

## An Assessment Model for Engineering and Technology Collections in The Nineties.

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### INTRODUCTION.

Jan Olson [1], director of the Albert R. Mann Library at Cornell University, in a recent article describing several activities that makes this library a pioneer in electronic access said:

"The function of the research library is to connect scholars to society's recorded knowledge. The traditional paradigm for achieving this has been the library and its collections of the printed record. Librarians have developed theories, practices, and standards to provide access to the printed record of knowledge. This paradigm of the research library depends upon the bibliographic record and its national standards of description and access points; the rows and rows of stacks holding printed materials shelved according to a nationally agreed upon classification of knowledge; the reference desk with librarians skilled in techniques for connecting the scholar with information; the discipline-oriented indexes, abstracts, and bibliographies compile to provide the scholar with command over materials published in his or her discipline; and the interlibrary loan service operating under national protocols. The scholar gains access to recorded knowledge by going to the library.

However, today access to information is not longer available through print. Librarianship is having to change its theories and practices from handling information only in printed forms to encompass handling information in electronic form. The traditional paradigm of the research library is being challenged by the emerging electronic library".

The object of this paper is to present a model for collection assessment that take into account the changes that are affecting today's library collections and services. The full electronic library is not here yet, but the significant changes of the last decade require that the evaluation of library operations be done according to the new environment.

### BACKGROUND.

Assessments in Higher Education. Assessments in higher education are a very common practice, in any given year an institution of higher education is subject to a professional accreditation body; a regional accreditation agency; or an institutional self-review. The Library is usually part of the initial self-study as well as of the external evaluation that follows. Regional and professional associations' review processes have the goal of granting accreditation to programs or to the institution. Delmus E. Williams [2] explained that a professional group applied rigid standards to determine the quality of specific a program while the regional agencies looks at the overall record of the same program and at the mission of the institution, and how the specific program fits in; then evaluates the resources to support the program. The Accreditation Board for Engineering and Technology ABET is the body responsible for the accreditation of engineering and technology programs.

### LIBRARY ASSESSMENTS.

F. W. Lancaster [3] in his book *"If you want to evaluate your library..."*, presents a comprehensive study of methods used in the evaluation of library services and collections. Lancaster's work includes methodologies for the evaluation of collections: quantitative and qualitative; in-house usage; evaluation of periodicals; and other factors such as obsolescence, weeding and resource sharing. It is a comprehensive treatment that includes the basic methods for evaluating libraries. Another important classical work on library evaluation is the book by Blaine H. Hall [4] *"Collection Assessment Manual for College and University Libraries"*, it explains in great detail about collection-centered measures and client-centered measures, it also introduces the Association of Research Libraries (ARL) National Collections Inventory Project which is based on the conspectus

program developed by the Research Libraries Group (RLG).

### THE CONSPECTUS.

The conspectus is widely used today as a model to assess library collections, initially introduced by the Research Libraries Group [5]; the conspectus is an inventory of libraries collections; it is a subject outline according to the Library of Congress' broad subject divisions which are then broken down into more specific subject descriptors. Collecting levels are determined for each subject in three major categories: strength of existing collections; current collecting activity; and desirable collecting activities. In the conspectus the levels of collection strengths are defined as 1 = minimal; 2 = basic; 3 = study; 4 = research; and 5 = comprehensive. Also added to the analysis are languages codes, and there is room available for notes to explain special scopes of the collections. The idea behind the conspectus was to create an inventory for libraries entering in cooperative agreements. This inventory of library collections strengths will be used to determine institutional responsibilities for maintaining and preserving collections with significant strengths within the group.

This initial form of conspectus has evolved and some other library groups have developed modifications of the original RGL conspectus to serve their particular needs. In the conspectus, librarians and collection development faculty using the measurement techniques mentioned above, and their judgement (based on for example in subject expertise or knowledge of the literature) assigned to each particular subject a level value.

### A NEED FOR A NEW MODEL.

In the traditional paper oriented collection the conspectus as presented above is a very effective tool for evaluating collections. But in view of the electronic library paradigm and with the increased number of formats and resources in the electronic format it is necessary to include these new formats as part of the total inventory. We have gotten to a point where the term collection has reached a new meaning: the capacity of a library to capture information regardless of its format and of the mechanism necessary to access it. Samuel Demas [6] has identified the information 'genres' available at

Cornell University libraries as: application software, bibliographic files, full text files, numeric files, multimedia, image data and sound. It is therefore necessary for an evaluation to be complete to know which of these genres are an important part of a subject area, and their availability in the library.

