gets a chance to examine all profiles and resulting reports, he can quickly spot problems and make suggestions.

GENERAL TECHNIQUES FOR PROFILE COMPILATION

Until now, I have dealt with reasons why documentalists should help with compiling user profiles. I think it is now time to discuss some specific techniques by which they can help.

Explain the Characteristics of the Individual System

Some users will have no previous experience with SDI systems. For these people, a basic explanation of the system and its capabilities is usually sufficient. One point that should always be stressed to the new user, is the difference between current awareness through SDI and retrospective search on a topic. New users often feel cheated when the first report doesn't bring them every article ever written on their topic. Proper explanation of the SDI function avoids this problem.

Other users may be familiar with SDI systems from previous experiences. These often feel that since they know one system, they know them all. It is important that this type of client know the differences between systems in such things as data base coverage, types of profile questions, currency, reporting intervals, etc.

The First Profile Isn't the Last

Many new users of SDI systems are under the impression that the first profile they submit will be the last. They are greatly concerned that it be exactly right lest they be subjected to poor results for the duration of the subscription. In most SDI systems today, this is simply not true. It is well understood by system designers that until the user starts to get feedback from the system, he cannot make a judgement on the value of the service. With ASCA, for example,

we advise subscribers to let their initial profile run for about six weeks and evaluate the results. At any time during the subscription, users may substitute another item of equal cost for any item on the profile for no additional charge. In fact, we periodically solicit all subscribers to re-evaluate their profiles and make changes. Thus, the documentalist can immediately put his client at ease by informing him that profile changes are expected and easily made.

Define the Literature of the Field

Some SDI system users, especially those involved with the hard sciences, have a knowledge of the literature practices in their fields and how to take advantage of them. These people will have their own reprint collection, will know what the important journals are, know the classic works in the field, and know who the important authors are. Others, especially in industrial environments, will not be able to provide much more information than to say "I want to know about any new developments in measuring hydrogen sulfide in air." For this type of client, a preliminary retrospective literature search would be an invaluable first step towards compiling an effective profile.

Help Get the Profile Started

For systems that use words, word phrases, and word stems, a good starting technique is to examine previous papers known by the client to be relevant to his topic. Any words appearing frequently in the titles of these papers, or in the titles of the references they contain, are likely to be good profile terms.

If the client is a publishing scientist, another starting technique is to examine the title words in his personal bibliography as well as the titles of the references he cites frequently. Recent papers that cite the client's older papers provide a means of learning any new terminology that has developed for his topic.

When choosing profile words, a useful tool to consult is the Permuterm® Subject Index. Permuterm is a contraction of the phrase "permuted terms." To produce the PSI®, all words within each title and subtitle of every item in the ASCA data base for a calendar year are permuted by the computer and printed out. All possible pairs of terms are formed. Thus, for a title containing n significant words, there will be n(n-1) pairs of terms produced (Figure 2). Each word takes a turn at being a primary term as well as a co-term. The printed index is arranged alphabetically by primary term. All terms co-occurring with a particular primary term are indented and listed in alphabetical order under that primary term. With each co-term, the name of the author is provided whose article title contains that co-term and its associated primary term (Figure 3).

In effect, then, the PSI is a dictionary of terms used in the titles of technical articles for any given year. Browsing through the PSI can therefore serve as a stimulus to include certain relevant words that might easily be forgotten. Such browsing can also alert the profile compiler to new technical terms and jargon words that have never been used before.[9]

The PSI can also be helpful in obtaining a preliminary indication of the number of hits that will occur for a given profile word. By looking up the proposed profile word in the PSI, it is possible to count how many articles in the previous year's ASCA data base used that word in their titles. It is then quite reasonable to project that a similiar number of articles will use that word in their titles during the current year. If the number of articles seems too large, negative terms and combination questions can be used to reduce the hits to a more manageable level.[10]

As a further aid to ASCA users, ISI publishes a "high-frequency" list that shows, for any type of question, profile entries that will cause an exceptionally large number of hits.

