

Using Information Technology to Improve Collection Management

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An information technology model using the synergistic combination of Dialog's advanced commands, Dialog's special databases, and third-party databases creates a powerful tool for collection building and database selection in libraries and information centers. This model of advanced information retrieval offers automatic data extraction that can be manipulated, customized, and applied to collection development decisions. The model assists librarians in identifying core journals in any given discipline and is especially applicable to interdisciplinary fields. The model can also be used to find databases with the best indexing and abstracting coverage for chosen journal titles.

With skyrocketing costs of periodical subscriptions stymieing even the most well-endowed institutions, strategies for collection management and development are red-hot topics in library and information science. Increasingly, libraries of all kinds are finding themselves in the unenviable position of having to spend more serial subscription dollars for less periodical product. Members of the Association of Research Libraries (ARL) have watched their purchasing power diminish with dismay, spending 124% more on periodicals while buying 7% fewer titles since 1986 (Walker 1998). Now, more than ever, information technology can play a vital role in assisting librarians in their decisions on how those limited dollars are spent in an efficient and customized fashion.

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A Model for Collection Development

In entering this discourse, my aim is to present a model for the use of information technology applied to practical issues of collection development and database selection in all types of libraries. A methodology that extracts tangible, reproducible numbers, while allowing for customization in line with individual institutions' needs, is certainly desirable and now absolutely feasible with existing information technology. This model represents only the beginning of what can be learned and practically applied to address the dilemma of soaring serial subscription costs.

Debate rages about the determination of "core journal" lists in all the disciplines and the implications for collection development and journal deselection. Descriptions of core serial projects abound in library literature; even as of this writing in March 1999, the topic is circulating once again on the SERIALST mail list. From just a quick read of some of the contributors to the thread this time around, we can see that these kinds of projects have traditionally been incredibly labor intensive, involving perusal of multiple bibliographies, classic reference works, and implementation of use studies and surveys (Black 1999). Although valuable, the arduousness of these evaluative techniques can deter all but the most resolute of information professionals. Citation analysis has also had a role in serial projects, with the use of the Institute for Scientific Information's *Journal Citation Reports* providing another kind of evaluative tool for

subject-specific journals in various fields (Snyder, Cronin, and Davenport 1995). Information technology is playing a more prominent role in evaluation techniques too (Atkins 1996). From the use of access statistics for online databases to price comparisons of document delivery services, technology has the potential to morph unwieldy data content into visual information and tell a story particular to each institution. This kind of information is vital to any library or information center making decisions about the allocation of precious dollars. Technology's ability to deliver the necessary data is an option no organization can afford to overlook.

An Interdisciplinary Example

Much discussion has taken place surrounding the difficulty of interdisciplinary collection evaluation, particularly the problems inherent in identifying and measuring the importance, value, and impact of journal holdings in these areas. Because libraries reflect a discipline-based model of organization and administration, assessment across subject areas is problematic (Wilson and Edelman 1996). The field of women's studies offers an example of this conundrum. Since its inception in the seventies, the area of women's studies has shown dynamic growth, yet remains a field elusive to traditional methods of collection evaluation (Dobson, Kushkowsky, and Gerhard 1996). Intner and Futas (1996) have demonstrated the gaps that exist when evaluating women's studies resources using traditional assessment tools based on Library of Congress classifications. They even suggest that the field be perceived as "women across the curriculum" in an effort to better understand the components necessary for collection building in this area. Perhaps because of this disregard of strict classification lines, women's studies ranked fourth in dissertation topics in *Dissertation Abstracts International* in early 1997 and has continued to be a popular topic in this decade (Jacsó 1997a).

