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M. MAGLIOLA

DATA BASE SEARCHING – NEW TOOLS

CONSULTATIONS DE BASES DE DONNÉES – NOUVEAUX EQUIPEMENTS

NUTZUNG VON DATENBANKEN – NEUE ENTWICKLUNGEN

MEDICAL LIBRARIES: Cooperation and New Technologies
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MEDIZINISCHE BIBLIOTHEKEN UND LITERATURINFORMATIONSSTELLEN IN EUROPA: KONKURRENTEN ODER PARTNER?

Z. URBANEK

In den sechziger Jahren, als die ersten staatlichen medizinischen Informationszentralen in Westeuropa gegründet wurden, waren die meisten Fachbibliotheken bereits Jahrzehnte wenn nicht Jahrhunderte alt. Die Leiter dieser Bibliotheken waren oft hochgebildete, renommierte und allgemein geschätzte Persönlichkeiten grossen Formates. Ihre Bibliotheken erinnerten aber manchmal eher an ein unfreundliches Archiv, wo die mühsam gesammelten Schätze der Vergangenheit gehütet und gehortet wurden, als an die weltweite aktuelle Informationen und neueste Wissensbestände aktiv offerierende und die wissenschaftliche Tätigkeit ihrer Träger koordinierende Organisationen.

Ich wage zu behaupten, dass einer der Anstösse zur Gründung der Informationzentralen auch diese, dem Entwicklungstempo der modernen Medizin nicht ganz angepassten Bibliotheken waren. Viele von ihnen boten nicht, oder nicht in gewünschter Qualität und ausreichendem Umfang, v.a. aber nicht mit befriedigender Geschwindigkeit die Dienste an, die gefragt waren und benötigt wurden.

So ist es nicht überraschend, dass die Pläne zur Gründung der staatlichen medizinischen Literaturinformationszentralen der fünfziger Jahre, die ja durch den Computereinsatz alle diese Uebel beseitigen sollten, vonseite mancher Bibliotheksdirektoren mit Unbehagen und Misstrauen oder mit ironischem Lächeln abgetan, oder aus Angst oder Neid sogar abgelehnt wurden. Auf dieser, im besten Fall ambivalenten Haltung der traditionellen Bibliothekare gegenüber den Informationszentralen hat sich auch ein paar Jahre nach deren Gründung nichts Wesentliches geändert. Egal, ob die Neulinge einen selbständigen, von den Bibliotheken unabhängigen Status und Arbeitsort erhalten haben, wie z.B. DIMDI in der BRD und IMA/INSERM in Frankreich, oder ob die neuen Informationszentralen ein Bestandteil der alten Bibliotheken wurden, wie z.B. BLAISE in Grossbritannien oder nachträglich MIC in Stockholm.

Und tatsächlich, die ersten Lebensjahre der Informationszentralen schienen den misstrauischen und skeptischen Standpunkt der Bibliothekare zu bestätigen: die damaligen Computer mit Batch-Verfahren waren umständlich und langsam, die Programme und Datenbanken – z.B. das MEDLARS – relativ primitiv, die Lieferfristen der bestellten Recherchen betrugen mehrere Wochen. Die Suchergebnisse waren wegen unzulänglicher Programme, ungenügenden Suchmöglichkeiten und der Unerfahrenheit der Rechercheure meistens schlecht. Die Dienste, obwohl überall kostenlos, wurden nur sehr wenig in Anspruch genommen.

Während dieses sogenannten Offline-Zeitalters, d.h. bis in die Mitte der siebziger Jahre, hatten die nationalen Informationszentralen die Literaturversorgung ihrer Länder nicht viel verbessert und keine grossen Aenderungen gebracht. Höchstens einzelne, auf "exotische Zeitschriften" weisende Zitate der Datenbanken drangen in die Bibkiotheken ein mit der

Bitte um Bestellung im Ausland.

Mitte der siebziger Jahre hat sich diese Situation langsam und stufen-
weise geändert. Grund dafür war sicher die Einführung, Weiterentwicklung
und Verbreitung des Online-Verfahrens:

Auf die Antwort mussten die Fragesteller nicht mehr Wochen warten,
sondern nur Tage, mancherorts sogar nur Stunden. Die Suchergebnisse
wurden präziser und relevanter. Das neue Verfahren ermöglichte eine
dezentralisierte Bearbeitung von Anfragen: viel mehr Stellen und Perso-
nen kamen mit der medizinischen Literatur-Information in Kontakt. Es
wurden zahlreiche kleine Informationsstellen gegründet, die teilweise in
den medizinischen Bibliotheken eingerichtet wurden. Da die Ergebnisse
brauchbar und trotzdem in vielen Fällen kostenlos geblieben waren, stieg
die Benützung der Datenbanken in ein paar Jahren drastisch an. In der
Schweiz z.B. stieg die Nachfrage nach DOKDI-Recherchen 1975, als wir das
Online-Verfahren für MEDLINE, EXCERPTA MEDICA und einige weitere Daten-
banken eingeführt hatten, gegenüber dem Vorjahr auf fast das Dreifache,
obwohl wir in der Zwischenzeit Bearbeitungsgebühren von 50 Franken pro
Anfrage einführen mussten.

Dieser Anstieg der Nachfrage nach Literaturrecherchen beeinflusste
selbstverständlich auch die Bibliotheken. Die Nachfrage nach ihren Foto-
kopien stieg allgemein, es wurden aber auch immer mehr Kopien von Arti-
keln verlangt, die aus unkonventionellen Zeitschriften stammten, die
weder in der Lokalbibliothek, noch evtl. im ganzen Land vorhanden waren.
Diese neu entdeckte Lücke in den Eigenbeständen belastete die Bibliothe-
ken umso mehr, als sie die ausländischen Bibliotheken um Kopien bitten
mussten. Dies verursachte wiederum einerseits höhere Kosten pro Kopie,
anderseits verlängerten sich die Lieferfristen, was wiederum die Endbe-
nützer irritierte. Sie erhielten die Hinweise auf die interessanten
Artikel innerhalb von Stunden, auf einen Teil der bestellten Fotokopien
mussten sie aber u.U. mehrere Wochen warten.

Dieser, durch die Verbreitung des Online-Verfahrens verursachte Druck
auf die Bibliotheken führte nolens volens die Chefbibliothekare und die
Leiter der nationalen Informationszentralen an einen Tisch. An diesen
Sitzungen wurde ungefähr folgendes festgestellt, bzw. vereinbart:

1.   Der die medizinische Literatur suchende Fachmann kann nur dann
optimal bedient werden, wenn beide Organisationen schnell funktionieren
und gut zusammenarbeiten. Sie müssen also Partner werden.

