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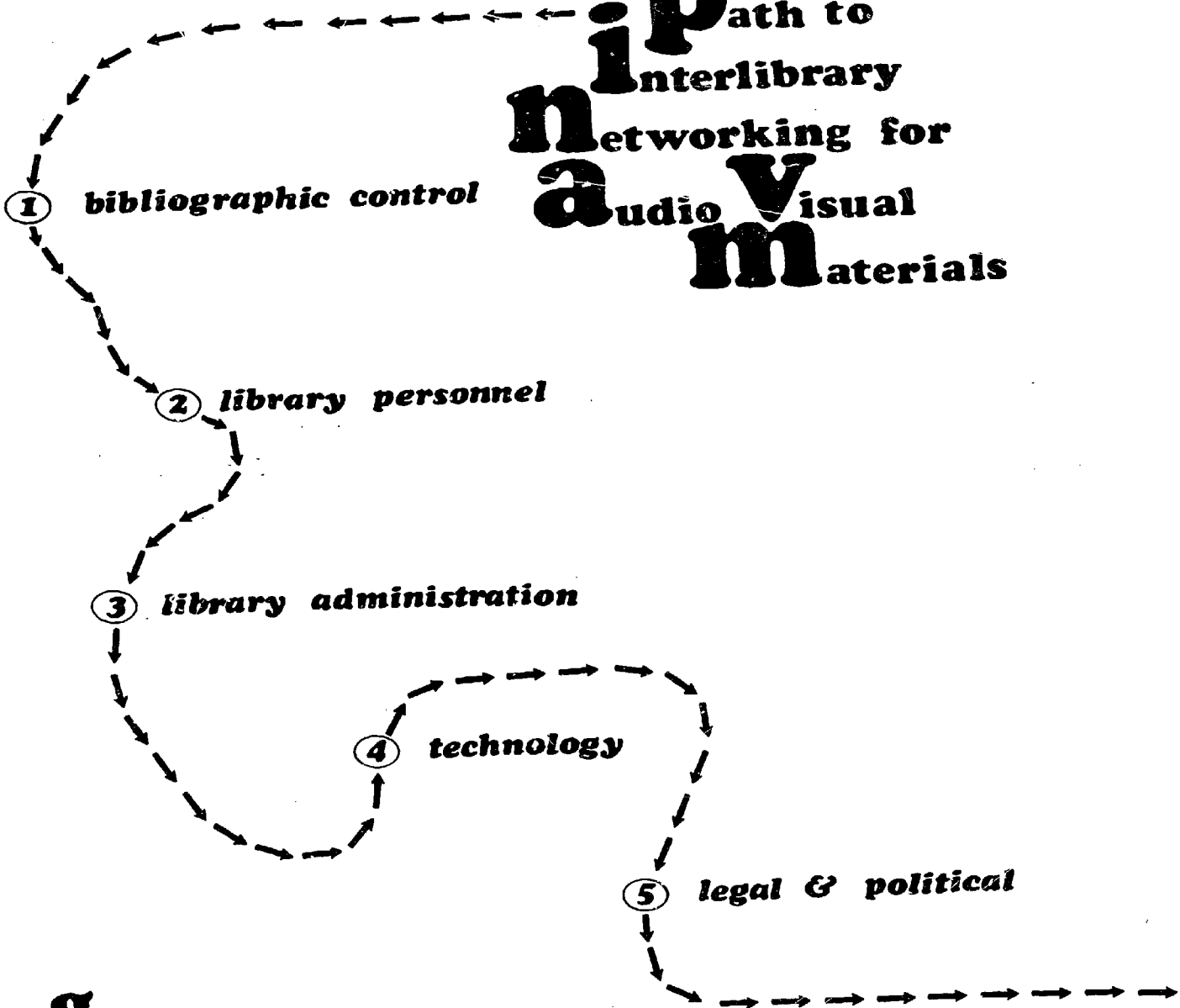AUTHOR   Brong, Gerald R.
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ABSTRACT
        The problems and prospects faced by involving the
nonprint informational units in interlibrary communication and
information networks are described. Nonprint materials are defined as
those materials not totally dependent on the printed word for
meaning. Nonprint materials were further identified as storage
devices for information or experiences--these devices can be handled
in information centers, or libraries, in a manner like all other
informational units. Following the definition of nonprint materials
is a discussion of the concept of a library or information resource
center. The types of libraries holding nonprint materials are listed
and ways or reasons for their further sharing of materials discussed.
Specific potential problems faced in the path leading to full use of
nonprint resources are presented with potential solutions. The major
portion of the paper discusses the technical aspects of nonprint
materials retrieval and display as well as remote transmission of
information. The paper is closed by a brief review of current
significant developments in the media field that are de~'   ⁷   have
an impact on library science or the use of information. ، ᵤₑᵣ papers
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the
inavm
**Path to
Interlibrary
Networking for
Audio Visual
Materials**

① bibliographic control

② library personnel

③ library administration

④ technology

⑤ legal & political

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august 1970

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ABSTRACT

Explored is the construct that the contents of what we
identify as libraries are information rather than collections of
books, films, recordings, or other physical devices for informa-
tion storage. The merging of nonprint, or audiovisual resources,
into the print materials collection so as to provide the patron
using the library access to a wide-base informational store. The
problems and prospects faced by involving the nonprint informa-
tional units in interlibrary communication and information
networks are described.