What constitutes a "core journal" set in an interdisciplinary field such as women's studies? And once discovered (or decided on), how well indexed are such journals? Opportunities abound for manipulation of data to meet these information needs, and these questions can be explored with a little twist of technology using the advanced commands of Dialog. With its multiple-ranking options and special databases such as the Journal Name Finder database, Dialog provides a powerful exploratory tool and confirms in a tangible, visually informative fashion the interdisciplinary nature of women's studies. At the same time, the resulting data sets provide a method of discovery, identification, and accessibility to a core list of women's studies periodicals across the subject spectrum. Dialog's technological muscle can be used by libraries eager to evaluate or develop a journal collection in any interdisciplinary field, as well as to assist information professionals in selecting the most appropriate abstracting/indexing and full-text databases and/or

information services for any type of library or information center.

A Look at the Literature

Research in the field has suggested that women's studies is multidisciplinary by nature. Mack (1991) identifies eleven subject areas that are consistently used in women's studies research. Research has also consistently shown that access to the field is hampered greatly by this fact, requiring researchers to employ many indexing and abstracting tools. Gerhard, Jacobson, and Williamson (1993) suggest that access to an interdisciplinary field such as women's studies can only be measured by evaluating the indexing of journals related to that field, but even when numerous indexes are used, the researcher in women's studies may still come up short. Mesplay and Koch (1993) examined indexing/abstracting coverage of seventeen women's studies periodical titles identified by *Magazines for Libraries* and several other bibliographies of the literature. Using eight print indexing and abstracting resources chosen with coverage of the selected journals in mind, they found that only a little over half of all articles from their core journal list were found in the eight indexes combined.

Identification of a core list in women's studies has been accomplished in a variety of ways. Compilations of published bibliographies in the field have provided one method of selection, as well as the use of classic reference works such as Katz's *Magazines for Libraries*. Serials directories such as *Ulrich's International Periodicals Directory* have been used as tools for collection evaluation, even though circulation and subscription prices quoted have been shown to be inconsistent. User surveys have continued to be popular for local collection review, as well as citation analysis, such as the classic study of the women's studies journal *Signs*, used by Mack to develop a core journal list (Mack 1991).

Other researchers have even downloaded multiple women's studies course syllabi from the Internet and merged them to create a broad assessment tool for collection development (Intner and Futas 1996). None of these methods has been deemed perfect as stand-alone tools, and all could benefit from an information technology model that produces hard numbers in easily customized data sets specific to individual libraries.

The Dialog Model

Harnessing the powerful combination of advanced command tools in Dialog, as well as applying them to morph large sets of data, is the essence of this information technology model. The synergetic effect of Dialog power commands has been explored by Jacsó (1997b); in this example, too, the interaction of advanced commands, special Dialog