2.   Die bisherige Aufgaben- und Arbeitsteilung zwischen den Bibliothe-
ken und den Informationsstellen soll beibehalten werden. Die meisten
Bibliothekare waren so mit echten Bibliotheksarbeiten ausgelastet, so-
dass sie keine Neigung zeigten, freiwillig weitere Aufgaben zu überneh-
men. Die Informationszentralen besassen keine Fachliteratur, sodass sie
die Hauptaufgabe der Bibliotheken auch beim besten Willen nicht überneh-
men konnten.

3.   Um die Lieferfristen der bestellten Fotokopien zu verkürzen und
deren Kosten zu senken sollten nach Möglichkeit alle Zeitschriften, die
in den am häufigsten benutzten Datenbanken zitiert werden, im Land
mindestens an einer Stelle vorhanden sein.

Die Folge dieser Vereinbarungen waren mehr oder weniger drastische Umbestellungen, resp. Erweiterungen der Zeitschriftenbestände der einzelnen Bibliotheken. Dies entweder im lokalen oder nationalen Rahmen, je nach Grösse des Landes, nach organisatorischer Struktur der Fachbibliotheken und deren finanziellen Mitteln.

In den Fällen, wo die Informationszentralen Bestandteile der Bibliotheken waren, waren die erwähnten Gespräche vielleicht weniger formell. Aber grosso modo haben sich auch da die beiden Seiten auf dieselben Prinzipien geeinigt. Auch hier blieb die Aufgabenteilung zwischen den Bibliothekaren und den Online-Rechercheuren bestehen, vielleicht mit Ausnahme der skandinavischen Länder und Grossbritannien, wo einige Fachbibliothekare gleichzeitig auch regelmässig Online-Recherchen in Datenbanken durchführen.

Um der ständig steigenden Nachfrage nach den Dienstleistungen beider Partner Herr zu werden und v.a. unnötige Bestellungen resp. Anfragen zu vermeiden, führten dann später beide Seiten - oft unabhängig voneinander - Bearbeitungsgebühren ein. Dank der traditionellen und völlig selbstverständlichen Finanzierung der meisten Bibliotheken durch die öffentliche Hand konnten die Bibliotheken relativ niedrige Tarife für ihre eigenen Kopien erheben, die kaum mehr als 10 - 20 % der tatsächlich entstehenden Kosten pro Fotokopie decken; wenn man die Beschaffungskosten der Zeitschriften, Lohnkosten des benötigten Personals und das Overhead einbezieht. Die meisten der Informationszentren waren aber gezwungen, die Endbenützer wesentlich schmerzhafter zur Kasse zu bitten, und von ihnen mindestens die direkt durch die Recherche verursachten Kosten zu verlangen. Ihr Etat war nämlich oft durch keine Organisation resp. kein Ministerium gedeckt.

In den letzten Jahren kann man in einigen europäischen Ländern einen weiteren Schritt auf dem gemeinsamen Weg beider Partner feststellen: das Online-Bestellverfahren der Fotokopien vor allem von Artikeln, die in den einzelnen Datenbanken zitiert werden. Je nach seiner Komplexität, Genauigkeit und der Stufe der Einbeziehung der Datenbanken in dieses Verfahren, verlangten die Vorarbeiten mehr oder weniger intensive Zusammenarbeit der Bibliotheken und der nationalen Hosts. Sicher ein weiteres Beispiel der Partnerschaft zugunsten des Endbenützers, der die bestellten Kopien nun schneller bekommen sollte.

Die bisherige Entwicklung zusammenfassend stellt man folgendes fest:

Der durch die Verbreitung des Online-Verfahrens hervorgerufene Druck der Benützer beider Organisationen zwang sie Mitte der siebziger Jahre nach langem Nebeneinander zu einem Miteinander. Die Aufgaben- und Arbeitsteilung blieb dabei mehr oder weniger erhalten, sodass Personen, die gleichzeitig und regelmässig beide Professionen ausüben in Europa - im Gegensatz zu den USA - relativ selten sind.

Gestatten Sie mir, meinen Beitrag mit zwei Bemerkungen über die Zukunft abzuschliessen:

1.   Man muss damit rechnen, dass es auch zukünftig die Entwicklungssprünge der Technik sein werden, die die Beziehungen der beiden Partner verändern werden. Den voraussichtlich nächsten Entwicklungssprung werden die CD-ROM zuerst mit den heutigen Datenbanken, später dann mit Volltext

der Originalarbeiten verursachen. Diejenigen mit Volltext werden dann mindestens teilweise die gedruckten Publikationen ersetzen. Sie werden damit einerseits die Online-Recherche der relevanten Arbeiten ermöglichen, anderseits die Fotokopie der Originalarbeit ersetzen.

Theoretisch gesehen könnte also die CD-ROM mit Volltext ein erstes Streitobjekt zwischen den beiden Partnern werden. Wer soll sie anschaffen und bedienen, die Bibliothek oder die Informationsstelle? Beide hätten dazu das gleiche Recht. Es kann nur die momentane finanzielle und personelle Lage und die Fortschrittsfreundlichkeit sein - selbstverständlich neben politischen Einflüssen von aussen - die ad hoc den künftigen Betreiber der Videoplatte mit Volltext bestimmen könnten.

Es kann aber auch völlig anders kommen, und zwar in doppeltem Sinne unterschiedlich: Die CD-ROMs mit Fulltext inklusive die benötigte Soft- und Hardware werden so billig und so einfach zu handhaben sein, dass sie nicht nur von den beiden Partnern angeschafft werden - wodurch sie wieder zu Konkurrenten würden - sondern auch jedes grössere Forschungsinstitut und jede grössere Klinik sie haben wird. Damit würde die Epoche der Informationsselbstbeschaffung eintreten und die beiden müssten - ob Partner oder Konkurrenten - längerfristig um ihre Zukunft bangen.

Da die CD-ROMs wie bereits gesagt nicht nur die heutigen Referenzdatenbanken (wie z.B. MEDLINE) bringen wird, sondern später auch den Volltext der Artikel, muss damit gerechnet werden, dass sie v.a. von den wissenschaftlichen Verlagen produziert und angeboten werden. Dabei werden sich sicher auch die Buchhändler beteiligen wollen. So wird möglicherweise ein dritter mächtiger Konkurrent ins Spiel kommen, der bisher kaum eine nennenswerte Rolle spielte (vielleicht mit Ausnahme des Elsevier-Verlags).

Und die zweite Bemerkung:

In den USA sind bereits längere Zeit die grossen Bibliotheken wie z.B. die NLM die Schrittmacher beim Einsatz von Computern in medizinischer Wissenschaft und Forschung. Sie organisieren oder beteiligen sich sehr aktiv an verschiedenen Forschungsvorhaben und wichtigen Entwicklungsprojekten. Vor allem bei der Entwicklung des neusten Typs von Datensammlungen den sogenannten Knowledge Bases, den Wissensbanken, bieten die amerikanischen Grossbibliotheken das notwendige Fachpersonal, Geld, Hard- und Software an. Lassen Sie mich nur ein Beispiel nennen: das INTEGRATED ACADEMIC INFORMATION MANAGEMENT SYSTEM der NLM.

