Part 1 of the bibliography gives textbooks, readers, handbooks, and journals of interest. Part 2 is a highly select list of further readings that contribute important ideas to the field. A textbook of this scope naturally draws on the entire accumulated knowledge of the field, and it would be nigh impossible to trace the source of every idea covered.

Reviews known to this author are referenced in the textbook bibliography; Journal abbreviations are explained in the list of journals.

PART I: TEXTBOOKS, READERS, ETC.

INFORMATION STUDIES IN GENERAL

Annual Review of Information Science and Technology. White Plains, NY: Knowledge Industry Publications; 1966- (First edited by Cuadra, Carlos, then by Williams, Martha. Various publishers through its history.)—A basic work for keeping up to date and for reference.

Encyclopedia of library and information science./Kent, Allen, ed.; Lancour, Harold, ed. New York: Marcel Dekker; 1968-


These textbooks deal with all components of an information system. They include, but are not limited to, a treatment of information storage and retrieval. They emphasize bibliographic information systems.


**COMPUTERIZED INFORMATION SYSTEMS IN ORGANIZATIONS**

These books usually present an introduction to three interrelated topics: the function of an information system in an organization, computer technology, and the handling of data by computers. They usually do not cover the structure of index languages.


libraries, from the point of view of automation. The treatment of technology is, of course, outdated.

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These books concentrate on information storage and retrieval, usually in the context of bibliographic systems. They often include substantial discussion of subject access, in particular the structure of index languages. Some of them concentrate on using computers for the more or less clerical functions of file building and maintenance and comparison/match.


ONLINE S
EARCHING

These books treat information storage and retrieval with emphasis on concepts and techniques for searching online data bases (usually bibliographic data bases).

AUTOMATED INFORMATION STORAGE AND RETRIEVAL

These books, while often dealing also with other topics, emphasize automated methods for indexing and retrieval, drawing in particular on language analysis and probabilistic theories.


ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

Bibliography 403


**DECISION SUPPORT SYSTEMS**


**DATA BASE MANAGEMENT SYSTEMS**

These books concentrate on data schemas for formatted data and associated query languages. Many deal also with data structures and access methods that can be used to implement these schemata. Specific data base management software packages are also discussed. These books generally do not discuss the structure of index languages or rules for other entity types.


404 Bibliography


**The Structure of Index Languages and Thesauri**


**JOURNALS**

ACM Transactions on Data Base Systems. 1976-
ACM Transactions on Office Information Systems. 1983-
Artificial Intelligence. 1970-
CH Choice. 1963-
Communications of the ACM 1958-
CR Computing Reviews. 1960-
Computing Surveys. The survey and tutorial journal of the ACM. 1969-
Drexel Library Quarterly. 1965-
PART 2

CHAPTER 1 INFORMATION SYSTEMS FOR PROBLEM SOLVING


Notes

Bell Labs has programmed a computer to discover the shortest route from a house to a desired store and give directions on the terminal (ASIS Bulletin 1982.10: 10).
An example of a high-speed search device is the GESCAN 2. The machine can scan 2 Mbytes/second or 1,000 pages/second (1 page = 2,000 characters). It can search for four queries simultaneously (General Electric, Military and Data Systems Operations, Arlington, VA).

CHAPTER 2 THE NATURE OF INFORMATION

5 Bibliography


Chapter 3 THE STRUCTURE OF INFORMATION

See also the textbooks on data base management and on artificial intelligence and the references given for Chapter 9. Also Jahoda 1980 listed for Chapter 17.


Chapter 4 THE INFORMATION TRANSFER NETWORK


>en, Thomas J. 1969.3; Cohen, St. I. *Information flow in R & D laboratories*. Administrative Science Quarterly. 1969.3; 14(1): 12—19.—Introduces the idea of technological gatekeepers. An earlier version published as a report (Cambridge, MA: MIT. Sloan School of Management; 1966. 26 pp.) is a better introductory reading, particularly since it traces the origin of the idea to previous research on two-step information flow in mass communication.


CHAPTER 5 THE STRUCTURE OF INFORMATION SYSTEMS

Thomas, Robert J. 1982.9. Marketing research in the scientific and technical information services industry: development and future directions. JASIS. 1982.9; 33(5): 265-269.—This article contains many useful references.

CHAPTER 6 SYSTEMS ANALYSIS

The readings listed here may also contain relevant material for Chapters 7, 8, and 18. Conversely, the readings for Chapters 7, 8, and 18 deal with specific functions in systems analysis. See also the textbooks on information systems and on computerized information systems.

