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Library services

Services des Bibliothèques

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MEDICAL LIBRARIES: Cooperation and New Technologies
C. Deschamps and M. Waickiers (Editors)

Pierre Marie BELBENOIT-AVICH

ETUDE DU ROLE INTERNATIONAL QUE PEUT JOUER UNE BIBLIOTHEQUE UNIVERSITAIRE DE MEDECINE - PHARMACIE (A PARTIR DE L'EXEMPLE DE LYON, FRANCE)

Pendant longtemps la section Médecine Pharmacie de la Bibliothèque Universitaire de Lyon a été à l'image des autres bibliothèques universitaires françaises. Héritière d'un passé historique et de certaines traditions intellectuelles, elle s'était donnée pour tâche de desservir essentiellement les étudiants, les enseignants, les chercheurs. Et il est vrai qu'il ne s'agissait pas là d'une mince affaire : huit facultés, plus de douze mille étudiants.

Par ailleurs, longtemps relativement épargnée par les soucis financiers, la Bibliothèque avait eu la chance de ne pas arrêter trop d'abonnements. De ce fait, d'autres établissements, moins favorisés, lui demandaient des photocopies. Enfin, quelques centres privés, essentiellement des laboratoires pharmaceutiques proches sur le plan géographique constituaient une ouverture extérieure. L'impact sur l'étranger était très limité : Les demandes concernaient essentiellement des prêts de thèses de médecine ou pharmacie soutenues à Lyon.

En 1983, la situation changea avec l'attribution, à la section Santé de la Bibliothèque Universitaire de Lyon, du Cadist de Pharmacie. Les Cadist sont des Centres d'Acquisition et de Diffusion de l'Information Scientifique et Technique créés à cette époque par le Ministère de l'Education Nationale français. Chacun concernait un secteur très précis. A Lyon, la section Sciences de la Bibliothèque Universitaire reçut le Cadist Chimie, la section Santé celui de pharmacie, les deux Cadist étant administrativement fusionnés. Quel était notre nouveau rôle ? Nous devions, dans ce secteur et sur ces crédits particuliers, acquérir entre autre des périodiques très peu reçus ailleurs. Nous décidâmes de prendre ceux qui risquaient d'être le plus demandés, je veux dire ceux qui étaient dépouillés par les bases de données internationales. J'insiste là-dessus car cette volonté de se situer dans cette optique nous a beaucoup aidés ultérieurement : avoir des périodiques peu reçus en France, mais susceptibles d'être très demandés.

Mais à quoi bon posséder ces collections si personne ne le savait ? Et autre question très vite posée : comment concilier la hausse du coût de la vie et la stagnation, pour ne pas dire la baisse des subventions ? Ces réflexions nous ont conduits assez rapidement à envisager des actions publicitaires qui devaient concerner non seulement le Cadist pharmacie mais aussi nos propres richesses. La Bibliothèque devait faire valoir tout ce dont elle disposait tant il est vrai que la recherche dans le domaine des médicaments s'appuie sur des périodiques pharmaceutiques et médicaux.

ADRESSE :

Bibliothèque Interuniversitaire Section Medecine Pharmacie
8 avenue Rochefeller 69373 LYON CEDEX 08

Mais comment mener cette tâche ? Et sur quoi mettre l'accent ? Notre promotion s'appuya en 1985 sur deux évènements concomittants et, pour nous, d'égale importance. D'une part, la Bibliothèque édita le catalogue de ses périodiques en cours. Ce fascicule n'avait pas été publié depuis 1979 et nos clients, si j'ose dire, nous le réclamaient avec insistance. Ils avaient besoin de savoir ce que nous possédions. En six ans en effet, nous avions pris un certain nombre d'abonnements nouveaux sans parler de ceux du Cadist. En revanche, d'autres titres avaient cessé de paraître. Pour un certain nombre enfin, nous avions arrêté la souscription. Ce répertoire groupa environ mille titres français et étranger et fut publié à trois cents exemplaires. Par ailleurs, dans le courant de l'automne 1985, se tint à Lyon un salon international de de pharmacie, nommé IPHARMEX, ouvert à tous les centres de recherches privés, publics, militaires même, français ou étrangers. Nous pûmes y tenir un stand ce qui nous permit de nouer des contacts et de nous faire connaître sur le plan international et national. Nous étions en effet la seule Bibliothèque, le seul centre de documentation à participer à ce salon et cela a été assez fructueux.

Mais notre effort ne se limita pas à ces deux seules actions, si spectaculaires soient-elles. Et comme tout d'abord il faut commencer par faire le ménage devant sa porte, nous avons eu comme première tâche d'informer davantage encore les enseignants locaux. Aussi paradoxal que cela paraisse, ils demandaient ailleurs ce qui était chez nous car ainsi ils n'avaient pas à se déranger. Nous avons tenté de remonter ce courant mais il n'est pas facile de contrarier des habitudes anciennes.

Naturellement, nous avons aussi dû passer par l'envoi de lettres et de prospectus par la voie postale. La tradition était chez nous d'envoyer périodiquement des listes de nouvelles acquisitions. D'une part, nous avons allongé la liste des destinataires. D'autre part, nous avons procédé à des envois ponctuels sur des thèmes précis, sans parler de toutes les circulaires relatives à l'édition du Catalogue des Périodiques. Nous avons aussi envoyé par télécopieur-téléfax une publicité à tous les centres français qui possèdent cet appareil pour les inciter à l'utiliser avec nous.

On s'aperçut très vite qu'il fallait concentrer le message publicitaire. Cela paraît évident aux professionnels mais pour un néophyte il n'en est pas de même. Un ou deux messages par texte devint très vite notre règle : Nous nous sommes concentrés sur quelques thèmes : l'un annexe ayant pour sujet notre fonds ancien très important et qui peut intéresser les historiens de la médecine et de la pharmacie, et sur deux thèmes principaux : nous possédons un grand nombre de périodiques, dont certains sont peu reçus voire même pas du tout en France ou en Europe. Et deuxièmement, nous utilisons des moyens modernes :

- messageries électroniques,
- télex,
- télécopieur-téléfax.

Un laboratoire, un centre de recherche qui demande une référence par télex peut avoir le texte complet de l'article par télécopieur une heure plus tard seulement à des prix raisonnables.

Mais ceci n'alla pas, je dois le dire, sans de grosses difficultés. Et le reconnaître nous permet d'avancer. Nous nous sommes heurtés, d'abord, à de simples questions matérielles inhabituelles dans une bibliothèque, puis à l'absence de crédits spécifiques à la publicité, en particulier pour le financement des stages de formation, mais je reviendrai là-dessus plus loin.

Problèmes sur le plan commercial ; il faut le reconnaître, nous connaissons mal, nous, personnel des bibliothèques, les circuits commerciaux à l'étranger. Nous n'avons pas l'habitude de travailler avec le Ministère du commerce

extérieur, avec les Chambres de commerce, avec les services commerciaux des Ambassades. A-t-on jamais vu une bibliothèque faire une étude de marché à l'étranger comme cela se fait dans tant autres industries ?

Je voudrais dire quelques mots des difficultés psychologiques et intellectuelles. Tout d'abord la connaissance des techniques publicitaires ne s'improvise pas, que ce soit sur le plan local ou sur le plan national ou international. Elle s'apprend comme s'apprend dans l'enfance la lecture ou l'écriture. Pour cela on doit suivre des stages ; mais ces derniers peuvent être refusés parce qu'il n'entre pas dans la mentalité des responsables de se faire connaître et donc d'apprendre à se faire connaître. Et bien entendu tant qu'on n'a pas appris, on fait des erreurs. Autre problème : il a fallu motiver les membres du personnel pour qu'ils se sentent stimulés, concernés par la promotion de l'image de marque de leur établissement. Car la publicité ne doit pas être l'affaire d'un seul.

Enfin, et nous abordons là un niveau intellectuel. En France le livre a longtemps eu un caractère sacré. Dans la bibliothèque on attendait le lecteur ; on exigeait de lui qu'il se déplace, on ne venait pas à sa rencontre. Aujourd'hui, une bibliothèque comme une entreprise a besoin de publicité pour s'attirer de nouveaux clients, de nouvelles demandes de photocopies, ce qui signifie des rentrées financières. A une époque où les subventions de fonctionnement diminuent - en France comme ailleurs - c'est aux établissements eux-mêmes de prendre le relais. Pour cela, il fautse valoriser et se faire connaître.