Ich glaube nicht, dass europäischen wissenschaftlichen Grossbibliotheken diesen Weg gehen werden. Aber auch die heutigen Informationszentralen oder Hosts werden sich in diesem Bereich kaum durchsetzen wollen. Diese Funktion werden in Europa eher die Informatik-Abteilungen der Fakultäten resp. der Kliniken übernehmen. Die Bibliotheken und Informationsstellen werden sich auch deshalb abseits halten, da ihre Broker nicht unbedingt bei klinischer Anwendung der Datenbasen dieses Typs die optimalen Vermittler sein würden. Das wird die Aufgabe der medizinischen Fachspezialisten werden.

ARE MEDICAL LIBRARIES AND LITERATURE INFORMATION
CENTERS IN EUROPE COMPETITORS OR PARTNERS ?

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ABSTRACT

    In the early sixties the majority of librarians disapproved
the establishment of public medical information centers. These
new organizations didn't change the supply of literature for a
great deal until the extention of online operations arose in the
middle of the seventies. In the meantime they were neither
important competitors nor partners of the libraries. The pressure
of demand on services of both institutions - provocated by the
online databases - forced on both of them to come to cooperation
and partnership and later to charge their service fees. The
videodiscs of the near future can change them into competitors
and bring new rivals on the scene : the publishers and
booksellers.

PLANIFICATION DES SERVICES BIBLIOGRAPHIQUES SUR ORDINATEUR
A L'AIDE D'UNE ANALYSE SYSTEMATIQUE DE L'EMPLOI DES BASES
ET DES BANQUES DE DONNEES

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INTRODUCTION

L'introduction des ordinateurs dans les bibliothèques a bouleversé nos
méthodes de travail et nous a obligé à réorganiser les différents services
en tenant compte de ces nouveaux outils de travail. La bibliothèque, devenue
centre de gestion de données automatisées met, en fait, à la disposition de
ses usagers, la littérature mondiale dans tous les domaines scientifiques.
Mais, si dans le passé l'usager effectuait sa recherche souvent sans même
avoir recours au bibliothécaire grâce aux ouvrages de référence mis à sa
disposition dans la salle de référence, il doit maintenant passer par le
documentaliste ou le bibliothécaire pour avoir accès aux bases et banques
de données. Nous avons donc là une occasion unique d'observer de près la
méthode, ou le manque de méthode, utilisée par chaque usager pour réunir
sa documentation et obtenir les documents requis. Cette nouvelle approche
va nous aider à évaluer l'efficacité de nos services bibliographiques et,
au besoin, à les modifier ou améliorer.

METHODOLOGIE

Nous supposons, a priori, qu'il existe parmi les usagers d'une même bibliothè-
que des différences notables au niveau des besoins d'information, des méthodes
pour l'obtenir et de leur connaissance des ouvrages de référence mis à leur
disposition. Nous devons donc nous poser plusieurs questions:

- sommes-nous en mesure de pouvoir aux besoins informatifs de chaque groupe
  d'usagers selon leurs différents niveaux?

- les ouvrages de référence et les collections de livres et de périodiques
  de la bibliothèque répondent-ils à ces besoins?

- l'ordinateur a-t-il révolutionné les méthodes de recherches bibliographiques,
  et les résultats obtenus en interrogeant les bases et les banques de données
  sont-ils meilleurs ou bien doit-on conclure que "plus ça change, plus c'est
  la même chose"?

- quel est le rôle de la formation continue de l'usager par le bibliothécaire
  et cette formation est-elle adéquate?

Pour nous aider à répondre à ces questions nous avons élaboré un questionnaire
détaillé nous permettant de caractériser chaque usager ayant recours au
bibliothécaire ou au documentaliste pour interroger les bases et les banques
de données, essentiellement en fonction de son statut et du genre de question
posée, s'il s'agit du traitement d'un malade ou d'un travail de recherche.

Cette méthode de travail nous a permis:

1. de collecter et organiser les données recueillies grâce aux recherches
    bibliographiques effectuées sur ordinateur

2. d'analyser ces données numériques, ce qui devrait en principe nous fournir
    des réponses précises aux questions que nous avons formulées précédemment.

RECUEIL DES DONNEES

Notre service de recherches bibliographiques sur ordinateur fonctionne dans
notre bibliothèque depuis 1981. Au début nous nous sommes limités, pour des
raisons évidentes, à la base MEDLINE. Progressivement nous avons ajouté
d'autres bases de données à notre répertoire, et à présent nous utilisons
de nombreuses bases par l'intermédiaire de neuf serveurs, tant aux Etats-Unis
qu'en Europe. Tous les lecteurs de notre bibliothèque (étudiants, membres de
la Faculté des sciences de la santé, médecins et personnel hospitalier du
Centre Hospitalier Universitaire Soroka) ont accès à ce service; très rapide-
ment, nous avons également accepté les chercheurs du secteur industriel de
la région, essentiellement dans le domaine de la chimie et de l'agriculture.

Dès le début de l'"interview" du client, le bibliothécaire commence à remplir
le questionnaire dont les différentes rubriques ont pour but de définir le
statut de chaque client, le genre de recherche bibliographique requise, la
formule de paiment appliquée et le but de la demande de recherche (traitement
d'un malade ou recherche).

Nous consignons également dans ce formulaire le nombre d'étapes requises pour
formuler la stratégie de traitement la plus efficace, le nombre de bases de
données balayées, le nombre de citations obtenues et le "degré" de satisfaction
du client. Cette dernière donnée est, cela va de soi, la plus aléatoire à
obtenir puisqu'elle dépend de la bonne volonté du client qui doit nous en
faire part.

Nous nous sommes efforcés de nous en tenir à des données numériques pour établir
une corrélation entre la requête du client telle qu'il la formulait au début
de l'interview, la statégie de recherche et les résultats obtenus. Enfin,
chaque groupe de lecteurs pouvant être identifié avec un certain type de
recherche, l'étude de cette relation groupe de lecteurs/type de recherche
nous aidera à adapter nos services à chaque groupe et de tenir compte des
possibilités budgétaires de chacun d'eux. Afin de ne pas défavoriser un groupe
par rapport à un autre nous avons établi un barème de prix adapté aux trois
principaux groupes utilisant les services en ligne:

1. un service subventionné par la Faculté et le Centre Hospitalier, destiné
    aux étudiants, aux internes et aux jeunes médecins - ce service étant
    limité aux bases les moins chères et les plus demandées, MEDLINE et ERIC.

2. pour les médecins et les chercheurs bénéficiant de fonds de recherche, nous
    nous limitons à un recouvrement des frais sans tenir compte du temps de
    travail des bibliothécaires.

