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AUTHOR   Duggan, Maryann
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ABSTRACT
              This project was an experimental effort to study,
analyze, and understand interlibrary networks. The immediate purpose
of the project was to develop methodologies for evaluating or
analyzing networks; the ultimate purpose was to provide planning
assistance to network funders, designers or operators. The project
was conducted in four simultaneous phases. The Conceptual Model
(Phase I) considered components of network design and performance and
identified thirteen significant operational parameters. The
Behavioral Model (Phase II) simulated network operations through
"game playing" and further confirmed the validity of the Conceptual
Model. In Phase III an effort was made to quantitatively analyze
interlibrary networks in a Metropolitan Area. Significant operational
variables were identified and measured. A Node-Network Dynamics Grid
was developed to assist in evaluation and analysis of the Pilot Model
Data. An Analytical Operations Research Model was developed in Phase
IV to provide network planners with a tool for netowk performance
prediction as a function of design options. A generalized network
model called Lib-NAT (Library Network Analysis Theory) was developed
and is presented. The methodologies developed in this project have
been used by several states for network planning or evaluation and
seem to be valid when properly applied. (Author/NH)

ED 065156

FINAL REPORT

OF

A LIBRARY INTER-NETWORK STUDY

DEMONSTRATION AND PILOT MODEL

(Lib-NAT)

Performed on Contract

for the

TEXAS STATE LIBRARY

Under

Title III, Library Services and Construction Act

By

Southern Methodist University

With the Cooperation of

Texas Library Association, Reference Round Table

And Others

Prepared By:

Maryann Duggan,
Principal Investigator
September 15, 1969
Revised June 17, 1971

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PREFACE

The increased importance of interlibrary cooperation and library networks is evident to all concerned with improving library services. Each state library agency is legislatively charged with the responsibility of implementing Title III of the Library Services and Construction Act. Furthermore, under the Higher Education Act, academic libraries have been engaged in developing cooperative consortia. Preliminary experiences with these two types of cooperative effort indicated the complexity of this new dimension in library service. The work reported herein was started in 1968 with the intent of identifying significant operational parameters and planning methodologies for more effective interlibrary cooperative ventures. In essence, this project was an experiment in library network analysis and planning for one state, Texas.

Certain significant operational parameters have been identified and a methodology for analyzing these parameters has been developed and presented herein. The term "Lib-NAT" (Library Network Analysis Theory) has been applied to these methodologies. However, the reader should keep in mind that most of the experimental work reported herein was conducted during 1969/70. The findings of the now infamous Airlie House Conference on networks were not available. Each state was just implementing Title III projects and the evaluation of those networks was not available in 1969. The work of Dr. Edwin E. Olson on power budgets of network cooperatives had not yet started. The National Advisory Commission on Libraries' final report was not publicly available. However, in spite of the unfortunate time lag between experimental data collection and this final report, the principles of network design and analysis presented herein are believed to be valid today--and, possibly confirmed by the more recent national studies mentioned above.

The major overriding objective of this work has been to
develop a generalized theory of network operation applicable to
library cooperative ventures. In a sense, this goal was not achieved
because no one concise, all-inclusive theory was evident. Instead,
the findings indicate that library network and cooperative ventures
are really very complex, new types of multi-dimensional systems with
many components, i.e. organizational, financial, political, technical,
and most of all--people. The findings reported herein just tap the
surface of these entities and are really only a first step in exploring
this new important aspect of library service. It is hoped that other
investigators will follow these explorations and extend the Lib-NAT
methodologies so that improved network design and operation will be
the ultimate achievement.

Many people contributed many things to this study and they
are appropriately credited in various parts of this report. However,
the completion of this project would not have been possible without
the continuous confidence and encouragement of Dr. Dorman Winfrey,
Director of the Texas State Library. Because of his determination
and insistence, the documentation of the project in this final
report form was made possible. Without his determined effort to issue
the final report, my own sense of inadequacy and failure on this
project would have let the pieces lie in the file. In the process
of synthesizing the final report, however, the pieces began to fit
together and order began to be discernible. So, thanks to Dr. Winfrey,
Lib-NAT--for better or for worse--is now in the public domain. Only
the future will determine its true value. And that future--I am
convinced--will be greatly influenced by the dedicated librarians
who are currently working to improve library services for all mankind
through networks. Hopefully, Lib-NAT will be as one candle lighting
their path in the darkness of this new adventure. But, beware! The
path is rocky and steep and incomplete.

Maryann Duggan
University of Texas Southwestern
  Medical School
5323 Harry Hines Boulevard
Dallas, Texas
December 31, 1971

SUMMARY

This project was an experimental effort to study, analyze, and understand interlibrary networks. The immediate purpose of the project was to develop methodologies for evaluating or analyzing networks; the ultimate purpose was to provide planning assistance to network funders, designers or operators.

The project was conducted in four simultaneous phases with each phase considering an aspect of interlibrary networks. The Conceptual Model (Phase I) considered components of network design and performance and identified thirteen significant operational parameters. The Behavioral Model (Phase II) simulated network operations through "game playing" and further confirmed the validity of the Conceptual Model. The Networking Game and a Networking Glossary were developed for use in the Behavioral Model. Additionally, the Behavioral Model served to identify significant human aspects of network operations that must be considered by network planners.

In Phase III (Dallas Area Pilot Model) an effort was made to quantitatively analyze interlibrary networks in a Metropolitan Area. Significant operational variables were identified and measured. A methodology for calculating node-network dynamics was evolved. Difficulties in data collection and processing were encountered but were overcome by modification of interpretation demands. A Node-Network Dynamics Grid was developed to assist in evaluation and analysis of the Pilot Model Data.

An Analytical Operations Research Model was developed in Phase IV to provide network planners with a tool for network performance prediction as a function of design options.

In an effort to synthesize and assimilate the experience and learning from these four phases, a generalized network model was developed. This model is called Lib-NAT (Library Network Analysis Theory) and is presented herein.

Certain recommendations are offered to the Texas State
Library as possible guidelines for future network development in
the state. These recommendations should be reviewed in context
and are therefore not listed in this summary.

The value of this project remains to be determined. The
methodologies developed in this project have been used by several
other states for network planning or evaluation and seem to be valid
when properly applied. Certainly, the investigator is now much
wiser and less naive about networks! This report is an effort to
communicate these experiences to those concerned with network planning,
funding, and operation. The findings described herein are only the
beginning steps in a long, difficult but exciting journey into the
multi-dimensional world of interlibrary networks.

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I.   INTRODUCTION

This is the final report of the work done under contract with
the Texas State Library on the proposed "Library Inter-Network Study,
Demonstration, and Pilot Model." A copy of the original proposal
and contract letter are included as Appendix A.

This report is intended to supply complete documentation
of the project from the initial proposal to the completion of the
contract. Every effort has been made to include all official corres-
pondence and written material* generated during the course of the
project. Minutes or summaries of all significant meetings are also
included to complete the documentation. Omissions as well as achieve-
ments are described since it is intended for this report to serve as
a record of the failures as well as the successes of the project.
The reader may select or omit portions of the report by using the
Table of Contents to the body of the report and to the Appendix.

This report is a "history of a project" and, in that sense,
the author hopes it will be of value to others interested in inter-
library network development. If any sections are not self-explanatory
or if details are not clear, the author welcomes inquiries. Comments
on any aspect of the work reported herein will be appreciated.

A.   Purposes of the Project

The project reported herein was intended to achieve all
the aims and objectives outlined on page 3 of Appendix A. In sum-
mary of these nine aims, the project was intended to develop guide-
lines for the development of a statewide interlibrary network in
Texas. The particular situation in Texas (as of November 1968) was
such that the planning and development of cooperative programs
interfacing various types of libraries required appreciable study
and analysis of the on-going 14 separate networks in the state. This
project was intended to provide insight into the methods, requirements,
and procedures for developing a statewide interlibrary network
interfacing the different types of libraries and yet available to
all citizens of the state.

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* As of September 1969.

B. Methodology Used in the Project

A variety of methodologies was employed at various
phases within the project. In general terms, the methodology of
modeling and simulation was combined with the methodology of ob-
servation, analysis, synthesis and hypothesis testing. A search
for appropriate methods to achieve the stated purposes was one part
of the project activity. Appropriate problem-solving methodologies
combined with the scientific methods of deduction from experimentation
and observation led to the development of a "generalized interlibrary
network theory."

This "theory" was then "tested" in a "behavioral model"
and "a pilot model." Observations and experimental data from this
testing were then "fed back" to improve the original theory. Cer-
tain tools for analysis and demonstration of the theory had to be
developed; systems analysis, symbolic modeling, mathematical modeling,
and operations research simulation techniques were employed. In the
behavioral modeling (to test the theory by "people participation")
a networking game requiring role playing and conflict resolution was
developed.

A brief explanation of "modeling" methodology might be
helpful in understanding the project. Generally speaking, a model
may be defined as the body of information about a system gathered
for the purpose of studying the system. An accurate model must rep-
resent the system and mirror or map the effects of various changes
in the original, enabling the original to be studied, analyzed, and
understood by means of the behavior of the model.* Many types of
models have been used in systems studies and may be classified in
the following ways:

1. Physical
   a. Static
   b. Dynamic
2. Mathematical
   a. Static - numeric or analytic
   b. Dynamic - numeric or analytic

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*Van Nostrand's Scientific Encyclopedia, 4th ed., 1968, p. 1628.

3. Behavioristic
   a. Static
   b. Dynamic

One of the frustrations of the project was the lack of
a concise theory and methodology for explaining, analyzing, com-
paring, and developing interlibrary networks. Interlibrary networks
are a complex, multi-dimensional system of sub-systems, operational
components, services, and people. This project attempts to illus-
trate the application of various "problem-solving strategies" to
interlibrary network planning, implementation, and development in
the "real world" of Texas. Hopefully, the results of this project
will provide a fundamental systems methodology (Lib-NAT) which can
be generalized and applied to other real library worlds.

C. PERT Chart of the Project

A modified PERT* chart for the project is presented
on the following page. This chart was constructed after the project
was completed and, thus, illustrates the "events" or "tasks" that
were actually performed at the time and in the sequence of actual
performance.** Those "tasks" marked with asterisks were not funded
under the contract, although they were generated by the project and
are reported herein as part of the project.

In broad terms, the project consisted of several simul-
taneous sub-projects, namely:

Phase I: Conceptual Model
Phase II: Behavioral Model
Phase III: Dallas Area Pilot Model
Phase IV: Analytical Operations Research Model
Phase V: Lib-NAT--a synthesis of the four previous
            phases into a Library Network Analysis Theory
Phase VI: Recommendations for network development in Texas.

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*Program Evaluation & Review Technique
**with the exception of the publication date of the final report.

Although, from necessity, these various phases are
described in sequence, it should be emphasized that the separate
phases were conducted simultaneously as illustrated in the PERT
chart. The interaction of these various phases produced symbiotic,
"iterative", heuristic benefits which resulted in an improved under-
standing of the total complex of interlibrary networks.

The following PERT chart should be helpful to the reader
in following the project activities.

One final introductory note: This report has been
organized so that the main text is really a guide to the Appendices
which contain the real information. Each chapter is supported and explained
by a separate appendix. Thus, when reading a chapter, the accompanying
appendix should be reviewed before proceeding to the next chapter.
The relationship between chapters and appendices is as follows:

When Reading Chapter:	Review Appendix:
I	A
II	B
III	C & F
IV	D & C.5(f)
V	C.5(h) and E
VI	F
VII	A.1 & G

The Glossary in Appendix C (p. C-45) should be helpful in reading all
chapters.

Oct. 1968	Nov. 1968	Dec. 1968	Jan. 1969	Feb. 1969

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┌──────────────────┐        ┌──────────────────┐                    ┌──────────────────┐       ┌──────────────┐
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        │Submitted Proposal│          │Contract Processed│
        └──────────────────┘          │   by SMU Adm.    │
                                      └──────────────────┘
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                                              │ Matching Funds   │        │Matching Funds    │
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│Meeting with RRT/ │        │Meeting with RRT/ │        │Meeting with RRT  │         │ Devel  │
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                                              │Development of Ana-│
                                              │lytical Model     │
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┌─────────────────────────────────┐
│   FIGURE 1   │
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│   MODIFIED P.E.R.T. CHART   │
│   │
│   OF S.M.U. PROJECT   │
│   │
│   ON INTERLIBRARY NETWORKS   │
│   │
│   Prepared by Maryann Duggan   │
│   September 15, 1969   │
└─────────────────────────────────┘

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ounting ──► Agreement with SCAS
            on Contributed          Audit of Accounting Records     Collection of All
            Matching Effort         and Project Cost                Invoices and Match-
                                                                    ing Funds Records

                                                                    Filing
   Commitment of                    Filed Interim Progress          Final
   Matching Funds                   Status Report

State-   Development of Concep-   RRT Testing of Con-   Preparation of Manuscript   Publishing of RRT Summary
roup     tual Model in State-     ceptual Model in a    for Reporting RRT to        in Texas Library Journal
         wide Study Group         Behavioral Model      Texas Library Journal

th RRT                Development of Behavioral     Transcription and Eval-     Revision of Conceptual Model
mittee                Model Strategy and Net-       uation of RRT
                      working Game

         Preparation for Reference
         Round Table.  Preparation of
         Glossary, Bibliography
                                                      Development of Data In-     Improvement of Data In-
                                                      terpretation Techniques     terpretation Techniques
cipants   Participants Briefing   Collecting and Coding   Analysis of Pilot Model Data
eeting    Session                 Pilot Model Data                                   Installation of TWX

             Planning Data Analysis                      Ordering of TWX
             and Coding                                                        Submission of
                                                                              Analytical Model
Ana-          Presentation of Analytical   Improvement of                     to Publisher      Presen
l             Model to RRT                 Analytical Model                                      Washin
                                                           Presentation of Lib-NAT               Rocky
                                                           to LSCA Title III                     Washin
                                                           Advisory Council                      Oklaho

                                           Preparation of       Presentation of Lib-NAT          Pre
                                           Lib-NAT Concept      to ALA Conference
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	June 1969	July 1969	Aug. 1969	Sept. 1969	Oct. 1969

ing Records
Cost

Collection of All
Invoices and Match-
ing Funds Records

Filing of Final Voucher

Final Internal
Audit by SMU

Filing of Preliminary
Final Report Summary

Publishing of RRT Summary
in Texas Library Journal

Planning of Follow-Up
for Future RRT

Appointment of RRT
Network Group

of Conceptual Model

Editing of RRT Papers
and Transcription

Preparation of Final
Report with
Recommendations

Publishing of Final Report

Distribution of
Final Report

Data In-
chniques

Improvement of Data In-
terpretation Techniques

Development of Interpretations
and Final Recommendations

Installation of TWX

Development of TWX Poli-
cies and Procedures

WX

Submission of
Analytical Model
to Publisher

Presentation of Lib-NAT to
Washington State Library,
Rocky Mtn. Bib. Center,
Washington Office O.E., and
Oklahoma Dept. of Libraries*

resentation of Lib-NAT
to LSCA Title III
Advisory Council

Presentation of Lib-NAT
to AIA Conference

Preparation of Lib-NAT Manu-
script for Publication

Publication of Lib-NAT
in Journal of
Library Automation

*Processing of Inquiries
from Lib-NAT Presentation

II.   PHASE I: THE CONCEPTUAL MODEL OF AN IDEAL, STATEWIDE
        INTERLIBRARY NETWORK

The 1968 Reference Round Table* clearly identified the need
for an overall state plan for interlibrary cooperation and network
development. As a minimum, such a plan should include all types of
libraries and should identify the functional elements necessary for
logical network development.

The first phase of the work reported on herein was to develop
a conceptual model of an ideal statewide interlibrary network that
would provide all citizens of Texas effective access (in an orderly
manner) to the library resources and services of the state.

The conceptual model would serve as an overall floor plan
or "basic building block" on which to develop action programs.

A. Purpose

The purposes of Phase I were:

1. To cooperatively define basic elements, components
    and operational parameters of an ideal statewide
    interlibrary network--a conceptual model.

2. To survey current status of development of planning
    of various library networks within the state and to
    include these developments in the conceptual model.

3. To identify barriers to development of the ideal
    statewide interlibrary network and to explore ways
    of overcoming these barriers.

B. Methodology

Development of goals requires a dual process of analysis-
synthesis. The analysis phase consists of determining present status
via "fact-finding". The synthesis phase consists of developing concepts
of short-term and long-term objectives. Both phases require the total
participation of persons with statewide perspective and responsibility
for statewide planning. A "round-table discussion" in an atmosphere
of candid analysis and synthesis was the methodology selected for
developing the conceptual method.

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*Texas Library Association Reference Round Table Pre-Conference Seminar
 Proceedings, 1968.

C. Procedures

The procedure followed in developing the conceptual model of the ideal statewide interlibrary network was as follows:

1. Involving Key Persons

Those persons responsible for statewide planning of library services and development were identified. These consisted of:

(a) Texas State Library - public libraries and administration of Library Services and Construction Act.

(b) Texas Education Agency - public elementary and secondary school libraries.

(c) President, Texas Junior College Library Division, Texas Junior College Association.

(d) Coordinating Board, Texas College & University System - public higher education system, college and university library planning.

(e) Heads of existing networks, namely:

(1) WINA - Western Information Network Association

(2) SETINA - Southeast Texas Information Network Association

(3) TEMP - Texas Educational Microwave Project

(4) TAGER - The Association for Graduate Education and Research

(5) IUC - The Inter-University Council

(f) Council of Medical and Health Science Libraries

(g) Southwestern Association of Law Libraries

(h) Texas Chapter, Special Libraries Association

(i) Association of School Librarians

(j) Library Development Committee, Texas Library Association

(k) Reference Round Table, Texas Library Association

(l) Library Services and Construction Act, Title III Advisory Council

(m) Office of Education, Library Services Program Officer, Region 7

Official representatives of each of the above
organizations were invited to participate in a Statewide Study
Group to analyze the present status of library development in
their area of responsibility and to synthesize a conceptual model
of an ideal statewide interlibrary network. The official meeting
of the Statewide Study Group was on February 18, 1969, at South-
ern Methodist University in Dallas. The full record of this meet-
ing is presented in Appendix B.

2. Analysis Phase - Summary

The Statewide Study Group analyzed the existing
situation during candid discussion at the February 18 meeting.
These findings are summarized as follows:

Existing networks seem to be developing in-
dependently with little, if any, coordination
at the state level. There seems to be a need
for a statewide "umbrella agency" to provide
guidance in planning and development of inter-
library networks. The statewide survey conducted
by Mr. Richard Waters indicated a need of defi-
nition of network characteristics or performance
elements.* Dr. Richard Nance's presentation em-
phasized the need for definition of network
"utility" and criteria for evaluation of perfor-
mance of library systems. Further discussion
indicated a need for distinction between "commu-
nication networks" and "library or information
networks." The library network planners need to
work closely with the communication network de-
signers to insure maximum use of telecommunication
channels being developed in the state.