Nonprint materials are defined as those materials not
totally dependent on the printed word for meaning. Nonprint
materials were further identified as storage devices for informa-
tion or experiences--these devices can be handled in information
centers, or libraries, in a manner like all other informational
units. Following the definition of nonprint materials is a dis-
cussion of the concept of a library or information resource
center. The types of libraries holding nonprint materials are
listed and ways or reasons for their further sharing of materials
discussed.

Specific potential problems faced in the path leading to
full use of nonprint resources are presented with potential
solutions. The first problem is bibliographic control. It is
pointed out that print bibliographic control techniques are

applicable to the information stored in the nonprint devices. Personnel, another major problem to be overcome for the insurance of full media use, and aspects of the change process are presented as not only a problem but the hope for full patron service. The role of the translator-librarian is explored. Administrative operations and the political or legal problems involved in development of full media use programs are briefly mentioned.

The major portion of the paper discusses the technical aspects of nonprint materials retrieval and display as well as remote transmission of information. Specific mention is made of current technological developments in both nonprint materials storage and transmission. The paper is closed by a brief review of current significant developments in the media field that are destined to have an impact on library science or the use of information. Offered is an optimistic view of what is being developed, what will be developed, and the way we access and use the knowledge of man as repre..aced by informational stores found in libraries of knowledge resource centers.

I. PRINT AND NONPRINT MATERIALS AND
LIBRARY DEFINED

Before we can explore the relationships of interlibrary communication and information networking as related to nonprint informational units, we must accept the assumption that libraries can no longer consume quantities of energy making distinctions between the kinds of materials acquisitioned as information storage units--as far as storage units, books are comparable to films, films to recordings on tape, tape to periodicals.[1] We are considering information. The output of man's activities may be information or knowledge. Knowledge resource centers might be a name for libraries.[2] These knowledge resource centers (KRC), in schools at least, says Clair Eatough, will go a long way towards alleviating today's massive problems of materials logistics--the KRC will provide the patron with needed information in a manner relevant to the patron's need and intended use. The KRC will be a pumphouse for information.[3]

Nonprint materials may generally be defined as those materials not totally dependent on printed words to transmit

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[1]Sister M. Claudia Carlen, "Expanding Resources: The Explosion of the Sixties," Library Trends, 18 (July, 1969), 49.

[2]Clair L. Eatough, "What Tomorrow's Library Will Look Like," Nation's Schools, 77 (March, 1966), 109.

[3]Ibid.

meaning. These materials are storage devices for information or
experiences. These nonprint storage units may take the form of
motion pictures on film or magnetic storage devices, audio
information on magnetic devices or pressed into vinyl discs,
computer generated graphics or even speech, but in each case the
items are not dependent on printed words for the user to extract
meaning from the information or experience. As informational
storage devices the nonprint media are the same as any other
print item, just the medium of storage is different. One thing
all nonprint media have in common is that they require some sort
of display device (projector, playback, viewer, etc.) before
information may be accessed. Not all print media are free of the
display device need, however.

When functionally defining a library it is in keeping
with the information center concept to indicate that it is a
collection of informational units organized in a manner allowing
for retrieval of the stored information. The library is further
organized to function in the process of information transfer
between the storage medium and the patron and the library may
become involved in the ultimate use of the information by the
patron (this implies much more than just providing information).
The content of the library is usually in printed or book form and
reading remains the principle means of information transfer.
Many other storage devices beyond the print are used, however, in
this information transfer function.[4] C. Walter Stone stresses

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[4]T. N. Dupuy, Ferment in College Libraries: The Impact
of Information Technology (Washington, D.C.: Communication Ser-
vice Corporation, 1968), pp. 3-4.

the fact that we are experiencing a shift from a material oriented library operation to an idea-information oriented operation.[5] Stone also indicates, with our new orientation on information contained in things and not the storage things, the library function has become so important that it should not be entrusted solely to librarians or any other single communication group.[6] The information or knowledge resource center (which we shall continue to call a library) will be staffed by catalogers, bibliographers, mediagraphers, administrators, communications specialists, information translators, and audiovisual or media specialists. These librarians will design and operate the functioning components of the library system which are:

1. Storage systems for the informational units.

2. Retrieval systems to bring the items from storage.

3. "Bibliographic" systems to inform the seeker of information what he may access to solve his informational need (usually provides indications on how to access the units as well).

4. Display of the informational storage units. This display may be from local or remote informational stores.

5. Creation of new informational storage units. Libraries are involved in storage of ideas or knowledge. As new ideas are created libraries may be called upon to create the storage unit and to assist in the communication of these ideas.

In *Libraries of the Future* Licklider described types of libraries--he identified the "procognitive" system, the library

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[5]C. Walter Stone, "The Library Function Redefined," *Library Trends*, 16 (October, 1967), 183.

[6]*Ibid.*, p. 181.

system we are viewing, as one operating to promote and facilitate
the acquisition, organization, and use of knowledge.[7]

Generalizing from the preceding discussion of libraries
as organizations which store and provide informational units we
can list <u>the main types of libraries in which nonprint materials
are found</u>.

1. <u>Rental libraries</u>--these may be commercial or noncommercial.
   Generally 16mm motion pictures are the rented items.
   Commercial libraries may circulate the Hollywood variety
   of entertainment film or the information film. The patron
   may be charged the rental or, in the case with sponsored
   commerical films, the depositing-sponsoring agency pays
   the library for each circulation. Noncommercial are
   generally found at colleges and their materials are
   circulated mainly to other educational agencies.