3. pour les chercheurs des industries locales nous avons majoré de 50% le
    recouvrement des frais et calculé le temps de travail du bibliothécaire
    à raison de dix dollars de l'heure.

ANALYSE DES DONNEES

Bien que notre service fonctionne depuis 1981, nous avons décidé de ne prendre
en considération que les données des années 1983-1985, excluant les résultats
des premières années faussés par le manque d'expérience des bibliothécaires

et les problèmes d'équipement et de télécommunications dont a souffert le service à ses débuts. A partir des données 1983-1985 et en utilisant le logiciel dBase III, nous avons établi les rapports suivants:

1   type de client / nombre de recherches éxécutées annuellement

2. type de client / genre de requête

3. type de client / formule de paiement

4. type de client / résultats obtenus

5. genre de requête / formule de paiement / coût de la requête

6. genre de requête / résultats obtenus / coût de la requête

En utilisant l'analyse de ces rapports nous avons modifié et amélioré notre service, notamment en ce qui concerne les points suivants:

- L'analyse du coût des requêtes a indiqué que le nombre d'étapes dans la stratégie de recherche renchérissait le coût bien plus que le nombre de citations imprimées en ligne. Nous nous sommes donc efforcésde préciser au maximum la requête du lecteur et d'affiner la stratégie de recherche avant de la mettre sur ordinateur.

- Nous avons établi une relation directe entre le genre de requête formulée par les étudiants et les résultats décevants obtenus une fois mise sur ordinateur: il s'est avéré que les étudiants nous demandaient de faire une recherche sur ordinateur bien avant d'être fixés sur sur un sujet précis et en étant encore au stade des tâtonnements. Il en résultait une disproportion entre le coût élevé de la recherche et les résultats pour la plupart décevants. Nous avons donc élaboré, avec l'aide et l'encoura- gement de la Faculté, un programme d'enseignement échelonné de la première à la quatrième année d'études, ayant pour but d'enseigner aux étudiants comment réunir une bibliographie, où se procurer les documents nécessaires et quand éxécuter une recherche sur ordinateur.

- Nous avons pu définir parmi nos usagers plusieurs groupe principaux, leurs besoins précis et leurs possibilités financières:
    a) les étudiants et les internes ne disposant pas de budgets de recherche , d'où la nécessité de mettre à leur disposition un service subventionné par la Faculté. Ce service est limité uniquement aux bases de données MEDLINE et ERIC.

    b) les médecins - deux difficultés: tout d'abord le temps très limité dont ils disposent en dehors de leur travail et leur manque de budgets de recherche. Très souvent ils ignorent même l'existence du service de références en ligne. Pour résoudre le problème financier, nous avons suggéré de créer un fonds commun de recherche géré par département. Pour familiariser le personnel médical avec les systèmes de références en ligne nous envisageons un programme de causeries hebdomadaires dans le cadre des réunions de travail de chaque département.

    c) les chercheurs - c'est la classe la plus privilégiée, puisqu'elle dispose de fonds de recherche. Ils sont, en général, familiarisés avec l'ordinateur et participent activement à définir la stratégie de recherche et à son éxécution. C'est essentiellement à ce groupe que sont destinés les nouveaux logiciels conçus pour diffuser l'information scientifique et technique sans passer par des inter- médiaires (bibliothécaires ou documentalistes).

- Nous nous sommes rendus compte qu'il était nécessaire d'adjoindre à
  l'équipe de bibliothécaires déjà en service, un documentaliste spécialisé
  dans les domaines de la chimie et de la biologie.

- Nous étudions la possibilité de mettre à la disposition de nos usagers un
  logiciel de recherche spécialement conçu pour être utilisé sans l'aide
  du bibliothécaire ou du documentaliste. Nous pensons notamment à un logiciel
  du genre "PaperChase" en usage à Boston ou "Colleague" de BRS/Saunders.

- Pour aider les étudiants dans les premiers stades de leur recherche nous
  envisageons l'introduction dans notre bibliothèque du CDRom (Compact Disk
  Read only memory).

CONCLUSION

L'emploi systématique de nos questionnaires et leur analyse multiple nous a
aidé à concevoir clairement la structure des différents groupes d'usagers
de nos services bibliographiques en ligne et leurs besoins spécifiques.
Cela nous a également permis d'analyser les divers aspects microéconomiques
de la gestion de services utilisant une technologie de pointe, notamment
le coût de production, la tarification adaptée à chaque groupe d'usagers
et la structure de recette.

Enfin, et c'est là un des points importants dont nous nous sommes rendus
compte, il n'est pas toujours nécessaire de faire une recherche sur
ordinateur. C'est au bibliothécaire qu'il incombe de conseiller quelle est
la méthode la plus efficace et la plus appropriée à chaque demande.
Le bibliothécaire ou le documentaliste possédant une connaissance approfondie
des ouvrages de référence et ayant reçu une formation adéquate dans le
domaine des recherches sur ordinateurs, est véritablement le pivot de ce
nouveau service bibliographique dont la souplesse et la variété des formules
proposées garantissent aux usagers le maximum d'efficacité.

DIFFERENT USE PATTERNS OF ON-LINE DATA BASES.
A SYSTEMATIC ANALYSIS FOR FUTURE PLANNING OF
COMPUTERIZED REFERENCE SERVICES

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ABSTRACT.

Analysis of on-line searches performed in medical libraries
offers the librarian/administrator a unique opportunity to
quantify the research behavior of the library patron.
Statistical analysis of on-line searches performed since 1981 at
the Medical Library, Ben-Gurion University of the Negev, provides
"hard" information on the numbers and types of patrons for whom
searches have been performed, as well as the scope and results of
the searches. Differences in information needs, difficulty in
accessing information, and satisfaction with search results from
the major bio-medical on-line data bases are hypothesized to be
significant between various groups of library patrons : senior
researchers, clinical practitioners, junior staff and medical
students.

Results of this survey and analysis are expected to aid in
the planning and reshaping of reference services in our Medical
Library. We expect to have clearer indications of : who should be
using the library's on-line terminals - the librarian or the
end-user himself - as well as how many terminals are needed,
which different kinds of services (multiple hosts, CD-ROM, etc.)
the library should be providing, and to what extent the library
should be subsidizing these services.

DATA BASES DEVELOPED AT THE ALL-UNION SCIENTIFIC INSTITUTE FOR
MEDICAL AND MEDICO-TECHNICAL INFORMATION (VNIIMI): THE PRESENT
AND FUTURE

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At the All-Union Scientific Institute for Medical and Medico-techincal Infor-
mation of the USSR Ministry of Public Health the Automated Branch System of
Medical Scientific Information (OASNMI) is functioning and developing in the
cooperation with the State Central Scientific Medical Library. The system's
input composed mainly of Soviet periodicals bibliography and partly of "grey"
literature. This system provides information services on national and interna-
tional levels (generally for partners in CMEA member countries participating
in mutually developed MEDINFORM system). In MEDLARS and EXCERPTA MEDICA sys-
tems Soviet publications are underpresented in comparison with OASNMI.