Les résultats, malgrè les difficultés, ont été assez heureux même si le travail doit se poursuivre. Nous avons créé un réseau decorrespondants en France puisque nous desservons des hôpitaux, des centres de documentation, des instituts de recherche civils ou militaires sans oublier les facultés et les laboratoires pharmaceutiques. A l'étranger, nous avons des points d'implantation en :

- Europe occidentale,
- Extrême-Orient,
- Europe de l'Est,
- Scandinavie,
- Afrique,
- et au Moyen-Orient enfin.

Nous avons essayé de tisser des liens avec les responsables locaux de façon à ne pas être un simple correspondant anonyme. Cela implique une correspondance fréquente et actuellement 25 % de nos clients habituels, si j'ose dire, habitent à l'étranger. Naturellement le volume des photocopies que nous fournissons a augmenté puisque l'on sait ce que nous possédons. Dans certains secteurs, il a doublé en deux ans. L'édition et la vente du Répertoire ont à elles seules provoqué un impact considérable. Et globalement le nombre de demandes de photocopies en I985 est supérieur de $\frac{1}{3}$ à ce qu'il était en I984.

Par toute cette recherche publicitaire, nous sommes donc arrivés à faire connaître la bibliothèque au niveau international. Pourtant il ne faut pas s'arrêter là. Il faut relancer sans arrêt la curiosité l'intérêt du public et cela est vrai dans toutes les sortes de bibliothèques. Il faut encore, et je m'arrêterai là, tester le degré de satisfaction des usagers, de manière simple et rapide. Car, ce dont il s'agit, quelque soit le plan géographique sur lequel on travaille, c'est d'être à l'écoute de l'utilisateur.

PROJECT FOR A COMMUNICATION AT THE FIRST EUROPEAN CONFERENCE OF MEDICAL LIBRARIES

Pierre BELBENOIT-AVICH

Bibliothèque Interuniversitaire de Lyon
Section Santé
8 avenue Rockefeller, 69373 Lyon Cedex 08
Tel.: (7) 844.19.54
Telex : 380334 F

In 1983, when the medical department of the Lyon Interuniversity Library became a French national acquisition centre, it decided to make itself known. In fact, what good would it be to acquire books and periodicals that are not or are rarely received in France if nobody knows about it.

For this reason, a vast national and international publicity campaign was launched. This was helped by two favorable events in 1985. First, the library actively participated in IPHARMEX, the International Pharmacy Show. Simultaneously, the library edited the catalogue of current periodicals for which a large promotion was undertaken.

The results were very satisfactory. About 15% of the catalogue was sold abraod, in Australia as well as in Finland, in Africa and, of course, Europe. In addition, IPHARMEX fostered the creation of relations with a certain number of French or foreign public or private laboratories that are major clients of photocopies. This action, that since then has been extended with an effort to penetrate certain countries, for example, Italy, should greatly increase our volume of Interlibrary loans.

MEDICAL LIBRARIES: Cooperation and New Technologies
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EVALUATION OF USAGE AND COLLECTION OF PERIODICALS

Riitta M A R T T I N E N and Terttu S O I N I

Library of Medical Faculty, University of Turku,
Kiinamyllynkatu 10, 20520 Turku, Finland

1. INTRODUCTION

In the Library of Medical Faculty, University of Turku usage study of periodicals was undertaken during a six month period in 1985-1986. In the study the frequency of use of a certain number of periodicals was charted out. The results will be used in making decisions on the periodicals acquisition policy of the library.

The Library of Medical Faculty was established in 1943. It belongs to the Turku University Library as one of its faculty libraries. It is a research library serving mainly the researchers, teachers and students of the Medical Faculty as well as the doctors of the University Central Hospital. Being the only library of its kind in South West Finland, it also serves all those in need of biomedical information in the area. In the network of biomedical libraries in Finland it is responsible for its own area. Through interlibrary lending it serves other libraries in Finland and even abroad.

The library only acquires biomedical literature. Odontology, pharmacy and nursing are not, however, represented in the collections. The collection consists of approximately 106.200 volumes. During the time of the study, the library received 911 periodical titles, of which 690 were purchased.

2. THE AIM OF THE STUDY

The aim of the study was to determine whether the periodicals collection of the library was responsive to the needs of its users. The collection should remain up to date and respond to changes taking place in the medical faculty. The study concentrated on the evaluation of the existing collections of the library. The need for new subscriptions was not considered.

In the study the frequency of use of each periodical during the period under study was determined. The aim was to find out how extensively the periodicals were used and whether there were periodicals that were not used at all.

A further aim of the study was to compare the usage of periodicals in different specialties by taking into account the frequency of use, subscription costs and number of titles received in each specialty.

3. METHODS

Included in the study were all periodicals subscribed to by the library during the period under survey. Gifts and exchanges were excluded in this phase of the study together with index and abstract publications. The number of titles included was 647.

Back volumes older than from the year 1970 were not included for practical reasons, since they are located in a closed storage. Newer volumes, shelved in open stacks in the library, were included in the study.

The actual survey was conducted between the beginning of October and end of March, the busiest time in the library. Six months was considered to be a long enough period to reflect accurately the use of all periodicals, even those that appear seldom.

Usage was measured in a number of sectors. These were circulation, photocopying, interlibrary lending, reader service (as explained in the Results section), and in-library use of current year's issues. Total usage was obtained by adding up the figures of each sector. The frequency and percentage distribution of periodicals by language, field of specialty and method of acquisition were calculated. Furthermore, the distribution of expenditure among different specialties was calculated.

The usage of current years's issues and periodicals taking part in the reader service was recorded by asking the readers to mark an X on a slip of paper attached to each issue every time they made use of it. In other sectors the use was measured by counting photocopying requests, interlibrary lending requests and the cards for journals borrowed.

When measuring the usage of current year's issues current week's issues were treated separately. In our library the latest issues brought in by mail each day are kept before shelving on a special desk for a week to catch the readers' attention. When measuring the use of these, the number of issues published of each title during that six month period was taken into account to make the figures comparable. The absolute number of X's representing the usage was divided by the number of issues published of that title. A weekly periodical is likely to receive a higher number of X's than a monthly one, although they might receive equal use relatively speaking. It has to be noted then that figures recorded in this sector do not indicate the absolute number of times the title has been of use. In other sectors the frequency of publication was not taken into consideration, since in these cases periodicals were consulted not for novelty's sake but in order to obtain specific information.

The resulting figures were processed at the University Computing Centre with a DEC computer using a BMDP programme.

4. RESULTS

Of the periodicals under study 590 or 91.1% were in English, 5.1% in German and 1.5% in French.

TABLE 1. Distribution of periodicals by language

Language	Per cent
English	91.1
German	5.1
French	1.5
Others	2.3
Total	100.0

It has to be kept in mind that only purchased periodicals were considered in the study. If gifts and exchanges had been included, the distribution by language would probably have been different, although English would have been overwhelming. The low percentage of periodicals in Finnish (0.3%) is explained by the fact that only a small number of them are published and almost all of them are received by the library as gifts.

Of the periodicals under study 61.7% were subscribed to through the publisher or a foreign agent. The share of periodicals acquired through a Finnish bookstore was 38.3%.

4.1. Total usage of periodicals

As mentioned above, the total usage of periodicals was obtained by adding up the figures obtained in each sector.

The three most used periodicals, the Lancet, Läkartidningen and the New England Journal of Medicine, represented general medicine. Among the 50 most used periodicals the largest group, 10 periodicals, represented internal medicine. With the exception of Läkartidningen, all other periodicals among the 50 most used ones were in English.

The share of Scandinavian periodicals in this sector was only 2, while their share of the current week's periodicals was 10. Of the current year's periodicals it was 4. Of the 50 most used periodicals 19 were European and 31 American.