2. <u>Academic libraries</u>--frequently a mixed media collection
   of informational resources is provided through the library.
   In many cases the audiovisual center is a separate entity
   within the library with all nonprint materials listed in
   the master bibliographic file and the institution's
   patrons can access the stored materials. In a few
   libraries the audiovisual materials, personnel, and admini-
   stration are merged into the total resource center
   program.

3. <u>Academic nonprint library cooperatives</u>--a banding together
   of higher education institutions into a program to provide
   on a cooperative basis a collection of informational units.
   These arrangements may be as simple as informal borrowing
   (since little interlibrary loaning of nonprint materials
   takes place) or elaborate financial arrangements with
   pooled monies to develop a collection and provide personnel
   to operate the nonprint system.

4. <u>Common schools</u>--a large variety of nonprint resources are
   used in grades 1-12 and many school districts have central-
   ized audiovisual collections which may be supplemented by
   materials from commercial or noncommercial libraries.

5. <u>School cooperatives</u>--operates as the equal to the academic
   nonprint library cooperative.

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[7]J. C. R. Licklider, <u>Libraries of the Future</u> (Cambridge,
Mass.: MIT Press, 1965), p. 21.

6. <u>Public libraries</u>--generally the most prominent nonprint
resource is recordings of music or dramatic works. Many
larger libraries have film and slide collections and some
even provide the patron with equipment he may check out
to display the materials. Cooperative programs also have
developed to provide access for libraries to shared
collections of films or other materials, nonprint in
nature. Public libraries are a most likely contact point
with a patron requesting information and they should be
a provider of data on what nonprint resources exist
elsewhere and how they can be accessed.

7. <u>Industrial and special libraries</u>--these collections are
usually limited to the specific needs of the supporting
agency and most likely the material is available for in-
plant use or as promotional material.

8. <u>Government agencies</u>--often, on either the state or federal
level, the individual agencies try to distribute to the
public by themselves nonprint materials. In increasing
numbers centralized distribution services are being
developed between agencies. These agencies are often
sources for considerable recorded history of operations
significant to that agency.

9. <u>Museums, galleries, historical societies</u>--nearly the total
collections can be classified as nonprint (even old books
when considered as a historical object and not the con-
tainer of information). This is an amorphous combination
of things, all valuable and usable.

10. <u>Private or personal collections</u>--often of value but most
difficult to identify and organize as usable information
stores accessable by patrons.

"The record of knowledge is now too extensive to be
accommodated in a single library in a single form."[8] What we have
described are varieties of libraries which store and provide on
demand informational units of a nonprint nature. Identification
of <u>potential problems in the exchange of information in nonprint
units</u> can be factored into five topics: (1) "bibliographic"
control, (2) personnel, (3) administrative, (4) technical, and

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[8]Carlen, "Expanding Resources: The Explosion of the
Sixties," p. 53.

(5) legal (political). The following sections will explore these

five problem areas--let it suffice to indicate now that these

problems should be solvable, if our priorities are high enough.

Man has solved some fairly complicated problems.

II. POTENTIAL PROBLEMS--POTENTIAL SOLUTIONS

The promise of total information access is a most difficult construct for us to grasp. We have an awareness of many conveniences that will be afforded us and our patrons as we operate in information centers and as patrons negotiate for or request information from our stores--we can see operational assistance in cataloging, interlibrary loan, reference, information display, but, without a doubt, we can see potential problems. Following will be a discussion of potential problem areas with respect to nonprint informational units and some of what this author feels are potential solutions. If these problems facing the nonprint realm sound similar to those facing print, that is understandable when the informational unit (not specific storage medium) question is analyzed. Interlibrary communication and information networking will be concerned with stored information.

"Bibliographic" control, the essential element of organization of all library collections, is highly developed and applied in the print realm. Nonprint libraries (incorrectly called libraries in many cases) are often staffed by nonlibrarian personnel interested in the circulation of a collection, limited in size, to an identifiable patron group. There are almost as many "bibliographic" control systems for nonprint collections as there are collections.

"Bibliographic" control, when we analyze the word bibliographic, is not applicable to nonbook resources. As the term is used for other than books it is the reference to the construct of information cataloging or control that is being made. "Bibliographic" control, as it is used here, refers to the processing of information about the information contained in the multitude of storage devices stored ready for access in the library.

For the past few decades we have heard reasons, too numerous to list here, why, supposedly, nonprint items could not be cataloged, classified, retrieved, provided to the patron, etc., like print informational units. Since libraries are a procognitive system designed to promote and facilitate the acquisition, organization, and use of knowledge, in each of these functions we are limited by the constraint that when information flows in or out of the library it must pass through people or their systems.[1] In the print world there is agreement, generally, on how the bibliographic file representing the content of the collection is to be organized. In the nonprint world this is not quite so.