*Partially as a result of this meeting, the Texas State Library funded
 the development and publication of: Interuniversity Council of the North
 Texas Area. Directory of Information Networks in Texas. March 1971, 58 p.

The analysis phase raised many questions. Some
of the questions concerned levels of switching
between networks (i.e., local, regional, or state)
and the availability of "locator files" or "switching
centers." Questions were raised concerning criteria
for use of networks for various patron groups and
types of needs or levels of service. Concern was
expressed that networks might be considered as a
substitute for responsible development of local
resources.

Questions regarding funding philosophy and pricing
structure were discussed with emphasis on need for
determination of economic value of library networks.
It was agreed that valid cost data of library ser-
vices are needed to provide guidelines for funding
and planning.

3. Synthesis Phase - Summary

The Statewide Study Group identified the areas needing
further development if a statewide interlibrary network is to be imple-
mented in Texas. In summary, the conceptual model of an ideal state-
wide network would consist of certain components, both technical and
organizational. These components constitute the conceptual design
as described below.

D. Results

The Statewide Study Group achieved several missions.
First, communication channels were opened between organizations and
persons responsible for statewide network development. Secondly, an
overview of various network developments in Texas was shared by all
participants. Thirdly, needs and barriers were identified and freely
discussed and relative priorities explored. The major result of
this Study Group activity was the development of the conceptual model
of an Ideal Statewide Interlibrary Network. This conceptual model
consists of the following components:

1. <u>Organizational Structure</u>, providing for fiscal, legal, planning, policy formulation and requiring commitment, operational agreement and common purpose.

2. <u>Collaborative Development of Resources</u>, providing for cooperative acquisition of rare and research material and for strengthening local resources for recurrently used material. Multi-media resources developing is essential.

3. <u>Identification of Nodes</u>, providing for designation of role specialization as well as for geographic configuration.

4. <u>Identification of Primary Patron Groups</u>, providing for assignment of responsibility for library service for all citizens within the network.

5. <u>Identification of Levels of Service</u>, providing for basic needs of patron groups as well as special needs and identifying distribution of each service type among the nodes; must provide for "referral" as well as "relay"; for document transfer as well as "information transfer."

6. <u>Legal Right of Access</u>, providing fiscal, contractual, legal planning and policies.

7. <u>Establishment of Bi-Directional Communication System</u>, providing "conversational mode" format and designed to carry desired message/document load at each level of operation.

8. <u>Common Standard Message Codes</u>, providing for understanding among the nodes on the network.

9. <u>Central Bibliographic Record</u>, providing for location of needed items within the network.

10. <u>Switching Capability</u>, providing for interfacing with other networks as well as determining the optimum communication path within the network.

11. <u>Selective Criteria of Network Function</u>, providing guidelines of what is to be placed on the network.

12. <u>Evaluation Criteria and Procedures</u>, providing feedback from users and operators and means for network evaluation and modification to meet specified operational utility.

13. <u>Training Programs</u>, providing instruction to users and operators, including policy and procedures.

In summary, the so-called ideal statewide interlibrary network should be so designed that any citizen anywhere in the state can have access to the total library and information resources of the state through his own local library.

E. <u>Evaluation and Conclusions</u>

The above conceptual model is only an outline of the components necessary in developing the statewide interlibrary network. The Study Group could do little more in the available time* and within their designated areas of responsibility. The conceptual model is the skeleton plan around which the development can proceed. The questions of priorities, funding, and responsibility for implementation are still unanswered as of this phase of the project. Each of the thirteen components should be further explored and developed in detail by appropriate statewide network planners and the required implementation steps identified cooperatively by a continuing Statewide Study Group.

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*The Study Group officially met only once during the contract period.

III. PHASE II: A BEHAVIORAL MODEL OF LIBRARY NETWORKS

The conceptual model developed in Phase I was the product of the Statewide Study Group and represented the theoretical approach and administrative background of that group. Too often there is a "credibility gap" between theory and practice. This credibility gap can often result in failure of the best theories. Phase II of the project required the testing of the credibility and practicality of the conceptual model. The March 1969 Texas Library Assocation Reference Round Table Pre-Conference Institute provided an ideal medium for further testing and development of the conceptual model by use of a "behavioral model."

A. **Purpose**

The purposes of this phase were:

1. To test the practicality and credibility of the conceptual model within a behavioral model environment.

2. To participate in planning and development of an improved conceptual model.

3. To determine practicing reference librarians' attitudes and "state of readiness" for interlibrary networking.

4. To acquaint practicing reference librarians with the latest networking concepts and of local, regional, state and national network developments.

B. **Methodology**

In order to achieve the above purposes, the following methodologies were employed:

1. **Simulated Network**

The March 1969 Texas Library Association Reference Round Table Pre-Conference Institute was arranged physically and organizationally in a simulated network with each node (table) representing different types of libraries and different geographical locations.

2. Networking Game

Specific examples of "typical networking cases"
were assigned to various nodes in the simulated network to determine
attitudes and behavior patterns in networking situations through
"role playing" as the cases were resolved.

3. Educational Objectives

Formal papers were presented to acquaint the ref-
erence librarians with recent developments in interlibrary networking.
A glossary of networking terminology was presented, along with a
bibliography of pertinent publications related to interlibrary network
development.

4. Reactors

"Official Listeners" were designated to answer
specific questions, to stimulate other questions, and to summarize
the significance of the behavioral attitudes exhibited during the
networking games.

5. Critique

Each registrant was given an opportunity to critique
or participate in planning the conceptual model, both informally
(through "role playing") and formally through completion of a written
critique sheet provided.

C. Procedures

The procedures followed were to achieve total involvement
of the March 1969, Reference Round Table Pre-Conference Institute of
the Texas Library Association. The one-day program was planned around
the theme of interlibrary networks for reference services. Formal
papers were interspersed with networking questions "to be handled"
by the conference participants as in the real world. In order
to enhance this involvement and participation, the conference room
was physically arranged as a network, by using 24 round tables. Each
table represented a "node" in the Texas Network, either by type of
library, geographic location, or existing networks previously identified.

To further enhance participation by the attendee, a pre-conference packet was mailed to each advance registrant. A glossary of networking terms, the networking problems, and the elements of the conceptual model were included in the advance packet, along with the bibliography on networking developments.

Appendix C contains the details and description of the Reference Round Table simulated behavioral model. All details of registered participants, program, room arrangement, networking cases, official listeners, formal papers, and transcription of the behavioral model are presented in Appendix C.

D. Results

A total of 288 reference librarians registered for the Reference Round Table Pre-Conference Institute. It is difficult to quantitatively measure human behavior and attitudes; however, the observation of the simulated network behavior and an analysis of the transcription of the "networking game" provide certain insights helpful to network planners. These are summarized as follows:

1. Testing of the Conceptual Model

The networking game was so designed to produce "forced choice" and "free choice" decision making of each participant playing the game. In this manner, the playing of the game reflected the player's "real-world" orientation regarding their concept and resulting practices in networking in Texas. All thirteen elements of the conceptual model were validated as significant factors in the daily operation of the network as evidenced by the participants' behavior in the game-playing.

Each situation in the networking game was designed to simulate a real-life situation involving one or more of the thirteen conceptual network components. The behavioral variables in each question involve the following decisions:

    a. What is the nature of the information need?

    b. What is the appropriate source?

    c. What is the appropriate route of access?

    d. What is the procedure for finding the source and route?

    e. What is the nature or "qualification" of the requestor?

    f. Who pays for the service?

2. **Participatory Planning and Development of an Improved Conceptual Model**

    (a) **Improvements Based on Observations:**

    The role-playing emphasized the need for further understanding of networking principles. The "rules of networking" have not been clarified, and each case resulted in generating questions of policy as well as procedure. The cases emphasized the importance of "locator files" and the acute need to "know resources." "Personal contact" was the first suggested method for knowing resources; the use of a formal "locator file" or switching center was apparently not an entrenched habit. The cases also generated agreement on the need for "selectivity criteria," i.e., guidelines on what types of requests to put on the network, and for which patrons are networks designed.

    (b) **Improvements Based on Formal Critique:**

    Each of the 288 participants were provided with a critique sheet soliciting additions to or deletions from the conceptual model of the ideal network. Only four critique sheets were completed and returned. These encouraged the (1) building of local resources through cooperative acquisitions, (2) avoidance of over-dependency on the network by strengthening local resources in a planned manner, (3) development of bibliographic center or locator files to enhance the filling of document transfer requests, (4) formulation of "selectivity criteria" and need for uniform policy decisions on whom will be served, (5) assumption of responsibility for all library service by each type of library for their designated primary patron group.

3. <u>Determination of Attitudes and "State of Readiness"</u>
   <u>for Interlibrary Networks by the Practicing Reference</u>
   <u>Librarians</u>

Based on observation of case-handling and analysis of
the transcription of the behavioral model, the reference librarians
attending the Institute have a willing but cautious "state of readi-
ness." Some of the potential benefits from interlibrary networks
are recognized but the full impact of the statewide network concept
was not totally realized or applied in the case handling. Adherence
to the traditional "routes of access" was predominant in the responses
to the cases; however, most participants were willing to try new routes
when such were offered. Some means of continuous training in net-
working concepts must be devised if the full benefits from inter-
library network systems are to be realized, or if these new systems
are to operate effectively.

An interesting (and unexpected) reaction was the
overt concern by many of the participants that (1) they were assigned
to the "wrong" node, or (2) they were not giving the "right" answer.
These attitudes and concerns are obvious in reading the transcription.

In general, the predominant attitude was one of
"cautious and uncertain willingness" with implied recognition that
library networks are coming--ready or not!! The value system of
the group was such that group recognition and acceptance were high
for intellectually rewarding "breakthroughs." Library-network
development--and all this term implies--is intellectually challenging
and appealing to this group. This group characteristic offers the
opportunity for the personal involvement of reference librarians
of Texas in network development. Their concern for "right answers"
implies a feeling of uncertainty but a desire to learn the "rules
of networking."

E. <u>Evaluation of and Conclusions from Phase II</u>:

The "networking game" proved to be an effective method
for stimulating thinking, gaining participation, and demonstrating
attitudes and current practices in the complexities of interlibrary

networks. The open and candid responses reproduced in Appendix C
are evident in the transcription of the networking game.

Based on this behavioristic model, it is concluded that:

1. The conceptual model of the ideal statewide interlibrary
network is fundamentally and theoretically valid.

2. Refinement of the 13 elements of this conceptual model
should be initiated by statewide planners. Definitive
implementation steps and strategy for development of
each element will be required to evolve a viable
program.

3. The "operators" of such a network (i.e., the reference
librarians) are cognizant of the challenge these new
systems offer and are eager and willing to be educated
on the policies, procedures, theory, and applications,
and to participate in the planning of such a network.
A certain amount of "rigidity" and "let others do it"
attitudes were apparent but these barriers can probably
be overcome by adequate training and motivation.

Based on the analysis of the networking game as presented in
Appendix C.6(b), the additional conclusions seem valid:

1. Routes of access are not well defined and potential options
are not clarified.

2. Following a pre-structured homogeneous vertical network is
"easy" to do but does not yield a high percent of favorable
results.

3. Local switching capability in metropolitan areas is needed.

4. Resources of special libraries need to be better identified.

5. Heterogeneous type transactions (i.e., involving more than
one type of library) are the most frequent and most successful
in meeting objective yet adequate switching mechanisms are
not provided.

6. The networking game has real potential for analysis and
understanding of interlibrary networks.

IV.   **PHASE III: DALLAS AREA PILOT MODEL OF INTERLIBRARY TRANSACTIONS**[*]

The designing and planning of interlibrary networks in Texas
must consider existing patterns of interlibrary cooperation and ex-
isting methods of "interfacing" between types of libraries. Inter-
library loans are a basic example of on-going interlibrary cooperation,
and are the first "service level" of an interlibrary network. The
Dallas Metropolitan Area offers a cross-section of different types of
libraries with varying network relations. The on-going interlibrary
loan transactions between and among these libraries and the "outside
world" should provide insight to the further development of inter-
library networks of various types of libraries at the state level.

A. **Purposes**

The purposes of this phase were:

1. To examine microscopically and quantitatively on-going
   interlibrary loan transactions in the Dallas area to
   achieve insight and understanding applicable to inter-
   facing library networks of varying types at the state level.

2. To develop appropriate methodology for examining, ana-
   lyzing, and interpreting the interlibrary loan trans-
   actions in a typical sample of all types of libraries
   in the Dallas area.

3. To systematize a strategy for interlibrary loan analysis
   and interpretation that could be generalized to other
   areas of the state and would be of assistance to in-
   terlibrary network planners at the state level.

4. To compare the actual interlibrary loan activity with
   elements in the conceptual model (Phase I) for further
   testing of the validity of the "ideal network."

B. **Methodology**

Generally, used methodology of observation of a sample,
quantifying the observation, analyzing the data and generalizing on
the findings.

1. The data collection methodology used in this phase consis-
   ted of pilot modeling technique based on sampling "typical
   libraries" and further sampling a time interval of inter-
   library loan activity prior to the pilot model period.

[*]Also see the descriptive paper on this study which is reproduced as
Appendix C.5f.

2. The data analysis methodology consisted of identifying
   significant variables and developing quantitative
   (a symbolic model) tools for expression of these
   variables as extracted from the data.

3. The interpretation methodology consisted of devel-
   oping generalizable modes of displaying the quanti-
   tative variables so that certain "operational parameters"
   can be evaluated and compared within the pilot model
   sample, enabling the formulation of specific conclusions
   about existing operation parameters.

C. Procedures

The following procedural steps were followed:

1. Identification and selection of participating libraries.
   The libraries selected for participation are listed in
   Appendix D. Each library selected represents a "type"
   of library as indicated in the listing.

2. Commitment of Participating Libraries
   The selected libraries were invited to a "briefing
   luncheon" and were officially invited to participate
   in the pilot model. Formal commitment forms were
   distributed for officially signifying willingness to
   participate and supply data. The list of the "com-
   mitted" libraries and sample forms are enclosed in
   Appendix D.

3. Data Collection Procedure
   Forms for collecting interlibrary loan transactions
   data were developed and are presented in Appendix D.
   In a briefing session with the participating libraries,
   certain definitions and policy decisions on data
   collection details were developed in order to achieve
   maximum uniformity of the data elements. These are
   described in Appendix D. Each participating library

was to collect* the data required on the forms and
submit the completed forms to the investigator.

4. Data Code Procedure

    The "raw data" as collected above required sorting
    and re-arranging in order to analyze and compare the
    data elements and the significant variables in the
    pilot model. Modern data processing via computer
    techniques seemed to offer the most effective means of
    "processing" these raw data. On a cooperative for-
    mal agreement with the Southwest Center for Advanced
    Studies (SCAS), competent data processing and computer
    assistance was promised. The code system used to
    "normalize" the raw data for input is described in
    Appendix D. The input format for each data point is
    also presented in Appendix D. The investigator, with
    the assistance of the SCAS personnel, attempted to code the
    raw date for computer input in an effort to achieve reason-
    able consistency in the interpretation required for data
    processing.

5. Data Analysis Procedures

    The significant variables of importance to understanding
    interlibrary networks from the pilot model were identified
    in a series of discussions with the participating libraries,
    with other interested persons, and from a review of the
    literature on interlibrary loan practices. These vari-
    ables are listed and described in Appendix D. A total of
    possible permutations could have been compared; however,
    for the purpose of this pilot model, the "type of library"
    was considered the control constant and the other data

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*See "RESULTS" section for explanation and discussion of problems
and exceptions to this data collection procedure.

elements were considered as the variables. Tabular and graphical displays were developed to illustrate the data elements in the various significant combinations.

At the time of the data analysis phase, a search of library literature indicated no prior published work of exactly this type. Thus, there were no previously designed standard procedures to follow in developing the data analysis and interpretation techniques. Those reported herein "evolved" as the data analysis phase continued.

6. Data Interpretation Procedures

Criteria for data interpretation were developed as the data analysis progressed. Means of interpreting the significant variables in a quantitative method were explored. Where applicable, standard statistical techniques were used to illustrate significant relations. Interpretations of the significance of some of the data configurations were based on a framework of the conceptual model (Phase I). Certain hypotheses of the conceptual model were "tested" against the pilot model data.

Again, the absence of any previously established quantitative criteria for evaluating interlibrary loan performance among various types of libraries required the evolutionary development of the interpretation phase.

D. Results

The results of this pilot model are summarized below. As explained in Appendix D, only the most general conclusions can be considered valid due to poor design of the testing instruments and inadequate data analysis.

1. A relatively small number of the 17 participating
   libraries engage in a significant volume of interlibrary
   loan activity. Over 80 percent of the total reported
   activity was conducted by only five of the libraries.

2. Sixty percent of the participating libraries borrowed
   more than they loaned. Seven-seven percent of the
   borrowing originated from the special libraries. Of the
   borrowing originating from the participating libraries,
   73 percent was filled by the academic library community.

3. The highest volume of borrowing was between special/
   academic, followed by academic/academic. Sixty-six
   percent of the borrowing involved a transaction between
   two different types of libraries.

4. The public libraries accounted for four percent of the
   borrowing in the sample. School libraries reported no
   borrowing transactions.

5. Over half (52 percent) of the items borrowed were located
   in Dallas County. Eighty percent of the requested items
   were obtained from within Texas.

6. Telephone was the access route used for 51 percent of
   the requests; TWX or Telex was used for 20 percent of
   the requests.

7. The total sample of reporting libraries requested 696
   items and were asked for 840 items, demonstrating a "node
   dependency coefficient" of 0.45.

8. As lenders, the participating libraries were able to
   fill 63 percent of the items requested. The special
   libraries filled 96 percent of the items for which
   they were asked; the public libraries filled 21 percent
   of their requests. A total of 310 unfilled requests
   was processed by the participating libraries. Of the
   189 Telex messages processed by the public library,
   80 percent were not filled due to inadequate collection
   or "other" reasons.

9. As lenders, the participating libraries served as a state
   resource more than as a local resource since 64 percent

of the requests originated out of Dallas County.
Fifty-two percent of these requests were trans-
mitted by TWX or Telex; telephone was used for
22 percent of the requests.

10. The largest volume of lending transactions did not
involve a mix of types of libraries; 81 percent
of the lending transactions were among libraries
of the same type.

E. Significance of Pilot Model

In many ways, the Pilot Model phase of this project could
be considered a failure. The Pilot Model was inadequately planned
and designed. The data collection instruments were not pretested and
were apparently confusing to participants. Encoding of data for
computer processing proved to be an insurmountable obstacle. Iden-
tification of significant variables was not sufficiently precise.
Computer analysis of the data was not successful due to a variety of
reasons. Continuation of the analysis techniques developed in the
Networking Game (Appendix C.6-b) was not possible due to inadequate
data processing capability. Evaluation criteria were not established
for comparative or interpretive purposes. Yes, in many ways the
Pilot Model was a failure.