"A CONFORMAL MAPPING METHOD TO PREDICT LOW SPEED AERODYNAMIC CHARACTERISTICS OF ARBITRARY SLENDER RE-ENTRY SHAPES"

the Permuterm technique results in the following indexing entries:

PRIMARY TERM CO-TERM	PRIMARY TERM CO-TERM	PRIMARY TERM CO-TERM
AERODYNAMIC ARBITRARY CHARACTERISTICS CONFORMAL LOW-SPEED MAPPING METHOD PREDICT RE-ENTRY SHAPES SLENDER	LOW-SPEED AERODYNAMIC ARBITRARY CHARACTERISTICS CONFORMAL MAPPING METHOD PREDICT RE-ENTRY SHAPES SLENDER	RE-ENTRY AERODYNAMIC ARBITRARY CHARACTERISTICS CONFORMAL LOW-SPEED MAPPING METHOD PREDICT SHAPES SLENDER
ARBITRARY AERODYNAMIC CHARACTERISTICS CONFORMAL LOW-SPEED MAPPING METHOD PREDICT RE-ENTRY SHAPES SLENDER	MAPPING AERODYNAMIC ARBITRARY CHARACTERISTICS CONFORMAL LOW-SPEED METHOD PREDICT RE-ENTRY SHAPES SLENDER	SHAPES AERODYNAMIC ARBITRARY CHARACTERISTICS CONFORMAL LOW-SPEED MAPPING METHOD PREDICT RE-ENTRY SLENDER
CHARACTERISTICS SEE STOP LISTS	METHOD SEE STOP LISTS *	SLENDER AERODYNAMIC ARBITRARY CHARACTERISTICS CONFORMAL LOW-SPEED MAPPING METHOD PREDICT RE-ENTRY SHAPES
CONFORMAL AERODYNAMIC ARBITRARY CHARACTERISTICS LOW-SPEED MAPPING METHOD PREDICT RE-ENTRY SHAPES SLENDER	PREDICT AERODYNAMIC ARBITRARY CHARACTERISTICS CONFORMAL LOW-SPEED MAPPING METHOD RE-ENTRY SHAPES SLENDER	

* No entries are created for the words "A", "TO", "OF". These illustrate "full stop" words and are not indexed. The words "METHOD", and "CHARACTERISTICS" illustrate "semi-stop" terms. Semi-stop words are suppressed as Primary Terms but do appear as Co-Terms. Hyphenated words such as "RE-ENTRY" or phrases such as "LOW SPEED" are treated as one term.

Figure 2. Indexing Entries that Result when Permuterm Technique is Applied to a Title