In contrast to documental flow of the other countries in the USSR national
flow of medical publications the "grey" literature prevailes over the papers
presented in medical journals. The structure of the national flow distributes
among the papers in special medical journals - 18,000 sources per year (23.5
per cent of total), methodical documents on medicine and public health - 4,000
(5.2 per cent), theses for doctor's and candidate's degree - 4,000 (5.2 per
cent), books - 4,500 (5.8 per cent), "grey" literature - over 50,000 (0.3 per
cent). At present in the bulk of documents included in the national computeri-
zed bibliographical medical system included all medical journal papers, metho-
dical documents and partial flow of "grey" medical literature. The total pro-
cessing of the national medical information flow is assumed by the year 1988.

Via MEDINFORM the OASNMI data base is being replenished with approximately
30,000 articles from the periodicals of socialist countries annually. For the
attaining such compatibility the member countries of MEDINFORM during some
years of cooperation developed common semantic means. For this purpose a unique
Rubricator (a classification hierarchic scheme) and thesauri based on Russian
and national languages of the member countries have been developed. The analo-
gous descriptors are identified in thesauri by the common code. The particip-
ants of MEDINFORM are using co-ordinated methods of indexing, common formats
and rules of information recording on magnetic tapes. Therefore MEDINFORM data
base can be enlisted without any additional processing.

The information on the related to medicine subjects in biology and chemistry
flows into OASNMI data base from ASSISTENT magnetic tapes distributed by the
All-Union Institute for Scientific and Technical Information of the USSR Aca-
demy of Sciences. This system includes approximately 200,000 sources from So-
viet and foreigen periodicals per year.

At the time being VNIIMI started the development of the applied scientometric
methods for the analysis of information included in complex OASNMI data base.

It is planned to use bibliographical, lexical and citation approaches for the system analysis of Soviet medical science reflected in publications.

TRENDS IN ONLINE RESEARCH FACILITATED MECHANISMS

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The outstanding philosophical bases of some new practices
for information retrieval by end users are outlined. At-
tention has been given to three simplified databases ap-
proaches: "user-friendly" or easy to use mode; expert
systems or artificial intelligence programs that mimicry
human intelligence processes; computerized training
programs that introduce to a correct database use.

1. INTRODUCTION

In this short communication the topic documentation is considered
mainly from the point of view of the users, on the basis of the
experience acquired in a national institution for biomedical re-
search and public health.

It doesn't intend to be an exhaustive and systematic review of the
tools provided by computer technology in order to provide infor-
mation even to users who are not familiar with online research
mechanisms. It aims, on the contrary, at giving an overview of
actual ways, with their analogies and differences, for providing
documentation chances to user people more and more large and in
the meantime differentiated in their information need.

Which one the reason of this widespread fervour of initiatives to
make data processing access easier, in such a moment when pocket
computers and video-games (just to mention some common uses) have
introduced computers in daily life? The response arises from a
simple observation: the first big information systems, with their
huge echo and yet unexhausted potentiality, remained anchored to
great scientific institutions, thus failing to reach the
end-users, who in the origin ought to be the target people. The
first ten years of the online interactive searching history have
been characterized by the concentration of the information re-
trieval activity exclusively in the hands of qualified docu-
mentalists, as necessary and unreplaceable intermediaries between
user and system. The student, the physician, the professional
having only an occasional information need remained at the doors
of the systems, unable to perform a research of their own. The

information industry reacted against this status of affairs
planning new ways of avoiding the end-users to know deeply the
peculiar philosophy, structure and searching processes of every
database. In the theory it is possible to envisage a simplified
system in which the user may be guided all over the information
retrieval process, including the connection procedures, database
selection, request formulation, output evaluation and so on. In
the practice, a total facilitated system is not yet actual, but
the user can make a choice among alternative partial solutions.

What remains still debatable is the quality of the product ob-
tained through these simplified and tipified search aids, mainly
in comparison with the product obtainable when the same material
is processed according to online traditional modes by an
experienced intermediary operator. The information market offers
now systems with differentiated possibilities of approach; namely
there are systems that can be operated either from unexperienced
or qualified users, being the choice dependent on the exhaus-
tiveness and precision of the search.

More as an occasion of reflexion than with the intent of a system-
atic approach, some prototypes of simplified access to online
information are considered from the user's point of view: so-call-
ed user-friendly systems, expert systems and online instruction
systems.

2.   USER-FRIENDLY SYSTEMS

The common meaning of this neologism, favoured by the producers
themselves for it is attractive, indicates a finalization towards
users who have no background of frequent online database use. Us-
er-friendly or, briefly, UF means "easy to be used", but substan-
tially, whom is it easy for? Users, either experienced or
inexperienced, cannot be considered as a homogeneous group of in-
dividuals. All the search aids that might be included in the ex-
pression "to be among friends" are not standard objective
components, pertaining to the system. They have necessarily to be
evaluated in reference to a peculiar user category, with a defi-
nite professional structure and specific information needs. What
could be the solution? As many UF systems as the potential user
categories? Besides the difficulty of their realization, this
superabundance would only create chaos and further problems. More
realistically, the trend is towards multilevel interface us-
er/database systems. Usually some systems carry two interfaces,
each of them assuring a style of interaction suitable for a spe-
cific user category. Thus, for instance, could be a menu inter-
action for inexperienced users and command interaction for expe-
rienced ones or alternatively a unique kind of interaction
integrated with aids and propositions appropriate to the different
levels of difficulty.

Under existing status of art the chance of completely fulfilling
the needs of every class of users through a unique system is still
a theoretical aim. As a matter of fact, market systems trend to a
reasonable compromise, asking the experienced users some
sacrifices in favour of a more diffuse use and thus of return
benefits for the whole scientific community.

Obviously there are no standard criteria to characterize "user
friendly" systems as such. Tentatively one could say that in the
UF system:
- connection protocols should be extremely easy;
- command language, in the form of natural expressions, avoiding
  the use of codes or acronyms, should be simple,
  logical, coherent;
- the system should continuously suggest the user the next step;
- occurring a mistake, the system should advise and suggest the
  user alternative pathways;
- it should be foreseen that the interaction with the system can
  be stopped at any moment.

A very recent example of this politics aimed at supporting users
is QUESTQUORUM or QRM, a project introduced at a pilot level by
ESA-IRS. In QRM friendliness steps are based on the experimental
observation that users, especially the inexperienced ones, gener-
ally prefer a limited quantity of relevant information than a
greater amount of it, because of in this last case a selection has
to be done, and the discrimination sometimes can be a quite
difficult task. QRM is of menu type; it automatically translates
requests formulated in natural language in QUEST commands; it
applies the logical product to all the terms thus getting the
highest relevance; it admits the possibility of increasing the
amount of citations (application of the logical product to n-1,
n-2..... terms); it suggests new possible terms (zooming the most
relevant set); if the case, it further limits search (introduction
of new terms in the product).