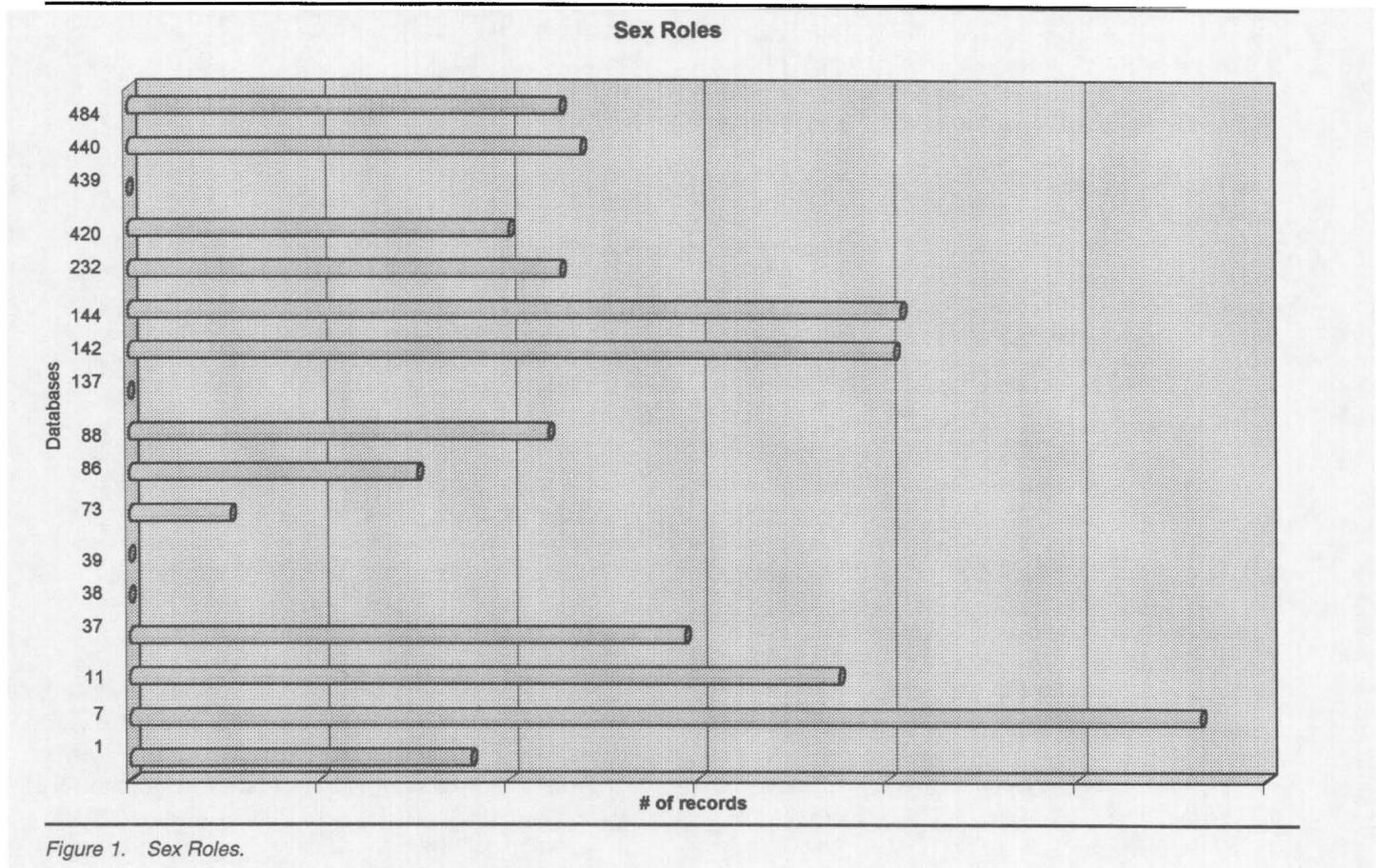


Figure 1. Sex Roles.

databases, and third-party databases provides exceptionally illustrative results.

As women's studies has traditionally emerged from the social sciences, two social science databases were examined, *Sociological Abstracts* (Dialog File 37) and *Wilson Social Sciences Abstracts* (Dialog File 142). In addition, *Psychological Abstracts* (Dialog File 11) was examined, as psychology is an oft-cited subject area for articles in the field. These three selections provided a workable starting point; large, sweeping searches were left for a later date. For my research, I created a complex query limited to the descriptor field and designed to accommodate the syntactical and semantic differences found among the controlled vocabularies of the databases. Although Dialog limits the set size that can be used with advanced commands such as RANK and MAP operations, representative samples can be very easily created and adjusted. My search strategy was optimized to remain within the command limits yet retrieve a significant and measurable set of records. A focused search for records on the sociological and psychological aspects of women's studies retrieved a set of just under 10,000 records.

Results were gathered for the year 1998, and a series of steps using RANK commands revealed a set of journal titles arranged by number of records in the targeted databases. Also revealed are the variations in spelling, abbreviations,

and word order in the selected journal titles, including intra-database inconsistencies. The resulting set of titles reflects sociology, psychology, humanities, health sciences, and traditional women's studies theory, again providing more substantive evidence for the interdisciplinary nature of women's studies periodical literature.