In spite of these very valid criticisms, the Pilot Model
does make several contributions to the understanding of interlibrary
networks. These are:

1. Performance data now exist for comparative purposes
for others to use in similar studies.

2. A methodology of analyzing node-network dynamics was
developed and proved to have merit in network understanding.

3. Certain performance parameters were identified as
needing improvement for the benefit of all users of
interlibrary networks.

4. Future investigators will now know what not to do in
future Pilot Models.

V.   PHASE IV: ANALYTICAL (OPERATIONS RESEARCH) MODEL

Designing interlibrary networks requires rigorous analysis
of functions, identification of elements, and synthesis of components
in an optimum manner for the purpose of maximizing some previously
defined "utility".* This type of approach to systems design is
amenable to operations research techniques, particularly linear
programming and simulation vis analytical/mathematical modeling.

Dr. Richard Nance's presentation at the Reference Round
Table (Appendix C.5, Item H) proposed an analytical model for simu-
lating document and message transfer in a network. Since the ini-
tial presentation, Dr. Nance has prepared a less mathematical "overview"
of simulation applications to interlibrary ventures. This "overview"
is presented as Appendix E.

The use of operations research techniques for interlibrary
network design and evaluation does appear promising. The systematics
of operations research techniques requires a rigor in defining net-
work parameters; this rigor in thinking out the operational elements
of contemplated interlibrary networks is of benefit to the design of
effective networks. Actual mathematical simulation will require the
development of complex algorithms if all aspects of network perfor-
mance are to be considered and modeled. The relating of operational
aspects of interlibrary networks to mathematical simulation for
evaluation of various design alternates will require appreciable re-
search and development. The specific areas needing further develop-
ment are detailed in Section VIII. Until such time as the algorithms
and other techniques are fully developed, specific answers to net-
work design cannot be obtained in a mathematical simulation. How-
ever, the work done on this project does illustrate the semi-
quantitative benefits that can be derived from the application of
operations research thinking to the design of interlibrary networks.
The following section on Lib-NAT illustrates specific semi-quanti-
tative applications of various operations research techniques for
network design.

_____
*See Glossary in Appendix C for definition of unfamiliar terms.

VI.   PHASE V: Lib-NAT*: LIBRARY NETWORK ANALYSIS TECHNIQUE

The previous sections of this report have described the
various phases of the project. In summary, Phase I was the de-
velopment of a <u>conceptual</u> <u>model</u> of an ideal statewide interlibrary
network.   Phase II was a <u>behavioral</u> <u>model</u> in which the conceptual
model was "tested" in a simulated network by role-playing during
the Texas Library Association Reference Round Table Pre-Conference
Institute.** Phase III consisted of a <u>pilot</u> <u>model</u> during which on-
going interlibrary loan transactions among a group of different
types of libraries were observed, analyzed, and interpreted in
view of networking concepts.   During Phase III, a variety of analy-
tical techniques were developed to permit the display and inter-
pretation of the pilot model data.   Phase IV was the application
of operations research techniques (and linear programming simulation)
to the design and evaluation of library networks.

Each of these phases could be considered independent ac-
tivity--each self-contained and complete within the scope of the
individual phases. However, each phase does relate to all the
others in that each phase is an essential approach to development
and design of interlibrary networks. Synthesizing the four separate
phases into a whole--into a logical approach to network design--
was the objective of Phase V, reported in this section.

Phase V consists of evolving a total approach to library
network analysis employing and combining the four methodologies
and findings described in the previous four phases, in combination
with another methodology: symbolic modeling. To give this total ap-
proach identity, it is called "Lib-NAT*: Library Network Analysis Theory."

Lib-NAT was first presented at the American Library Association
joint meeting of Reference Services Division, Information Science and
Automation Division, and Resources and Technical Services Division on
June 25, 1969. A summary of Lib-NAT was published in the September
1969 issue of <u>Journal</u> <u>of</u> <u>Library</u> <u>Automation</u> at the invitation of the
editor. A reprint of this article is enclosed as Appendix F.

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*"Lib-NAT" as an acronym evolved from the acronym of "Lib-NET" used
by Mr. Carl Peters for the data analysis phase of the pilot model.
**Analysis of the results of the Networking Game led to a technique for
classifying types of network transactions, thereby giving insight into
need for interfacing of different types of libraries.

Lib-NAT is an effort to present a total approach (using new methodologies) to the design and analysis of interlibrary networks--a generalized interlibrary network theory. The value of Lib-NAT can only be determined by testing and application in the real library world with real data in different interlibrary systems. The detailed description of the various phases of Lib-NAT in the various sections and appendices of this report is intended to make the Lib-NAT approach available to others concerned with designing and improving interlibrary networks. Through such testing, the true value of Lib-NAT (and the work leading to Lib-NAT) can be evaluated in relation to achieving the goals of Title III of the Library Services and Construction Act.

VII.   PROJECT COST ANALYSIS AND EVALUATION

    A. Budget vs. Actual Costs

          The proposed budget for this project is presented in
Appendix A.1. These data represented the "best guess" of the
cost of doing the work outlined in the Proposal dated November 4,
1968.

          Now that the project is completed, actual cost data are
available for review and for comparison with the proposed budget.
The actual cost data*are presented in Appendix G by budget line item.
The source of the matching funds, i.e. institutional or "contributed",
is also indicated. Southern Methodist University was reimbursed the
$11,000 federal funds as agreed in the contract.

          The purpose of providing these cost data is to complete
the documentation of the project in this report for the benefit of
others planning similar projects. The comparison of anticipated
expenditures (proposed budget) with actual expenditures indicates:

    1. Salaries estimates were about correct, although
        slightly low.

    2. Consultant costs were much greater than anticipated.

    3. Committees, Workshops line item was overspent, par-
        tially because this line item was used to "collect"
        the bulk of the contributions of the Reference Round
        Table, the Statewide Study Group, and the Dallas Pilot
        Model participants, and partially because the cost of
        holding these meetings was greater than anticipated.

    4. Travel costs were less than anticipated (partially
        because some travel costs were combined with travel
        for other projects, and therefore, the full cost was
        not charged to this project).

    5. Communications costs were less than anticipated be-
        cause the TWX-Telex units were not installed until
        late in the project. Also much of the cost of long
        distance calls was absorbed by participants in the
        program other than SMU.

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*As of June 1969.

6. Supplies and printing costs were greater than anticipated because of unforeseen volume of printed material required (witness the Appendices to this report!!)

7. Rent/Purchase of Equipment was less than anticipated due to the lag in processing the TWX and due to the donation of computer facilities and to the coding of rental equipment used in committees and workshops to that line item rather than to this line item.

Two last remarks on costs and related fiscal affairs:

1. If matching funds are to be identified from contributed salaries, services, expenditures, etc. of other co-sponsoring organizations, full documentation and accounting assistance is essential and should be arranged in advance.

2. Costs are almost always greater than anticipated and more salary and other expense will be required due to the complexities of interlibrary activity and the necessity for working with so many groups, etc., outside the sponsoring organization.

B. Benefit/Cost Analysis

The ultimate financial evaluation of a project requires a factual benefit/cost analysis. Again, this quantitative evaluation is difficult to develop. How can a dollar value be computed for the "benefits" of a project of this nature??

Disregarding all benefit aspects of the project other than the behavioral model, the following benefit/cost computation might be one way of quantitative evaluation:

        Fact: Total Federal Dollars Spent in Total Project = $11,000

        Fact: 288 Reference Librarians Participated for a Lapsed
                   Time of 7 Hours Each in the Behavioral Model

Assumption: Each of the 288 Reference Librarians "learned enough" to improve their value as librarians by an assumed amount of $50.00 each.

Therefore: The Behavioral Model alone provided $50.00 x 288 = $14,400 benefit value for the total $11,000 federal funds spent on the entire project, or $1.40 benefit for each $1.00 federal cost.

Disregarding all benefit aspects of the project other than Lib-NAT, the following additional benefit/cost computation might be one way of quantitative evaluation:

Fact: Total Federal Dollars Spent on Total Project = $11,000

Fact: Sixteen libraries (see Section VIII) have specifically inquired regarding Lib-NAT and an estimated 1500 librarians heard the oral presentation of Lib-NAT at ALA in June 1969, and approximately 2000 librarians have read the Lib-NAT article in the September 1969 issue of Journal of Library Automation.

Assumption: Each of the 16 libraries will save at least $1,000 of their staff time in developing Lib-NAT concepts "from scratch" and each of the 2000 librarians reading the article will bene-fit by at least $100 in improved library performance.

Therefore: Lib-NAT alone provided 16 x $1,000 = $16,000 plus 2,000 x $100.00 = $200,000, or a total of $216,000 benefit value for the total $11,000 federal funds spent on the entire project, or $19.6 benefit for each $1.00 federal dollar spent.

The author recognizes that the above are only assumptions and welcomes suggestions on more factual methods for computing benefit/ cost analysis. For example, perhaps the real benefit of a project of this type is the ultimate improvement in library and information services for the nation's needs through cooperative networks. By mobilizing total library services and resources to meet the diverse and critical needs of industry, education and students, local and state governments, each dollar spent on separate library service may do "triple duty", thereby enhancing the benefit/cost ratio of all library programs.

VIII.   EVALUATION, CONCLUSIONS AND RECOMMENDATIONS
    A. Evaluation

        It is difficult to quantitatively evaluate a project
of this type. Evaluation, therefore, must be subjective based on
criteria generally acceptable for measurement of professional
achievement. Following these guidelines, it is believed that the
project:

    1. Considered significant issues in developing improved
        interlibrary networks in Texas.

    2. Involved appropriate persons at all levels in the
        development of network design concepts.

    3. Followed reasonably valid scientific methodology in
        each phase.

    4. Developed an innovative approach (Lib-NAT) to network
        analysis and design which can be generalized to other
        states or regions concerned with network development.

    5. Stimulated thinking about basic concepts in interlibrary
        cooperation and emerging networks.

    6. Made a worthy contribution to the Texas State Plan under
        Title III, LSCA (see "Recommendations" below).

    7. Fulfilled the commitment to disseminate the procedures
        and results through professional media.

        Admittedly, all the initial proposed goals and achieve-
ments were not accomplished. These failures were partially due to:

    1. Poor or inadequate project planning, management, and
        staffing.

    2. Shortage of time for implementation and completion.

    3. Unforeseen barriers due to psychological and personal
        resistance to the project objectives.

    4. Lack of adequate funding (local, state, and federal)
        particularly the matching funds requirement, to
        accomplish the magnitude of tasks proposed.

5. Lack of guidelines or previously established procedures or patterns to follow; i.e., the experimental nature of the project, requiring frequent revision in plans and programs.

6. The necessity of working with many different persons in groups and individually, thereby requiring extensive and unforeseen communications and coordination.

If the project can be considered in the total perspective of its contribution, perhaps the following quotation[*] provides applicable criteria for evaluation:

> "It is axiomatic in science that every opportunity for generalization is an opportunity for progress . . . Every model is of course an analogy. What makes a model (a project?) heuristically valuable is that it is treated as a point of departure, not arrival."

Thus, the true evaluation of this project will be determined by the future influence of the results on interlibrary cooperation and library development in Texas.

Perhaps an indication of the value of this project can be surmised from the interest expressed in the project's procedure and findings by library leaders in other states. Since the presentation[**] of Lib-NAT at the American Library Association conference on June 25, 1969, inquiries have been received from:

> Washington State Library (Olympia), Oklahoma Department of Libraries (Oklahoma City), Rocky Mountain Bibliographic Center (Denver), Wayne State University (Detroit), Western New York Library Resources Council, Hampshire College (Amherst, Mass.), Louisiana State University (Baton Rouge), Saint Louis Public Library, State of Wisconsin Division for Library Service (Madison), New York State Library (Albany), Purdue University (Lafayette, Indiana), University of Wisconsin Library School (Madison), University of Southwestern Louisiana (Lafayette), Black Gold Library Cooperative (Ventura, California), Vassar College Library (Poughkeepsie, N. Y.), and individual librarians in Minnesota, Illinois, and Canada.

The dissemination of the project findings is an integral part of the project, and copies of this final report will be distributed accordingly. Again, the evaluation of the project can best

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[*]Berrien, F. Kenneth. General and Social Systems. New Brunswick, N. J., Rutgers University Press, 1968. p. 204.

[**]As of September 1969. Since that time and as of June 1971 Lib-NAT has been used by Colorado, Ohio, Minnesota, Indiana, and Kentucky for planning purposes.

be measured by the validity of its findings in these other states
and library systems as determined by application and testing.

    B. <u>Conclusions</u>

        The following are offered as the major conclusions
resulting from the various phases of this project:

      1. The conceptual model is essentially valid and realistic.
          Therefore, if statewide interlibrary cooperation is
          to be achieved at optimum capability, implementation
          of the conceptual model should be initiated at an
          early date.

      2. The behavioral model effectively documented the cur-
          rent attitudes and "state of readiness" for interli-
          brary networks in Texas. Based on these findings,
          programs of continuing education for the librarians
          of the state will be necessary for the development of
          the day-to-day skills and attitudes essential for the
          successful operation of interlibrary networks.

      3. The Dallas area pilot model demonstrated the need for
          improved interlibrary services, the dependency of
          smaller libraries, and the inter-dependency of all
          libraries in the area.

      4. The analytical model emphasizes the real and potential
          benefits to be derived from the use of operations re-
          search techniques in planning and evaluating library
          networks. Further refinement of these techniques will
          be required if valid, specific design questions are to
          be answered. In the interim, the techniques of operations
          research provide semi-quantitative guides of value in
          network design.

      5. Lib-NAT, the synthesis of a general theory concerning
          library networks, emphasized the need for a new approach
          (and new problem-solving methodologies) in the development
          of interlibrary networks. The apparent acceptance of

Lib-NAT by library leaders from various states
indicates a seeking for workable new approaches
and re-emphasizes the critical lack of viable
theories or guidelines in interlibrary network
development. Lib-NAT does offer heuristic benefits;
the true value of Lib-NAT can only be determined
by further testing in different library systems.

6. Projects of the magnitude of the one reported herein
require skilled project management, adequate funding,
and appreciable time for activities and successful
implementation--in view of the unforeseen diffi-
culties and the necessary involvement of many persons.

7. The cooperative spirit of most of the libraries in
Texas is a vital factor in future development of
interlibrary networks. The libraries of Texas are
eager to "get involved" and to participate and to be
innovative--provided the leadership is sufficiently
dynamic and charismatic!! The service potential of
the libraries of Texas can be developed to the benefit
of all citizens through the cooperative application
of Lib-NAT at all service levels.

C. Recommendations

Based on the above conclusions and other findings of this
project, the following recommendations are offered. It was the
intention of this project to develop practical guidance for the
improvement of interlibrary cooperation in the state. These recom-
mendations are, therefore, offered as the ultimate value of the
project to the sponsor--the Texas State Library.

1. A review of the 13 network components identified in the
Conceptual Model should be undertaken with the intent
of clarifying policies and procedures on network opera-
tions for Texas. The transcription of users' opinions
on network design (in Appendix C.6) should be helpful
in this review.

2. An analysis of the transcription of the Behavioral
   Model (Appendix C.6) should be undertaken to identify
   specific behavioral barriers, policy and procedural
   questions and levels of understanding on network use.
   Appropriate workshops should be held throughout the
   state to improve skills in network utilization.
   The Networking Game is a good tool for this.

3. A review of the quantitative data presented in the
   Dallas Pilot Model section (Appendix D) should be
   undertaken with the objective of improving the situation.
   Quantitative criteria for fulfilling network roles could
   be established, such as processing a certain number of
   requests at a fill rate of a certain percent. The
   reasons for the high number of unfilled requests being
   received over Telex should be reviewed with the objective
   of achieving an 80 percent fill rate. The cost of processing
   unfilled requests should be determined so that the cost
   of remedial steps can be evaluated. The routes of access,
   levels of switching, and uncertainty of location demon-
   strated in the analysis of the Networking Game (Appendix
   C.6-b) should be reviewed to assist in improving network
   performance.

4. An evaluation of possible means of identifying resources
   at the state level should be considered. The data indicate
   that location of resources is the major barrier to
   successful interlibrary loan transactions. Some simple
   yet effective method (such as the "LNR: Numerical Register
   of Books in Louisiana Libraries") should be evaluated
   for Texas needs. Closed, homogeneous networks apparently
   do not provide as effective a fill rate as do horizontal,
   heterogeneous open networks. Criteria for local switching
   in metropolitan areas can perhaps be established, based

on total available resources and the number of re-
quests processed or transmitted at the geographic
node. If the total library resources of the state
are to be accessible, development of local switching
capability in metropolitan areas is believed to be
essential.

5. A plan for officially continuing the Statewide Network
Study Group should be developed. Some state-level
coordination of the various types of library networks
is essential for optimum network performance.

6. Quantitative modeling and evaluation of interlibrary
networks is a task of considerable magnitude and probably
beyond the scope of any one state. And yet, each state
is trying to perform this function in a vacuum of
criteria or procedures. It is suggested that state
library agencies urge that a national task force be
appointed, funded, and charged with the responsibility
of developing national network performance criteria
and evaluation methodology

IX. ACKNOWLEDGMENTS

In Phase II, the entire Texas Library Association Reference Round Table made contributions through the Networking Game. Specific appreciation is expressed to Miss Maxine Johnston, Chairman, Reference Round Table, to all the "official listeners" including Mr. Heartsill Young, Miss Jan Wolford, Dean Stanley McElderry, and all the program participants, including Dr. Ed Holley, Mr. Richard Perrine, Mr. Richard O'Keeffe, Miss Margaret Morris, Dr. Richard Nance, Mr. Wallace Olsen. Miss Carole Johnson, RRT Secretary Treasurer, and Mrs. Ruby Weaver, RRT Local Arrangements Chairman, deserve particular recognition for their extra efforts. Mr. Richard Waters' skill as "leader" assured the success of the game-playing in Phase II. Mr. Jim Stephens, Dr. Richard Nance, and Mrs. Elizabeth Twitchell made valuable contributions to the bibliography and glossary in Phase II.

In Phase III, the Dallas Pilot Model could never have operated had the following not participated:

Mr. David Reich, Dallas Public Library
Miss Marguerite Anderson, Richardson Public Library
Mr. Lowell Lindsay, Garland Public Library
Mrs. Viola Baird, Southwestern Medical School
Mrs. Robin Taylor, Southwest Center for Advanced Studies
Miss Jan Wolford, Mobil R & D Corporation
Mrs. Shula Schwartz, Texas Instruments Incorporated
Mrs. Virginia Brannen, Academy of Computer Technology
Mr. George Johnson, Bishop College
Mrs. Mayrelee Newman, El Centro Junior College
Mr. Jim Stephens, SMU Science/Engineering Library
Miss Lois Bailey, SMU Fondren Library
Mrs. Mickey Hill, Industrial Information Services
Miss Margaret Morris, University of Texas at Arlington
Miss Mattie Ruth Moore, Dallas Independent School District

The networking model in Phase IV is the result of Dr. Richard Nance's "labor of love" in this very complex area.