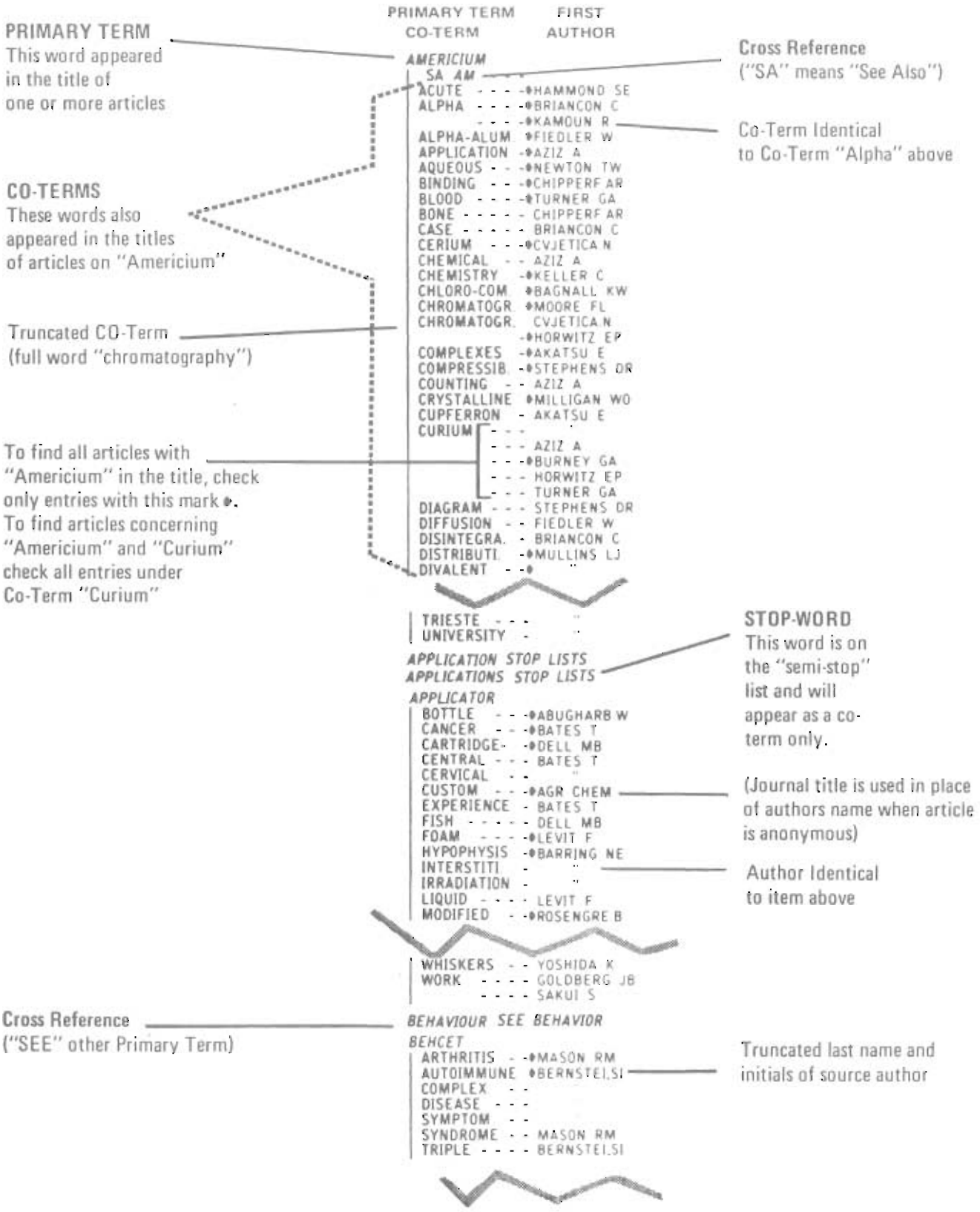

Figure 3. Typical Column from Permuterm Subject Index (PSI)

While the PSI and the high-frequency list are both derived from the ASCA data base, they are obviously useful tools for profile compilation for a number of SDI systems.

Don't Try to Make the Profile Too Specific

In my opinion, too many SDI system users are overly concerned about "noise," that is, alerts to irrelevant articles. The reasoning is that a busy man can't afford to spend even a few seconds examining the title of an article that may not be precisely related to his topic. The result is that every effort is made to make the profile pull the narrowest range of material. This often involves the use of complex questions based on elaborate Boolean logic statements. In these cases, the material located by the SDI system frequently consists of items that the user would get through his own normal use of the literature. It isn't long, then, before the user decides that SDI systems are of no help to him.

The documentalist assisting in profile compilation would do well to remind clients that the purpose of an SDI system is to prevent them from missing anything that could be of interest rather than just alerting them to articles that are "guaranteed" relevant. By using a profile that is too specific, chances of picking up useful information in areas that are peripheral to the main topic are severely reduced.

The thing to remember is that noise only becomes important if the total number of hits is large. If a profile is producing 10 or 15 hits a report, even 50% noise is not a real cause for concern. As the total number of hits per report starts to grow, noise becomes more of a problem.[11]

For these reasons, we advise ASCA users to submit profiles that, at first, are relatively free of combination questions which tend to reduce the number of hits. After the profile runs for a while, noise/relevancy ratios can be assessed

and, if needed, questions inserted that will cut down on the noise. For example, take an ASCA user who starts with a "cited journal" question. After a while, he may find that researchers from a certain university tend to cite that journal heavily, but are not at all involved in work of interest to him. He can then adjust his profile so that the cited journal question will be combined with a negative organization question. This will eliminate all articles citing the given journal that are published by members of the specified university.

Know the Important Details

Each SDI system will have its own detailed data processing requirements. ASCA has more than a hundred editing rules that are applied to each profile to achieve consistency in handling and searching. While I'm not suggesting it is necessary for a documentalist to become familiar with all the detailed rules, it is advisable that he learn a few that deal with situations that are almost certain to come up. Included in these would be:

1. Spelling Variations. How are such words as COLOR/COLOUR, CENTER/CENTRE, and SULFURIC/SULPHURIC handled by the system? Is it necessary to enter such words on the profile twice, or does the computer have a unification routine that makes either term equally effective?

2. Plural Forms. If the singular form of a word is used on the profile, will it pick up the article if the plural form is used in the title? For example, if ELECTRODE is used as an ordinary word on an ASCA profile, it will not pick up the word ELECTRODES in titles; if ELECTRODES is used as the profile entry, it will not pick up the singular form. The usual solution to this is to "stem" the word and enter it as ELECTRODE/. This entry will pick up the singular and plural forms. However, it will now also pick up titles with such words

as ELECTRODEPOSITION and ELECTRODECANTATION. Depending on the user, this may or may not be troublesome.