3.   EXPERT SYSTEMS.

The expert system is a programme of artificial intelligence (A.I.)
operating as an interface between user and database. It is sub-
stantially an attempt of imitating and replicating the same mental
processes that qualified operators apply for the solution of
bibliographic research problems.

The expert system or interface is an autonomous entity, wholly
distinct and independent either from connection network or from
database and databank softwares. It is produced in order to make
connection procedures easier (f.i. introduction of research in
offline mode and automatic logon); to facilitate the formulation
of problems; to perform search strategies; to display search
outcome for evaluation; to suggest new potential formulations etc.

As to the program, it differs from a normal application software in that it tends to confer the rigour of an automatic process to that indefinable thing composed of knowledge, experience, intuition, good practice, which guides subjectively the mental work of the experienced user confronted with a problem of information retrieval.

Briefly, supposing that the expert system might be useful for every kind of user, is it right to assume that in different situations, artificial intelligence programmes represent the last answer to information retrieval? A certain measure of uncertainty in the answer is not imputable to the program. Elements of weakness come just from human intelligence which has not been able yet to specify the theoretical guidelines of searching. Artificial intelligence is strengthless if natural intelligence doesn't unequivocally point out which are the elements it works upon and which are the series of mental operations it performs. The troubles rise in fixing unambiguously the mental process, wholly or in its significant segments, carried out by the user in performing the search. This process represents the guide and the pathway along which the artificial intelligence takes the place of the natural one to guide step by step the unskilled user.

It is not imperative that all operations performed in an information retrieval process are accomplished by only one expert system. Now the available artificial intelligence systems mostly cover only some aspects; however many of these systems give solutions that even skilled operators could achieve only at a hard effort. For example let's consider the QUESTINDEX produced by ESA/IRS. By a few commands quickly and automatically it identifies and quantifies which of the ESA files contain citations pertinent to the information required.

4.   ONLINE EDUCATION SYSTEMS.

Online education systems have been set up for the beginner user in a completely different optics. They are not programmes which reproduce the operations of human intelligence; their aim, in fact, is to introduce the searcher in a correct use of the system as it is in its own original structure, with its severe logic and its strict and complex mechanisms. For a right exploitation of the system the professional qualification of the user is held essential; nevertheless through a combination of didactics and knowledge of user needs the system performs the teaching better than it could be done in a classroom or training manuals. The teaching takes the form of question/answer at the terminal; it is personalized and directly involves the user who is guided through difficulties gradually growing so that he is enabled to think over the received suggestions, to understand his mistakes, to look for the causes of such mistakes and their consequences. What still should be done is to develop an experience in using the system,

but the training, intentionally not very expensive, may be repeated,brought up-to-date and/or realized at an advanced level.

There are several examples of these systems which have been experienced and improved during many years as the NLM's pioneer MEDLEARN or PINOCCHIO, the interesting product of ESA/IRS not yet completed in all its categories. Among didactics aids there are also the so-called "training files" that is, subsets of some large files which enable the inexperienced user to get acquainted with the main bases (ESA/IRS's CHEMABS TRAINING, INSPEC TRAINING ...., NLM's INTROMED).

5. FUTURE TRENDS.

It is possible that the big effort by information systems to open the doors to a larger and larger number of users will soon maintain just a historical meaning. Microcomputers represent an operative reality for most people and also bibliographic search through personal computer is already routine work both for specialized documentalists and for the layman who asks for a direct and autonomous access to databases. The market has promptly answered by producing software packages which can fulfill a lot of functions such as automatic logon operations, information searches, downloading and uploading, selective data dissemination, editing, etc, usually by interfaces with menu structure (MIKROTEL; GRATEFUL MED).

Briefly, it appears as the present stage of progress is marked by programmes more and more sophisticated so that users will have an easier task and therefore be involved in greater extent. Roughly, one might say that the information retrieval asks for some definite intelligent work according to the following equation: Artificial Intelligence + Human Intelligence = constant, so that to the increasing of one of the two addenda necessarily corresponds the decreasing of the other. In the extreme, an ideal documentation system should contain so much an elevated artificial intelligence as to make the human intelligence approach of quite no use in the search. As a matter of fact it is easier that the increasing of easiness and effortlessness will inevitably approach to an asymptote, and this shall not wonder if we think that the research of knowledge is itself a peculiar need of man, not of robots.

THE USE OF THE PERSONAL COMPUTER FOR ON-LINE SEARCHING
Experiences with the SCI-MATE microcomputer software

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Online literature retrieval is a rapid method for identify-
ing important published information on special topics in
medicine.Within minutes the perhaps few relevant documents
with bearing on a problem can be searched for and detected
among millions of articles.Revealed almost immideately,with
their bibliographic informations;-sometimes also with their
abstracts

A number of studies of literature use have shown that
information reported in the medical literature significantly
affects treatment by physicians and other health
professionals at various levels.These include the diagnostic
stage,treatment,inpatient- and outpatient management,and
ultimately the final outcome of the treatment.By consulting
the current literature the health professionals can arrive
at a more balanced perspective on any issue of medical
treatment and diagnosis (1).In one such reported
study by Scura and Davidoff in 1981(2), 20 % of the medical
doctors at a US hospital asserted that the current
literature directely influenced management of specific
patients.It implied that the literature obtained had a
positive direct impact on the ways patients were diagnosed
and treated.

Although appreciated,medical information, is not well
communicated in the medical society.This has been clearly
demonstrated in the studies of Stross and Harland(3),and of
Dunn(4).They tried to find out how an important report about
prevention of severe visiual loss in diabetic patients
reached practicing physicians.The report was published in
1976 in the American Journal of Ophthalmology by the
Diabetic Retinopathy Study Research Group(5).The beneficial
results of photocoagulation therapy was reported to be of
major significance in diabetic patients with
retinopathy.Eighteen months after the publishing of the
report, these important findings were widely unknown to the
physicians in the study of Stross and Harlan.Quite a many of
the physicians in the study,whose practice included more
than fifty diabetic patients, did not know the implications
of the report.

The medical librarian has an important role to play in speeding up the communication process.Not only by delivering the information asked for,but also by educating the physician how to use the medical library most effectively,and by teaching him to take the benefits of modern information technology.This paper deals with the experiences of implementing the software SCI-MATE in a personal computer,Apple IIe.Successfully achieving this, the physician could now get the information asked for in a machinereadable form on floppy discs for his personal computer.As the SCI-MATE system was easy to learn and easy to use,it also became possible to learn the interested medical doctors to use the Personal Text Manager of the SCI-MATE package,some also started to deal with the Universal Online Searcher.