Lib-NAT (Phase V) would not have been possible without the participation of Mrs. Mickey Boyvey who contributed the visual graphics. Dr. Russell Shank, Mr. Richard Perrine, and Mr. and Mrs. Frederick G. Kilgour also contributed to Lib-NAT in various ways.

None of this project would have been possible without the financial and administrative support of Southern Methodist University, the encouragement and tolerance of the Industrial Information Services staff, and the efficiency of Mrs. Frances Fauteck, secretary-and-counselor, editor-first-class!!

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A P P E N D I X

APPENDIX

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APPENDIX A.1
ORIGINAL PROPOSAL

A PROPOSAL

FOR

A LIBRARY INTER-NETWORK STUDY,

DEMONSTRATION AND PILOT MODEL

To Be Performed On Contract

for the

TEXAS STATE LIBRARY

Under
Title III, Library Services and Construction Act
Special Project Grant
By

Southern Methodist University

With the Cooperation of

Texas Library Association, Reference Round Table,

Goals for Dallas,

and Others

November 4, 1968

INTRODUCTION

The enclosed proposal is submitted to the Texas State Library in accord with the requirements outlined in "Application and General Information for a Special Project Grant, Library Services and Construction Act, Title III" transmitted to SMU on October 21, 1968, by the Texas State Library.

The project described herein has both local as well as statewide implication. It involves a close-up analysis of the inter-library and network interfacing in the Dallas area before, during, and after a Demonstration and Pilot Model of an experimental interfacing project. In addition, this proposal outlines a statewide project (in cooperation with the Texas Library Association Reference Round Table) to analyze existing networks and to develop an ideal statewide network interfacing all types of libraries and existing networks. In this latter mission, a Statewide Network Study Group (representing all the various existing library networks) will be appointed to advise and to participate in the planning of network development in Texas.

It would have been easy to submit a much simpler proposal for the same amount of funding. However, we at SMU sincerely believe that the opportunities for improved library and information services during the next decade cannot be fully realized until the fundamental parameters involved in "networking" are identified, analyzed, and evaluated cooperatively with all concerned parties in an open and straightforward manner. This we will attempt to do in the proposed <u>Library Inter-Network Study, Demonstration and Pilot Model</u>. This is a research project designed to develop (through analysis and experimentation) a quantitative methodology for interfacing of libraries in a network and for interfacing of different networks — for the purpose of improved library service to all citizens of Texas.

Maryann Duggan
November 4, 1968

(1)

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APPLICATION

1. Name, mailing address and telephone number of initiating individual, group or agency:

   Maryann Duggan, Southern Methodist University, Science Library, Dallas, Texas 75222, A.C. 214, EM3-3011.

2. Describe the project ennumerating its aims and objectives.

The project is a <u>Library Inter-Network Study, Demonstration and Pilot Model</u> designed to:

1. Explore and develop ways and means for interfacing the existing library networks in Texas.

2. Identify and analyze the specific parameters that must be considered in interfacing these library networks.

3. Identify the kinds of existing networks in the state and analyze the operational features, service policies, financing and future plans of each.

4. Demonstrate experimentally the feasibility of interfacing the various types of libraries and networks through service agreements and telecommunication channels in a Dallas area Demonstration and Pilot Model.

5. Identify the costs involved in interfacing libraries and networks (message costs, transaction costs, indirect costs) and determine fair and just allocation of costs among network participants.

6. Identify the direction of flow of requests, the types of requests, the success ratio in filling requests, and the problems of network interfacing in the Pilot Model.

7. Develop a basic ideal model for a library inter-network system in Texas showing levels of service, access points, switching points, network configuration, communication links, recommended fee structures and cost allocations, and administrative policy.

8. Present the findings of the Demonstration and Pilot Model and the statewide ideal model network to the TLA Reference Round Table Conference in a graphic, as well as descriptive, form enabling public critique.

9. Present to the Texas State Library and the Texas Library Association final summary report with specific recommendations.

* Including methods of computing transaction costs as a function of basic capital cost of a library; i.e., amortization of the cost of the library.

3. Clearly demonstrate the relationship of the proposal to goals of the
   State Plan. Show how this project would further these goals.

   This project will assist the statewide effort to maximize the use of
   the total library resources in the state by all types of library
   patrons, regardless of need, ability to pay, or geographical location.
   All types of libraries will be involved and, thus, the project will
   collect data and make recommendations on the interfacing procedures
   and policies necessary to achieve the goals of the State Plan. The
   recent findings of various national programs (such as the ALA Reference
   Service Division, the revised Inter-Library Loan Code, and the National
   Commission on Libraries) will be considered and incorporated in the
   planning. The data from this project should enable the progressive and
   orderly implementation of a statewide network interconnecting the vari-
   ous types of libraries allowing reciprocal and equitable use of the
   total state resources by all patrons.

4. Names, addresses and positions of personnel responsible for conducting this project. Describe the responsibilities of each.

This project will be under the direction of Maryann Duggan, Assistant Professor, Graduate Faculty, SMU. The work will be done cooperatively with the Reference Round Table of the Texas Library Association and a Statewide Network Study Group to be appointed by the Project Director. Personnel involved, position, and responsibility are as follows:

1. <u>Project Direction and Main Responsibility</u>:

    Maryann Duggan
    Science Library
    SMU
    Dallas, Texas 75222

    Miss Duggan will assign necessary staff to implement and complete the project as outlined under Section 5. She will be responsible for planning, scheduling, implementing, accounting, demonstration project, development of ideal model, summary presentation, and final report.

2. <u>Reference Round Table, Texas Library Association</u>

    a. Miss Maxine Johnson, Chairman
        Reference Round Table
        Lamar State College of Technology
        Beaumont, Texas

        Miss Johnson is responsible for scheduling the RRT Conference in Houston, March 26, 1969 (during which the project results will be reported) and for coordinating the project with the RRT and TLA.

    b. Mr. Dick Waters, RRT Coordinator
        Branch Coordinator
        Dallas Public Library
        Dallas, Texas 75201

        Mr. Waters is responsible for appointment of the 10 Major Resource Center Coordinators (listed below), for collecting and compiling the survey data on existing networks in Texas, and for presenting the summary results of the survey during the March 26 conference in Houston.

3. <u>Statewide Network Study Group</u>

    The Project Director will appoint the following individuals to serve on a Statewide Network Study Group for purpose of analysis and planning of network interfacing policies and procedures and for advising on the proposed ideal network. This group will consist of administrative heads of existing networks and of those agencies involved in networking or library development in the state. The persons to be appointed and their titles are as follows:

a. Miss Maxine Johnson, TLA Reference Round Table Chairman

b. Mr. Dick Waters, TLA Reference Round Table Coordinator

c. Each of the 10 Public Library Major Resource Center Coordin-
    ators:

    1) Mrs. Barbara Wade, Abilene Public Library, Abilene

    2) Miss Joe Battle, Helium Research Center, Amarillo

    3) Mrs. Helen Smith, Business Administration & Economics Library,
        Austin

    4) Mrs. Margaret Hancock, Texas College of Arts & Industries
        Library, Kingsville

    5) Robert Joyce Head, Casa View Branch, Dallas Public Library

    6) Mrs. Shelah Bell Cragin, El Paso Public Library

    7) Miss Janice Gohmert, Fort Worth Public Library

    8) Miss Ruby Weaver, Houston Public Library

    9) William D. Gooch, Ector County Public Library, Odessa

   10) Miss Catherine Montague, George Storch Memorial Library,
        San Antonio

d. Mr. Heartsill Young, Chairman, Library Development Committee,
    Texas Library Association

e. Mr. Dick Perrine, Chairman Reference Services Division, Amer-
    ican Library Association

f. Miss Ammarette Roberts, President, Texas Chapter, Special
    Libraries Association

g. Mrs. Kay Franklin, President, Texas Association of School Librarians

h. Dr. Wilson Fahlberg, President, Texas Council of Health Science
    Libraries

i. Mrs. Wanda Sivells, President, Junior College Library Section,
    Texas Junior College Teachers Association

j. Mrs. Ann Graves, Reference Library, Texas State Library

k. Mrs. Mary R. Boyvey, Library Coordinator, Texas Educational Agency

l. Each Member of LSCA Title III Texas Advisory Council:

    1) Dr. Edward G. Holley (college & university libraries)

    2) Mrs. Flora Wilhite (Size II public libraries)

    3) Mrs. Lillian Bradshaw (major resource center libraries)

    4) Mr. James L. Love (Trustees)

5)   Mrs. Mary Boyvey (school libraries)

6)   Miss Maryann Duggan (special libraries)

m.   Mrs. Dell DeHay, Southwestern Division of American Association
     of Law Libraries

n.   Each of the Administrative Heads of the Existing Library on
     Information Networks, as follows:

   1)   Mrs. Marie Shultz, representing Texas State Library Communi-
        cation Network

   2)   Mr. John Hudson, representing Texas Information Exchange and
        the Council of State College Libraries

   3)   Mr. Dick O'Keeffe, representing Regional Information and
        Communication Exchange

   4)   Col. Stanley Reiff, representing Inter-University Council

   5)   Dr. Robert Olson, representing The Association for Graduate
        Education and Research

   6)   Col. Wilbur Hurt, representing Texas Technology Application
        Network

   7)   Dr. Harry Ransom, representing Knowledge Network

   8)   Dr. John Bradford, representing Western Information Network.

This Statewide Network Study Group will meet four times during the
project and will be responsible for describing details of present
networks (including policies, operating data, and procedures),
identifying parameters of present network operations, and parti-
cipating in the planning of future network developments in the state
to reach the goals of the State Plan. Representatives from this
Group will also participate in the March 26 conference in Houston.

4.   Advisors and Consultants

In addition to the above, certain special advisors or consultants
will be used as needed. Technical assistance in network modelling
will be obtained from the Southwestern Bell Telephone Company and
from Western Union.

5.   Demonstration and Pilot Model Participants

For the local Demonstration and Pilot Model in the Dallas area, the
following libraries will be invited to participate:

a.   SMU Science Library* - Large private academic (departmental)

b.   SMU Fondren Library - Large private academic

c.   Southwestern Medical School - State supported medical library

* Including inter-library services to Southwest Center for Advanced
  Studies (SCAS)

d. University of Texas, Arlington - State university

e. Bishop College - Small, newly developed private academic

f. Dallas Public Library - Large public library (Main library and
    two branches)

g. Richardson Public Library - Small public library

h. Dallas Independent School District - Large school system (one
    grade school and one high school)

i. Richardson School District - Small School System

j. Mobil Research & Development Library - Large special library

k. Texas Instruments Library - Large, departmentalized special
    library

l. Dallas Chamber of Commerce Library - A public service agency

m. El Centro Junior College Library - A public junior college

n. Lone Star Gas Company Library - A special information center

o. Dallas County Library - A county library system

p. Veterans Administration Hospital Library - A government medical
    agency

A Local Advisory Council will be appointed to assist in the Demon-
stration and Pilot Model in the Dallas area. This Council will con-
sist of a representative from the Dallas County Library Association,
the Metropolitan Public Library Association, and the Goals for
Dallas (Planning Committee and Library Task Force).

The participants in the Demonstration and Pilot Model will be responsi-
ble for collecting and reporting data on their inter-library trans-
actions before, during, and after the Demonstration. This group
-will also assist in the designing of the Pilot Model for the Dallas
area.

The data collected from the Demonstration and Pilot Model will be
presented to the Statewide Network Study Group to assist them in plan-
ning an ideal state network.

5. Outline the general method to be followed in implementing the project
   and give the timetable for completion.

   The Inter-Network Demonstration and Pilot Model project consists of two
   separate but inter-related projects, namely:

       a.   The statewide study and development of an ideal network jointly
           with TLA and the Statewide Network Study Group and

       b.   the Demonstration and Pilot Model in the Dallas area.

   The general method to be followed in the statewide study is to collect
   data on existing networks, plan future network development in the Study
   Group, present our findings and recommendations to the Reference Round
   Table Conference in Houston on March 26, 1969, and publish the proceed-
   ings of the conference with recommended future action and implementa-
   tion.

   The general method to be followed in the Dallas Demonstration and Pilot
   Model is to solicit the cooperation of 16 participating libraries (repre-
   senting six types), to collect data on inter-library services before the
   demonstration, to participate in the demonstration of total library co-
   operation, to identify systems problems and collect data on services
   requested during the demonstration, and to help formulate an ideal local
   inter-library network for the Dallas area, spelling out service levels,
   communication channels, fee structure, switching nodes, and procedures
   and costs for implementation.

   The results of the Dallas area pilot model will be available to the
   Statewide Network Study Group for their use in planning the ideal state
   network. The timetable to be followed for the total project is as fol-
   lows, assuming initiation on August 1, 1968:

TARGET DATE	E V E N T
08-01-68	Preliminary planning, discussions and drafting of program.
09-01-68	Preliminary conferences and detail planning on project.
10-01-68	Planning conference in Austin with RRT.
11-07-68	Submit proposal to LSCA Title III Advisory Council.
11-12-68	Sign contract for project.
11-12-68	Appoint Statewide Network Study Group and determine par-ticipating libraries for Pilot Model.
11-13-68	Set up accounting procedures and forms; file voucher to 10-01-68.
11-15-68	Start summary of statewide survey results.
11-20-68	Start planning and collection of data on Pilot Model.
12-01-68	Install Telex and TWX in Dallas Demonstration and Pilot Model.

TARGET DATE	E V E N T
12-05-68	Tabulate results of Statewide Survey and Pilot Model Inter-Library Use data.
12-13-68	First meeting of Statewide Network Study Group (in Houston at SLA) to identify parameters.
01-10-69	Start computer modelling of ideal statewide and local network.
01-20-69	File voucher for period 10-01-68 to 01-01-69.
02-01-69	Second meeting of Statewide Network Study Group to formulate ideal network (incorporating modelling and ALA data).
02-01-69	Designation of Participants in Reference Round Table Conference (03-26).
02-15-69	Mail invitations and programs and draft of Ideal Network to Reference Round Table members.
03-01-69	Collect data on 10 weeks' Demonstration and Pilot Model in Dallas.
03-10-69	Preparation of papers, slides, etc., for RRT Conference.
03-26-69	Reference Round Table Conference, Houston.
04-20-69	File voucher for period 01-01-69 to 04-01-69.
05-10-69	Third meeting of Statewide Network Study Group to plan implementation of Revised Ideal Network.
06-01-69	Collect data on six months' Demonstration and Pilot Model in Dallas.
06-15-69	Fourth Meeting of Statewide Network Study Group to review findings of Houston and Dallas Pilot Model and to make final recommendations on implementations.
06-20-69	Start publication of RRT conference proceedings, Pilot Model results and Statewide Network Study Group's recommendations.
06-29-69	File final voucher covering all expenses on project.

6. Set forth complete anticipated budget requirements to perform the pro-
   ject. Show full breakdown of the local matching and anticipated federal
   grant funds.

ANTICIPATED BUDGET REQUIREMENTS

BUDGET LINE ITEM	TOTAL COST	TITLE III FEDERAL FUNDS	LOCAL* FUNDS
1. Salaries	$ 6,800	$ 4,600	$ 2,200
2. Fringe Benefits	700	400	300
3. Consultants and Contractual Services	1,000	500	500
4. Committees, Workshops & Conferences	2,000	--	2,000
5. Travel	3,000	1,000	2,000
6. Communication Costs	3,000	3,000	--
7. Supplies & Printing	3,500	500	3,000
8. Rental or Purchasing of Equipment	1,000	1,000	--
9. Rental of Space	500	--	500
10. Minor Remodeling	100	--	100
11. Utilities	200	--	200
12. Janitors	200	--	200
	$ 22,000	$ 11,000	$ 11,000

* Local funds will be supplied by participants other than SMU except for
  line items 9-12. Donation of salaries and travel expense will be certi-
  fied and will not exceed pro-rata daily salary, plus travel expenses of
  $16.00 per diem and .09/mile.

Budget Notes:

Line Item

1. Includes salary of principal investigators, necessary steno-
   clerical help and donated time from participants and study group.

3. Includes fee for consultants and donated time from technical
   specialists.

4. Includes cost of TLA RRT Conference and four meetings of
    Statewide Study Group.

5. Includes cost of travel by Statewide Study Group in connection
    with fulfilling the proposal, not to exceed $16.00 per diem
    and .09/mile for automobile or tourist fare on common carrier.

7. The application should be signed by authorized official of the institution
   and the project director.

Institutional representative*	Project Director
Signature: SeVan Griffis	*Signature:* Maryann Duggan
Signature	Signature
Dr. LeVan Griffis	Maryann Duggan
Typewritten or printed signature above	Typewritten or printed signature above
Vice-Provost	Assistant Professor
Title	Title
Southern Methodist University	Southern Methodist University
Institution	Institution
Perkins Administration Building	Science Library
Mailing address	Mailing address
Dallas, Texas 75222	Dallas, Texas 75222
City State Zip	City State Zip
214 EM3-5611	214 EM3-3011
Area Code Telephone number	Area Code Telephone number

* Person authorized to contract for institution making application.

LETTER OF CONTRACT

TEXAS STATE LIBRARY TEXAS ARCHIVES AND LIBRARY BUILDING
DRAWER DD,/CAPITOL STATION/AUSTIN, TEXAS 78711

DORMAN H. WINFREY
DIRECTOR AND LIBRARIAN

MARIE SHULTZ
DIRECTOR, FIELD SERVICES DIVISION

TEXAS LIBRARY AND
HISTORICAL COMMISSION

November 20, 1968

Miss Maryann Duggan, Director
Industrial Information Services
Southern Methodist University
Dallas, Texas 75222

Dear Miss Duggan:

This is to acknowledge the agreement made verbally at the meeting of the Library
Services and Construction Act, Title III Advisory Council on November 7, 1968
at Texas State Library.

The proposal which you presented at that time for Southern Methodist University
with the cooperation of the Texas Library Association Reference Roundtable,
Goals for Dallas group and others, (a copy of which is attached) has been
accepted as a Special Project under Title III, Project 2 of the State Plan
for Texas under the Library Services and Construction Act for FY 1969.

We understand that you will submit evidence of local expenditures for the
project beginning September 1, 1968. The project will cover the period
September 1, 1968 through June 30, 1969. Payments will be made on a quarterly
basis upon receipt of acceptable evidence of local expenditures which can be
used as matching funds to earn federal Title III, Library Services and Con-
struction Act funds by the Texas State Library. The total of local eligible
expenditures which will be matched by grant funds for this project will not
exceed $11,000. Local expenditures will be subject to federal audit.

We understand that Texas State Library Field Services Division will receive a
periodic report of progress being made during the operation period of the
library inter-network study and demonstration pilot model. The final report
generated from this demonstration and submitted to the State Library at the
termination of the project will be evaluated by an out-of-state person chosen
by the Title III Advisory Council. This report should be provided to the
Texas State Library and access given to the records of the project.
activities to the consultant employed to evaluate the project's effectiveness.