TABLE 2. The 50 most used periodicals. The table gives the title, number of times used and, for comparison, the impact factor (SCI Journal Citation Reports 1984, Journal Rankings)

Title	Usage	Impact factor
Lancet	228.6	9.444
Läkartidningen	169.3	-
New Engl J Med	158.6	15.921
J Immunol	149.0	6.318
Circulation	148.6	6.780
Am J Med	147.2	3.466
Proc Nat Acad Sci USA	145.3	8.933
J Hypertension	145.0	-
Science	126.7	8.209
Br Med J	121.9	2.804
Brain Res	121.2	2.818
Am J Physiol	119.8	2.905
J Biol Chem	119.1	6.118
Infect Immunol	115.0	3.002
Biochem Pharmacol	114.8	2.295
Eur J Pharmacol	111.5	2.964
Biochim Biophys Acta	100.9	2.536
Life Sci	100.4	2.829
Nature	98.8	10.248
Fed Proc	98.7	0.290
Am Heart J	98.2	2.699
Am J Obstet Gynecol	96.8	1.823
J Cardiovasc Pharmacol	96.5	3.030
Cancer	94.2	2.595
Cancer Res	89.3	4.003
Jama	88.1	3.804
J Neurochem	87.5	3.302
J Ped	85.5	2.408
Endocrinology	84.7	4.347
Ann Neurol	83.2	3.544
Am J Cardiol	82.2	4.127
Neurology	81.8	1.938
Ann Intern Med	81.7	8.211
J Physiol	81.0	3.294
J Steroid Biochem	80.6	1.540
J Clin Invest	80.3	6.123
Obstet Gynecol	79.8	1.644
Arch Dis Child	79.7	1.516
J Pharmacol Exp Ther	76.5	3.488
Eur J Clin Microbiol	76.3	-
Cell	76.0	16.185
J Clin Microbiol	74.3	2.239
Pediatrics	74.2	2.809
J Immunol Methods	73.9	2.347
J Neurol Neurosurg Psychiatry	73.0	1.534
Arch Intern Med	72.8	1.737
Am J Clin Nutr	72.0	2.647
Acta Med Scand	71.3	0.874
Biochem J	69.3	3.425
Clin Exp Immunol	69.3	2.709

TABLE 3. The 50 most used periodicals by specialty

Field of specialty	Number of titles
Anaesthesiology	0
Anatomy	1
Bacteriology	6
Biomedical Engineering	0
Dermatology	0
Forensic Medicine	0
General Medicine	8
Gynecology	2
Internal medicine	10
Laboratory technology	1
Medical chemistry	6
Neurology	4
Ophthalmology	0
Otology	0
Pathology	2
Pediatrics	3
Pharmacology	4
Physiatry	0
Physiology	3
Psychiatry	0
Public Health	0
Radiology	0
Surgery	0
Total	50

The frequency and percentage distributions of periodicals were calculated. They indicate that 10 titles (1.5%) were not used at all during the period of study.

TABLE 4. The frequency and percentage distributions of periodicals

Usage	Frequency	Per cent
0	10	1.5
1-5	78	12.1
6-10	86	13.3
11-20	156	24.1
21-30	94	14.5
31-40	78	12.1
41-50	49	7.6
51-	96	14.8
Total	647	100.0

The 10 no-use periodicals were:

Int Rev Exp Pathol	Vopr Virusol
J Group Psychother	Year Book Drug Ther
Lab Animals	Year Book Orthop Traum Surg
Prog Mol Subcellular Biol	Year Book Pediatr
Prog Surg	Z Geburtsh Perinat

The number of low-use titles (titles used 1 to 5 times) was 78. When the distribution of titles by specialty is examined, one can note that 9 titles represent bacteriology. They account for 13.8% of all periodicals on bacteriology under survey. Nine titles represent general medicine, accounting for 19.1% of the total number of titles on general medicine. Eight titles represent pathology, the corresponding percentage being 19.0%. Forensic medicine is represented in this group by 7 titles, which accounts for as much as 87.5% of all titles on forensic medicine included in the study. The high percentage is partly explained by the highly specialized nature of the field. In the fields of anaesthesiology, psychiatry, physiology and biomedical engineering all titles were used more than 5 times.

TABLE 5. Distribution of no-use and low-use periodicals by field of specialty

Field of specialty	Number of no-use titles	Number of low-use titles
Anaesthesiology	0	0
Anatomy	1	1
Bacteriology	1	9
Biomedical Engineering	0	0
Dermatology	0	2
Forensic Medicine	0	7
General Medicine	0	9
Gynecology	1	4
Internal Medicine	0	3
Laboratory Technology	1	2
Medical Chemistry	0	1
Neurology	0	2
Ophthalmology	0	5
Otology	0	5
Pathology	1	8
Pediatrics	1	5
Pharmacology	1	1
Physiatry	0	0
Physiology	0	0
Psychiatry	1	3
Public Health	0	3
Radiology	0	2
Surgery	2	6
Total	10	78

4.2. Usage of current year's issues

Current year's issues are not lent for home reading but are for in-library use only. They constituted one sector in the survey, since it was considered that the usage of titles that have been subscribed to only recently would be more truthfully reflected in the results in this sector.

The Lancet was the most often consulted periodical in this sector as well. The score it received was 61.6. Table 6 lists 10 of the most used titles in this sector.

TABLE 6. The 10 most used among current year's periodicals

Title	Usage
Lancet	61.6
Eur J Pharmacol	60.5
Proc Nat Acad Sci USA	59.3
Am J Med	57.2
J Biol Chem	55.1
J Hypertension	51.0
Science	50.7
J Cardiovasc Pharmacol	49.5
Circulation	48.6
New Engl J Med	47.6

Current year's periodicals included 16 no-use titles.

4.3. Reader service

In the library there are 241 periodicals the latest issue of which are delivered to 30 different places in the departments of the faculty according to their own preferences and requests and are collected a week later. Of these periodicals 16 turned out to be no-use ones. Six of them represented otology and 5 pediatrics.

4.4. Distribution of usage and expenditure according to specialty

As to the number of titles, the largest group consists of titles on internal medicine. Their percentage is 13.6. The second group consists of titles on becteriology (10.0%) and the third titles on general medicine (7.3%)

Titles on internal medicine also come first when usage is concerned. They were consulted in 17.1 % of all the recorded instances of usage. General medicine accounted for 10.6% and bacteriology 10.5% of instances of usage.

As to the expenditure on subscriptions, titles on neurology turned out to be the most expensive group. Their share was 11.2% of the total subscription budget of $143,500. Internal medicine accounted for 10.6% of the expenditure. Titles on medical chemistry came as the third group.

Figure 1 indicates the percentage distribution of periodicals by total number of titles, usage and expenditure in each field.

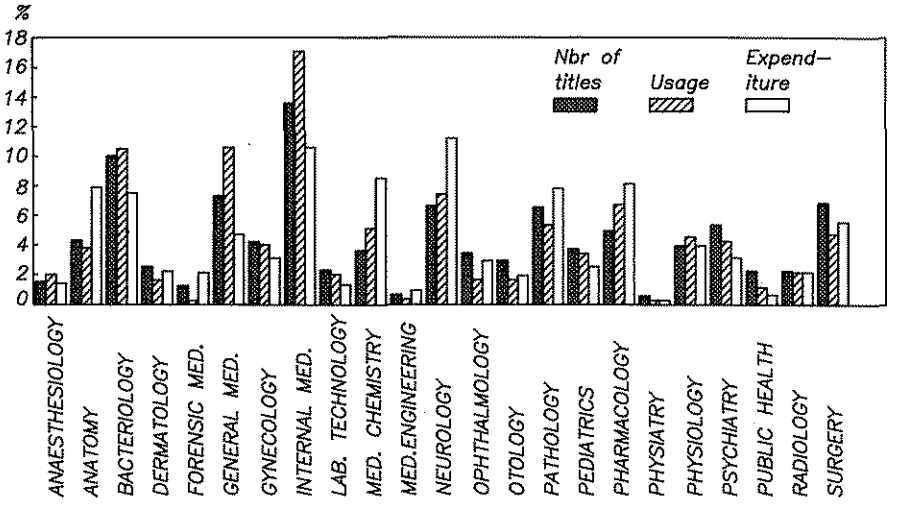

FIGURE 1.

The total expenditure on the 10 no-use periodicals was $916, while the 10 most used periodicals costed $1,300. When the cost per actual instance of usage was calculated, it was, for the Lancet and Läkartidningen, the two most used periodical, 8 cents and 9 cents respectively. For the two most expensive periodicals it was $6.50 for Biochimica Biophysica Acta and $6 for Brain Research.

5. CONCLUSION

The results of the study show that the share of low-use periodicals of the periodicals included in the study was rather low, being 12.1%. Because the share of no-use periodicals was only 1.5%, it would seem that the periodicals collection of the library serves its users well.

The subscriptions to the 10 no-use titles will most likely be

discontinued. In the sector of reader service the study revealed that 16 periodicals were not consulted at all in the departments that had requested them. Their delivery to the departments will be subject to reconsideration.

The distribution of specialties according to the usage, costs and number of titles will not be further analyzed in this connection, but the results obtained so far suggest that it would be worthwhile to do so at some later date. In the further analysis, factors like the research policy and research projects of the faculty should be taken into account.