3. Names. How are complex name forms handled? With ASCA, a name like "Juan Jose de Cordoba" becomes CORDOBA JJD and "Jorge Olivera-Dias" becomes OLIVERADIAS J. Other systems may have different rules. Does the system retain honorifics such as "Sir" or "Professor" as part of the name? ASCA doesn't, but some others may.

ISI AS A MIDDLEMAN

Sometimes, there is just no one within the user's organization who can help him with profile compilation. For example, if the user is a doctor in a small hospital, he is not likely to have a trained documentalist available to him. This lack of qualified help is also a problem in many industrial concerns and small businesses where there is often a complete absence of staff services. In cases like these, the SDI system producer should be able to perform some of the middle man functions in profile preparation.

Thus, if a new ASCA user is unfamiliar with the literature of a field, and has no other help available to him, he can utilize ISI's Search Service to develop a bibliography on the topic. From the bibliography, items can be selected for insertion on the profile as discussed previously. With Search Service, an ISI information scientist will establish the needs of the user and conduct a custom search using the Science Citation Index, Permuterm Subject Index, and Current Abstracts of Chemistry and Index Chemicus,[12] Index Medicus, Biological Abstracts, Chemical Abstracts, and other standard reference tools. In effect, the SDI system user will have hired a highly skilled middleman to help him prepare his profile. This can be justified not only in terms of user time saved in profile preparation, but on the basis that a properly prepared profile will probably be less expensive, have less noise, and not miss any important information.

If the profile is to run for any length of time, the Search Service cost can be looked on as an initial investment for long-term time and money savings.

Another ISI approach to serving as the middleman is its "canned profile" program. In recent months, ISI information scientists have prepared standard ASCA profiles on several topics that are of current interest to large numbers of individuals and organizations. Covered topics include Pesticides, Pollution, Oceanography, and Drug Addiction (Figure 4). The profiles are available to new and existing subscribers and are offered at prices that are substantially lower than the total unit values of the profiles if compiled on an individual basis. Each canned profile is designed to retrieve a very broad spectrum of articles on the topic. This makes them particularly effective for users who want to get an overview of the many aspects of a topic, or who need a quick education in a new field.

I might add here that preparing partial or complete standard profiles which anticipate the needs of clients is a good approach for any documentalist involved in an SDI program. Such profiles are good public relations tools for the library and are solid evidence of the documentalist's interest in his clients' work.

In many cases, however, profiles are received by ISI that have not had the attention of any qualified middleman at all. The internal systems and procedures that ISI uses to initiate and process profiles must then absorb some of the functions of the middleman.

For example, we provide printed instructions for filling out the ASCA profile form that are as concise and graphic as possible. A wide variety of questions are shown on a sample profile which is keyed to narrative explanations on the facing page (Figure 5). Every profile received by ISI is checked by at least one specially trained profile editor and his immediate supervisor. Where possible, subject specialists within ISI also check profiles. Questions and

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325 Chestnut St Philadelphia Pa 19106 USA

ASCA IV Account No. SPECIAL
ISI Invoice No. 0004
Name DRUG ADDICTION

ASCA IV PROFILE ENTRY FORM

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01			LYSERGIC ACID	(WORD)	(1)				7	
02			LSD	(WORD)	(1)				7	
01			LSD-25	(WORD)	(1)				N/C	
04			HALLUCINOGEN/	(WORD)	(1)				7	
05			MARIJUANA	(WORD)	(1)				7	
06			MARIHUANA	(WORD)	(1)				7	
07			HASHISH	(WORD)	(1)				7	
08			HEROIN	(WORD)	(1)				7	
09			CANNABIS/	(WORD)	(1)				20	
10			PSYCHEDELS/	(WORD)	(1)				7	
11			ADDICT/	(WORD)	(1)				7	
12			SOLOMON, D (ED)	MARIHUANA PAPERS (BOOK)				1967	4	
13			ABRAHAM, H (ED)	HALLUCINOGENIC DRUGS & THEIR PSYCHOTHERAPEUTIC USE (BOOK)				1963	4	
14										
15			GARATTINI, S (ED)	PSYCHOTROPIC DRUGS (BOOK)				1957	4	
16			DEBOLD, RC (ED)	LSD, MAN & SOCIETY (BOOK)				1967	4	
17			ISBELL, H	(CITED AUTHOR)					9	
18			ABRAHAM, HA	(CITED AUTHOR)					9	
19								TOTAL	117	
20										
21										
22										
23										
24										
25										