General Works on the Systems Approach and Systems Analysis


Systems Analysis in Libraries

18 Bibliography

methods for Collecting Data and Analyzing and Designing Procedures


ost-Effectiveness and Cost-Benefit Analysis


perations Research and Use of Models


dquist, M. G. 1978.3. Growth dynamics of information search services. JASIS. 1978.3; 29(2): 67-76.—A good example of simulation as applied to information systems management, wherein the use of an online service is predicted as a function of public relations and quality of service.


HAPTE 7 A SSESSMENT OF USERS’ PROBLEMS AND NEEDS

The readings listed with Chapters 2, 4, and 6 may also contain relevant material.

eneral Readings


Guides for Information Needs and Use Studies


Results of Information Needs and Use Studies


McCann, Davis B. 1967. See Chapter 18.

Catalog Use Studies


Studies of Impact


Application of User Studies to System Design


CHAPTER 8 OBJECTIVES AND PERFORMANCE MEASURES
FOR ISAR SYSTEMS

Readings emphasizing the definition of objectives and performance measures are listed here. Readings that deal also with methods for measuring or testing are listed in Chapter 18. Further relevant readings can be found with Chapter 6.

Introduction


Sections 8.1 and 8.2. Definition of Performance Measures


Section 8.3 Testing versus Evaluation

“To test is not to evaluate” is a quotation from

Section 8.4 Relevance and Relevance Judgments

The references given with Chapters 2, 7, and 17 may also contain relevant material.

General Review Articles


On the Definition of Relevance


Usefulness of Relevance as a Concept


How People Judge Relevance

412 Bibliography

CHAPTERS 9-11 DATA SCHEMAS AND DATA STRUCTURES

See also the textbooks on data base management.

CHAPTER 9 DATA SCHEMAS AND FORMATS

Section 9.1 Designing a conceptual schema

Section 9.3 Criteria for the Design and Evaluation of Data Schemas

CHAPTER 11 DATA STRUCTURES AND ACCESS

Section 11.1 Exploration of Data Structures

Articulated Indexes


The review itself is a brief introduction to PRECIS.


Section 11.4 The Concept of Order


**CHAPTERS 12—15 INDEX LANGUAGE FUNCTIONS AND STRUCTURE**

Xs is true for all parts of the book, much material can be found in the textbooks listed in Part 1. See also Chapter 7 references on studies of catalog use, Chapters 16-18 and Chapter 18, especially Fugman 1985.3.


CHAPTER 13 INDEX LANGUAGE FUNCTIONS

Section 13.2 The Role of the Index Language in Indexing

Moores, Calvin N. 1958; Brenner, C. W. A case history of a Zatocoding IR system. Casey, R. S., ed. 1958. Punched cards: their application to science and industry. 2. ed. New York, Reinhold; 1958: chapter 15, p. 340-356.—This is the seminal article on request-oriented indexing, called in the article “filtering technique”; the essential pages are 346-352.


CHAPTER 14 INDEX LANGUAGE STRUCTURE 1: CONCEPTUAL


Reports on Systems

The Semantic Code and Syntol are examples of methods for the representation of knowledge. Today’s systems could capitalize on the intellectual effort invested in them.


SECTION 14.5 Conceptual Analysis, Facet Analysis: Elaboration

Further relevant material is listed with Chapter 3.

Bibliography 415


Section 14.7 Concept Formation in Thesaurus Building

The quotations on cross-disciplinary concepts are from


CHAPTER 15 INDEX LANGUAGE STRUCTURE 2:
DATA BASE ORGANIZATION

See also references for Section 11.1.


CHAPTERS 16-18 ISAR SYSTEM OPERATION AND DESIGN

References on Automated Methods of Information Storage and Retrieval

These references go well beyond the text.

Knowledge-based approaches and language analysis

See the textbooks on artificial intelligence and expert systems and references with Chapter 3.

Probabilistic approaches

Some of these references deal with indexing, some with searching, and some with both, but they all use the same underlying ideas and it is, therefore, useful to put them together. See also the section on automated ISAR in the textbook bibliography and Salton’s work on SMART.


The following references describe a particular method of indexing and searching: human experts provide indexing using a controlled vocabulary or relevance judgments with respect to a query, respectively, for a training set. Analysis of these data yields associations between document terms (or other easily ascertained entity characteristics) and descriptors from a controlled vocabulary or between entity characteristics and queries. A program then uses these associations to infer from entity characteristics the appropriate controlled vocabulary descriptors or relevance judgments with respect to queries.