To ascertain that the collections serve the clientele of the library as well as possible, it would be necessary to chart out, for example with the help of interlibrary borrowing statistics, which are the most important periodicals the library lacks and whether it would be justified to start subscribing to them. The shares of gifts and exchanges of total usage will be studied later as well.

The attitude of the readers was positive, even enthusiastic throughout the whole survey period. Co-operation between the library and its clientele was strengthened, a valuable result in itself.

Surveys like this should be considered dynamic instruments. They must be repeated at intervals if they are to be of greatest use, as reader preferences and the library's ability to satisfy them change over time.

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INFORMATION POLICY AND THE DISCOVERY PROCESS

INTRODUCTION

This century has been an extraordinary period for human society. In virtually every aspect of our lives we have experienced changes which have left us simultaneously stimulated and confused, optimistic and full of fear. Science and its child, technology, have driven those changes more than any other single factor. The process of scientific discovery has accelerated at unbelievable rates. And the time lag between a basic discovery and its practical applications in human society has almost disappeared.

Information is central to the entire process of scientific discovery and the creation of new technologies, affecting both the substance of science and its applications.

Our individual and collective decisions concerning what information is important, and who should have access to it, shape the long-term character of our society. This paper reviews the emerging role of information in human history, examines the values and ideology which underlie our current implicit information policies, and calls for the development of an explicit global information policy to help shape the emerging information society.

THE FOURTH INFORMATION REVOLUTION

For the fourth time in human history we are experiencing a major social revolution in the role of information in society.

The first revolution occurred when humans evolved ways to communicate with each other using their voices. Slowly, over time, we learned how to send and receive highly differentiated messages. Oral communication became a major tool for the day-to-day business transactions of life. Oral tradition developed, passed from generation to generation, and created continuity over time concerning the basic questions of the origins and meaning of life.

The second revolution began when humans discovered how to create transmittable, fairly permanent physical records of their experiences. Knots tied in ropes may have been the first external system humans used for keeping a record of their experiences. Over time, writing replaced oral tradition and memory as the primary tool for recording experience. Such information could be transported and shared across space and time with a high degree of "precision," even though some of the underlying meanings may have been lost. There were both gains and losses in that shift, as accuracy superseded meaning in the message.

The third information revolution came with the invention of movable type. During the Middle Ages, the written record was carefully controlled. Writing was focused upon the maintenance of orthodoxy. New thinking and new discoveries were often equated with heresy. There was no more serious offense, since heresy threatened to consign not only the individual, but the whole community, to eternal damnation. Infor- mation, therefore, was very tightly controlled. Very few people were literate, and many of those who were literate were denied access to much of the written record. Information, quite correctly, was seen as pow- erful, and not to be given away lightly.

Suddenly, within one generation, there was an explosion in availabe information. In the middle of the 15th century, just prior to the invention of movable type by Gutenberg, only a few thousand books existed in all of Europe. By the end of the century, 50 years later, that number had reached somewhere between 10 and 20 million books.

The new mass printing technology fundamentally changed European society. It made information accessible to many more people than ever before. The new literati provided the base for an informed public that overthrew autocracy and groped toward more democratic structures. The impact of printing

upon science and technology was similarly fundamental. For the fist time, what previously had been private communications among a few scholars and inventors began to be openly shared, encouraging the growth of a much wider community of inquiry and discovery. Scientific societies soon emerged.

The Royal Society was established in 1662 as what its founders called an "invisible college." It was dispersed geographically, but united by a common interest in discovery. Henry Oldenberg, one of the first secretaries of the Society, fostered the exchange of letters among the Society's members, as a way of keeping them in touch with each other between Society meetings. In 1665 these letters became formally structured in *Philosophical Transactions*, the first scientific journal. It was in *Philosophical Transactions* that Newton first published his "De Montu," a nine page note on his first and second laws. Apparently, the main reason Newton published this brief note was to establish publicly his primacy with regard to these ideas. Oldenberg, and others to follow, very early used the publishing process as a device for recording and establishing primacy of discoveries. In addition to establishing primacy, publication had the effect of spreading new ideas widely, thereby stimulating discussion and debate over the validity and implications of the discoveries.

Thus, in many respects, the introduction of movable type was a crucial prerequisite for our modern system of science and technology.

The Tools of the Fourth Revolution

Now the fourth information revolution is upon us. What is the basic tool of the fourth revolution? Essentially, it is the process of converting information, of virtually all kinds, to zeros and ones. The zeros and ones are combined into binary codes representing letters and numbers. Pictures, sound, movement, text—all are converted to digital forms, which are then susceptible to extraordinary manipulation and transmission.

The magnitude of change precipitated by the fourth revolution is difficult for any of us to comprehend. Today, commercial systems are available which store a gigabyte of information, the equivalent of 60,000 - 80,000 pages of text, on a 12" optical disk platter. And this is only the beginning. Scientists now claim to have condensed digital memory to what they describe as the molecular level, providing as much as one gigabyte of information on a square centimeter. That is the equivalent of 60,000-80,000 pages of text—on one square centimeter. The cost of such information storage and retrieval systems is also dropping dramatically, so that within the next few years $30,000 to $40,000 systems will easily be able to store and retrieve the equivalent of a substantial research library.

There are, of course, many unsolved technical issues, but the basic technology needed for this fourth revolution in information is already in place, and much of it is already in the market. Within this decade we will have storage and retrieval systems that will make it technically possible for just about anyone on the globe to have access to just about any information, using hardware that is extraordinarily inexpensive.

What will these systems look like?

They will be *fast*. The information will be available instantaneously around the world.

They will be *comprehensive*. Any information to which the user is qualified to have access will be available in a comprehensive global network.

They will be highly *reliable*. Information in its new forms can be infinitely duplicated, with each copy maintaining all the quality and accuracy of the original. Photographs, for example, will be digitized in their original form and will be accessible for further examination and study in their original form.

They will be *friendly*. The access systems will be designed to meet human requirements. Systems will be voice and touch controlled, interactive, and intelligent. The search and retrieval process will be experienced as an intelligent discussion that is cumulative and meaningful. The systems will not only provide what you ask for, but will enable you to scan broad ranges of information easily and efficiently, somewhat like scanning the front page of the *Wall Street Journal*. The systems will be portable, and customized.

Flat folding screens will fit in your briefcase or in your jacket pocket. Hard copy will not disappear, but will be generated at a high speed, on demand, at the point and time of use. Therefore, in an information-hungry world, there will be much more, rather than much less, printed paper.

Social Trends Associated with the Fourth Revolution

The technology and gadget side of the Fourth Revolution is, to most of us, utterly fascinating, although to some not yet really believable. Still, as a society we tend to treat the adoption of such new technologies as an imperative. Since they are available, we will use them. That will certainly be true of the new information technology.

Yet, despite its fascination and its probable inevitability, the technology itself is of secondary importance to the underlying human and social changes associated with that technology.

Let us examine some of the broader social dynamics associated with the fourth information revolution.

First, the *velocity of change.* The velocity of change is rapidly increasing in virtually every aspect of our society—and at unprecedented rates. Scientific technologies have been the engines of this change. Information technologies are its wings.

Only a few generations ago the assumption was that a son would follow in his father's profession, that one would have a single profession, and probably a single spouse. Today, rather than being able to assume stability in job, family, or community, it is necessary to assume that change will predominate.

We are not yet accustomed to the rate of change which we now experience. Change, even when it is clearly an improvement in our condition, tends to be experienced as loss. The sense of loss brings with it a grieving process, which is often very painful. Any of us responsible for the management of change need to build into our plans for ourselves and our colleagues opportunities for legitimate grief over the loss of the past.

The unrelenting increase in the velocity of change will probably be one of the most dramatic features of our future.

Second, the *service-oriented society.* Information technology and its cousins, artificial intelligence and automation, will accelerate the shift of our society from production to service. Less and less time and energy will be needed to produce and deliver the basic goods required for a satisfactory life. The tangible, hardware side of living will be relatively inexpensive, and human employment and attention will shift toward the softer side of the economy. Services, it would appear, are capable of virtually unlimited expansion.

Even the services will be dramatically altered. Medicine, in particular, will change drastically in the next few years with the development of expert systems that utilize artificial intelligence and natural language technology. These extraordinarily effective systems will place diagnostic and prescriptive smart systems into the hands of layman as well as physicians. The medical community's response to these technological innovations is by no means clear. A possible response would be to build a wall around the technology in an attempt to "own" the new systems and prevent them from becoming widely used. Embracing this technology by promoting its widespread use, in order to reduce health care costs while humanizing the delivery of care, is an option that is in fact more desirable.