The beauty of this model is apparent on many levels. Once a set of journal titles is retrieved in any set of databases, the titles can be grouped, regrouped, and manipulated at will. In the following example, selecting a group of journal titles traditionally identified as belonging to the field of women's studies shows a spread across databases of different disciplines. The combination of intentional feminist perspective and scholarly content, two of the criteria used in previous studies of academic journals in the field (McDermott 1994), makes this subset a worthy offering as an example of what can be learned.

Visualizing the Results

By ranking our sample from the three databases, we can see actual postings attached to journal titles. In this sample, *Sex Roles* (see Figure 1) and *Signs* (see Figure 2) both rank highly, corresponding with their top showings for total cites in the women's studies subject area of the *Journal Citation*

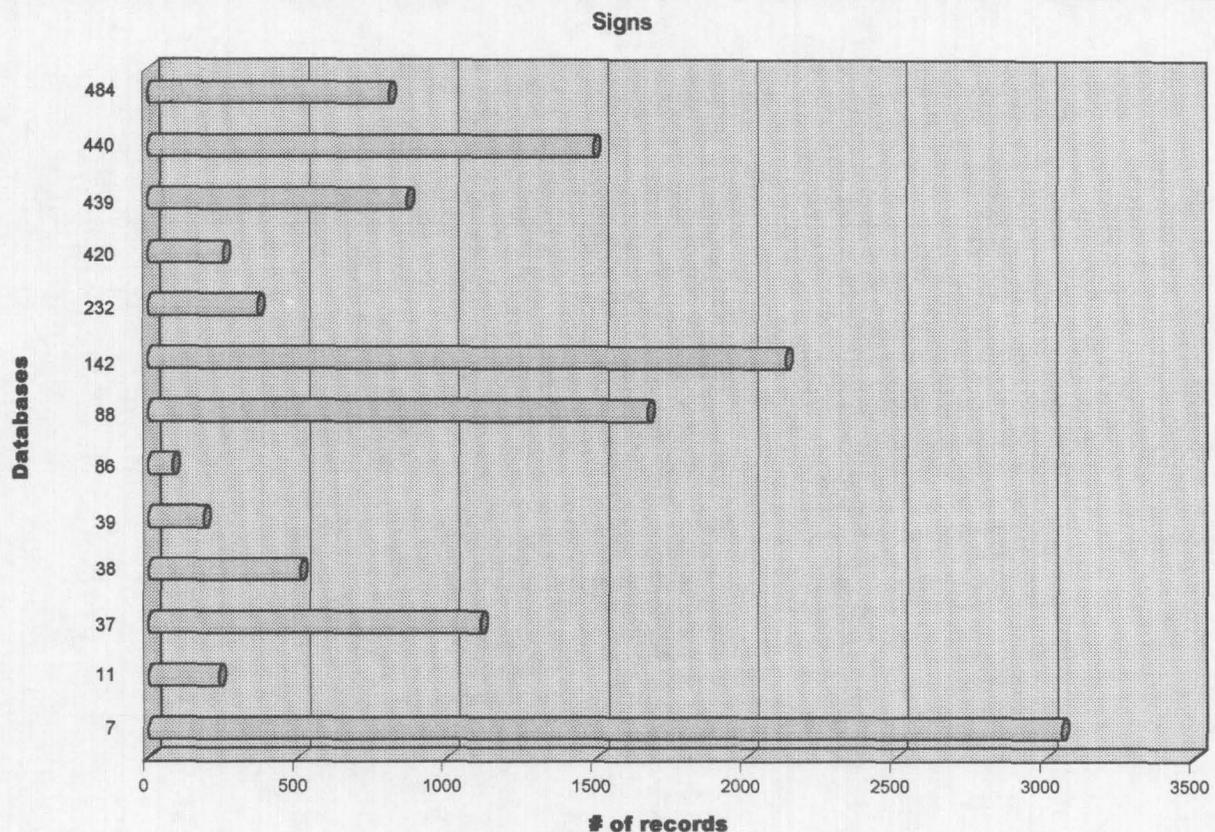


Figure 2. Signs.