There are manuals (many manuals—all telling a different story) on how to organize and control nonprint collections. These "re-inventions" of the wheel (or attempts to improve on the existing wheel) often are an individualized system that works at one place. Each manual has devotees. Each manual has good points. But they differ from each other in how they call for organizing

[1]Licklider, pp. 21 and 28.

the information on the library catalog card, or they disagree on
the color of the card to represent different physical storage
units (blue for slides--some are pink--and green for motion
pictures) and some do not use color coding but use number coding,
or use no coding. A few manuals base their systems on what is
accepted for print. But many nonprint resource specialists,
generally not trained librarians, reject the "print approach"--
likewise many print librarians reinforce the nonprint person by
agreeing that a phonodisc is so different from the printed score
of an opera that they can not be listed in the same "bibliographic"
file.

Until there is developed a cataloging and/or bibliographic
control system for nonprint informational units that provides the
sophistication to meet the indexing, storage, and retrieval needs
of information, we have problems. Likewise, as long as the content
of print items is treated differently than nonprint, the patron
will have difficulty in identifying the total informational store
available to him. A common bibliographic control system presenting
information to the patron on the available information (in a wide
variety of storage devices, possibly) in a library or system of
libraries (or information stores) is an essential ingredient in
interlibrary communication and information networking.

The Systems and Standards for the Bibliographic Control
of Nonprint Media Institute, funded by the United States Office of
Education, brought together library and audiovisual specialists
from Canada, Great Britain, and the United States to study and
educate themselves about this problem. This group found it

difficult to accept the fact that the bibliographic control
systems for nonprint materials exists--it has been used for years
with print materials and nonprint librarians need to learn to
apply it. Retraining of people to use the existing tools and to
improve on them is the task that must be tackled.

Professional resistance, found whenever change is being
considered, must be analyzed as we develop comprehensive mixed
media information stores. In making reference to "book" we will
need to learn to think of the generic idea of book with the word
book representing the concept of informational storage device.[2]
In all forms of library operation, except the act of display and
physical storage, nonprint materials can be handled as physical
objects to be warehoused (allowing for retrieval) and cataloged
with retrieval addresses.[3] Ponder for a moment the Library of
Congress with the 60 million items (books, serials, maps, photo-
graphs, recordings, films, and the like) and the world's largest
file which contains 16.5 million records. There are 1,260
different files in use at the Library of Congress.[4] Can a mixed
media collection of such magnitude exist? Can the bibliographic
data on the informational content of the holdings be merged into
a single file?

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[2]Sister Helen Sheehan, "The Library-College Idea: Trend
of the Future," Library Trends, 18 (July, 1968), 93.

[3]Robert S. Taylor, "Technology and Libraries," Educom,
4 (May, 1970), 5.

[4]Paul R. Reimers and Henriette D. Avram, "Automation and
the Library of Congress: 1970," Datamation, 16 (June, 1970), 138.

Within the American Library Association there has been
much interest in the bibliographic control of nonprint materials.
The Department of Audiovisual Instruction (now the Association for
Educational Communication and Technology) is extending its
activities in the area of applying the principles of library-
information science to nonprint resources and information. At
the 1970 DAVI convention approval was granted to a group of
nonprint librarians to form the Media Organization and Control
Division. The activities of this division will be in the
standardization of bibliographic control systems and the applica-
tion of library science principles to nonprint resources.

Historically, with the possible exception of the Committees
on Cataloging Audiovisual Material and on Information Science,
members of Association for Educational Communication and Technology
(AECT) have tended to look on bibliographic organizational pro-
cesses for nonprint media resources as logistic or high class
clerical tasks. Because of this, professionals concerned with
the library and information science skills necessary for the
bibliographic organization and control of nonprint media have, by
default, turned to professional organizations other than AECT. As
recently as June 29, the Executive Committee of the American
Library Association's Cataloging and Classification Section, RTSD,
unanimously passed a resolution recommending that the "Canadian
Library Association publication, Non-Book Materials (preliminary
edition), be accepted as an interim guide for the cataloging of
nonbook materials, with the proviso that a permanent ALA-CLA
committee be established to work on any necessary revision for the

final edition and its supplements." Nowhere does the motion ev i
acknowledge the existence of the Association for Educational
Communications and Technology by either its present or former na e.
Space on the program has already been reserved at the October 1 15
annual meeting of the American Society for Information Science in
Philadelphia by those interested in forming an ASIS Special Interest
Group to deal with problems of nonprint media and the application
of information science techniques and technology to its organiza-
tion and control.

The AECT must become involved with the problems of
bibliographic control, as well as the hardware and techniques of
educational communications. It is in a position to exert some
influence over the numerous, uncoordinated efforts by various
services, journals, and other professional organizations to provide
information about the availability and utility of nonprint media.
It can provide research and statistics concerning the software of
educational communications and work with producers and indexers
toward standardization of modes of access and user retrieval
formats for such materials. It can provide the basis for informed
legislation at the local and national levels such as that affecting
the Library of Congress's ability to process nonprint materials
and to incorporate them into their MARC (MAchine Readable Catalog-
ing) output. It should work toward a national bibliographic
service or system for nonprint media, with a sharp eye toward
international implications, which will be able to inform any
educator at any time of what is available, to whom, under what
peculiar circumstances, and with what results for a specific patron.

<u>Hesitancy to provide full access to nonprint materials</u>
available is often justified because, it is rationalized, the
nonprint items are more easily damaged than print items and they
are costly, and most nonprint items require display devices that
may not be readily available. Without a doubt the book is the
simplest to use (mechanically) information storage device we have
and it is often the least expensive for amount of information that
can be stored. This does not justify excluding from use the more
costly items. Today we provide patrons access to expensive print
items without much formality--but we might require a deposit or
we retain a library card when a patron checks out a sound filmstrip
set (the book might cost $20 and the sound filmstrip $30).