Third, the *value of information.* Information has always been valued by mankind. As the velocity of change increases, information will be much more important. Its perceived value is bound to increase substantially. Access to knowledge—quick, accurate, comprehensive information—will become the capital of the future, making the difference between success and failure.

Fourth, the *price of information.* Drawing on a layman's sense of the economics of technology, despite its high initial capital cost, consistently increased productivity increases the volume of unit production and thereby decreases the unit cost of a good or service.

So, for example, the printing press, despite the fact that it cost much more than the quill pen, significantly increased the volume of printing and dramatically reduced both the time and cost of production. We see similar dramatic increases in productivity and cost reductions in software for microcomputers.

At the same time, technological innovations consistently increase the total amount of money and labor invested in and around the innovation period. This pattern of decreased unit costs and increased total expenditures is likely to continue as new technologies are employed in the information world.

Fifth, *secrecy*. Because of the perceived high value of information, the dissemination of many kinds of information will become more restricted. A publisher recently confided to me that his biotechnology journal, even though quite expensive, was attracting an unprecedented number of subscribers. But he had two problems. His editor had just resigned because of pressure from the editor's biotechnology company, and the publisher was finding it very difficult to attract good articles. Lots of people wanted to read his journal, but very few who were qualified wanted to write for it.

Whenever practical, patents will give way increasingly to trade secrets as the preferred device for protecting commercially valuable information from circulation. High-value information will become less and less available from published materials.

Just as trade secrets are restricting the free flow of information in the private sector, national security is increasingly being invoked in the public sector as a justification for reducing the availablity of information. The Reagan Administration is greatly expanding the reach of government into both the academic and commercial scientific communities, in order to restrict the flow of what it unilaterally asserts to be "militarily significant emerging technologies." The government's list of such technologies is extensive and apparently arbitrary, with no publicly debated set of guidelines for identifying them. There has been very little protest against the federal government's intrusion into the scientific community, with a few notable exceptions, such as that from the National Academy of Sciences.

Sixth, *escalation in the cost of generating information*. With the increased value of information, the cost of generating information will escalate. The discoverers will recognize that they can make a substantial amount of money by *selling* their discoveries rather than *giving* them away. Recognition and tenure will not remain sufficient rewards for the scientists of the future. Some researchers will begin to market the results of their research the way market research companies now sell their products. Or they will employ specialized agents to negotiate contracts with their potential employers the way professional athletes now do. A percent of the gate could become a common requirement.

At each point along the chain of information flow, each participant will claim, with or without justification, greater value added and an increased price for his or her part in the information system. Thus, despite the cost reduction effects of new technologies, the overall cost of information will skyrocket in comparison with other goods and services.

Seventh, *blurring of non-profit and profit endeavors*. With the escalation in costs, of the reseachers themselves and of the support systems needed for advanced research, universities and non-profit research organizations will become more and more indistinguishable from the for-profit organizations.

In order to survive, universities will increasingly combine efforts with the profit sector, or willestablish their own profit centers, or will simply and openly become for-profit institutions. The economics of research and of education will force them in that direction. You can observe this shift quite clearly in our leading universities such as Harvard, Stanford, and MIT, as well as at less visible institutions struggling for survival. Many universities have entered into exclusive research agreements with corporations. One university recently engaged a venture capital firm to exploit the results of its research for commercial profit.

Eighth, *a shift toward applied technology*. Along with the economic dynamic which I have described, there will be a strong shift away from disinterested research and toward applied efforts which are likely to have relatively immediate financial rewards. Admittedly, the theoretical distinction between basic science and applied technology has been clearer in theory than in practice. However, the personal and institutional incentives currently developing among our research institutions will generate a real shift in priorities.

Ninth, *an increased gap between info-rich and info-poor nations.* Another result of the current dynamics of information will be to leave poor countries with even greater shortages of information than they now experience. The economics of information and the shift to increased secrecy will bar the people of many countries from access to the very information they need to develop healthy independent societies, thus increasing the economic gap between rich and poor nations.

Future Roles for Publishers

It would appear that the future is indeed bright for publishers. There will be a significant increase in the number of publishers. Today The Faxon Company does business with approximately 25,000 different publishers throughout the world. Although the half-life of many of these publishers is quite short, their numbers are growing at a much faster rate than they are dying. A small number of publishers, fewer than 100, publish approximately 80% of the scientific and technical literature of the world. That concentration is likely to remain.

Becoming a publisher is increasingly easy. All one needs is a microcomputer, some word processing and mailing list software, and a photocopy machine. The capital costs are no longer prohibitive. There will be a significant increase in small specialty publishers serving highly specialized constituencies. Many of these will distribute their products through private electronic networks rather than on the open market. These networks will be an electronic extension of the historical (and current) role of personal correspondence among scientists.

The shift from postal letters to electronic ones will, however, introduce major changes in the communication patterns among scientists. There will be a flood of information of all kinds. This will create the need for intermediary ways to sort out what is useful and what is not.

At the same time, larger publishers will become larger. With their superior distribution and marketing systems, and substantial economies of scale, large publishers will systematically acquire the successful small publications that respond to a specific market need. We will see a bimodal distribution of publishers —a few very large publishers and many small specialty publishers emerging in response to new markets.

The core functions of publishers, which they have fulfilled for over four centuries, will certainly remain. And in all likelihood they will increase in importance. I think of the publishers' functions as the "priestly functions" of the information society. They are to solicit, select, and refine information, and to make it public. These functions, however they may be carried out with new technology, will be central to the Information Society.

Future Roles for Libraries

What will be the role of libraries?

We are already suffering badly from information overload. With the increase in the number of sources of information which we can expect as desktop publishing expands, and with rapid inflation in the unit cost of information, the task of sorting out useful from non-useful information will become increasingly critical.

Libraries of the future will have four sets of responsibilities.

Professional. The central role of libraries will, I believe, continue to be the three-fold task of:

> *monitoring* the changing sources of information, so that users can be confident of comprehensive and current data sources;
>
> *selecting* the information to be included in an institution's resident databases, so that high-priority information can be readily and cost-effectively available to its users; and
>
> *compiling* information in appropriate forms, customized to a unique individual or a subject matter profile, and easily browsable.

Technical. A second, and increasingly important, role for libraries is that of being a technical resource to the institution. This will include developing and maintaining the institution's technology as it relates to:

> *storage technology* - - the technology of archiving not only text and graphics but the whole range of information, including video and audio information;
>
> *distribution networks* - - the design of local and wide area networks which provide access to databases; and
>
> *information retrieval* - - the design of user work stations, to be used for interactive learning and research, that are friendly and accessible to users.

Educational. Even with our best developmental efforts, future information systems will require user education. Old habits of doing things will not fall away quickly, and libraries must be ready to assist in user education and training. Skilled users will get much more from these systems than novices, and libraries are the logical sources of training in how to use new information technologies effectively.

Management. Finally, but by no means of least importance, libraries will increasingly become the focus of information management. This role includes:

> Developing *decision support systems*. These would audit existing systems, assess their cost effectiveness, evaluate the potential of new and changed systems, and recommend ways to improve the effectiveness of the institution's information systems.
>
> Improving *human resource allocation*. Qualified human resources will become increasingly scarce in our society. Talent searches and matching talent to needs will be critical tasks for institutions. Libraries will also need qualified people, and they will be held accountable not only for holding down payroll expenses but, more importantly, for finding the right people and maximizing the effectiveness of those serving the information system.
>
> Managing an increasingly large share of an institution's *financial resources*. With both the value of information and its unit cost increasing, libraries have an opportunity to take the initiative as key financial resource managers. As proactive and competent financial managers, they could become major participants in the financial management of their institution.

None of these four roles—professional, technical, educational, or managerial—is inevitable in the future of libraries. They are, however, critical roles in all institutions, and they are logical and credible roles for library professionals. It will be up to individual librarians, as well as the profession, to decide which of these roles they will fulfill.

Medical librarians face a unique challenge. As advances in technology make possible the creation of expert systems for both diagnostic and prescriptive purposes, medical librarians are uniquely qualified to serve as the key element in the interface between smart systems, physicians, and laypeople. Medical librarians, however, must make a conscious choice to embrace both the technology and their new role in the information chain.

INFORMATION AND IDEOLOGY

The social trends outlined here appear to be associated with the Fourth Revolution in information. They are not, however, inherent in the technology itself. Instead, they reflect our implicit underlying ideology about ourselves and the world.