Texas State Library staff members look forward to working with you on this project.

Sincerely,

Mrs. Marie Shultz
Director
Field Services Division

Dorman H. Winfrey
Director and Librarian
Texas State Library
November 20, 1968

APPENDIX A.3

SUMMARY OF SMU'S LSCA TITLE III PROJECT
FOR INCLUSION IN TEXAS STATE LIBRARY ANNUAL REPORT

August 10, 1969

1. Describe accomplishment(s) and failure(s):

Eighteen libraries (or library systems) of all types participated
in analyzing interlibrary loans (or "document transfer") within
and without the Pilot Model Area for the purpose of gaining in-
sight into interlibrary networks. This project provided the
vehicle for developing Lib-NAT, i.e. "library network analysis
technique," which is composed of:

   a. A Conceptual Model of an "Ideal Statewide Network",
      developed cooperatively with representatives from
      all types of libraries.

   b. A Behavioral Model, developed cooperatively and ex-
      perimentally tried at the Reference Round Table, in
      which 288 libraries participated.

   c. A Symbolic Model, developed to graphically illustrate
      basic concepts of interlibrary networks including
      geographic/type relations and node/network dynamics.

   d. An Analytical Model using operations research tech-
      niques illustrates critical network design parameters
      such as utility criteria (quality, cost and time).

Failures in the project relate to lack of sufficient time to perfect
the Lib-NAT tools, collect more data on other libraries in the area,
statistically correlate the data with possible operational variables,
implement a "new" network interface for the Pilot Model Area, and
develop contractual/funding arrangements for interfacing.

2. Describe problems encountered; special experiences and observations.

Inadequate time to achieve all goals was a major problem. Identify-
ing matching funds and developing accounting system were   difficult
problems. Working closely with so many persons with diverse back-
grounds and interests presented problems in meeting achievement
time-table. Just "getting people together" for planning sessions
was difficult operationally.

The attitudes of the many participating librarians toward cooperation
and apparent willingness to experiment with new concepts were rewarding.
The reception of Lib-NAT by the library community indicates a readiness
to move forward into the networking phase of library development, with
appropriate guidance and leadership.

3. Effectiveness of project in achieving objectives of state plan.

This project indicates further steps necessary to reach the long-range goal of total participation of all types of library and information networks for reciprocal use of information resources by all patrons. This project developed a technique and methodology for analyzing document transfer networks and for designing networks to achieve maximum capability to serve all citizens of the state.

4. Materials for Publishing . . .

The final report (due September 15, 1969) will contain copies of all the printed material developed during this project. Enclosed is a reprint from Texas Library Journal describing the project as presented to the TLA Reference Round Table. The Lib-NAT story will be published in the September issue of Journal of Library Automation. Oral presentations have been made to ALA (three divisions), Washington State Library, Rocky Mountain Bibliographical Center Board, and the Oklahoma State Library.

APPENDIX B

STATEWIDE STUDY GROUP AND CONCEPTUAL MODEL

APPENDIX B.1

INVITATION LETTER FOR FEBRUARY 18, 1969 MEETING

January 27, 1969

File: Title III
        Statewide Study

TO ALL PERSONS ON ATTACHED LIST

RE: STATEWIDE LIBRARY/INFORMATION NETWORK STUDY GROUP MEETING FEBRUARY 18

The Texas State Library has contracted with SMU to study ways and means to
interface existing statewide library and information networks serving all
types of users. The purpose of this study is to develop greater quantitative
insight into present and future network operations so that an optimum state-
wide system of library and information service can be planned and proposed
by July 1, 1969. This study is partially funded through Title III of Li-
brary Services and Construction Act.

The preliminary findings of this study will be presented in a Texas Library
Association Reference Round Table Institute in Houston on March 26, 1969.
The preliminary program of this Institute is enclosed for your information.
The final results and recommendations of the study are due July 1, 1969.

In order for the statewide study to be meaningful, I feel that the Adminis-
trative heads of the existing library/information networks should be in-
volved in the analysis and planning phase. We need quantitative date on
the operational characteristics of each network.

We also need to know current policies and procedures of each network and any
future plans or goals for future network developments in all types of libraries.
We are sincerely seeking ideas on how the statewide library network system can
be improved to provide optimum service to present and future users of all
types.

We have scheduled a planning meeting of all network heads and typical network
users on Tuesday, February 18, 8:30 a.m. to 4:00 p.m., SMU Science Information
Center, Room 119. The purpose of this meeting is to identify the specific
parameters of network performance and to develop the necessary procedures for
modelling and simulating network design. Dr. Richard Nance, our consultant
in network design, will be available to discuss details of network modelling.
Mr. Richard Waters, chairman of TLA Statewide Network Survey Committee, will
have available preliminary data from a recent survey of library/information
network in Texas. A list of all persons invited to participate in the February
18 meeting is enclosed for your information. Also enclosed is a proposed
agenda for the meeting and an outline of the kind of data needed for a valid
network study.

We have no funds for payment of your expenses for participating in this study.
In fact, we are asking that you donate your time and expenses to the matching
funds requirements of the study. As a minimum, may we sincerely urge you to
attend the February 18 planning meeting to explore ways and means of improved
network development.

- 2 -

A reply form is enclosed for your convenience. If you have any questions,
I would be pleased to talk with you. We look forward to your participation
in this study and we sincerely need your presence at the February 18 meet-
ing.

If you are not able to attend this meeting, could you please send a deputy
to represent you so that we may have your thinking and participation.

Sincerely,

STATEWIDE NETWORK STUDY - TITLE III

Maryann Duggan
Project Director

MD:rm

Encl.

cc: All persons on attached list

ENCLOSURE 1

STATEWIDE NETWORK STUDY GROUP

The following persons are invited to participate in the study and planning
of improved statewide library/information networks on February 18, 1969,
8:30 a.m. to 4:00 p.m., SMU Science Information Center, Room 119:

1. Mrs. Mary Boyvey, Texas Educational Agency

2. Dr. John Bradford, representing Western Information Network

3. Mrs. Lillian Bradshaw, Major Resource Center Libraries, Title III
   Council

4. Mr. Truman Cook, Consultant on Network Design

5. Mrs. Dell DeHay, Southwestern Division of Southwestern Association
   of Law Libraries

6. Dr. Wilson Fahlberg, Texas Council of Health Science Libraries

7. Mrs. Kay Franklin, Texas Association School Librarians

8. Mrs. Ann Graves, Reference Library, Texas State Library

9. Dr. Edward Holley, LSCA, Title III and HEA Title IX Advisory
   Council

10. Mr. John Hudson, representing Texas Information Exchange and Council
    of State College Libraries

11. Col. Wilbur Hurt, representing Texas Technology Application Network

12. Miss Maxine Johnston, TLA Reference Round Table Chairman

13. Miss S. Janice Kee, Regional Library Program Consultant, O. E.

14. Mr. James L. Love, Trustee, Title III Council

15. Mr. Stanley McElderry, Consultant on Network Design

16. Mr. Edward Montgomery, Consultant on Network Design

17. Dr. Richard Nance, Consultant on Network Design

18. Mr. Richard O'Keeffe, representing Regional Information and Communica-
    tion Exchange

19. Dr. Robert Olson, representing The Association for Graduate Education
    and Research

ENCLOSURE 1
Page 2

20. Mr. Ross Peavey, Consultant on Network Design

21. Mr. Richard Perrine, Reference Services Division, ALA

22. Dr. Harry Ransom, representing proposed Knowledge Network and
    President's Commission on Libraries

23. Col. Stanley Reiff, representing Inter-University Council

24. Miss Ammarette Roberts, Texas Chapter, SLA

25. Mr. Prentiss Selby, Consultant on Network Design

26. Mrs. Marie Shultz, representing Texas State Library Communications
    Network

27. Mrs. Wanda Sivells, Junior College Library Section, Texas Junior
    College Teachers Association

28. Mr. James Stephens, Consultant on Network Design

29. Mr. Richard Waters, TLA Statewide Network Survey Committee

30. Mrs. Flora Wilhite, Size II Public Libraries, Title III Council

31. Mr. Heartsill Young, Library Development Committee, TLA

Preliminary Program

COOPERATIVE INFORMATION AND REFERENCE SERVICES - LIBRARY NETWORKS

TLA Reference Round Table Pre-conference Institute

Albert Thomas Convention Center   Downtown Houston, Texas
March 26, 1969

8:30 a.m.	-	Registration
9:00 a.m.	-	Opening Remarks and Objectives of Institute Maxine Johnston, Chairman, Reference Round Table

9:10 a.m.	-	Recent Developments on the National Scene
		    Richard Perrine, President, ALA Reference
		        Services Division
		    Ed Holley, Librarian on Office of Education's
		        Knowledge Networks Task Force

9:30 a.m.	-	Texas Library Networks and Cooperative Reference
		Services Survey
		    Richard Waters, Chairman, RRT Institute
		        Planning Committee

10:15 a.m.	-	Questions and Discussion from Attendees
10:30 a.m.	-	Coffee

10:45 a.m.	-	Reference Librarians and Networks -- What It's All
		About: Houston and Dallas Case Studies
		    Richard O'Keefe, Project Director, LSCA
		        Title III - Houston
		    Maryann Duggan, Project Director, LSCA
		        Title III - Dallas

11:30 a.m.	-	Questions and Discussion from Attendees
12:00 noon	-	Lunch (Included in Registration Fee)

1:00 p.m.	-	"Games Librarians Play" or A Day in the Life of
		an Inter-Library Loan Librarian
		    Francine Morris, University of Texas at
		        Arlington, Texas Library

1:15 p.m.	-	Model Library Network and Library Network Modeling
		    Dr. Richard Nance, S.M.U. Institute of
		        Technology

2:00 p.m.	-	Questions and Discussion from Attendees

2:15 p.m.   -   The Ideal Library Network for Texas

2:45 p.m.   -   Coffee

3:00 p.m.   -   Networking Your Own Library - Discussion and
                    Critique from Attendees

3:45 p.m.   -   The Future - Where Do We Go From Here
                    Report of Official Listeners & Discussion from
                         Attendees

4:20 p.m.   -   Summary

4:30 p.m.   -   Reference Round Table Plans for the Future

4:45 p.m.   -   Adjournment

OBJECTIVES OF THE INSTITUTE

1. To summarize development (national, state, and local) in cooperative
    reference and information services since the 1968 TLA Reference Round
    Table Institute.

2. To explore new thinking and approaches to the examination and use of
    cooperative reference services and library networks.

3. To apply network concepts to local library situations.

4. To develop an ideal state-wide, inter-library reference network through
    participation of institute attendees.

5. To identify future developments needed in cooperative reference and
    inter-library networks in Texas.

Participants will include public librarians, college and university
librarians, information scientists, school librarians; a few adminis-
trators; and a sprinkling of mathematicians, theorists, and Devil's
Advocates.

Audience participation (all attendees will be in a simulated network
during the Institute) and brainstorming is welcome and encouraged.
Together, reference and information librarians will develop insight
and know-how in building cooperative reference services through and
with library networks.

ENCLOSURE 3

PROPOSED AGENDA

STATEWIDE NETWORK STUDY GROUP

FEBRUARY 18, 1969

SMU SCIENCE INFORMATION CENTER

DALLAS, TEXAS

8:30 a.m.	Opening Remarks and Purpose of Meeting
9:00 a.m.	Summary Report on Statewide Network Survey - Dick Waters
10:00 a.m.	Coffee
10:15 a.m.	Summary Report on Network Modelling - Dick Nance
11:00 a.m.	Network Performance Characteristics (Data Gathering)
12:00 noon	Lunch
1:00 p.m.	Summary Report on Reference Round Table Conference Objectives
1:30 p.m.	Ideal Model Statewide Network - Conceptual Design
2:30 p.m.	Coffee
2:45 p.m.	Reports from Each Existing Network - Status and Future Plans
3:45 p.m.	Strategy and Goals for Future Statewide Network Development

* * *

·ENCLOSURE 4

TYPES OF DATA NEEDED TO EVALUATE NETWORK PERFORMANCE

The following network characteristics will be discussed during
the February 18 meeting. Please bring available data on your
network.

I. Users and Operators

  a. Primary User Group
  b. Secondary User Group
  c. Operator Group

II. Administrative Aspects

  a. Legal Authorization
  b. Organization Structure
  c. Contractual Agreements .
      (Operators and Users)

III. Financial Aspects

  a. Operational Budget
  b. Fee Structure
  c. Source of Funds
  d. Cost Data per Service Unit

IV. Resources

  a. Data Base
  b. In-House Resources
  c. Access to Other Resources

V. Services

  a. Document Transfer
  b. Search Service
  c. Referral
  d. Switching
  e. Other

VI. Network Configuration

  a. Location of Nodes
  b. Location of Switching Center
  c. Patterns of Use

VII. Interfacing with Other Networks

  a. Currently Active
  b. Planned
  c. How

VIII. Telecommunications

  a. Terminal Services - Type
      & Capacity
  b. Channels - Location & Width
  c. Other Hardware Capability

IX. Volume of Activity

  a. Messages or Requests -
      Number
  b. Messages or Requests -
      Length
  c. Document Flow
  d. Other Uses

X. Time vs. Cost vs. Quality

XI. Problems

XII. Switching Levels

  a. Homogeneous
  b. Heterogeneous
  c. Vertical
  d. Horizontal
  e. Local
  f. State
  g. National

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ENCLOSURE 5

RESERVATION FOR FEBRUARY 18 MEETING

Send to:

Maryann Duggan, Director
Industrial Information Services
Southern Methodist University
Dallas, Texas 75222

I (____ will) (____ will not) attend the February 18 State-
wide Network Study Group Meeting at SMU.

I (____ will) (____ will not) send a deputy to represent my
thinking and area of interest in statewide network development.
The Deputy is: _____.

I (____ am) (____ am not) interested in actively participating
in such a Study Group during the next 6 months (requiring attendance
at two additional statewide meetings) and am willing to donate my
time and expenses.

_____
Signed

_____
Address

_____
Telephone No.

APPENDIX B.2

STATEWIDE STUDY GROUP ON LIBRARY NETWORKS

FIRST MEETING - FEBRUARY 18, 1969

P A R T I C I P A N T S

1. Mrs. Mary Boyvey, Texas Educational Agency
2. Mrs. Virginia Brannen, University Computing Company
3. Mr. John Carpenter, Southwest Center for Advanced Studies
4. Mr. Truman Cook, Consultant on Network Design, SMU
5. Dr. William Fahlberg, Texas Council on Health Science Libraries
6. Mrs. Catherine Franklin, Texas Association School Librarians
7. Mrs. Ann Graves, Reference Library, Texas State Library
8. Dr. LeVan Griffis, Vice Provost, SMU
* 9. Mr. John Hudson, representing Texas Information Exchange and Council of State College Libraries
10. Miss Maxine Johnston, TLA Reference Round Table Chairman
11. Miss S. Janice Kee, Regional Library Program Consultant, Office of Education
*12. Mr. Stanley McElderry, Consultant on Network Design
13. Mr. Edward Montgomery, Consultant on Network Design
14. Dr. Richard Nance, Consultant on Network Design, SMU
15. Mr. Carl Peters, Southwest Center for Advanced Research
16. Mr. Ross Peavey, Southwest Center for Advanced Research
17. Mr. Richard Perrine, Reference Services Division, ALA
18. Col. Stanley Reiff, representing Inter-University Council
19. Miss Ammarette Roberts, Texas Chapter, SLA
*20. Mr. Robert F. Schenkkan, T E M P, University of Texas
21. Mr. Frank Seay, Administrative Assistant to the President, SMU
*22. Mr. Prentiss Selby, Consultant on Network Design
23. Mrs. Marie Shultz, representing Texas State Library Communications Network
24. Mrs. Dorothy Sinclair, University of Houston, SETINA
25. Mrs. Wanda Sivells, Junior College Library Section, Texas Junior College Teachers Association
26. Mr. James Stephens, Consultant on Network Design, SMU
27. Mr. Forest Ward, Programs Division, Coordinating Board
28. Mr. Richard Waters, TLA Statewide Network Survey Committee
29. Dr. Robert Whipple, Texas Technological College, WIN
30. Mrs. Flora Wilhite, Size II Public Libraries, Title III Council
31. Mr. Dick Yoes, T E M P, University of Texas
*32. Mr. Heartsill Young, Library Development Committee, TLA

* * *

*Were unable to attend meeting, but participated via telephone and correspondence.

APPENDIX B.3

HANDOUTS AT FEBRUARY 18, 1969 MEETING

STATEWIDE STUDY GROUP ON LIBRARY NETWORKS

FIRST MEETING - FEBRUARY 18, 1969

A G E N D A

8:30 a.m.	Opening Remarks and Purpose of Meeting
9:00 a.m.	Summary Report on Statewide Network Survey - Dick Waters
10:00 a.m.	Coffee
10:15 a.m.	Summary Report on Network Modeling - Dick Nance
11:00 a.m.	Network Performance Characteristics (Data Gathering)
12:00 noon	Lunch
1:00 p.m.	Summary Report on Reference Round Table Conference Objectives
1:30 p.m.	Ideal Model Statewide Network - Conceptual Design
2:30 p.m.	Coffee
2:45 p.m.	Reports from Each Existing Network - Status and Future Plans
3:45 p.m.	Strategy and Goals for Future Statewide Network Development

* * *

STATEWIDE STUDY GROUP ON LIBRARY NETWORKS

FIRST MEETING - FEBRUARY 18, 1969

OBJECTIVES

1. To determine the Operational Parameters of existing
   or proposed
   a. Communication Networks
   b. Library/Information Networks

2. To develop a Conceptual Design of an Ideal Inter-
   Library Network for Texas.

3. To explore the possible interfacing of Communication
   Networks and Inter-Library Networks.

* * *

OPERATIONAL CHARACTERISTICS OF TEXAS NETWORKS

Data Supplied By _____

Date _____

Name of Network _____

Address of Headquarters _____

CHARACTERISTICS		
I. USERS & OPERATORS		
a. Primary User Group		
b. Secondary User Group		
c. Operator Group		
II. ADMINISTRATIVE ASPECTS		
a. Legal Authorization		
b. Organization Structure		
c. Contractual Agreements		
III. FINANCIAL ASPECTS		
a. Operational Budget		
b. Fee Structure		
c. Source of Funds		
d. Cost/Service Unit		
IV. RESOURCES		
a. Data Base		
b. In-House Resources		
c. Access to Other Resources		

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OPERATIONAL CHARACTERISTICS OF TEXAS NETWORKS   Name of Network

CHARACTERISTICS					
V. SERVICES					
a. Document Transfer					
b. Search Service					
c. Referral					
d. Switching					
e. Other					
VI. NETWORK CONFIGURATION					
a. Location of Nodes					
b. Location of Switching Center					
c. Patterns of Use					
d. Message Volume on Each Link					
VII. INTERFACING					
a. Active Interfaces					
b. Planned Interfaces					
c. How Done, Contract?					
VIII. TELECOMMUNICATIONS					
a. Terminals - Type					
b. Terminals - Capacity					
c. Channels - Location					
d. Channels - Width					

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OPERATIONAL CHARACTERISTICS OF TEXAS NETWORKS	Name of Network
CHARACTERISTICS	
VIII. TELECOMMUNICATIONS (cont.)	
e. Other Special Hardware Computers, FAX, etc.	
IX. VOLUME OF ACTIVITY	
a. Messages - No./month	
b. Requests - No./month	
c. Length of Messages (Avg.)	
d. Document Flow	
e. Other Uses	
f. Hours/Week Operations	
X. UTILITY	
XI. PROBLEMS	

L S C A   TITLE III

STATEWIDE STUDY GROUP ON LIBRARY NETWORKS

MATCHING FUNDS IDENTIFICATION

TO WHOM IT MAY CONCERN:

The following individuals attended a Meeting of the Statewide Study
Group on Library Networks on _____, from _____
to _____, at _____.
These individuals authorize their time and travel expense for this meeting
to be used as matching funds for the SMU LSCA TITLE III Project.