With familiarity through increased use we will provide
access to nonprint materials plus the needed display equipment.
Continued technological developments will make the display equip-
ment simpler to operate and more "goof-proof," thus helping prevent
damage to the informational unit. Personnel in libraries need to
be made aware that these nonprint items are nothing more than
information storage devices. The audiovisual specialists need to
quit implying how complex, expensive, and difficult to use the
nonprint materials are and the print librarians need to expand
their horizons beyond their traditional realm of operation.

<u>Awareness of the holdings in remote collections</u> is as much
a problem, if not more, in the realm of nonprint materials as in
print. With so many print/nonprint collections existing without
a merged holdings information file the requester of information

about a specific subject may receive information only about what
is found in a certain storage medium. Union lists of nonprint
holdings are a rarity today but they are being developed as
demands for nonprint material increase. In Washington State, for
example, one of the groups operating under the State Library as
plans for the Washington State Library Network are studied is
examining the total nonprint holdings within the State. This
group has identified clusters of nonprint materials and grouped
these clusters of nonprint stores into a subject arrangement. A
task yet to be tackled is the identification of specific items by
title and content so that a complete subject based union listing
can be developed. These tasks will be furthered on the way to
success when a standardized bibliographic information system is
operative, simplifying the origination of bibliographic data and
the sharing of this data.

It is interesting that libraries have developed information
locating tools in fields where the frequency of demand justifies
the production of these tools. Indicies, abstracts, data sheets,
etc., exist in areas where society has recognized the urgency of
need for information.[5] We are seeing the development of these
tools for nonprint resources--the National Information Center for
Educational Media listings of 16mm motion pictures, filmstrips,
overhead transparencies, and the review services such as Book
Review Digest or Landers Film Reviews, just to name a few. As

[5]Ralph R. Shaw, "Using Advances in Technology to Make
Library Resources More Available," in Student Use of Libraries
(Chicago: American Library Association, 1964), p. 73.

needs increase they become evident--as they become evident they become demands and are often met.

Sources for bibliographic data usable in cataloging and related tasks are increasing. The MARC format now allows for handling certain nonprint items. In time the MARC distribution system can become a source for bibliographic information on the total of all informational units generated and the MARC records for nonprint accessed and used like the records for print. Copyright procedures offer one means for refining the responsibilities of the creator of an informational unit in providing bibliographic data. It has been discussed by librarians and information specialists that funding for a research project to develop a model of a bibliographic control system for nonprint materials compatible with the existing print systems be sought. The results of this project would be to report to the information field what actually is being done, how it works, how it fits existing systems, and then to offer a heuristic model for bibliographic control of nonprint materials. The system, and model, would be a series of components with each component operating as a usable subsystem that could be part of other systems.

One of the powerful elements that must be considered in the development of a bibliographic control system is the commercial concerns functioning to provide library services. These organizations are affected by decisions on how libraries shall operate and they influence our decisions. Examine the potential power and value of an operation such as the Xerox Bibliographic

Products division in association with the others in the Xerox "family." Bowker produces considerable data essential to the operation of libraries by compiling lists--Books in Print and now the publication of the NICEM indicies--and providing information on current production activity in the information field (print now and nonprint in the immediate future). We find Professional Library Service (PLS) operating alongside of Bowker and Library Journal Cards. Combine their functions, let PLS operate as its name implies by providing professional library service in the form of contracted staff for special functions, materials selection, consultants, etc. Add to this the capabilities of Xerox Data Systems and University Microfilms. If we need to retrain staff or provide new skills Xerox has a behavioral research division that can provide programs to do the training. After it is all said and done we can acquire hardware from Xerox to convert stored data into hard copy, duplicate copy, or transmit printed words by facsimile over distances both short and long. Commercial concerns do have a stake in our use of nonprint information.