The Ideology of Individualism

Current social trends reflect a dominant set of ideas and assumptions in our culture which can be legitimately termed the "Ideology of Individualism." These ideas were originally brought together into a coherent whole by John Locke, the English philosopher, in the 17th century. They were picked up enthusiastically by Thomas Jefferson, and incorporated into our constitution and laws and into our view of humanity and the world.

The key concept of the "Ideology of Individualism" is that individuals are entitled to personal self-fulfillment, and that this is the goal of life. The individual person is the most highly valued element of the society. Nothing is more important. This ideology also embraces the Darwinian theory of the survival of the fittest. Those who are most fit will, *and should*, survive. The unfit and lesser fit *should*, in one way or another, die.

The "ideology of individualism" is the dominant ideology of our past and present in Western culture, particularly in the United States. It forms the mental framework which we bring to the process of discovery, to issues of information access, and to the kind of society we wish to have.

Ideology of Community

Social analysts, such as Daniel Yankelovich, George Lodge, and most recently, Robert Bellah, have pointed out that this traditional ideology is no longer adequate for our society. It no longer fits current realities in this world. The ideology of the "lone ranger," "standing tall" down the main street of a frontier town is a grossly inadequate metaphor for our times. We must balance the human need for self-fulfillment with a sense of commitment and community. We have responsibilities not only to ourselves, but to others as well. We cannot tolerate the gross, lethal discrepancies which exist from village to village, nation to nation throughout this small planet. We need an ideology which is characterized by a commitment to values beyond ourselves, to social accountability, consensus, and compassion.

Such an ideology would involve a balance between the rights and needs of the human community and those of the individual. Most important for the purpose of our discussion, it would emphasize concern for sharing our discoveries and the practical results which they generate. *Consensus* rather than *contract* would become predominant in human transactions.

Our rights and duties as members of humanity, as well as our individual entitlements would guide our actions.

Community needs would be balanced with individual needs.

Holistic involvement, in contrast with narrow specialization, would increasingly characterize our work.

Government would be recognized as legitimate and essential, reflecting community needs.

Public service would be given justified respect.

The Process of Discovery

An ideology of community would have direct implications for the process of discovery. The process of discovery is central to the human community. It is a trim tab of society, redirecting it long into the future. The values and ideology which underlie those processes spill over into all of society. Discoveries already participate in much of the ideology of community. Yet there is a clear sense that the old ideology of the individual, of the left-brain mentality, is in ascendance and may become even more dominant than it has been. There are clear pressures upon us to intensify the left-brain characteristics of our society, to attempt to own and profit from our discoveries, to emphasize personal and national competition, to close the doors of information, trade, and ideas, and to raise a big fist of personal, corporate, and national power to anyone who appears to compete with us.

TOWARD AN INFORMATION POLICY

Given the increasingly central role of information in our entire society, it is time for us to have a social theory of information that can provide a theoretical framework and some practical guidelines for the development of social policies affecting the discovery process, and the sharing of those discoveries.

Fundamental questions must be addressed soon:

Who should have access to the discoveries of science?

Who should pay the cost of discovery?

Who should benefit from those discoveries?

What efforts should be considered community or global efforts with all of mankind entitled to access, and what efforts should be private, confined, and secret in their funding and applications?

These are central issues facing us today which will become even more crucial in the years ahead.

At the moment we have no clear policies to guide our thinking and behavior with regard to information, only an outmoded ideology. We need a new ideology which can inform our public and private policies—policies concerning issues of access and secrecy, policies concerning the roles of universities, business and government in the discovery and dissemination process, policies for cross-national information sharing, and policies to facilitate information access for developing countries.

Those on the globe who are discoverers, who work and make a living in the discovery process and in the process of disseminating information have a special obligation at this point in history. It is not sufficient for us to observe what is happening and comment upon it. We have an obligation to shape the future in ways that make the world more viable. Our various roles in the information system—from the original creator, to publisher, information management agent, and librarian—all place us in a position of potentially great leverage in an unsettled and confused world. We have an obligation to clarify our concept of the ideology of information we need for the future and then to promote that ideology with conviction and perseverance.

It is already late in the day. We need now a statement of global policies concerning the financing and conduct of discovery and the policies which should guide access to such information. It is not a simple task. There are no easy answers. Yet the answers to these questions will shape the future of this planet.

About the Author...

Dr. Richard Rowe is President and Chief Executive Officer of The Faxon Company, a multi-national subscription company which specializes in facilitating the acquisition of information. Under Dr. Rowe's leadership, Faxon developed the LINX system, an online network which links sources and users of information. Prior to joining Faxon in 1979, he was Director of the Cambridge office of the American Institutes for Research, which he founded in 1973. Dr. Rowe served as Associate Dean of the Harvard Graduate School of Education and Director of the Program in Clinical Psychology and Public Practice from 1967-1973. Dr. Rowe is also active in the area of child and family welfare policy issues on the state and national level. He currently serves on the boards of directors of the National Information Standards Organization (NISO) and Educators for Social Responsibility. Dr. Rowe received a Ph.D. in Psychology from Columbia University in 1963.

MEDICAL LIBRARIES: Cooperation and New Technologies
C. Deschamps and M. Walckiers (Editors)

LE BULLETIN DE L'ACADEMIE NATIONALE DE MEDECINE

Pierrette CASSEYRE

Participation d'une bibliothèque médicale à l'élaboration et à l'édition de la publication de l'organisme dont elle dépend.
Incidence sur la création d'une base de données interne à partir de cette publication.

L'Académie nationale de Médecine de France, dont la création remonte à *1820*, édite depuis *1836 le "Bulletin de l'Académie nationale de Médecine"*. Le titre a subi quelques fluctuations au cours des temps.

Cette revue se compose : des textes des communications qui doivent être des travaux originaux; des textes de rapports délivrés par l'Académie sur des avis demandés par le *Ministère de la Santé* tels que : colorants en pâtisserie, emploi de tel ou tel pesticide, commercialisation de tel ou tel vaccin; des présentations d'ouvrages, et la vie de l'Académie : élections des nouveaux membres, éloges, prix décernés.

Au fil des années, la bibliothèque avait participé de près ou de très loin à l'édition du Bulletin. L'archivage relevait bien évidemment de son domaine. De très nombreuses demandes de renseignements tant téléphoniques qu'écrites faisaient appel à des références du Bulletin.

Dans une étude très récente sur les périodiques biomédicaux français publiée par l'INSERM (*Institut national de la Santé et de la Recherche médicale*) et le CNRS (*Centre national de la Recherche scientifique*), le Bulletin de l'Académie nationale de Médecine fait partie des 10 périodiques français de médecine les plus demandés au service signalement et microfiches de l'INSERM.

Petit à petit, la bibliothèque s'est intégrée dans la chaîne d'élaboration de la revue. Voici brièvement les différentes phases d'intervention de la bibliothèque :
Les conseils aux auteurs pour la présentation des normes de publications bibliographiques sont rédigés par la bibliothèque.
Avant la présentation d'un article au Comité de lecture de la revue, des recherches sur bases de données (Medline, Pascal, Excerpta Medica, Biosis) sont effectuées pour "repérer" l'originalité ou non des travaux. Reste, bien sûr, un pourcentage possible d'erreurs imputables au temps de latence d'une bibliographie sur ordinateur, ou bien, lorsqu'il s'agit d'un article ayant fait l'objet d'une communication à un congrès non publié.
Dans le cas précis où une communication a fait l'objet d'un article précédent très peu différent, une photocopie de l'article, jointe à la communication proposée, est transmise au Comité de lecture.

Après avis favorable du Comité de lecture, la bibliothèque est de nouveau concernée. Une vérification de la présentation des références bibliographiques est faite. Si une ou deux références semblent erronées, un membre du personnel de la bibliothèque pratique les corrections nécessaires.
Lorsque l'auteur n'a manifestement pas suivi les directives de conseils de publication, l'article est renvoyé pour l'établissement d'une liste de références correctement établie.
La traduction en anglais des titres des articles est faite, dans 20% des cas par la bibliothèque. (La plupart des auteurs rédigeant eux-mêmes les résumés et titres en anglais).

Chaque article est suivi de mots-clés français et anglais. Pratiquement, tous les auteurs proposent une liste de mots-clés.
Les mots-clés anglais sont les mots-clés MESH (*Medical Subject Heading*). En ce qui concerne les mots-clés français, le choix a été jusqu'alors difficile. La traduction du MESH en français dans le cadre du programme conjoint MEDATA entre l'INSERM ET LE CNRS résoudra peut-être, à l'avenir une des difficultés.
Lors de la présentation orale de la communication à l'Académie, il est tout à fait loisible au COnservateur de discuter de l'indexation en français de l'article avec l'auteur. Enfin, c'est à la bibliothèque qu'incombe depuis 1985, l'établissement de l'index annuel de la revue.