Certified and
Witnessed by: _____

Title _____

NAME (PLEASE SIGN)	INSTITUTION & LOCATION	TRAVEL EXP*	T I M E**		TOTAL
			HRS.	$ VALUE	

* Not to exceed 9¢ per mile (or actual plane fare) or $14.00 per diem.
** Include time preparing for meetings as well as time at meetings.

Texas State Library
Field Services Division
Drawer DD - Capitol Station
Austin, Texas 78711

MAJOR RESOURCE CENTER LIBRARIES
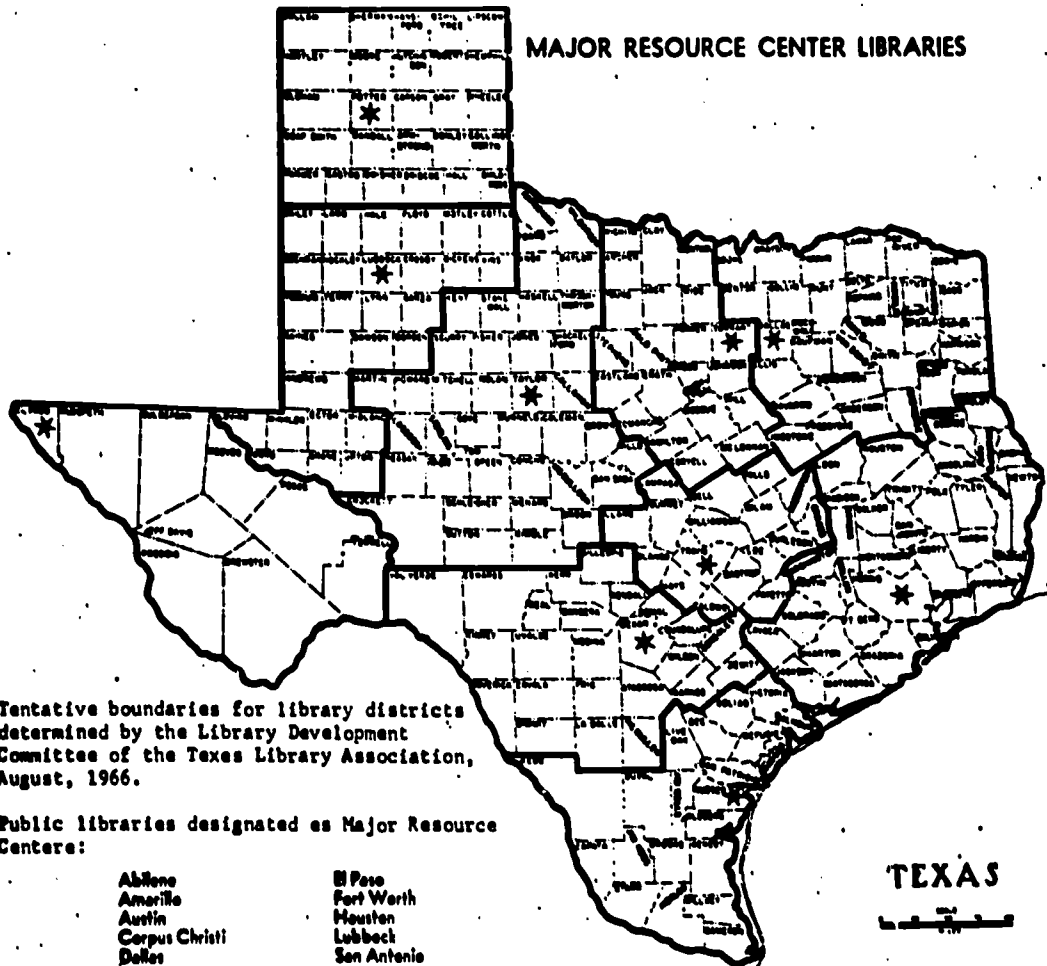
Tentative boundaries for library districts
determined by the Library Development
Committee of the Texas Library Association,
August, 1966.

Public libraries designated as Major Resource
Centers:

Abilene	El Paso
Amarillo	Fort Worth
Austin	Houston
Corpus Christi	Lubbock
Dallas	San Antonio

TEXAS

By _____   _.B. No. _____

A BILL TO BE ENTITLED

AN ACT

relating to the establishment, operation,
and financing of a state library system
consisting of a network of interrelated
cooperating library systems designed to
provide adequate library facilities and
services to the public; and declaring an
emergency.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

CHAPTER A. GENERAL PROVISIONS

Section 1. PURPOSE. Since adequate library services are essential
to the cultural, educational, and economic development of the state and to the
health, safety, and welfare of its people, and are the responsibility of government
at all levels, and since the state has a financial responsibility for promoting
public education and the public library is a vital agency serving all levels of the
educational process, it is the policy of this state to promote, support, and imple-
ment through state grants-in-aid and other means the development and maintenance
of a network of library systems to provide adequate public facilities and services
to every citizen.

Sec. 2. SHORT TITLE. This Act may be cited as the Library Systems
Act.

Sec. 3. DEFINITIONS. In this Act, unless the context requires a
different definition.

(1) "public library" means a library operated by a single public agency
that is freely open to all persons under identical conditions and receives its
financial support in whole or in part from public funds;

(2) "Commission" means the Texas State Library and Historical Commis-
sion;

(3) "State Librarian" means the director and librarian of the Texas State
Library;

(4) "library system" means two or more public libraries cooperating in a
system approved by the Commission to improve library service and to make their
resources accessible to all residents of the area which the member libraries
collectively serve;

(5) "state library system" means a network of library systems, inter-
related by contract, for the purpose of organizing library resources and services
for research, information, and recreation to improve statewide library service and
to serve collectively the entire population of the state;

(6) "major resource system" means a network of library systems attached
to a major resource center, consisting of area libraries joined cooperatively to
the major resource center and of community libraries joined cooperatively to area
libraries or directly to the major resource center;

(7) "major resource center" means a large public library serving a popu-
lation of 200,000 or more within 4,000 or more square miles, and designated as
the central library of a major resource system for referral service from area libraries

1 in the system, for cooperative service with other libraries in the system, and for
2 federated operations with other libraries in the system;
3   (8) "area library" means a medium-sized public library serving a popu-
4 lation of 25,000 or more, which has been designated as an area library by the
5 Commission and is a member of a library system interrelated to a major resource
6 center;
7   (9) "community library" means a small public library serving a popu-
8 lation of less than 25,000, which is a member of a library system interrelated to
9 a major resource center;
10   (10) "contract" means a written agreement between two or more libraries
11 to cooperate, consolidate, or receive one or more services;
12   (11) "standards" means the criteria established by the Commission which
13 must be met before a library may be accredited and eligible for membership in a
14 major resource system;
15   (12) "accreditation of libraries" means the evaluation and rating of
16 public libraries and library systems using the standards as a basis;
17   (13) "governing body" means that body which has the power to authorize
18 a library to join, participate in, or withdraw from a library system; and
19   (14) "library board" means the body which has the authority to give
20 administrative direction or advisory counsel to a library or library system.
21   CHAPTER B.   STATE LIBRARY SYSTEM
22   Sec. 4.   ESTABLISHMENT.   The Commission shall establish and develop
23 a state library system.
24   Sec. 5.   ADVISORY BOARD.   (a)   The Commission shall appoint an
25 advisory board of five librarians qualified by training, experience, and interest
26 to advise the Commission on the policy to be followed in the application of the
27 provisions of this Act.
28   (b)   The term of office of a board member is three years, except that the
29 initial members shall draw lots for terms, one to serve a one-year term, two to
30 serve a two-year term, and two to serve a three-year term.
31   (c)   The board shall meet at least once a year. Other meetings may be
32 called by the Commission during the year.
33   (d)   The members of the board shall serve without compensation, but shall
34 be reimbursed their actual and necessary expenses incurred in the performance of
35 their official duties.
36   (e)   Vacancies shall be filled for the remainder of the unexpired term in
37 the same manner as original appointments.
38   (f)   No member may serve more than two consecutive terms.
39   Sec. 6.   PLAN OF SERVICE.   The State Librarian shall submit an initial
40 plan for the establishment of the state library system and an annual plan for the
41 development of the system for review by the advisory board and approval by the
42 Commission.
43   CHAPTER C.   MAJOR RESOURCE SYSTEM
44   Sec. 7.   AUTHORITY TO ESTABLISH.   The Commission may establish and
45 develop major resource systems in conformity with the plan for a state library
46 system as provided in Chapter B, Sec. 6 of this Act.
47   Sec. 8.   MEMBERSHIP IN SYSTEM.   (a)   Eligibility for membership in
48 the system is dependent cn accreditation of the library by the Commission on the
49 basis of standards established by the Commission.
50   (b)   To meet population change, economic change, and changing service
51 strengths of member libraries, a major resource system may be reorganized,
52 merged with another system, or partially transferred to another system by the
53 Commission with the approval of the appropriate governing bodies of the libraries
54 comprising the system.

Sec. 9.   OPERATION AND MANAGEMENT.   (a)   Governing bodies within a major resource system area may join in the development, operation, and maintenance of the system and appropriate and allocate funds for its support.

(b)   Governing bodies of political subdivisions of the state may negotiate separately or collectively a contract with the governing bodies of member libraries of a major resource system for all library services or for those services defined in the contract.

(c)   On petition of 10 percent of the qualified electors in the latest general election of a county, city, town, or village within the major resource system service area, the governing body of that political subdivision shall call an election to vote on the question of whether or not the political subdivision shall establish contractual relationships with the major resource system.

(d)   The governing body of a major resource center and the Commission may enter into contracts and agreements with the governing bodies of other libraries, including but not limited to other public libraries, school libraries and media canters, academic libraries, technical information and research libraries, or systems of such libraries to provide specialized resources and services to the major resource system in effecting the purposes of this Act.

Sec. 10.   WITHDRAWAL FROM MAJOR RESOURCE SYSTEM.   (a)   The governing body of any political subdivision of the state may by resolution or ordinance withdraw from the system. Notice of withdrawal must be made not less than 90 days before the end of tha major resource center fiscal year.

(b)   The provision for termination of all or part of a major resource system does not prohibit revision of the system by the Commission, with approval of the appropriate governing bodies, by reorganization, by transfer of part of the system, or by merger with other systems.

(c)   The governing body of a public library which proposes to become a major resource center shall submit an initial plan of service for the major resource system to the State Librarian. Thereafter, the governing body of the major resource center shall submit an annual plan of system development, made in consultation with the advisory council, to the State Librarian.

Sec. 11.   ADVISORY COUNCIL.   (a)   An advisory council for each major resource system is established, consisting of six lay members representing the member libraries of the system.

(b)   The governing body of each member library of the system shall elect or appoint a representative for the purpose of electing council members. The representatives shall meet within 10 days following their selection and shall elect the initial council from their group. Thereafter, the representatives in an annual meeting shall elect members of their group to fill council vacancies arising due to expiration of terms of office. Other vacancies shall be filled for the unexpired term by the remaining members of the council. The major resource center shall always have one member on the council.

(c)   The term of office of a council member is three years, except that the initial members shall draw lots for terms, two to serve a one-year term, two to serve a two-year term, and two to serve a three-year term. No individual may serve more than two consecutive terms.

(d)   The council shall elect a chairman, vice chairman, and secretary.

(e)   The council shall meet at least once a year. Other meetings may be held as often as is required to transact necessary business. A majority of the council membership constitutes a quorum. The council shall report business transacted at each meeting to all member libraries of the system.

(f)   The council shall serve as a liaison agency between the member libraries end their governing bodies and library boards to:

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1   (1)   advise in the formulation of the annual plan for service to be offered
2   by the system;
3   (2)   recommend policies appropriate to services needed;
4   (3)   evaluate services received;
5   (4)   counsel with administrative personnel; and
6   (5)   recommend functions and limitations of contracts between coopereting
7   agencies.
8   (g)   The functions of the advisory council in no way diminish the powers
9   of local library boards.
10   CHAPTER D.   CONSTITUENTS OF MAJOR RESOURCE SYSTEMS
11   Sec. 12.   MAJOR RESOURCE CENTER.   (a)   The Commission may desig-
12 nate major resource centers. Designation shall be made from existing public
13 libraries on the basis of criteria approved by the Commission and agreed to by the
14 governing body of the library involved.
15   (b)   The governing body of the library designated by the Commission as a
16 major resource center may accept the designation by resolution or ordinance
17 stating the type of service to be given and the area to be served.
18   (c)   The Commission may revoke the designation of a major resource
19 center which ceases to muet the criteria for a major resource center or which fails
20 to comply with obligations stated in the resolution or ordinance egreements. The
21 Commission shall provide a 'fair hearing on request of the major resource center.
22   (d)   Funds allocated by governing bodies contracting with the major
23 resource center and funds contributed from state grants-in-aid for the purposes of
24 this Act shall be deposited with the governing body operating the major resource
25 center following such procedures as may be agreed to by the contributing agency.
26   (e)   The powers of the governing board of the major resource center in no
27 way diminish the powers of local library boards.
28   Sec. 13.   AREA LIBRARY.   (a)   The Commission may designate area
29 libraries within each major resource system service area to serve the surrounding
30 area with library services for which contracts are made with participating libraries.
31 Area libraries may be designated only from existing public libraries and on the
32 basis of criteria approved by the Commission and agreed to by the governing body
33 of the library involved.
34   (b)   The governing body of the library designated by the Commission as an
35 area library may accept the designation by resolution or ordinance stating the type
36 of service to be given and the area to be served.
37   (c)   The Commission may revoke the designation of an area library which
38 ceases to meet the criteria for an area library or fails to comply with obligations
39 stated in the resolution or ordinance agreement. The Commission shall provide
40 a fair hearing on request of the major resource center or area library.
41   (d)   Funds allocated by governing bodies contracting with the area library
42 and funds contributed from state grants-in-aid for the purposes of this Act shall
43 be deposited with the governing body operating the area library following such
44 procedures as may be agreed to by the contributing agency.
45   Sec. 14.   COMMUNITY LIBRARY.   (a)   Community libraries accredited
46 by the Commission are eligible for membership in a major resource system.
47   (b)   A community library may join a system by resolution or ordinance of
48 its governing body and execution of contracts for service.
49   (c)   The Commission may terminate the membership of e community library
50 in a system if the community library loses its accreditation by ceesing to meet
51 the minimum standards established by the Commission or feils to comply with
52 obligations stated in the resolution or ordinance agreement.
53
54

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CHAPTER E.   STATE GRANTS-IN-AID TO LIBRARIES

Sec. 15.   ESTABLISHMENT.   (a)   A program of state grants within the limitations of funds appropriated by the Texas Legislature shall be established.

(b)   The program of state grants shall include one or more of the following:

(1)   system operation grants, to strengthen major resource system services to member libraries, including grants to reimburse other libraries for providing specialized services to major resource systems;

(2)   incentive grants, to encourage libraries to join together into larger units of service in order to meet criteria for major resource system membership;

(3)   establishment grants, to help establish libraries which will qualify for major resource system membership in communities without library service; and

(4)   equalization grants, to help libraries in communities with relatively limited taxable resources to meet criteria for major resource system membership.

Sec. 16.   RULES AND REGULATIONS.   (a)   Proposed initial rules and regulations necessary to the administration of the program of state grants, including qualifications for major resource system membership, shall be formulated by the State Librarian with the advice of the advisory board.

(b)   These proposed rules and regulations shall be published in the official publication of the Texas State Library. Such publication shall include notice of a public hearing before the Commission on the proposed rules and regulations to be held on a date certain not less than 30 nor more than 60 days following the date of such publication.

(c)   Following the public hearing, the Commission shall approve the proposed rules and regulations or return them to the State Librarian with recommendations for change. If the Commission returns the proposed rules and regulations to the State Librarian with recommendations for change, the State Librarian shall consider the recommendations for change in consultation with the advisory board and resubmit the proposed rules and regulations to the Commission for its approval.

(d)   Revised rules and regulations shall be adopted under the same procedure provided in this Chapter for the adoption of the initial rules and regulations.

Sec. 17.   ADMINISTRATION.   The State Librarian shall administer the program of state grants and shall promulgate the rules and regulations approved by the Commission.

Sec. 18.   FUNDING.   (a)   The Commission may use funds appropriated by the Texas Legislature for personnel and other administrative expenses necessary to carry out the provisions of this Act.

(b)   Libraries and library systems may use state grants for materials; for personnel, equipment, and administrative expenses; and for financing programs which enrich the services and materials offered a community by its public library.

(c)   State grants may not be used for site acquisition, construction, or for acquisition, maintenance, or rental of buildings, or for payment of past debts.

(d)   State aid to any free tax-supported public library is a supplement to and not a replacement of local support.

CHAPTER F.   OTHER PROVISIONS

Sec. 19.   SEVERABILITY.   If any provision of this Act or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect other provisions or applications of the Act which can be given effect without the invalid provision or application, and to this end the provisions of this Act are declared to be severable.

Sec. 20.   EMERGENCY CLAUSE.   The importance of this legislation and the crowded condition of the calendars in both houses create an emergency and an imperative public necessity that the Constitutional Rule requiring bills to be read on three several days in each house be suspended, and this Rule is hereby suspended.