A similar case can be made for document services which in this paper is defined as the access to a document through interlibrary loan, through a document delivery service, or through the internet online. Document delivery has been proclaimed as the solution to the deterioration of in-house journal collections. In view of this new approach to access the scientific and technical literature, document services are an extension of the collection development program of a university library.

Finally, this model also includes as part of the total inventory a component to evaluate in-house journal collections, and a component to evaluate collections of technical reports, patents and engineering standards. See Figure 1.

### BOOKS.

In most cases book collections are evaluated by using a standard list - or validation studies - to compare local collections with library holdings of similar institutions. The literature on collection evaluation has the results of many of these surveys. The main problem with using standard bibliographies for collection assessment is the fact that in some cases they do not exist. General bibliographies such as "*Books in College Libraries*" have a limited scope to evaluate basic undergraduate collections, therefore, they are not always adequate to validate collections dedicated to specific programs. Some specialized bibliographies exist but are not always updated. A side note I would like to indicate that circulation statistics should not be considered as an evaluation process but as a valuable tool to determine collections strengths. A similar comment can also be said about interlibrary loan data.

In recent years a new electronic tool to evaluate collections has emerged: The *OCLC/AMIGOS Collection Analysis CD (CACD)* is an interactive software package that includes titles cataloged by over 100 academic libraries with OCLC records. It provides acquisitions data for the last 11 years except for the most current one. CACD provides

quantitative and qualitative assessments in the form of statistical reports and bibliographic listings respectively, many articles in the literature such as the one by Sherry L. Vellucci [7], explains in detail its capabilities. Statistical reports generated compare a library collections with the holdings of a group of similar libraries. The package came with several groups of libraries built in, but customized groups made up of libraries with similar missions can be included in the analysis. CACD can provide a quick comparison of collection development activities. Observations taken from qualitative and quantitative analysis can then be used to assign level values to subject areas as is done by using the conspectus. CACD is a validation tool that can deliver results quickly.

#### **SERIALS COMPONENT.**

The high cost of journal subscriptions for engineering and technical journals is making crucial the decisions of which titles the library shall hold in paper. It is important to determine factors such as 1. most important journal titles in the field, 2. journals most frequently cited by faculty, 3. titles covered by most used indexes, and 4. cost of subscription as compared to other access options when available.

This component is becoming extremely important since budget limitations and high cost is making it essential to identify the journal titles that can make a greater contribution to the program in terms of usage and importance.

The Serials component shall measure instructional and research needs and costs. Carpenter and Getz [8] in addition to identifying the 4 selecting factor above, also suggested identifying 1. a best journals list, 2. a list of journals most frequently cited by faculty, 3. a list of most expensive titles, and when available 4. journals ranked by highest impact factor and by highest cited half-life.

#### **REPORTS, PATENTS, AND STANDARDS COMPONENT.**

Technical reports, patents and engineering standards are unique elements in engineering and technical collections. The literature of technical reports is quite diverse; companies, government and private agencies produce them world-wide. In this component the availability of significant report collections identified

as an essential part of the collection should be taken into consideration. Patents are also an essential part of a collection because patents describe important engineering design methods and processes, in-house patent collections in specific subject areas for the United States, and any other country with important contributions to patents of the given subject must be part of the collection to be evaluated. Technical standards defined as the code of practices recommended for an industry, and created by companies, professional societies, governments, national bodies, and international agencies must also be included in the evaluation when they are important to program. The last two components have been the most noticeably missing components in the traditional paper oriented library. Since this component is relative smaller as compared to the other four, in our discussion at the end of this paper, we give to this component a lesser weight.

#### **ELECTRONIC COMPONENT.**

The electronic component and the document service component are the new components created in order to incorporate new technology as essential part of the collection development process.

In this component the evaluators want to determine important factors affecting electronic resources such as; What significant resources related to the discipline are located locally and remotely; Are the different types of resources represented: bibliographic files, full-text; numeric databases and others; Is the access to this resources easy, for example there is one single point of entry to the scholar station; What is the quality of the interface(s); What is the quality of the support service both technical and instructional; Is the system easy to use; What is the cost to the users; Is the equipment upgraded; Is the telecommunication system reliable; What is the extent (geographical) of the network; Are there enough work stations for students; Can the system delivery images, sound.

#### **DOCUMENT SERVICE COMPONENT.**

At least three aspects of document delivery services has to be evaluate. 1. Interlibrary loan service: library reciprocal agreements, cost to users, time an average request takes. 2. Document delivery services: which document delivery services are use; do they included specialized vendors for your program; cost to users; limitations; time an average request takes. Internet

online full text services: Do they cover the program in review; Are the services well supported (software, hardware, communications, etc); are the services easy available to users; what is the cost to users. These are some of the factors to evaluate in order to

determine how the overall document service is supporting a specific discipline. In our discussion at the end of this paper this component receives a higher weight because document deliver services is the present solution to the high cost of serials.