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0004

PAGE 1

160,123 INDEXING TERMS FROM CURRENT SCIENTIFIC LITERATURE WERE PROCESSED FOR ASCA THIS WEEK

BATTEGAY R BAUMLER J GNIRSS P LADEWIG D
SCHW MED WO 99 965 69 49R N27 D5527
MARIJUANA (GE) DRUG DEPENDENCE OF CANNABIS TYPE (HASHISH MARIJUANA)

ROTHSCHI.B
SCHW MED WO 99 1003 69 A 1R N27 D5527
MARIHUANA (GE) MARIHUANA (CANNABIS)

PETRZILK T MEFLIGE W SIKEMEIE C
HELV CHIM A 52 1102 69 41R N4 D4521
HASHISH (GE) SYNTHESIS OF HASHISH CONSTITUTENTS .4.

IDANPAAN.JE MCISAAC WM HO BT FRITCHIE GE
SCIENCE 164 1085 69 24R N3883 D2913
HALLUCINOG RELATION OF PHARMACOLOGICAL AND BEHAVIORAL EFFECTS OF A HALLUCINOGENIC AMPHETAMINE TO DISTRIBUTION IN CAT BRAIN

HILTON JG CUSHMAN F BORDIER B
B NY AC MED 45 483 69 M NO R N5 D1817
HEROIM EXAMINATION OF PITUITARY-ADRENAL FEEDBACK IN HEROIN ADDICTS ON A METHADONE SUBSTITUTION REGIMEN

NIGAM IC HOLMES JL
J PHARM SCI 58 506 69 L 8R N4 D2896
LYSERGIC MASS SPECTROMETRY OF LYSERGIC ACID DIETHYLAMIDE

OPPENHEI. GB
LANCET 1 1154 69 L 2R N7606 D3974
HEROIN TREATMENT OF HEROIN ADDICTION

THE BOOK BY GARATTINI S PSYCHOTROPIC DRUG ED 460 57
CITED AUTH ISABELL H PSYCHOPHARMACOLOGIA 29 59
CITED BY UYNEO ET
INT J NEU 8 245 69 18R N3 D3873
HALLUCINOG ALTERATION OF A LEARNED RESPONSE OF SQUIRREL MONKEY BY HALLUCINOGENS

Figure 4. "Canned Profile" on Drug Addiction and Partial List of Hits Produced for One Week

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01			LORENTZ, GG	ACTA MATH	80	167		48	3	
02			CHAMBERLAIN, JW	ASTROPHYS J	131	47		60	3	
03			KALOW, W	PHARMACOGENETICS (BOOK)				62	4	
04			VAUGHN, W	THESIS					3	
05				U.S. PATENT #3,103,399					3	
06			VICKERY, BC	CITED AUTHOR	(1)				9	
07			SORM, F	SOURCE AUTHOR	(1)				5	
08			RAND CORP	ORGANIZATION	(1)				10	
09			JAPAN ANALYST	SOURCE JOURNAL	(1)				7	
10			TEXTILE RES J.	CITED JOURNAL	(1)				100	
11			ANAPHYLACTIC	WORD	(1)				7	
12			RADIATION DAMAGE	WORD PHRASE	(1)				10	
13			ABNORM/	INITIAL STEM	(1)				29	
14			MYCIN//	FLOATING STEM	(1)				43	
15			CILLIN///	TERMINAL STEM	(1)				20	
16			RADIO	WORD	(2)				8	
17			SOURCE/	INITIAL STEM	(2)				16	
18			EMISSION	WORD	(2)				10	
19			*RELATIVISTIC	NEGATIVE	(2)				5	
20			BARIUM	WORD	(1A1)				5	
21			CALCIUM	"					11	
22			STRONTIUM	"					5	
23			SULFIDE	"	(1A2)				5	
24			CHLORIDE	"					12	
25			NITRATE	"					5	

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Sample ASCA® IV Questions

1-5. Each of these five terms, as entered on form (facing page), is a separate *Cited Reference* question:

1-3 Cited Articles. Give the complete citation of a specific article: the identification should contain the name and initials of the first author, the name and volume of the journal, first and last page of the article, and year of publication.