-5-

Prepared by
TEXAS LIBRARY ASSOCIATION

For further information on the Proposed Library Systems Act,
contact the Director of one of the following libraries:

Abilene Public Library
202 Cedar Street
Abilene 79601

El Paso Public Library
501 North Oregon Street
El Paso 79901

Mary E. Bivins Memorial Library
Post Office Box 2171
Amarillo 79105

Fort Worth Public Library
9th and Throckmorton
Fort Worth 76102

Austin Public Library
Post Office Box 2287
Austin 78767

Houston Public Library
500 McKinney Avenue
Houston 77002

La Retama Public Library
505 North Mesquite
Corpus Christi 78401

Lubbock City-County Library
2001 19th Street
Lubbock 79401

Dallas Public Library
1954 Commerce
Dallas 75201

San Antonio Public Library
203 S. St. Mary's
San Antonio 78205

November 1968

PROPOSED TEXAS LIBRARY SYSTEM
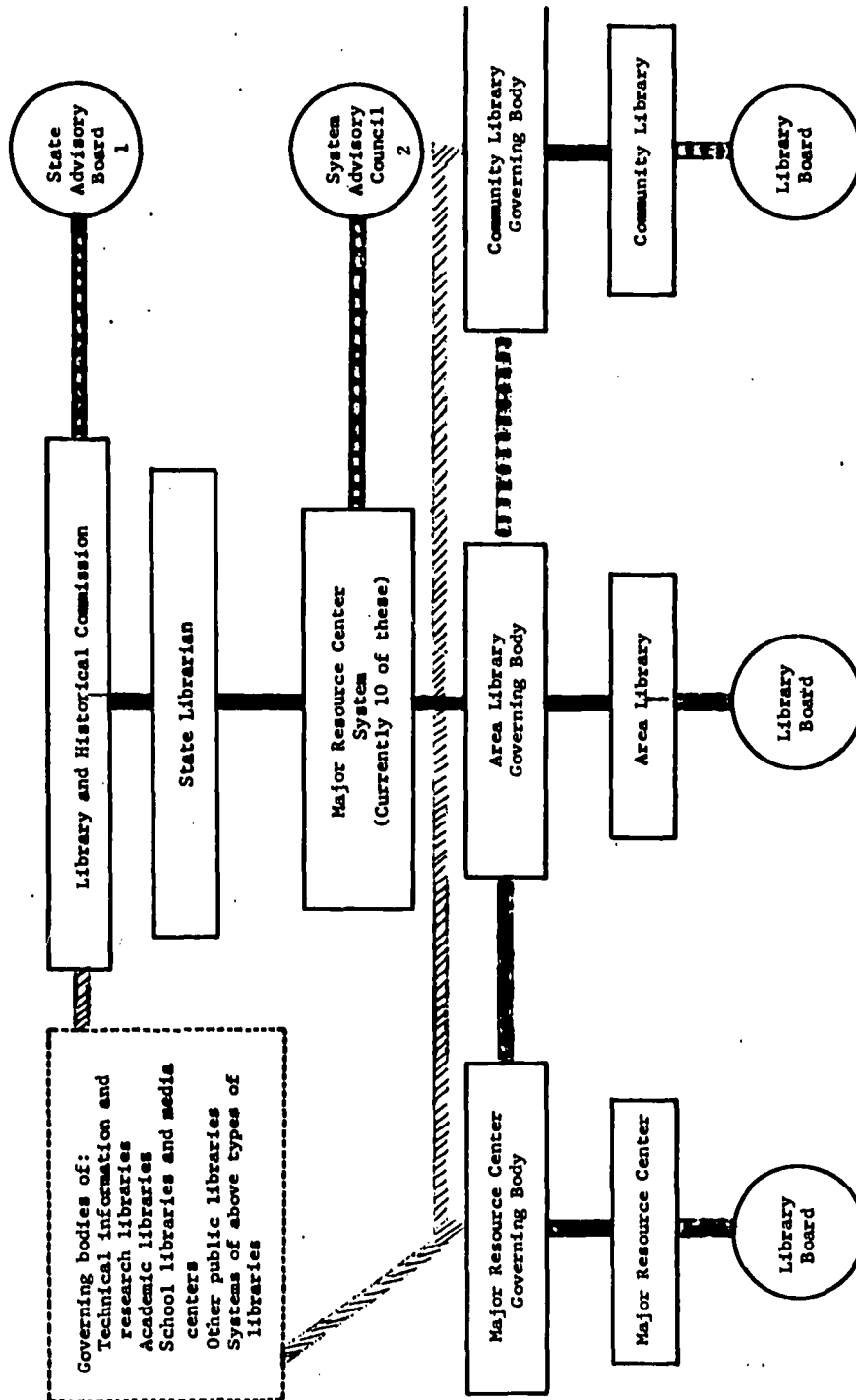
Governing bodies of:
Technical information and
research libraries
Academic libraries
School libraries and media
centers
Other public libraries
Systems of above types of
libraries

Library and Historical Commission

State Librarian

Major Resource Center
System
(Currently 10 of these)

State
Advisory
Board
1

System
Advisory
Council
2

Community Library
Governing Body

Area Library
Governing Body

Major Resource Center
Governing Body

Community Library

Area Library

Major Resource Center

Library
Board

Library
Board

Library
Board

1. Five librarians appointed by the State Library
   and Historical Commission.
2. Six lay representatives from governing bodies
   included in the System.

Administrative
Contractual
Advisory

B-26

92
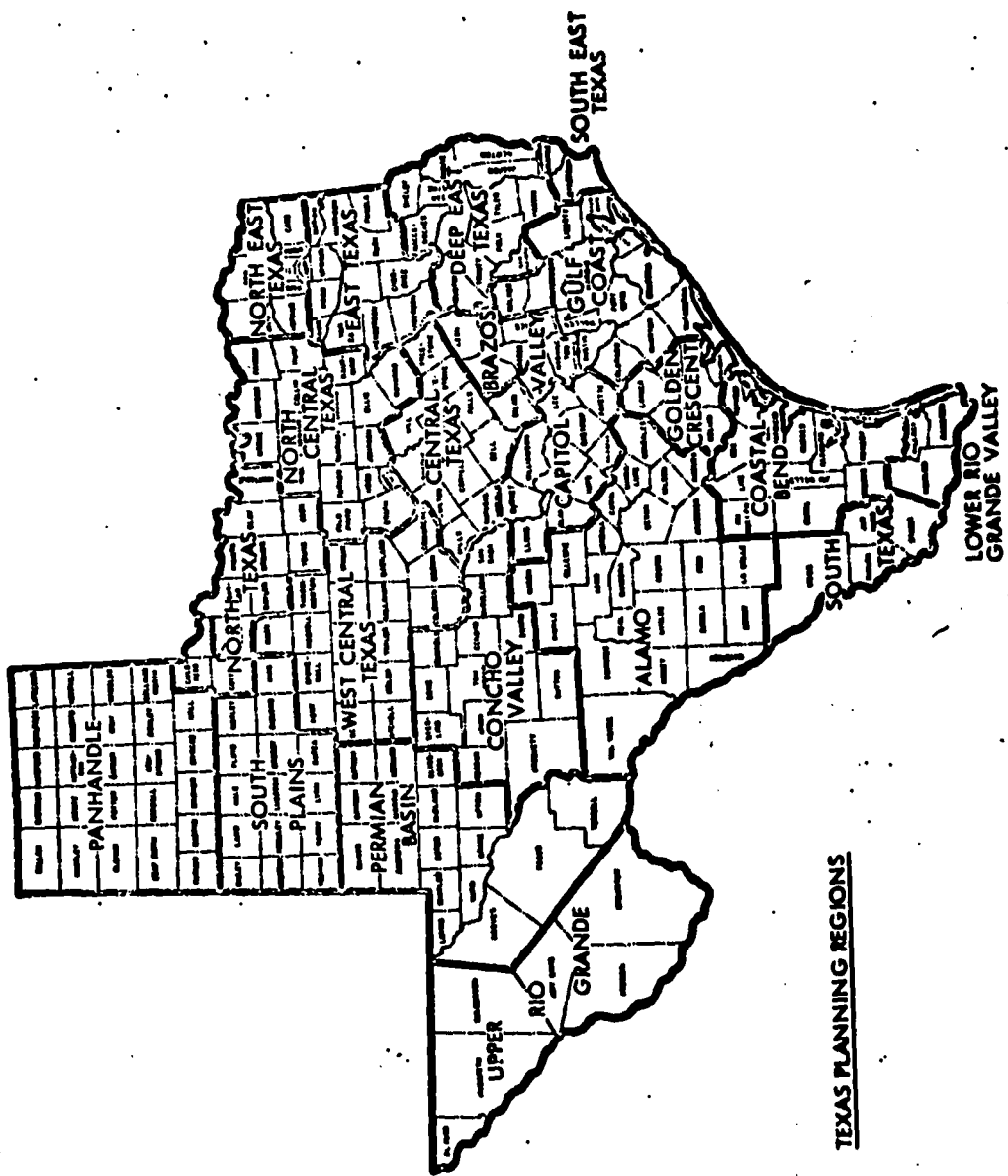
TEXAS PLANNING REGIONS

T.I.E.
STATE UNIVERSITY AND COLLEGE
LIBRARY TWX SYSTEM

Univ. of Texas	Austin	910 874 1304	TXU
U. of T. at Arlington	Arlington	910 890 5135	TXARLA
*U. of T. Med. School	Galveston	910 885 5225	TXGIM
Midwestern University	Wichita Falls	910 890 5823	TXWIM
East Texas State Univ.	Commerce	910 860 5112	TXCOMT
North Texas State Univ.	Denton	910 810 5795	TXDN
Prairie View A. & M.	Prairie View	910 880 4620	TXPRC
*Southwest Texas State Col.	San Marcos	910 870 1981	TXSM
Texas A. & I. Univ.	Kingsville	910 870 1910	TXKT
Lamar State Col. of Tech.	Beaumont	910 884 5137	TXBL
*Pan American College	Edinburg	910 870 1561	TXEPA
Sam Houston State College	Huntsville	910 880 4611	TXIRT
M. D. Anderson Hosp. Lib.	Houston	910 881 3756	TXIMD
Stephen F. Austin St. Col.	Nacogdoches	910 880 4225	TXNACS
*Tarleton State College	Stephenville	910 890 4850	TXSVT
Texas Southern Univ.	Houston	910 881 3745	TXIIT
Texas Technological College	Lubbock	910 896 4313	TXLT
Univ. of Houston	Houston	910 881 3754	TXHU
West Texas State Univ.	Canyon	910 899 4291	TXCAW
U.T., S. Tex. Med. School	San Antonio	910 871 1050	TXSAS
U. of T. Med. School	Dallas	910 861 4946	TXDAS
Texas A. & M. Univ.	College Sta.	910 880 4425	TXCM
Texas Women's Univ.	Denton	910 890 5796	TXDTW
*Angelo State College	San Angelo	910 897 5534	TXSANA
Sul Ross College	Alpine	910 897 5450	TXALS
*U. of T. Dental School	Houston	910 881 3765	TXUD

*Not in service as of 9/22/68.

TIE PHOTOCOPY SUMMARY, CUMULATED THROUGH MARCH 31, 1969

	SENT	RECEIVED	DUE TIE	TO BE PAID
ANGELO STATE COLLEGE	0	272	$ 27.20	$
EAST TEXAS STATE UNIVERSITY	58	425	36.70	
LAMAR STATE COLLEGE OF TECHNOLOGY	12	84	7.20	
M. D. ANDERSON HOSPITAL LIBRARY	0	886	88.60	
MIDWESTERN UNIVERSITY	24	1043	101.90	
NORTH TEXAS STATE UNIVERSITY	1549	476		107.30
PAN AMERICAN COLLEGE	0	317	31.70	
PRAIRIE VIEW A AND M	0	159	15.90	
SAM HOUSTON STATE COLLEGE	77	1033	95.60	
SOUTHWEST TEXAS STATE COLLEGE	169	553	38.40	
STEPHEN F. AUSTIN STATE COLLEGE	485	604	11.90	
SUL ROSS COLLEGE	0	283	28.30	
TARLETON STATE COLLEGE	0	137	13.70	
TEXAS A AND I UNIVERSITY	36	121	8.50	
TEXAS A AND M UNIVERSITY	1680	1402		27.80
TEXAS SOUTHERN UNIVERSITY	58	192	13.40	
TEXAS TECHNOLOGICAL COLLEGE	1640	3283	164.30	
TEXAS WOMAN'S UNIVERSITY	448	17		43.10
UNIVERSITY OF HOUSTON	2170	2181	1.10	
UNIVERSITY OF TEXAS	6288	921		536.70
UNIVERSITY OF TEXAS AT ARLINGTON	148	227	7.90	
UNIVERSITY OF TEXAS DENTAL SCHOOL	0	395	39.50	
SOUTHWESTERN MEDICAL SCHOOL AT DALLAS	596	104		49.20
UNIVERSITY OF TEXAS MEDICAL SCHOOL AT GALVESTON	816	629		18.70
UNIVERSITY OF TEXAS SOUTH TEXAS MEDICAL SCHOOL	17	175	15.80	
WEST TEXAS STATE UNIVERSITY	296	466	17.00	
UNIVERSITY OF TEXAS AT EL PASO	0	173	17.30	
			$935.30	$782.90

60th Legislature - Regular Session

WESTERN INFORMATION NETWORK ASSOCIATION

H.B. No. 692

AN ACT

relating to the creation and operation of the Western Informa-
tion Network Association and the creation and operation of
additional regional information network associations by the
Coordinating Board, Texas College and University System, all
of which associations are state agencies comprised of certain
institutions of higher education in the State of Texas whose
function is the acquisition and operation of a cooperative
system for communication, information retrieval and transfer,
and instructional television interchange between the institu-
tions and by contract between the institutions and private
educational institutions, school districts, industry, and the
general public; providing for severability; and declaring an
emergency.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

SUBCHAPTER A. GENERAL PROVISIONS

Section 1. PURPOSE. The purpose of this Act is to promote
the educational programs of state-supported institutions of
higher education in Texas by authorizing the establishment and

operation of a cooperative system for communication and in-
formation retrieval and transfer between the institutions
and between the institutions and private educational
institutions, industry, and the public. The system, employ-
ing two-way, closed-circuit television and other electronic
communication facilities, is to provide a means of effecting
the interchange of ideas, talents, faculties, libraries, and
data processing equipment and a means of carrying out an
approved program of instructional television.

Section 2. DEFINITIONS. In this Act unless the context
requires a different definition

(1) "association" means the Western Information Network
Association or any other regional network association created
and named by the Coordinating Board, Texas College and
University System;

(2) "member" means one of the institutions of higher
education which compose an association;

(3) "associate member" means an organization other than
an institution of higher education admitted to associate
membership in an association;

(4) "board" means the board of directors of an associa-
tion;

(5) "director" means a member of a board.

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SUBCHAPTER B. THE WESTERN INFORMATION NETWORK ASSOCIATION

Section 3. ASSOCIATION CREATED. (a) The Western Information Network Association is created. It is an agency of the state composed of the following state-supported member institutions of higher education: Amarillo College, Angelo State College, Clarendon Junior College, Frank Phillips College, Howard County Junior College, Midwestern University, Odessa College, South Plains College, Sul Ross State College, Texas Technological College, Texas Western College, and West Texas State University.

(b) The board by a majority vote may admit other state-supported institutions of higher education to membership in the association upon approval by the Coordinating Board, Texas College and University System.

(c) The board by unanimous vote may admit private institutions of higher education to membership in the association upon approval by the Coordinating Board, Texas College and University System.

(d) The board by unanimous vote may admit other organizations to associate membership in the association.

Section 4. BOARD OF DIRECTORS. The association is governed by a board of directors. The chief administrative officer or such person designated by the chief administrative officer of

-3-

each institution of higher education holding membership in the
association shall serve as a director of the board. Such
service on the board is an additional duty of employment of
the chief administrative officers or such persons designated
by the chief administrative officers of state-supported insti-
tutions and not an additional position of honor, trust, or
profit. The Legislature finds that this service is necessary
in accomplishing the purpose of this Act; is compatible with
their employment; and will benefit the educational program of
the institution and of the state.

Section 5. DIRECTOR'S EXPENSES. A director is entitled
to receive reimbursement for actual expenses incurred in
attending meetings of the board and in attending to the
business of the association which is authorized by a resolu-
tion of the board.

Section 6. MEETINGS OF THE BOARD. (a) The board shall
hold a meeting at least once each quarter and may hold meetings
at other times at the call of the chairman of the board or at
the request of a majority of the other directors.

(b) A majority of the membership of the board constitutes
a quorum at a meeting of the board.

(c) Action may be taken by the board by the affirmative
vote of the majority of the directors present at a meeting at

-4-

which a quorum is present.

Section 7. CHAIRMAN AND VICE CHAIRMAN OF THE BOARD. The
board shall select a director to serve as chairman and a director
to serve as vice chairman of the board. The chairman shall
preside at meetings of the board. If the chairman is not
present, or is unable to act, the vice chairman shall preside
at the meeting.

Section 8. EMPLOYEES. The board may employ a general
manager who shall serve as the chief executive officer of the
association. The board may employ other employees it considers
necessary in carrying on the association's duties and functions.

Section ' DELEGATION OF AUTHORITY. The board may dele-
gate any of the powers, duties, or functions of the association
to the general manager or to any other employee.

Section 10. BOND OF AN OFFICER, AGENT, OR EMPLOYEE.
(a) The general manager, and every other agent or employee of
the association charged with the collection, custody, or payment
of any money of the association shall execute a bond conditioned
on the faithful performance of his duties.

(b) The board shall approve the form, amount, and surety
of the bond.

(c) The surety may be a surety company authorized to do
business in this state.

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(d) The association shall pay the premium on the bond.

Section 11. POWERS AND DUTIES. (a) The association may acquire, operate, and maintain, or obtain by contracting with any communications common carrier in accordance with its tariffs, a multichannel, two-way communications system, including closed circuit television, linking classrooms, libraries, computer facilities, and information retrieval systems at the member-institutions.

(b) The association may acquire, operate, and maintain, or obtain by contracting with any communications common carrier in accordance with its tariffs, any facility, in addition to that described in Subsection (a) of this section, which the board considers necessary or desirable in carrying out the purposes of this Act.

(c) The association may interchange educational information with private educational institutions, school districts, the United States Government and other parties engaged in education or participating in educational projects, and use the facilities of the association only in the exchange, retrieval and transfer of information and the interchange of approved course offering and instruction between member-institutions and other parties engaged in education or participating in educational projects.

Section 12. GIFTS AND GRANTS. The association may accept
gifts, grants, or donations of real or personal property from
any individual, group, association or corporation. It may accept
grants from the United States Government subject to the limita-
tions or conditions provided by law.

Section 13. FUND CREATED. The Information Network
Association Fund is created as a special fund in the state
treasury. All money deposited in the treasury by the Western
Information Network Association or any other regional network
association created by the Coordinating Board, Texas College and
University System, shall be credited to the special fund and
disbursed as provided by legislative appropriation.

Section 14. RULES AND REGULATIONS. The association shall
adopt and publish rules to govern the conduct of its business.

Section 15. PRINCIPAL OFFICE. The board for the Western
Information Network Association shall maintain its principal
office in Lubbock, Texas, at Texas Technological College. The
boards for other regional information network associations
created by the Coordinating Board, Texas College and University
System, shall maintain their principal offices at locations
designated by the Coordinating Board, Texas College and
University System.

Section 16. FACILITIES. Each member-institution shall

-7-

furnish suitable space to the association for a classroom-studio, a lecture-studio, and a control room. It may also furnish any additional physical plant facility needed by the association in carrying on its functions at the institution.