Reports (JCR) (Institute for Scientific Information 1997). Eleven of the top-ranked journals according to *JCR* are revealed in our sample, and that number can be increased by lowering the article count limit for the year being sampled. A different subset of the original search could be plucked out of the sample and manipulated in a similar fashion. Ranges of years can be sampled as well, providing valuable information about journal use and impact over time.

Even better, these titles may then be examined against their indexing/abstracting availability in the databases offered through Dialog. Again, through a series of steps using RANK and MAP commands, journal titles are automatically extracted in all their various forms. After some filtering and using autogenerated queries, the original journal title samples may be run through Dialog's *Journal Name Finder* to discover where our field of study is indexed or abstracted. Here we are treated to a firsthand look at the depth and breadth of indexing in more than 400 available databases, all at one fell swoop. The usefulness of a huge variety of databases becomes readily apparent to the researcher in women's studies, for any journal title group. For this sample, seven databases include coverage of at least ten of the selected journal titles (see Figure 3). Two more

have coverage of at least eight titles. As expected, *Sociological Abstracts* (see Figure 4) provides decent coverage of our chosen area, but there were some surprises. Many librarians might not realize the excellent coverage that *Gale Group Business A.R.T.S.* affords women's studies (see Figure 5). Here, with numbers that can be turned inside out and back again, this database is revealed as a gem for researchers in women's studies.

Putting Technology to Work

Information technology can do much of the work in developing a strategic plan for core journal selection and management. This model, in conjunction with other available evaluative tools, provides a powerful and illustrative method of molding a rich core journal collection in any interdisciplinary field. Using this Dialog model provides unparalleled flexibility and offers data extraction with ease. Moreover, the possibilities for data application to the vagaries of database content, scope, and coverage make this method a solid investigative tool when decisions regarding database subscription or purchase need to be made. Record

Databases with the largest coverage of selected journals
(Excerpts)

	1	7	11	37	38	39	86	88	142	144	232	420	439	440	484
FEMINIST REVIEW		376		257				549	640		288	231		397	320
FEMINIST STUDIES : FS		805		266	210	140		573	793		241	262	174	405	328
GENDER & SOCIETY		646	185	746				658	358		106	284		687	448
HEALTH CARE FOR WOMEN INTERNATIONAL			237	122								434			
JOURNAL OF WOMEN'S HEALTH		419										596		269	
NWSA JOURNAL				370				296	448			236			218
PSYCHOLOGY OF WOMEN QUARTERLY	457	1207	731	501			30	549	828	569	380	358		597	502
SEX ROLES	901	2826	1875	1469			764	1110	2024	2041	1144	1008		1199	1145
SIGNS	129	3056	235	1115	501	184	81	1673	2137		366	252	869	1492	809
WOMEN & HEALTH		977	309				130	437	584			277		483	363
WOMEN & POLITICS		385		401	115			338	239			192		420	296
WOMEN'S STUDIES INTERNATIONAL FORUM		2007	125	686		202	10	698	454		601	618	418	999	728

1	ERIC
7	ISI Social SciSearch
11	PsycINFO
37	Sociological Abstracts
38	America: History & Life
39	Historical Abstracts
86	Mental Health Abstracts
88	Gale Group Business A.R.T.S
142	H.W.Wilson Social Science Abstracts
144	PASCAL
232	Applied Social Science Index and Abstracts
420	UnCover
439	ISI Arts and Humanities
440	ISI Current Contents
484	Periodical Abstracts Plustext

Figure 3. Databases with the largest coverage of selected journals (March 1999 excerpts).

counts in the databases can be compared, contrasted, and used as an aid in evaluating completeness of coverage for each title in each database. All of this provides a pathway of exploration, and all this can be done with ease in a very short time.