3 Cited Book or Monograph. Give name and initials of the first author and the title of the work. If you want to be alerted to items citing any part of the book, omit page numbers. If you are interested in items citing a specific edition, list its year. If you want to be alerted to items citing a specific page-range within a specific edition of a book, list the first and last pages in which you are interested and show the edition year. If you are interested in items citing a specific chapter in a specific edition of a book, list chapter number, page range, and edition year.

4 Cited Thesis or Dissertation. To be alerted to items citing a thesis or dissertation give the name and initial of the author and specify THESIS.

5 Cited Patent. If you want to know about items citing a patent or patent application in any country, fill in the patent number and specify PATENT.

6. A Cited Author question will alert you to current items citing any work in which a particular person was named as first author.

7. A Source Author question alerts you to what a particular author is publishing currently—no matter where his name appears in the by-line.

8. An Organization question will alert you to all items published by any member of the staff of a given organization. The division or the whole organization may be specified.

9. A Source Journal question used alone causes an alert for everything published currently in a particular journal. You can also use a *Source Journal* question as a *negative* term to restrict selection of articles.

10. A Cited Journal question will alert you to any new article that cites any work ever published in a journal in whatever period you specify.

11. A Type 1 Word question alerts you to all articles containing that *word*.

12. A Phrase question (a string of consecutive words) alerts you to all articles containing that *phrase*.

13. An Initial Stem question (four or more letters) alerts you to any article in which that stem occurs at the beginning of a word. Please designate an *initial stem* in your profile by using a single slash (/). Example: ABNORM/.

14. A Floating Stem question alerts you to any article containing that stem whether it occurs as a prefix, in the middle of a word, or as a suffix. Use a double slash (//) immediately following the *Floating Stem*. Example: MYCIN//.

15. A Terminal Stem question alerts you to any article whose title contains that stem as a suffix. Use a triple slash to specify a *Terminal Stem* (///). Example: CILLIN///.

16-19. A Type 2 Combination question alerts you to articles whose titles contain two or more words or stems you specify regardless of sequence. Example: The *word* RADIO and the *stem* SOURCE/ would cause an alert. So would RADIO and EMISSION or EMISSION and SOURCES.

19. A Negative term prevents selection. Use an asterisk (*) to indicate a *Negative* term. Example: *RELATIVISTIC.

20-25. A "Chinese Menu" question would alert you to titles containing at least one of the 1A1 terms and one of the 1A2 terms. Every possible combination of pairs across the two groups would cause an alert. For example, BARIUM and NITRATE. Additional questions of this type can be asked (e.g., 2B1 + 1B2 or 1C1 + 1C2).

BOOLEAN LOGIC—Boolean expressions may be used as an alternative method of requesting any desired combination of *Positive* and *Negative* terms. For example, the relationship among terms 16 through 19 might be expressed in this Boolean statement: [(16 ∩ 17) ∪ (16 ∩ 18) ∪ (17 ∩ 18)] ∩ 19'

Figure 5. Profile Compilation Instructions Provided to ASCA Subscribers

suggestions frequently result from these checks and are resolved by contacting the user before the profile is accepted.

Admittedly, these are not optimum approaches, but they do succeed in upgrading a surprising number of profiles.

RESPONSIBILITIES AND OPPORTUNITIES

Despite the problems in profile compilation that I have outlined, let me leave no doubt about the present and potential usefulness of SDI systems. SDI systems represent the dynamic type of "instant awareness" that all people are growing more and more accustomed to. The average person can now view news events live or a few minutes after they happen half-way around the world. He can know the price of stock transactions seconds after they are made on the floors of the various exchanges. Reservations for trains, planes, hotels, and shows can all be made and confirmed within seconds at a multitude of on-line terminals. Can it be surprizing, then, that researchers, managers, educators, and other professionals now feel that they need the same degree of currency for information that can affect or help their work.

I believe that it is the responsibility of the documentalist to help fill this need through participation in the development and use of SDI systems. In filling this responsibility, the documentalist will find that there are also new opportunities for his own professional growth.

One opportunity will be for greater prestige. As clients begin to realize that a documentalist can help focus the power of the computer on their information problems, they will naturally develop greater respect for the service offered and the skills involved. Certainly, this has to have a salutary effect when library budgets and space allocations are made.

Another opportunity will be for increased salaries and other financial rewards. If a large, computerized SDI system is produced by a private or public organization for its own use, an investment of millions of dollars will be involved. If the SDI service is purchased from a commercial supplier, a substantial amount may be paid out in fees over a period of time. In either case, the documentalist who can maximize the value of the services received from such expenditures will certainly increase his own personal worth to the organization.

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