The University Library of Bergen,Norway,Division of the Faculty of Medicine and Odontology,is a medium-sized medical library with the total holdings of 150.000 books and journal volumes.The increasing demands on the medical information retrieval services made us start in 1976 with online searching in the databases of DIALOG,SDC AND NLM.Yearly we made about 600 MEDLARS searches and about 100 searches in the various databases of DIALOG.These were all done on a Texas Silent 700 terminal connected to a modem at 300 Baud.As we felt we could get more out of the money we spent on this system, we decided in 1983 to do the searches on an Apple IIe personal computer.To choose the right software was a much more difficult task with a software industry today(according to Fortune) "exploding like a supernova".

It was after reading the articles of Cathryne Stout and Thomas Marcinko in ONLINE in 1983(6), and by Eugene Garfield in Current Contents in the same year(7) about the software SCI-MATE(8), that we made our final choice.The main decisive factor in this was that SCI-MATE, to the best of our knowledge,was the best integrated microcomputer software designed for both management of textual information,and online searching of the wide variety of commercially-available databases,a.o.MEDLINE.

SCI-MATE is a menue-driven microcomputer software package for offline and online information retrieval.SCI-MATE consists of two components,the Personal Text Manager and the Universal Online Searcher.The offline component, the Personal Text Manager,is intended to access bibliographic references,laboratory notes,correspondence,abstracts and other forms of textual material.The online component,the Universal Online Searcher,allows searching of databases mounted on several large commercial vendors, using an universal command language.

Although both the Personal Text Manager and the Universal Online Searcher are available as separate packages,they are also intended for use as an integrated system.Using both

components,items can be retrieved through the Universal
Online Searcher,and transferred   for permanent storage   in
the   Personal   Text   Manager("downloading").SCI-MATE   is
designed to be used also by users not too well acquainted
with personal computers.It has a menue-driven(or multiple-
choice) command system with a tutorial subsystem.At each
step the computer asks a question and presents a short   list
of options.

The Personal Text Manager actually consists of two interre-
lated files.Users can temporarily store and manipulate
records retrieved online or read from a word processor or
any other text file in the temporary work file.The permanent
user file is a free-text searchable system where information
is permanently stored.Information in the user file can be
stored as free-text or by using one of 20 customized self
generated formats,or templates.Variable-length records up to
1.900 characters can be used.Records can be linked to extend
record capacity.Any record is searchable as soon as it is
entered.

Menue-driven searches of stored records can be done through
Boolean logic.For example,two title words can be combined,or
an anuthor's name with a journal title and a yearof publica-
tion.Left-and right hand truncation can also be used to
allow stem searching, e.g. bronch£ for bronchitis ,bronchial
etc.A search string can consist of 255 consecutive
characters.

SCI-MATE's Universal Online Searcher makes is possible to
search database hosts, such as DIALOG, BRS, NLM, ISI OR
SDC.SCI-MATE's menue-driven language makes it unnecessary
to know numerous command languages, but the host language
can be used,if desired.For all host systems,the Universal
Online Searcher has   the   possibility to   "logon"
automatically.It can also automatically dial up the system
if an an automatic modem is used.SCI-MATE is available
for several of the most used personal computers in the
market,for instance those using the operative systems of
MS-DOS or CP/M.

Having used the SCI-MATE for more than two years we still
feel we made the right choice, although we for time being
cannot use it to its full capacity.This is mainly due to our
lack of automatic modems and differences in the
communication protocols,U.S.A.vis à vis Europe.We cannot
therefore automatically "logon" and dial up.This is also the
hindrance for the use of the system in its "active mode",
which means we cannot use its universal command language.
As we are all well acquainted with the various host
languages,this is of no importance.SCI-MATE's ability to
download works very well and to our end-users fullest
satisfaction.

Initially we had difficulties with the "handshaking" of the

European MEDLARS host in Stockholm,Sweden.By reading the guidebook very carefully and by rigid control with the wiring, these obstacles were quickly overcome.More difficult was our problem with the computer's X-on/X-off signalling. What happens in theory with these signals is that the buffer of the personal computer sends a signal to the software that no more data should be sent while it catches up.Then ,when the buffer is almost empty(that is the printer has 'caught up"), a signal is sent indicating that more data can now be handled.It was only after much trial and error,and when we got hold of a signal transmission analyzer,we found that the host computer in Stockholm did not respond to the signalling.This was corrected and that ended our problems with the downloading.

Due to the big advances in information technology we are more and more approaching the "the new age of end-users".The medical librarian should take interest in teaching end-users how to search the bibliographic databases most effectively with their personal computers.Some few have already started on their own.By playing an active role in this initial phase of the new era ,the medical librarian will be highly welcomed on the medical team.

<div align="right">Oystein Wendelbo.</div>

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THE EXCERPTA MEDICA DATABASE ON CD-ROM

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Abstract: The Excerpta Medica biomedical database, EMBASE,
is now available on compact disc. This new product offers
unlimited and user-friendly access to EMBASE bibliographic
records for end users (students, faculty, researchers) in the
library. For the information professional, EMBASE on CD-ROM
offers a cumulative annual index to the printed Excerpta Medica
abstract journals as well as a complementary service to online
searching.

Introduction

Compact disc technology offers a complementary medium to the Excerpta Medica
range of biomedical literature. The printed abstract journals, published since
1947, were supplemented in the 1970's by online accessibility to the
bibliographic records through host systems such as DIALOG. Thus began the
online Excerpta Medica file, EMBASE, which today is one of the world's leading
sources of basic sciences, medical research, clinical studies, and drug
information. Now in 1986, EMBASE is available on CD-ROM, offering librarians
annual cumulative indexes to the current 46 Excerpta Medica abstract journals,
as well as a new exciting source of medical data for the end user.

What's on the Disc

We use standard (12 cm diameter) compact discs which hold 540 megabytes of
data. This is the equivalent of 1 year of EMBASE, or 250,000 bibliographic
records each including citation fields, up to six indexing fields, and in 60%
of the records, the author's original abstract. For those familiar with
EMBASE, all of the indexing fields are available: EMCLAS biomedical
classifications (e.g. Section 16 - Cancer and the lower hierarchical levels),
MALIMET descriptors divided into major and minor terms on the disc), and the
general EMTAGS concepts (e.g. human). We currently have a 1984 disc which
covers medical literature published in 1984 and part of 1983. Approximately
200 megabytes on the disc are used for the storage of inverted files, or
indexes. The indexes lie in the center of the disc for faster retrieval of hit
counts for each search term.

EMBASE or CD-ROM runs on an IBM-compatible p.c. with a disc player (Hitachi,
Phillips, or Sony) and interface card with the driver software. The RAM
necessary is 512 K, but performance is improved with 640 K. The search
software was written by SilverPlatter Information Services, offering many help
screens and search examples which guide the user through the system. We have
found in alpha testing that written documentation is unnecessary, except for
basic instructions on how to set up the hardware.