Bibliographic control--the first gate through which we need to pass if we are to have interlibrary communication about and increased use of nonprint informational units can be open. Libraries with new technologies can become the mechanisms for identifying what information the patron wants (needs), producing the information in usable form from storage, and providing the patron with freedom of interaction with information.[6]
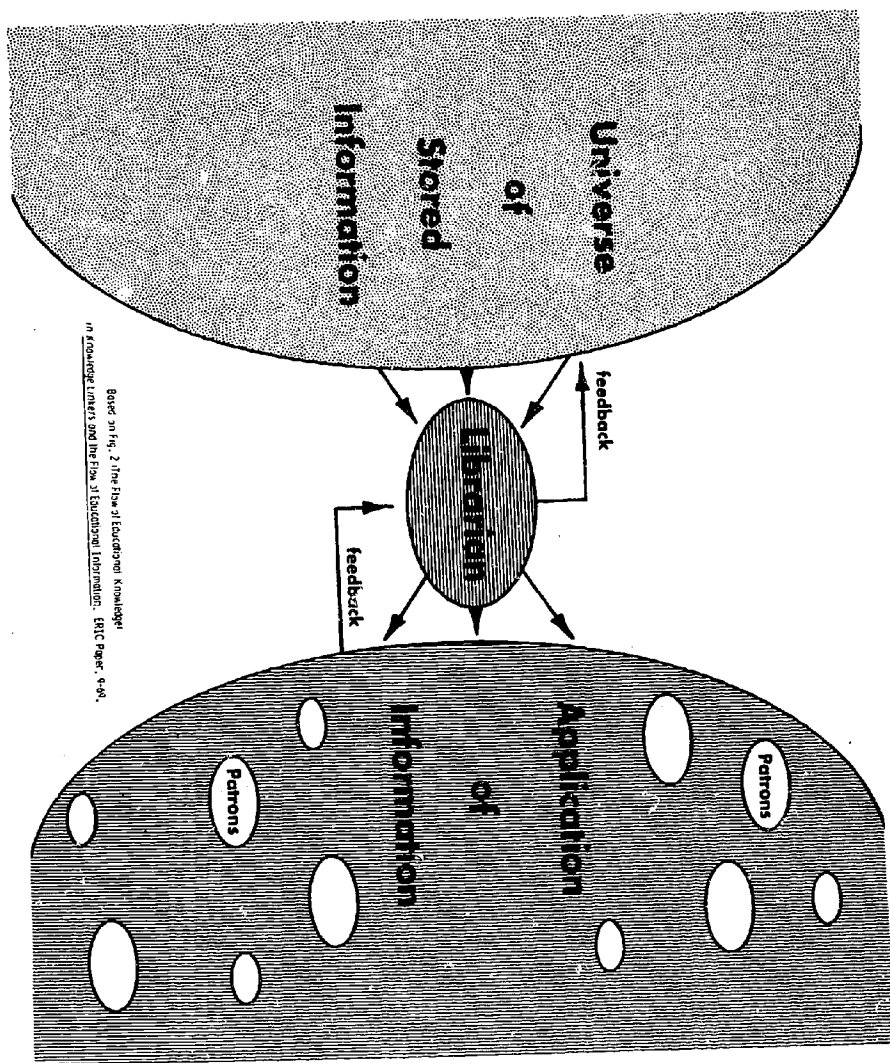
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[6]Nelson N. Foote, "The New Media and Our Total Society," in The New Media and Education: Their Impact on Society, ed. by Peter H. Rossi and Bruce J. Biddle, Anchor Books, Copyright 1966 by National Opinion Research Center (Garden City, N.Y.: Doubleday and Co., Inc., 1967), p. 400.

<u>Personnel with a wide variety of tasks and responsibilities</u>
operate our libraries. One of the obstacles to program change is
personnel. They may be an obstacle in the implementation of
interlibrary communication of information networking programs. A
problem to be overcome as a total merging of information in our
libraries takes place is the print orientation (rather than
information orientation) of most practicing librarians. Librarians
working with all media are involved in the process of extending
the senses of man, his perceptions, and his total sensorium.[7]
Library personnel serve a mediator role between information and
user. The librarian in a procognitive library becomes a translator
between the patrons' perception of his need for information, the
identification of the true need, accessing of the information, and
then provision of the information in a manner most relevant to
meet the specific needs of that specific patron. As a translator
the librarian is more than the manager of the information store--
he is involved in the use of information.

As Fig. 1 implies, the librarian is between the universe
of stored information and the application of that information by
patrons. The librarian-translator is a feedback link between the
user of information and the creator of information or the informa-
tion store. Translators in our information centers will need to
know much about the patron to help identify how he uses informa-
tion in his cognitive processes, abilities of the patron to

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[7]Hayden R. Smith, "Media Men Arise: What if McLuhan is
Right?" <u>Educational Screen and Audiovisual Guide</u>, 47 (June,
1968), 19.

Universe
of
Stored
Information

Librarian

feedback

feedback

Based on Fig. 2 The Flow of Educational Knowledge:
in Knowledge Linkers and the Flow of Educational Information; ERIC Paper, 6-69.

Application
of
Information

Patrons

Patrons

22

communicate an informational need, how to access information, and
how to store new information for future access.

Audiovisual specialists have been permeating the informa-
tion field for many years and finally the audiovisual specialist--
who was only recently referred to as a gadgeteer--has almost
become accepted as a professional peer with colleagues in the
classroom.[8] Can we assume that he is being accepted by his library
colleagues as a peer? Development of this peer relationship will
be the responsibility of the audiovisual specialist. He must
learn to apply the principles of library or information science
to his operations with nonprint materials. He must make his
skills available to librarians, helping them interact with informa-
tional stores and meet the needs of the patrons. He must become
as competent as his library colleagues if he is to become a
librarian.

We find, then, that the present operants in the library
field may need retraining. Pre-service training for the translators
now in translator school (library school) must be modified to
help them grasp an understanding of their role in the movement
and application of information. They must become familiar with
nonprint resources and they need to know equipment operation so
that they can display the nonprint materials. In this age of
rapid technical change, as Husén and Boalt in their writings about
educational change in Sweden indicate, we need to educate for an
increased amount of technical know-how and, possibly more important,

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[8]James S. Martin, "The Audio-Visual Department Comes of
Age," American School and University, 40 (February, 1968), 24.

for flexibility or ability to adapt to change.[9] We will experience a rapid increase in varieties of information storage systems and accessing techniques. The printed word has competition.

The end of the last decade saw man walk on the moon. Long before we had a record of this event in printed-word form we on Earth saw man step on the surface of the moon, the video tape recorders stored the sight and sound of this feat, computers and digital data records stored indication of the astronauts' heart rate, equipment read-outs, etc. The printed word lost the race to record history of man's first lunar step. As our informational glut, especially in the nonprint realm, increases we must learn to cope with it.