Deployment of advanced information retrieval management techniques saves information professionals the arduous work of traditional data collection methods and facilitates the morphing of raw data into usable information. Time previously lost in the tedium of data crunching can instead be applied to the transformation of information into knowledge that supports the decisions that all libraries, especially academic and special libraries, must make.

To a student in the field of library and information science, the necessity of learning advanced information management strategies is made quite clear in the literature, but as a library intern in an academic institution, this necessity is readily apparent on a daily basis. Preparation for my eventual professional career will continue to include the exploration and use of advanced information management techniques and their applications to libraries and

information centers of all kinds. The hot issues of today will undoubtedly be with us tomorrow, and armed with the Dialog model and like resources that today's technology offers, I'll have valuable skills to contribute to any organization interested in the transformational power of applied information technology.

References

- Atkins, Stephen E. 1996. Mining automated systems for collection management. *Library Administration and Management* 10:16-19.
- Black, Steve. 1999. [Re:Core Journals]. *SerialsT: Serials in libraries forum* [Online]. Available: e-mail: SERIALST@LIST.UVM.EDU [1999, March 16].
- Dobson, Cynthia, Jeffrey D. Kushkowski, and Kristin Gerhard. 1996. Collection evaluation for interdisciplinary fields: A comprehensive approach. *Journal of Academic Librarianship* 22:279-84.
- Gerhard, Kristin, Trudi Jacobson, and Susan G. Williamson. 1993. Indexing adequacy and interdisciplinary journals: The case of women's studies. *College and Research Libraries* 54:125-35.

Sociological Abstracts

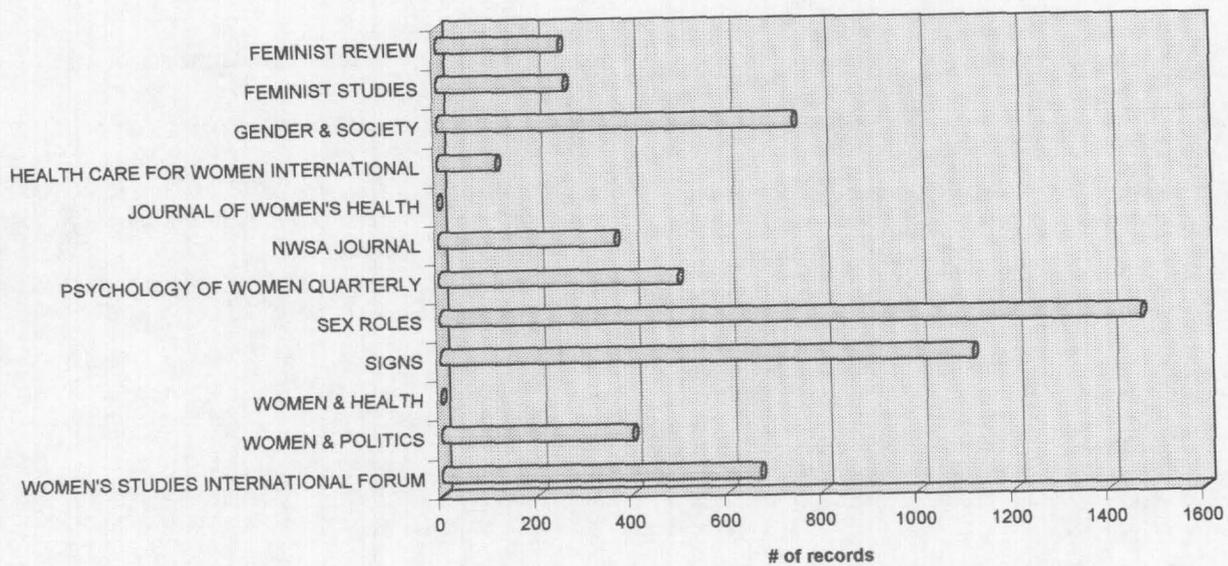


Figure 4. Sociological Abstracts.

Gale Group Business A.R.T.S.