The search software is based on eight function keys: HELP, FIND, INDEX, SHOW,
PRINT, CLEAR, and GUIDE are the most important. There are also a number of
movement keys which are useful: including PAGE UP/DOWN, ESCAPE, TAB, BACKSPACE,
BREAK, and the arrow keys.

The HELP key provides tutorial screens for using the SilverPlatter software,
while the GUIDE key gives instructions for doing biomedical searches in

EMBASE. Search terms can be browsed using the INDEX key which gives an alphabetical display of the inverted words and phrases. All searches must be done in FIND mode using that key, and retrieved records can be displayed on the screen using the SHOW key, or printed with the PRINT key. A very nice feature of the software is the highlighted search terms in the record, available on colour or monochrome screens.

Boolean operators are present, as well as two adjacency operators: "with" searches for the terms in the same sentence or subfield; "near" searches for proximity in the same field. Right-hand truncation is possible. Three fields are both word and phrase posted: major MALIMET descriptors, minor MALIMET descriptors, and EMTAGS.

For more advanced searching, parenthetical nesting of search terms and logic is possible. Other highlights of the software are the processing messages which give numbers of records and percent completion for lengthy searches, and the ability to interrupt searches at any time and review the records retrieved up to that point.

The Bonuses of CD-ROM

First are the general compact disc advantages over online database searching:

1. Unlimited search capability in the library. The system is available 24 hours a day, 7 days a week.

2. Fixed costs. The library purchases the annual disc, and then uses it continually at no additional extra costs - no telecommunication costs, password fees, royalty fees, or hourly connect costs.

3. Extensive HELP and tutorial screens are at your fingertips, and allow the system to be self-teaching.

4. Searching can be leisurely and thorough since time of searching is no longer a cost factor.

5. End users (students, researchers) can easily do their own searching, allowing the library reference staff more free time.

Next are the factors which make EMBASE annual discs complementary to the printed Excerpta Medica journals and the online EMBASE files:

1. As an annual cumulative index. There have never been annual cumulative printed indexes for the Excerpta Medica abstract journals . EMBASE on CD-ROM, segmented by production years, fills this need for comprehensive, historical searching.

2. As a cost-effective alternative to searching back files online. Searches for the most up-to-date medical and drug literature can be done best online where the EMBASE files contain records input within 6-8 weeks of journal receipt in Amsterdam. For searches going back 5 or 10 years into the literature, CD-ROM offers an alternative.

The Drawbacks of CD-ROM

There are several inherent disadvantages with the CD-ROM technology:

1. Retrieval performance is slower than online. This is particularly true of Boolean searches combining large sets.

2.   The CD-ROM workstation including the dedicated personal computer is
     not designed for multiple users at this time. In the future, systems
     such as SilverPlatter´s Multiplatter will allow many users to access a
     library of discs.

3.   New hardware investment may be high for initital CD-ROM users,
     although prices of disc players have fallen to $900 this year.

4.   Because the discs are very expensive to master and cannot be updated,
     the data is less current than online files or the printed abstract
     journals.

In regards specifically to EMBASE on CD-ROM, the drawbacks are:

1.   Searches on EMBASE over a period of years require switching the annual
     discs in the player.

2.   MALIMET is not available on the disc as a useful drug and medical
     thesaurus for search terms. However, the printed Mini-MALIMET guide
     or the microfiche MALIMET can be consulted in conjunction with
     searching the disc.

What the Users Say: Alpha Tests

EMBASE on CD-ROM has been alpha-tested at three sites: 1) Wellcome Research
Laboratories in England, 2) John Hopkins Oncology Center in the U.S., and 3)
Columbia Presbyterian Health Sciences Library, also in the United States.

Purpose of the Alpha Tests

The purpose of the alpha testing was fourfold:

1.   To test the SilverPlatter software, including search features, HELP
     screens, record layout, and retrieval performance.

2.   To test the usefulness of a 1-year EMBASE disc with regard to current
     biomedical searches and as a cumulative index to the printed abstract
     journals.

3.   To test a wide variety of users: trained versus untrained test
     participants, end users versus information professionals, and computer
     novices versus skilled computer users.

4.   To test the overall acceptability of CD-ROM in a library.

Methodology of the Alpha Tests

The test sites were equipped with their own personal computers, but were
loaned a Hitachi CD-ROM player plus interface card, a printed hardware
set-up guide ("Getting Started") and the EMBASE "Guide to the
Classification and Indexing System". The test supervisor kept a log book
detailing who used the system and search results. Each of the test sites
set up the workstation in an accessible area of the library, publisized the
test, and offered participants EMBASE key rings. Questionnaires were
completed by each test participant which allowed a weighted analysis by
user type (end user, computer literates, etc.). Training was given to half
of the participants on a one-to-one basis for approximately 15 minutes.
Each participant was asked to perform one standard question and then to
continue with individualized searches.

Results of the Alpha Tests

The Wellcome test site results have been analyzed. The 53 respondants searched an average of one hour each, a longer time than was anticipated in the study design. General comments supported the idea that the software was easy to learn and user-friendly, and that free text searching was most often used (rather than consulting printed EMBASE user aids for search terms). There was little difference between trained and untrained participants in search satisfaction, but those who received instructions made more sophisticated use of all of the system's features. The computer naive users were less confident about search methods and results than those experienced in computer systems. Several end users indicated a continued preference for help from intermediaries in searching. In summary, the non-professionals (end users) widely supported the idea of their library purchasing the CD-ROM system.

The information professionals were less enthusiastic, and tended to worry more about currency of data, response time, overall cost of the system, need for the MALIMET thesaurus, and the one-year disc segmentation. Most librarians indicated a need for at least 5 years of biomedical data per search, and felt online searching was preferable for this reason. The fact that the workstation did not support multiple users was a drawback.

The plus point was the new database access which the workstation offered patrons of the library on their own, without asking assistance of the reference staff. For the librarians, the CD-ROM system was seen more as a supplement to the existing online and manual Excerpta Medica indexes. In summary, the information professionals also supported the idea of the library purchasing the EMBASE CD-ROM system.

Preliminary results from the two test sites in the United States show similar end user enthusiasm along with some hesitation on the part of the information professionals, but overall acceptance by all users.

What is the Future for EMBASE on CD-ROM?

Compact disc technology is still an evolving vehicle for database access, and Excerpta Medica will continue testing user satisfaction over the next year in the United States, Europe, and Japan. Right now, EMBASE on CD-ROM is an excellent product for libraries:

1. Who support quick and easy access to EMBASE by end user searching (undergraduate and graduate students, faculty members, researchers, other patrons of the library).

2. Who do not need up-to-the-minute currency in the biomedical citations, or who can use CD-ROM to complement online searches.

3. Who want a comprehensive index to the printed Excerpta Medica abstract journals.