Robertson, Stephen E. 1976.5; Sparck Jones, K. *Relevance weighting of search terms.* JASIS. 1976.5; 27(3): 129-146.—A good summary of this area of research.


The SMART System

The SMART system is amply covered in books written or edited by Gerard Salton, some of them cited in the textbook bibliography. The following early references give a good idea of the conception and genesis of the system.


CHAPTER 16 INDEXING AND SYSTEM PERFORMANCE


Machine-Assisted Indexing


Automatic Abstracting


Borkowski, Casimir 1975.3; Martin, J. Sperling. Structure, effectiveness, and benefits of LEX tractor, an operational computer program for automatic extraction of case summaries and dispositions from court decisions. JASIS. 1975.3; 26(2): 94-102.
Automatic Indexing: Syntactic Approaches

See also references given under automated information storage and retrieval earlier.


Borkowski, Casimir 1970.1; Cepanec, Louis; Martin, J. Sperling; Saiko, Virginia; Treu, Siegfried. Structure and effectiveness of the citation identifier, an operational computer program for automatic identification of case citations in legal literature. JASIS. 1970.1; 21 (1): 8-15.

Dunham, G. S. 1978.3; Pacak, M. G.; Pratt, A. W. Automatic indexing of pathology data. JASIS. 1978.3; 29(2): 81-90.—Uses SNOP, a faceted classification of pathology, as the target index language.

CHAPTER 17 SEARCHING

Textbooks


Articles on the Entire Scope of Chapter 17

Scheffler, F. 1972.1; March, Jacqueline; Bern ados, John. An experiment to study the use of Boolean NOT logic to improve the precision of selective dissemination of information. J ASIS. 1972.1; 23(1): 58-65.—Much broader than title indicates. Many good points on formulating queries for SDL.

Costs of Searching


Section 17.1.2 Develop the Query Statement

The references listed here deal with the reference interview.
Basic Works on the Reference Interview


Interviewing in General


Additional References


Section 17.2 Develop the Search Strategy


Section 17.2.4 Free-Text Searching

See also Chapter 18, other studies, Blair 1985.3.


Section 17.3 Execute the Search Strategy


Sections 17.5 Edit Search Results and Send Them to the User and 17.6 Check Whether the Answer Was Helpful (Evaluation 2)

Lancaster, F. Wilfrid 1970.9; Jenkins, Grace T. “Quality control” applied to the operations of a large information system. JASIS. 1970.9; 21(5); 370-371.

Section 17.7 Interaction

See also the references on search term weighting given earlier under automated information storage and retrieval and the references given in Section 17.3.


CHAPTER 18 DESIGN AND EVALUATION OF INFORMATION SYSTEMS

This listing emphasizes references that deal with methodologies for or results of testing the performance of information systems, especially their ISAR system component. References that emphasize objectives and performance measures are listed with Chapter 8. More comprehensive references are listed with Chapter 6.

Methodology for testing and evaluation


Swanson, Rowena Weiss 1975.5. Performing evaluation studies in information science. JASIS. 1975.5; 26(3): 140-156.

Reports on Actual Studies and Experiments in the Testing and Evaluation of Information Systems

Cranfield II and Related Studies

The Comparative Systems Laboratory at Case Western Reserve University

MEDLARS Evaluation

Retrieval Tests with the SMART System
See the books by Salton listed in Part 1 of the bibliography and references on SMART listed with chapters 16-18

Other Studies
McCarr, Davis B. 1967; Stein, Charles R. Intelligence system evaluation. Kent, A., ed. 1967. Electronic handling of information. Washington, D.C.: Thompson; London: Academic Press; 1967:109-122.—In addition to performing a retrieval experiment, this study looked at the incremental value of the information system studied over other information sources consulted by its users in terms of additional relevant documents found and in terms of additional substantive data gleaned from such documents.
422 Bibliography


Design Characteristics of Information Systems

Fugman, Robert 1985.3. The five-axiom theory of indexing and information supply. JASIS. 1985.3; 36(2): 116-129.—A good summary of ISAR principles with a view to design.


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This subject index serves also as a key to abbreviations. It should be used in conjunction with the table of contents, which serves as a classified index. Cross-references are introduced only as space permits; crossreferences that can be inferred from the term itself are not given (for example, there is no cross-reference Polyhierarchy to Hierarchy). Bag numbers 399 and above refer to the bibliography.

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