As we develop personnel to serve as translators between a patron's true need for information and the provision of that information, as we develop information and not thing-oriented librarians, and as we become familiar with the nonprint information storage systems we open the second gate between us on the path to information use, interlibrary communication and information exchange.

The administration of our information center program can be viewed as the enabling activities that allow the library system to exist and meet the informational needs of patrons. Little can be said about the special aspects of library administration that is not as applicable to print as well as nonprint. A thing orientation, not information orientation, in library administration

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[9]Torsten Husén and Gunnar Boalt, Educational Research and Educational Change: The Case of Sweden (New York: John Wiley and Sons, Inc., 1967), p. 31.

may complicate development of nonprint resource collections since
most administrators of libraries, like the libraries themselves,
are print- and thing-oriented. As this "thing" orientation is
overcome the administration can see the library acquiring informa-
tional units and, therefore, provision of support for these units
(be they print or nonprint) will follow. The administrative
functions (providing personnel, budgeting, purchasing, patron
services, interinstitutional cooperation, etc.) are much the
same, but the mechanics of performing the functions will differ
for print and nonprint.

The administrative gate between total information use and
interlibrary communication is an easy one to open if administrators
of information centers are sensitive to the needs of the patron
group served and the developments within the information field.

Technological developments in the nonprint information
field need not be new to have an impact on our information center
programs. Within libraries the application of existing technologies
represented by motion picture display, video or audio magnetic
tape storage and display, photographic storage in color transparen-
cies, closed-circuit television within a library to aid in communi-
cation, telephone for "long-distance" reference service, teletype
for routine communication between information centers, or community
antenna television systems for communication throughout a community
have received less than desired attention.

Computers offer many potentials for library operation
beyond management and bibliographic control. Computers can
provide display of printed or graphic data. Libraries may even

provide patrons with access to a local or remote computer via terminals. Employing the CATV system, for example, the patron remote from the library might access stored information or interact with a computer stored learning program, or the patron might be switched by the local library's computer into an information network which then allows the inquiry to be met by the remote information store applicable. The extent that the computer will function within the information system will be limited by the defined function of that system.

Storage systems for nonprint materials may take on a variety of forms depending on use of the storage device. Nonprint resources do not lend themselves well to browsing on the shelf, therefore a closed-stack arrangement with high density storage may be used. Access may be on a remote electronic basis such as in dial-access information retrieval systems where the patron accesses stored video or audio materials using a switching matrix to address the stored item. Interlibrary networks might carry high traffic in video or audio materials via the electronic interlibrary connections.

Physical items in the nonprint realm are becoming smaller and simpler to store. Audio tape in cartridges or cassettes are less prone to damage by misuse and are more compact than either open reel-to-reel tape or audio discs. Motion picture film in 16mm is not difficult to store but an increasing number of 8mm films, smaller and less costly, are becoming available. In some cases 8mm film is stored in cartridges, further simplifying display and storage.

Display devices are increasing in dependability and becoming simpler to operate. Functions performed by the newly developed devices offer increased capabilities for interaction with stored information or people serving as resources. Telewriters may be interfaced with normal voice telephone lines allowing for the transmission of written documents to either a desk-top paper receiver of a receiver-projector allowing the remote image creator to draw an image for instant projection to a group of people. Coupled with interactive amplified telephone conversations information can be exchanged between groups or individuals.

Video-phone or two-way television allow for visual contact during communication but they further allow for the "live" examination of objects. In reference work the questioning-negotiation associated with reference analysis might be expedited if the reference specialist could see the patron and see the materials to which he makes reference--likewise the patron could see the reference person and examine items with potential for solving the informational need. This video communication channel would allow for data transmission or video display as well.

Portable audio playback devices such as cassette players are inexpensive and fairly servicable. They can be checked out along with the cassettes. Wireless headset units allow a patron in the library to listen to a recording being played while giving the patron freedom of movement throughout the library since he receives the program on a transmitted radio signal over his battery operated radio-headphones. Battery operated video tape recorders and players with monitors, 16mm sound filmstrips,

cartridge 8mm sound projectors, video disc players, EVR (electronic video recorder), and on ad infinitum could be shown to have implications for libraries.

With telephone service in our information centers the capability for total information exchange exists. Voice grade telephone circuits can carry teletype signals or the analog signals of the telewriter type devices. These existing circuits can become the distribution system for an audio information system. At Washington State University the decision was made in 1969 to develop a telephone based dial-access audio system. To avoid the capital investment of wiring the library or city of Pullman, where WSU is located, arrangements were made with General Telephone and Electronics of the Northwest for the installation of a switching matrix allowing an operator to interconnect an incoming telephone line (or combination of lines) with a variety of audio playback sources. Now any telephone anywhere on or off campus can dial the listening library and listen to audio material. The system does not have adequate fidelity for music but the solution to that problem will be explored in the discussion of CATV system applications. Washington State University pays a normal telephone charge for each phone line coming into the system—the telephone company maintains the system except for the program sources. Services, rates, disconnect orders, or repair are handled like normal telephone service.