Le nombre de demandes de recherches d'articles dans le bulletin, le temps passé en recherches manuelles, ont tout naturellement abouti à la création d'une base de données bibliographiques. Une demande d'implantation de micro-ordinateur a été faite auprès de la DBMIST (*Direction des Bibliothèques, des Musées et de l'Information Scientifique et Technique*). Après acceptation du projet, la DBMIST a décidé d'implanter le logiciel SUPERDOC, élaboré par Thermodata à Grenoble. Ce logiciel est sur matériel Micromachine 300, les caractéristiques techniques de cet équipement sont les suivantes :
- microprocesseur Z 80 - clavier Azerty - disquette 8"" et 2 disques durs de 5 millions d'octets - une imprimante microline - système d'exploitation CP/M.
Le logiciel a subi une évolution nécessaire sous la pression d'un club d'utilisateurs SUPERDOC. L'absence de certaines fonctions documentaires (troncatures, tri alphabétique des listes de mots-clés), a rendu difficile l'exploitation immédiate du logiciel.
Actuellement, notre grille type définissant une notice est parfaitement interrogeable, tous ces champs répondant aux critères classiques d'interrogation et d'exploitation maximale des données.
Le problème majeur a été dans le choix des mots-clés français afin d'établir une liste de vocabulaire contrôlé. Le caractère purement médical ou biologique représente environ 2/3 des communications; mais les rapports de commissions spécialisées n'entrent plus dans le domaine médical. Par ailleurs, il est impérieux d'avoir une indexation fine. La politique d'indexation choisie a été définie de la manière suivante, en tenant compte bien sûr des possibilités du logiciel :
Chaque article donne lieu a un maximum de six mots-clés. Les termes retenus ne comportent, dans l'intitulé, aunune sous vedette.
L'indexation comprend le terme générique et le terme spécifique. Le maximum d'entrées est prévu dans le but, à long terme, d'être accessible à l'utilisateur final.
Ex. Infarctus du myocarde ou myocarde, infarctus.
des renvois sont faits :
Ex. IRM ; V. imagerie par résonnance magnétique.
La liste des mots-clés, constamment mise à jour, comprend 1000 termes. Ces termes purement médicaux ou biologiques commencent à avoir une occurence importante Il arrive de les retrouver 10, 20, 30 fois. Les mots-clés correspondants aux rapports, sont fluctuants.
Actuellement, la base comprend 1600 notices et fonctionne à titre opérationnel.
Exemple d'une sortie de notice :

Notice numéro 1391 (5/8)

AU : CHERMANN Jean Claude/ BARRE Françoise/ MONTAGNIER Luc/
TI : Retrovirus et syndrome d'immunodeficience acquise (SIDA)
IN : LEPINE Pierre/ DREYFUS, dit GILBERT-DREYFUS Gilbert/ MANDE Raymond/ BAYLON Henri
DA : 84.02.28/
SO : BUL ACAD NAT MED : 1984, 168(1-2) : 288-295
TD : Communication/ Discution/
MCF : SIDA/ Retrovirus/
MCM : AIDS/ Retrovirus/

Malheureusement, lorsque le cahier des charges avait été rédigé, il n'était pas envisagé la prise en charge de l'élaboration de l'index annuel de la revue par la bibliothèque. Double handicap :

Le logiciel Superdoc ne permet pas la sortie d'un index annuel, l'indexation en unitermes convient parfaitement pour l'interrogation d'une base, mais pas encore pour une sortie d'index de revues. En effet, l'objectif visé est totalement différent. Le lecteur a besoin impérativement d'un index du type KWIC (*Key-Words in Contents*) surtout en ce qui concerne les communications et les rapports. En conséquence, il y a double indexation pour un article.

Actuellement, les traitements, stockages et sorties sont étudiées par le serveur SUNIST (*Serveur Universitaire pour l'Information Scientifique et technique*) sur lequel est déjà implanté le CCN (*Catalogue Collectif national des Publications en série*). Cette solution permettrait l'édition quinquennale d'un index.

EN CONCLUSION

Si l'apport de la bibliothèque à la publication du Bulletin de l'Académie entraine une charge de travail supplémentaire, il est indéniable que cette fonction nouvelle permet une osmose encore plus étroite entre les 130 Académiciens et leur Bibliothèque.

PARTICIPATION OF A MEDICAL LIBRARY IN THE PREPARATION AND EDITION OF ITS AGENCY'S PUBLICATION. EFFECT ON THE CREATION OF AN INTERNAL DATA BASE FROM THIS PUBLICATION

P. CASSEYRE

Bibliothèque de l'Académie Nationale de Médecine
16, rue Bonapart, 76006 Paris

The papers received by the Académie Nationale de Médecine de France are published in :
"Le Bulletin de l'Académie Nationale de Médecine".

The role of the library prior to publication is :
- to check that the paper has not been published before,
- to decide on the English and French key-words appearing at the end of the article,
- to check the bibliographies.

After publication, the library draws up the annual index for the review. It feeds all data from the Bulletin into a micro-computer (papers, reports by commissions, presentation of articles, Académie life).

Creation of a base has led to thought as to the "philosphy" of indexing from the point of view of a retrospective data base or an annual index with a different objective.

MEDICAL LIBRARIES: Cooperation and New Technologies
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ADMINISTRATION OF AN AUDIOVISUAL COLLECTION WITHIN AN ACADEMIC MEDICAL LIBRARY: A CASE PRESENTATION

A. Tschida Glassmeyer

Health Sciences Center Library, University of Arizona, Tucson, Arizona, 85724, U.S.A.

A slide-illustrated overview of the management of the audiovisual collection developed over the past 13 years at the Health Sciences Center Library, University of Arizona. The collection supports professional health sciences curricula and continuing education needs of health care professionals throughout Arizona.

Principles and practical suggestions for collection development, cataloging and technical processing of materials, reference services, circulation policy and procedures, and interlibrary loan of programs will be discussed.

INTRODUCTION

The Health Sciences Center at the University of Arizona is relatively young when compared with similar academic medical institutions in the United States and certainly if compared with the long-standing tradition of medical institutions of Europe. The students, faculty and staff of the Colleges of Medicine (est. 1967), Nursing (est. 1957), and Pharmacy (est. 1949), and the School for Health Related Professions (est. 1978) make up the primary clientele of the Health Sciences Center Library. Additionally, the Library serves all health care providers in Arizona, as the resource library for the region, both through interlibrary loan services to hospital libraries and in direct contacts with health care professionals.

The Media Department was officially formed on January 1, 1973, the date which marks the beginning of the development and growth of a media collection that now numbers over 3,200 titles. Full-time staff members are the Media Librarian, Assistant Media Librarian, and two Library Assistants. Three part-time student assistants work a total of 45 hours per week, of which thirty-five are dedicated to evening and weekend coverage.

As Media Librarian, I report directly to the Library Director and am responsible for the overall administration of the Media Department and its services, and have primary responsibility for collection development and user services. The Assistant Media Librarian has full responsibility for cataloging and processing programs and assumes responsibility for the general management of the department in my absence. One Library Assistant has primary tasks in general office management and supervision of the part-time student assistants, while the other Library Assistant has primary duties in the technical processing of materials and provides assistance in online cataloging.

The original intent in developing the media collection was to supplement an accelerated three-year training program for medical students. The theory at that time was that through the assistance of self-instructional materials medical students would acquire greater clinical skill at their own convenience and at a faster pace. The end purpose of that project

influenced every policy and decision with regard to the Media Department.

The following slides and text demonstrate how we adhere to the KISS principle in all our decisions regarding media and its use. KISS is an acronym: Keep It Short and Simple.

Users have access to Health Sciences Center Library materials on a 24-hour basis.

The Media Department is located on the lower level of the library among the stacks of older journals and monographs.

In the interest of economy and efficiency as well as for the convenience of our users, audiovisual formats are limited primarily to 35mm slides, audiocassettes, and 3/4 inch videocassettes. This means users are able to familiarize themselves in the operation of the equipment with little effort. Restricted space for viewing media programs makes it desirable to limit the types of playback equipment. Equipment maintenance is facilitated by limiting audiovisual formats. Fewer service manuals and replacement parts in the inventory are required and technical engineers, in the Division of Biomedical Communications, are free to focus their expertise on the maintenance and repair of standard pieces of equipment.