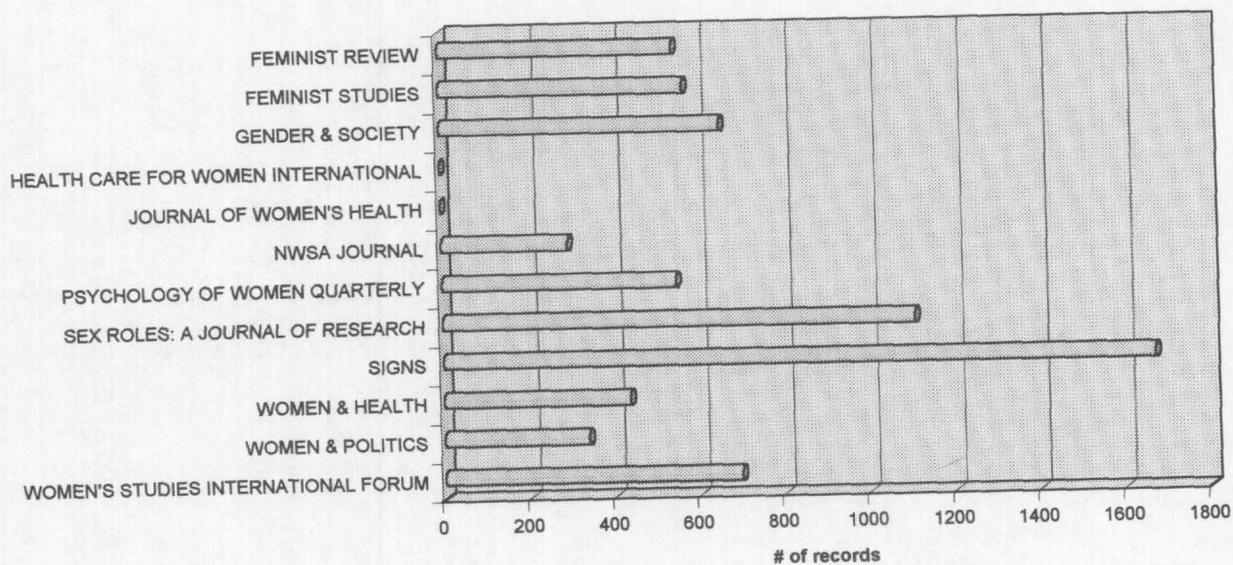


Figure 5. Gale Group Business A.R.T.S.

- Institute for Scientific Information. 1997. *Journal citation reports: Social sciences edition* [CD-ROM].
- Intner, Sheila, and Elizabeth Futas. 1996. The role and impact of Library of Congress classification on the assessment of women's studies collections. *Library Acquisitions: Practice & Theory* 20:267-79.
- Jacsó, Péter. 1997a. Contemporary women's issues (CWI). *Database* 20:74-75.
- . 1997b. *The synergy of special databases and power commands on dialog* [Online]. Available: <http://library.dialog.com/quantum/wp/synergy.html> [1999, January 18].
- Mack, Thura. 1991. A model methodology for selecting women's studies core journals. *Library and Information Science Research* 13:131-45.
- McDermott, Patrice. 1994. *Politics and scholarship: Feminist academic journals and the production of knowledge*. Urbana: University of Illinois Press.
- Mesplay, Deborah, and Loretta Koch. 1993. An evaluation of indexing services for women's studies periodical literature. *RQ* 32:404-10.
- Snyder, Herbert, Blaise Cronin, and Elisabeth Davenport. 1995. What's the use of citation? Citation analysis as a literature topic in selected disciplines of the social sciences. *Journal of Information Science* 21:75-85.
- Walker, Thomas E. 1998. Free Internet access to traditional journals. *American Scientist* 86:463-71.
- Wilson, Myoung Chung, and Hendrick Edelman. 1996. Collection development in an interdisciplinary context. *Journal of Academic Librarianship* 22:195-200.

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