FIGURE 1

Subject	B&AV			Ser			R,P&S			Elect			Doc Serv		
	cl	ca	dl	cl	ca	dl	cl	ca	dl	cl	ca	dl	cl	ca	dl
T															
TA															
TC															
TD															
TE															
TF															
TG															
TH															
TJ															
TK	3	3	4	4	3	3	3	2	3	3	4		2	4	
TL															
TN															
TP															
TR															
TS															
TT															
TX															
Comments:															

cl= Collection level; ca= current activity; dl= desirable level.  
 B&AV= books and audiovisuals; Ser= in-house serials; R,P&S= technical reports, patents and standards;  
 Elect= electronic formats; Doc Del= document services. Levels: 1-5 as prescribed by the RLG conspectus.  
 Comments for each subject and its components are also part of the assessment.

## INTERPRETATION OF THE MATRIX.

In the example above an electrical engineering collection has been evaluated. Level 5 is not used because this level precluded that most resources of a subject matter are available. Assuming that this collection is for a program with graduate degrees, we can note from the matrix that: for books the  $d1=4$ , this might be because book budgets are better controlled than serials budgets. A  $d1=3$  for serials is assigned, since this is the major financial trouble area and because we expect that a  $d1=4$  (research) for Doc Ser will make available copies of articles to users. A  $d1=4$  for electronic resources assumes that the institution is committed to support this part of the collection at this level. And finally a  $d1=3$  for R,P&S is compensated by a  $d1=4$  for Doc Ser and for Elect.

What is then the total strength of this collection? Assuming that three of the five elements (columns) of the matrix has a weight of .2; that R,P&S has a weight of .1; that Doc Del has a weight of .3; and averaging the impact for each element do to the current level (cl) and the current activity (ca) for the first three columns, we have:

Books:	$3 + 3 = 6$	$6/2 = 3$	$3 \times .2 =$	.6
Ser:	$4 + 3 = 7$	$7/2 = 3.5$	$3.5 \times .2 =$	.7
R,P&S:	$3 + 2 = 5$	$5/2 = 2.5$	$2.5 \times .1 =$	.25
Elect:			$3 \times .2 =$	.6
Doc Ser:			$2 \times .3 =$	.6
		Total		2.75 or 3.0

What would happen if ca for Doc Del is 4 and ca for Elect is also 4? Making the arithmetic calculation now the collection reaches a total value of 3.55 or 4.0, which might be the most desirable level in this case. It is important to indicate that a total calculation of a collection strength is not necessary, the matrix allows for a quick visual analysis of where the weaknesses and strengths are. The numerical example here are for those more inclined to match collections with numerical values. It is even possible to have a matrix of only comments, which briefly describes the highlights of each component. The most important part of an evaluation is to make all the different components of the collection accountable and to make the results of the observation part of an over all plan to build a collection.

## BIBLIOGRAPHY.

- [1]. Olson, Jan  
Cornell University's Albert R. Mann Library: A prototype for today's electronic library, Introduction, *Library Hi-Tech*, vol 12, no 3, p. 31-37, 1994.
  - [2]. Williams, Delmus E.  
Accreditation and the Academic Library, *Library Administration and Management*, vol 1, no 1, p. 31-37, Winter 1993.
  - [3]. Lancaster, F. W.  
*If you want to evaluate your library...*, Champaign, IL: University of Illinois, Graduate School of Library and Information Science, 1988.
  - [4]. Hall, Blaine H.  
*Collection assessment manual for college and university libraries*, Phoenix, AZ: Oryx Press, 1985.
  - [5]. Mosher, Paul H.,  
Collection evaluation in research libraries: the search for quality, consistency, and system in collection development, *Library Resources and Technical Services*, vol 23, p. 16-32, 1979.
  - [6]. Demas, Samuel  
Collection Development for the electronic library: A conceptual and organizational model, *Library Hi-Tech*, vol 12 no. 3, p.71-80, 1994.
  - [7]. Vellucci, Sherry L.  
OCLC/AMIGOS collection analysis CD: broadening the scope of use, *OCLC Systems and Services*, vol 9, no 2, p. 49-53, Summer 1993.
  - [8]. Carpenter, David; Getz, Malcolm  
Evaluation of library resources in the field of economics, *Collection Management*, vol 20, no. 1/2, p. 49-89, 1995.
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