Initially, SIX audiovisual carrels were installed, each equipped with a Kodak Carousel Slide Projector with rearscreen, a Telex slide/synch playback unit for audiocassettes, a Sony 3/4 inch videocassette playback unit with a 9" Sony Trinitron television monitor. The 3/4 inch videocassette playback units were placed between the carrels on rolling stands having two shelves so each stand could service two carrels. In 1975, the Audiovisual Carrel Room was moved to a remodeled alcove large enough to accommodate the two fully-equipped audiovisual carrels that were added, bringing the total number of carrels to EIGHT.

Although the audiovisual carrels were intended for individual use, it was quickly learned that students most often prefer to study in groups of two or three. Thus, each audiovisual carrel was wired to accommodate three sets of headphones. Models and simulators are housed in a small room. The twenty-four models and simulators in the collection are used regularly to practice medical skills.

COLLECTION DEVELOPMENT

The policy statement for the selection and acquisition of media materials was formulated at the outset. Our policy states that the Library collects and organizes media materials in support of the teaching, research, study, and continuing education needs of our primary clientele. The policy delineates the audiovisual formats to be acquired and the methods for acquiring them.

All decisions to acquire media programs are based upon preview and recommendation by a subject expert. This policy applies to all methods of acquisition: purchase, permanent loan, the right to dub (make a copy), or gift. Departments have been very cooperative in designating, or volunteering a member of their faculty to preview materials and make purchase recommendations. In-house produced programs, primarily from the Division of Biomedical Communications, make up 10% of the total media collection.

Media programs are obtained on preview from the vendor at no cost, on a purchase order "subject to approval," through interlibrary loan, or by

asking the department interested in the program to assume the preview or rental costs. Another method is to seek the evaluation of a colleague in another library who owns the title.

Since rental/preview costs are very often applicable to the purchase price, the department interested in the program is occasionally asked to bear the rental/preview charge. If purchase is recommended following preview, the Library will pay for the remaining costs.

Finding audiovisual programs suited to health sciences education is not easy. Union lists of audiovisual materials are not available as they are for printed materials. Many sources must be used; for this reason, files of catalogs and brochures listing audiovisual programs related to the health sciences are maintained. Included are catalogs from professional medical associations and societies, other academic medical institutions, pharmaceutical and hospital supply manufacturing companies, governmental agencies, commercial producers and other hospitals.

Another source is AVLINE, the National Library of Medicine's online audiovisual database, which began in 1975. Initially every title in AVLINE was critically reviewed. However, this process proved cumbersome and expensive and was later discontinued. Titles are now entered without critical review. The database now includes 15,313 titles. The "Audiovisuals Section" of The National Library of Medicine Current Catalog Proofsheets is scanned regularly for potential titles to be considered for preview and purchase.

Central to the process of collection development for media programs is the maintenance of a close working relationship with faculty and students through frequent contacts to remain current in trends of curriculum development and educational needs.

TECHNICAL PROCESSING AND CATALOGING

The technical processing and cataloging of media materials requires detailed handwork. It is necessary to quality-check each program for defective or missing pieces. Particularly in the case of purchased media programs, quality-checking is important if one is to make claims to vendors. Student assistants view and quality-check every program upon receipt from beginning to end. Basic cataloging data and inferior picture or sound quality are noted on a form. Programs with sound are timed using a stopwatch. The call number, which consists of the audiovisual format code and accessions number is assigned by the Library Assistant.

A student assistant labels each slide in a program with the call number and property stamp. If the title or the sequential slide number does not appear on the slide mount, they are printed on by hand. All slides are marked with a dot to indicate the corner of the slide that is to be placed in the upper, outer edge of the slide carousel tray.

Individual presentations in a seminar or workshop recording are timed and metered. This information is labeled onto the program container to facilitate the user in finding the beginning of a particular speaker's talk. This same procedure is used when more than one video title is recorded on a single videocassette. Student assistants perform this work during evening and weekend hours.

Full cataloging information is provided. Titles are cataloged directly from the piece. Main entry is by title. The National Library of Medicine's Medical Subject Headings, (MeSH), is used to supply subject added entries.

For the convenience of users and to help staff in locating materials, either a substantive summary or a contents note is written for each title. Care is taken in composition of the summary to select keywords that will be of future benefit in the use of integrated online library catalog systems that are emerging in academic medical institutions e.g. the LS2000 system being installed in our library.

The OCLC online database is used for cataloging and card production. AVLINE database records and the National Library of Medicine Current Catalog Proofsheets, mentioned earlier, are also used as cataloging tools.

Media catalog cards are filed in the Library's main card catalog. Duplicates of the media catalog cards are filed in the Media Card Catalog located adjacent to the media collection and the Audiovisual Carrel Room.

Browsing media programs on the shelf in the same sense that one does with printed materials is not possible with media materials. Audiovisual programs must be viewed or heard. To compensate for this, a printed catalog was compiled. Media Software Titles... lists media program titles under broad subject categories by audiovisual format and accession number. Cumulated and revised annually, the catalog is distributed to key departments in the Health Sciences Center and to health care institutions in Arizona to aid in the selection of programs.

Although many medical libraries choose to classify by subject, classification by media format was selected for our use. This permits more compact shelving of programs and is particularly useful to us in our situation of limited space.

REFERENCE SERVICES

A full range of media reference services is offered: mediographies (audiovisual title citations), interlibrary loans, reference assistance and referrals, consultations on media software, and tours/orientations.

It was found by survey, in 1981, that 89% of the users were satisfactorily assisted in their needs, 8% of the users were satisfied in referral to sources outside the Health Sciences Center Library yet within the University of Arizona system, and only 3% of the users were unable to be helped in finding media materials to suit their needs.

It was further found that users require audiovisual materials either immediately or in a time period from one to three days.

It was noted that the use of media programs was rather evenly divided between self-study and lecture purposes.

In summary, conclusion was made that media programs must be readily available and easily accessible if they are to be useful to the media user.

CIRCULATION POLICY

Contrary to general practice among academic medical libraries in our country, media programs in our library, are shelved on open ranges of standard library shelving. Users are encouraged to serve themselves although the media department staff is ready to offer assistance in selecting programs for use and in operating the playback equipment. Media materials shelved on the open stacks need not be charged out for use within the confines of the Library. One hundred fifty titles (150) in the media collection are shelved in the Media Office. They are media titles that

receive high use, are extraordinarily expensive, are restricted in their use, or are otherwise considered to be susceptible to loss and therefore are shelved on closed stacks. Users who wish to access these programs, must present personal identification, which is most often the Library Borrower's Card.

Materials for use outside the Library are charged out at the Loan Services Desk. The loan period is three days except for audiocassettes, which may be borrowed for one week.

Videocassette programs are non-circulating. However, exceptions are made for group and seminar use. The length of loan is adjusted to the need. The user is asked to come for the program shortly before the seminar or group session and asked to return the program soon afterward. These materials are signed out on a log in the Media Office and use may be reserved in advance. The name of the person requesting the program, telephone number, time and date are noted on a large wall calendar. Classroom and seminar use accounts for an average of 45 showings and over 1000 viewers every month.

It is important in locating missing and damaged pieces to check the contents of every program before reshelving the container. When follow-up for missing pieces is carried out immediately, most often by telephone, retrieval is excellent.

INTERLIBRARY LOAN

Since 1977, the Media Department has provided interlibrary loans of audiovisual programs to health care providers in Arizona to support continuing medical education and hospital in-service needs. Programs are sent through the mail FIRST CLASS. The number of programs damaged or lost in transit has been negligible.

To make packaging more compact, the media programs are dismantled from their containers and placed in small boxes. Special mailers, even though available on the market, have not been used. The same containers, in which new purchases are received, are recycled.

It is preferable to channel media interlibrary loans through the hospital or clinic librarian or counterpart. When this is not possible, the loan is made directly to the health care provider. The number of media interlibrary loans has grown to 800 annually during the last few years.

Media interlibrary loan services are actively promoted among health care providers in Arizona through exhibits at continuing medical education meetings, telephone contacts with Directors of Nursing Staff Development and Medical Continuing Education departments in hospitals, and by cooperation with the many Health Science Center agencies who have the specific mission to serve the needs of health care providers in our state outside the University in Arizona.

SUMMARY

In summary, audiovisual collections in medical libraries have proved themselves essential to faculty in teaching basic medical knowledge and to students in becoming proficient in the clinical skills of modern-day medicine. The recent developments in the instructional use of the videodisc used in combination with the microcomputer and advanced technology facilitating satellite transmissions of video to present continuing medical education programs makes the future appear even more exciting.