Community antenna television systems provide coaxial cable interconnection between homes, schools, businesses, or libraries. The CATV systems are generally associated with the distribution

of off-the-air television. The system can function in a much broader application for many forms of video, audio, or data communication. As part of the WSU system the CATV system (commercially owned) is used to distribute video and/or audio programs from the University Library, on demand or by schedule. If large numbers of patrons need to access an audio program or if the fidelity must exceed the telephone's capabilities the program is carried via FM broadcast to the patron on the CATV system.

As CATV systems start interconnecting and as commercial carriers start interconnecting these CATV systems a network grid starts to develop.

VIDAC, a Westinghouse Learning Corporation development, holds interesting prospects for information storage and use. The VIDAC system is an integrated media system--print or still images, motion, sound--and it is compatible with present telephone or television technology. Information is stored on magnetic video tape in a compressed manner and then when accessed it is provided through a buffer which converts it from its digital storage medium to audiovisual material. The VIDAC system can store 75 color visuals on a few cents worth of magnetic tape. A 15-minute program can be sent to a remote buffer in 3 seconds and then the patron views the program in real time. The storage tapes can be duplicated. The buffer can be encoded to selectively receive and store only certain programs. For example, a mass of programs could be distributed over a broadcast TV station before start of the day's programming, and only those desired would be stored by the remote buffer storage system. The only major unique element in the VIDAC

system is the buffer. In volume production the buffer might sell for $300 to $400.

Instructional television fixed service and satellites have applications for the distribution of library information. The ITFS systems have the capabilities of interconnecting a group of information centers with medium proximity to one another for the interchange of a wide range of information. Hughes Aircraft has proposed a high power S band experiment for the ATS-G spacecraft. With this variety of satellite libraries could, over a continental region, share masses of recorded information. Technologically, the satellite could serve as a repeater between the earth station which receives the signal from the information library and then the receiving earth station distributes it to the requesting library which could then store the signal in a buffer device for the patron to access at a convenient time.

With satellites we shall pause. Communication technology, from the auto-thread 8mm sound projector to spacecraft, can carry any message we can design. We need to decide what messages are to be carried, whom they are to be carried for, and what information storage units we want to access.

There is one possible caution. Since people are attracted by hardware, often without rationality, because it has a special appeal or excitement--as new hardware becomes available there seem to be people that promote its use, promise potentials beyond reason, and apply it with only the weakest of rationales.[10]

[10]Robert M. Gagne, "Educational Technology as Technique," Educational Technology, 8 (November 15, 1968), 11.

Another gate has been easily opened with the use of communication and materials display technology.

Legal and political aspects of information generation, storage and use is the last gate on the path to full employment of nonprint resources in library communication systems. Legal and political--start with copyright. What will come out of the present deliberations? Will libraries exist as we know them today under the new copyright law? Will we be able to transmit stored information from the storage device to the patron under the new law? No one knows at this time. This may be a most difficult gate to open especially when combined with the political-legal implications of funding the interlibrary communication and information network programs.

III. DEVELOPING IDEAS AND SYSTEMS

In Detroit during the 1970 Department of Audiovisual
Instruction Convention the first and second divisions of that
organization were formed (unlike the American Library Association,
DAVI had never instituted special interest divisions). The first
division was Telecommunications and the second was Media Organiza-
tion and Control. The Media Organization and Control division
should have a solidifying effect on the nonprint librarians within
DAVI and there might be created a closer working relationship
between sections within ALA divisions as problems of common
interest are tackled.

At a Joint Council on Educational Telecommunications
meeting in March, 1970, Clay Whitehead of the White House
discussed the concern of the White House in telecommunications
policy. Whitehead indicated that an office on telecommunications
policy, with a staff of about 30, was to be established in the
Executive Office of the President in April, 1970. This agency
will be the key one in the executive branch of the government
in the field of telecommunications. This agency might have
involvement with interlibrary networking programs or development
of carrier systems employable for library communication.

A further step was taken in April of this year to develop
audiovisual equipment performance standards when the ALA Library
Technology Program signed an agreement with DAVI to jointly

sponsor and finance the drafting of standards for record players,
tape recorders and playback units, 16mm motion picture projectors,
and filmstrip and combination filmstrip/slide projectors.

In Washington State two developments are worthy of mention.
First, the Nonprint Resources Committee working with the State
Library in activities planning for a State Library Network is
identifying clusters of nonprint informational resources within
the state. All sources, not just the formal libraries, are being
identified and techniques studied on how to establish a type of
union listing of these clusters. Ultimately, specific holdings
will be listed and merged into the total informational resources
for the State. Second, Washington State University is investigating
with Microwave Transmission Corporation, General Telephone and
Electronics of the Northwest, and talks have been held with other
carriers, the possibility of a regional network for total
communication. The prime function would be for people-communication
via a two-way video system. The system would have additional
capabilities for data transfer and a mini-library network has been
proposed, as a demonstration project, if the WSU system becomes
operational. This mini-network would involve, undoubtedly,
considerable use of nonprint materials between the involved
information centers.

Edgar Dale, at Ohio State University, one of the pillars
in the audiovisual-information field, said that "The good society
is above all else a learning society, a society that is growing,
moving forward on a rising curve. . . . The good society encourages
learning, does not prevent anyone from learning, provides access

to learning for all."[1] We librarians have a responsibility to
provide society, our patrons, access to knowledge. We have an
obligation to work with our patrons as they make use of information,
regardless of the information's medium of storage.

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[1]Edgar Dale, "The Good Society," The Newsletter, 34 (May,
1969), 1.

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