SUBCHAPTER C. OTHER INFORMATION NETWORK ASSOCIATIONS

Section 17. DESIGNATION OF REGIONS. (a) In addition to the Western Information Network Association, the Coordinating Board, Texas College and University System, shall at such times as such board shall determine, divide the state into information network association regions consisting of state-supported institutions of higher education located within geographical boundaries prescribed by the coordinating board.

(b) The coordinating board shall give due consideration to the geographical proximity and number of institutions of higher education to be included within a proposed region.

Section 18. CREATION. (a) The Coordinating Board, Texas College and University System, shall create and name an information network association within an information network region if

(1) a majority of the institutions of higher education within a region apply to create an association; and

(2) the institutions applying show good cause for creating an association.

(b) The Coordinating Board, Texas College and University

-8-

System, may not create more than one information network association in an information network region.

(c) Each information network association created is an agency of the state.

Section 19. APPLICABILITY. Except for Subsection (a), Section 3, of Subchapter B, the provisions of Subchapters A and B of this Act shall apply to any additional information network association created by the Coordinating Board, Texas College and University System.

SUBCHAPTER D. TEMPORARY PROVISIONS

Section 20. SEVERABILITY. If any provision of this Act or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of the Act which can be given effect without the invalid provision or application, and to this end the provisions of this Act are declared to be severable.

Section 21. EMERGENCY. The importance of this legislation and the crowded condition of the calendars in both houses create an emergency and an imperative public necessity that the Constitutional Rule requiring bills to be read on three several days in each house be suspended, and this Rule is hereby suspended.

Passed by the House on April 28, 1967 by a non-record vote; House concurred in Senate amendments on May 12, 1967 by a non-record vote.

Passed by the Senate, as amended on May 11, 1967 by a viva-voce vote.

Approved by the Governor on May 27, 1967.

Effective August 28, 1967, 90 days after adjournment.

B-40
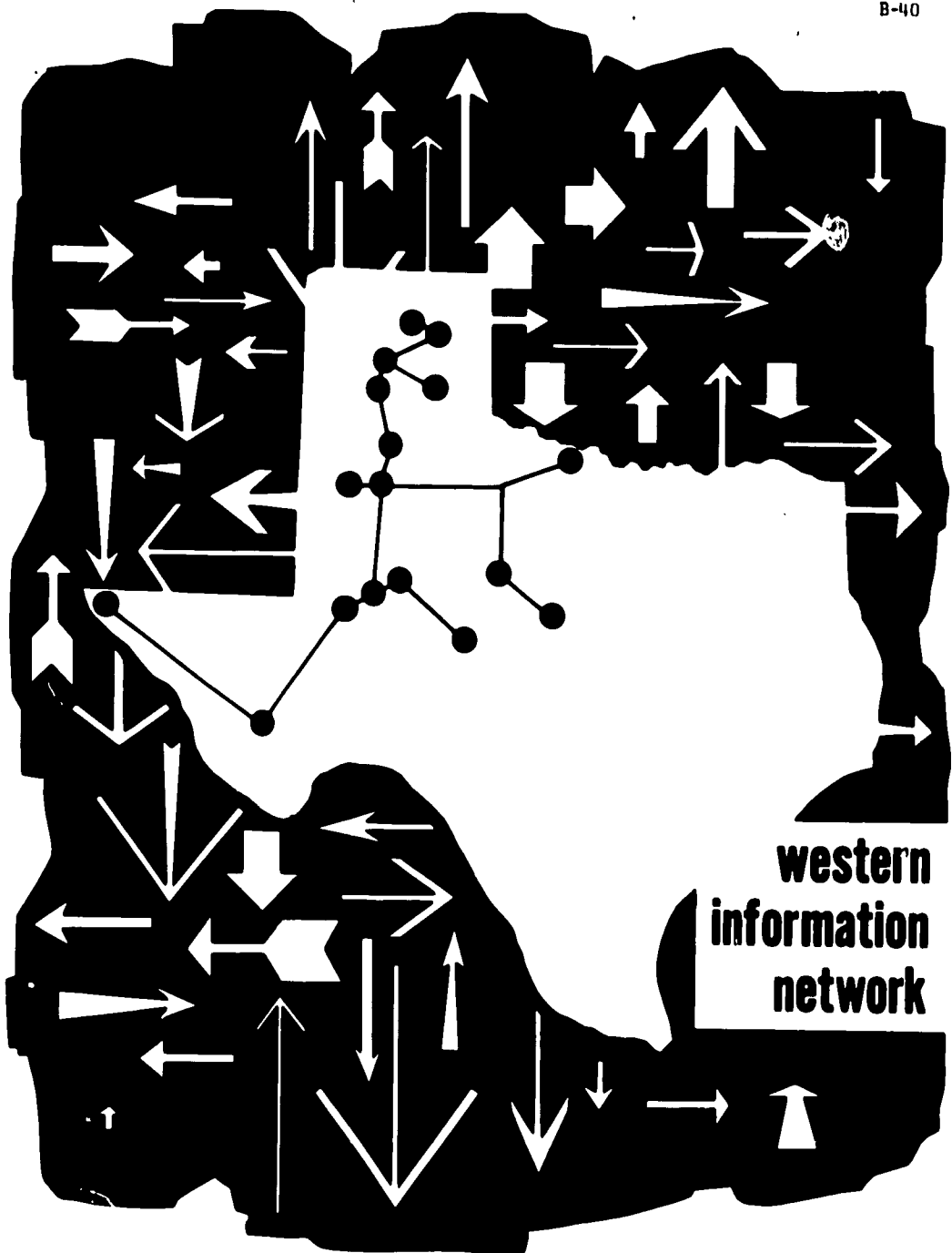
western
information
network

The Western Informotion Network is o cooperotive en-
deovor of eighteen of the institutions of higher leorning in the vost
West Texos region. Its gool is to provide business, industry, com-
munities ond educotionol institutions with on effective system for
communicotion ond informotion tronsfer.

The intent is to forge combined efforts of institutions of
leorning into one tremendous force of moximum quolity, ochieving
institutionol enrichment, enhonced relationships between industries
ond colleges, ond greotest public service.

Primory operotions of the Western Informotion Network
will be through o multi-chonnel, two-woy communicotion system
including closed circuit television, which will link clossrooms,
librories, computer focilities, and informotion retrievol systems ot
the eighteen points, into one immense knowledge-dynomics system
which oll moy use most efficiently, economicolly, ond effectuolly.

The system will greotly enhonce cooperotive interchonge
between educotion ond industry, immeosurably exponding it ot
minimum cost. With the stoggering increose in volume of all cate-
gories of informotion, and the greot broodening in the scope of
educotionol demands and goals, o monageable system for meeting
these needs must be devised. New procedures and new ideas will
inevitobly find expression in such a conjoined venture.

The creotion of this communicotion network will provide . . .
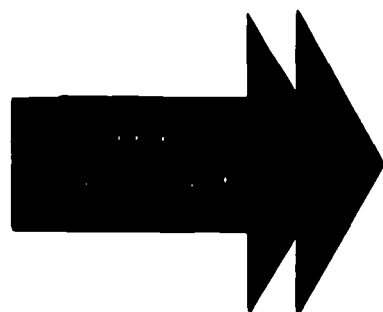
to the institutions of higher learning . . .
instantaneous interchange of faculty and students
. . . graduate opportunities for faculty
development . . . extensive programmed
instruction capability . . . special lectures . . .
outstanding short courses . . . improved
professional status and enhanced quality of
teaching . . . expanded library resources . . .
sharing of information retrieval systems . . .
increased computational capabilities . . . special
knowledge of scholars and researchers
transmitted to soaring numbers of students . . .

to business and industry . . .
a practicable answer to the essential process of
continuing education . . . closer association with
institutions of higher learning . . . effective
multi-computer utilization . . . rapid information
retrieval . . . expanded graduate work . . .
rapid dissemination of the end products of
research in all fields, tremendously simplified and
speeded, resulting in economic growth, higher
employment, and an improved competitive
position in world markets . . .
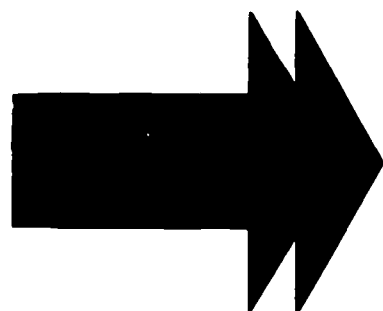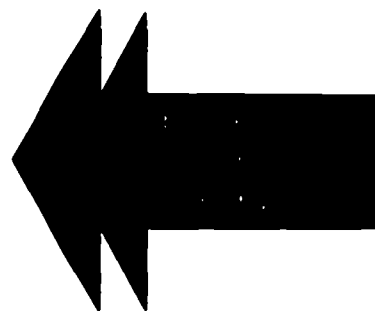
to the communities . . .
local accessibility of studies for elementary and
secondary educators . . . greatly enhanced
library facilities . . . improved knowledge and
practice in the realms of public health, first
aid and safety . . . ready availability of
technical courses leading to certificates . . .
specialized subject matter . . . job training
programs . . . improved means for career
scholarship . . . increased potential for industrial
development . . . greater opportunity for
institutions and communities to work
together to their common advantage.

PARTICIPANTS

abilene christian college
abilene

amarillo college
amarillo

angelo state college
san angelo

clarendon college
clarendon

frank phillips college
borger

hardin-simmons university
abilene

howard county junior college
big spring

howard payne college
brownwood

lubbock christian college
lubbock

midwestern university
wichita falls

mcmurry college
abilene

odessa college
odessa

south plains college
levelland

Network facilities and operations for the state-supported institutions are provided by Western Information Network Association, an agency of the State of Texas, created in 1967, House Bill 692, 60th Legislature.

Network facilities and operations for the private institutions are provided by Western Information Network, Inc., a non-profit corporation.

sul ross state college
alpine

texas technological college
lubbock

the university of texas at el paso
el paso

wayland baptist college
plainview

west texas state university
canyon

THE KNOWLEDGE NETWORK

R. F. SCHENKKAN AND
JOHN W. MEANEY

A Report to the Coordinating Board,
Texas College and University System,
on the Feasibility of a State Educational
Communications System in Texas

NOTE: This full report was handed out at
the meeting, but for purpose of economy
is not duplicated herein.

APPENDIX B.4

STATEWIDE STUDY GROUP ON LIBRARY NETWORKS
FIRST MEETING - FEBRUARY 18, 1969

MEETING NOTES

Mr. Richard Waters summarized the partial results that have
been received by the Texas Library Association Statewide Network Survey
Committee. Basis of the survey was those covered in Richard Perrine's
survey for the Pre-Conference Reference Round Table of the Texas Library
Association in 1968. Dick Waters commented that, in his estimation, the
lack of a definition of networks caused the survey to cover what may be
termed cooperative ventures.

The results are being categorized into five groups as follows:
1. Local networks involved in one to three Major Resource Center areas,
as defined by Texas State Library; 2. Statewide networks, with few li-
braries as members; 3. Regional networks defined as Texas and at least
one other state, with headquarters in Texas; 4. Regional networks of at least
one other state and Texas, with headquarters in the other state; 5. National
networks. Generically the committee is trying to define the holdings within
the different areas: 1. MRC; 2. Texas Library; 3. Region into which Texas
feeds data.

The questionnaire is attached in the appendix of these notes.

One question covering the growth from last year painted the pic-
ture that there was no last year in the case of many of these networks.
Dick Waters commented on the ranging answers to the questions such as:
Does the network perform "reference" or refer the patron to another
network? There was no consistency in 92 percent of the answers. How-
ever, one hopeful sign was the indications from the field of Medical
Science, where there are not networks, but they are well organized.

At present, Dick Waters can define eight local networks, five
state, four regional with Texas headquarters, and five regional with
out-of-state headquarters. The committee has not attempted to cover
the national networks at the present time.

Dick Waters suggested that the next survey be financed so
that the survey can be carried on on a person-to-person basis, with
a glossary of terms and identification of library organizations. He
felt because of a luck of communication some of the responses were
worthless.

During the commentary, it was pointed out that most librarians
are interested in cooperative ventures, cooperative location files,
plus service capabilities of these networks, their policies and prices.

Dick Perrine commented that the characteristics of a formal
network were that it was a communication media, bi-directional with a di-
rectory, and switching capabilities. Networks usually fall into the
following groupings: Educational, library and professional societies.
What is needed is the identification of class of equipment, form of
data, function and financial support of the network, and whether or
not the library can piggyback.

Maryann Duggan pointed out that there four types of networks:
Homogeneous-vertical networks, Heterogeneous-vertical networks, Homo-
geneous-horizontal networks and Heterogeneous-horizontal networks.

LIBRARY NETWORKS MODEL - Dr. Richard Nance

A network is defined as consisting of vertices (entities,
libraries) and arcs (the action between the vertices). The message
model presented has two modes of behavior for libraries: Initiators
(senders of messages), and Receivers. These two modes are separated
for the sake of the mathematical model, though both exist in an actual
library. There also exists a subset of libraries which act as relay
libraries (also defined as switching centers) having material such as
finding guides, Union Catalogs, TWX and Telex, which in theory never
initiate, but act strictly as relay libraries.

The Initiator library (1) has some number of messages it is going
to send, and the Receiver library (n+j+1) has some number of messages
that it is going to receive (bn+j+1). Using the channel through relay
library (n+1), the Initiator library will discover the Capacity (C_1,n+1,r)
of channel r, and the Utility (U_1,n+1,r of the channel r (also r•k^1 in some
parts of his discussion).

INITIATOR RECEIVER

messages RELAY messages
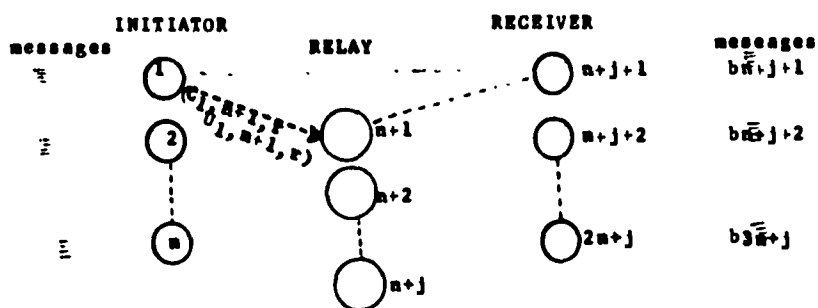
X= number of messages from library i over k channel to j library
X= number of messages
i= 1,2, ...n
j= n+1, n+2, ... n+j
k= channel
U= utility of channel r
C= capacityof channel r

$$\sum_i \sum_j \sum_k = X_{ijk} U_{ijk}$$

What we will attempt to do is maximize i, j, and k, which graphically will be defined as the peak of the utility of a channel in ratio to the number of messages sent, and how sent.

This Mathematical Model is a Multi-commodity, capacitated, multi-linked network on messages. One on documents is a location problem and has not been solved.

During the morning session, Maryann Duggan listed the items of consideration of the Statewide Study Group on Library Networks.

1. Identify existing library networks

2. Define the meaning of networks

3. Definition of services

4. Quantitative identification of network characteristics

5. Lack of "locator guides"

6. Establishment of priorities

7. Conflict: publication vs. cooperation

8. Overlapping of networks

9. Level of switching

10. Designation of specialization and roles
11. Definition of geographic levels
12. Problems of organizational behavior.

In the morning and afternoon sessions, various networks were identified and a short history and their services were given by their representative or a knowledgeable person.

1. THE PUBLIC LIBRARY NETWORK: is a hierarchical network with three levels of switching, which ties in nationally in theory. Actually still on a trial and error basis. You could classify it as homogeneous vertical.

2. INTER-UNIVERSITY COUNCIL (IUC): is a local network limited by charter to the six counties in the Dallas-Fort Worth area, with a private line communication link of one message at a time, connecting eight college libraries for the purposes of interlibrary loans and exchange of photocopies. On a contract basis, it is interfaced with Industrial Information Services (IIS), and on a manual basis to Texas Information Exchange (TIE). Col. Reiff classifies his IUC as homogeneous-horizontal.

3. TEXAS EDUCATION MICROWAVE NETWORK (TEMP): is an instructional education network involving seven institutions. It is a broadband microwave set-up with a spare channel or two which could be used for interlibrary loan purposes if it had teletype or facsimile transmission equipment. Its members are St. Mary's, Trinity, Southwest State, University of Texas, St. Edward's, and two others.

4. WESTERN INFORMATION NETWORK (WIN): Interconnects 18 universities to share resources using a microwave system. Primary operations of the Western Information Network will be through a multi-channel, two-way communication system which will link classrooms, libraries, computer facilities and information retrieval systems at the 18 points. House Bill 692 of the 60th Legislature was quoted, and is attached at the end of these notes.

5. **SOUTHEAST TEXAS INFORMATION NETWORK ASSOCIATION** (SETINA):
   is based on the in-school GRETA covering 20 counties
   in the Houston area. Though the medical schools are not
   included, it consists of most of the major universities
   and colleges in that area. They will have a meeting
   Friday, which will firm many of the future plans.

6. **EDUCATIONAL SERVICE CENTERS** (ESC): consists of 20 regional
   centers operating autonomously, without local tax support,
   but closely related to Texas Education Agency. Mary Boyvey
   explained that those concerned were watching the Yarbrough
   Bill in the national Congress for possible amendment which
   will create capabilities of acquiring technological equip-
   ment, training of personnel, software and hardware. Janice
   Kee went on to explain that hopefully this would create
   channels of communication, and real time computer center
   for these media centers through contract with NASUM.

7. **TEXAS COUNCIL ON HEALTH SCIENCE LIBRARIES** (TCHSL): is the
   exchange through which 14 medical institutions exchange
   library information. The Council is becoming concerned with
   serving outside contacts, and even outside the medical pro-
   fession. Wilson Fahlberg pointed out that the medical
   libraries in this region have a $10,000 grant to update the
   N. Y. library list (separate from MEDLARS) but the regional
   center has not been designated. One MUST is the interfacing
   of these medical information systems with those networks
   covering physics and mathematics. Another problem is the
   training of the hospital librarian to ask for material
   properly. It is an individual policy whether or not the
   medical school serves the individual practitioner.

8. **TEXAS COORDINATING BOARD**: thinks it is possible to have
   four regional information systems. Forrest Ward as the
   TCB representative was not ready to commit the Board to
   any plans.

As Janice Kee pointed out, librarians need to be in the position
to say "this is what we need," but they haven't taken this charge.

Ed Montgomery spoke of the N. Y. libraries network with facsimile transmission until dollar feasibility raised its head. He suggested that: 1. We find what we want to do with a network, and 2. Find out if it is worth doing before the taxpayer's revolt gets here.

(Part of the discussions have been omitted, particularly that revolving around Dr. Nance's presentation of the Mathematical Model, where fast and furious comments were being made by the participants on the multi-commodity, capacitated, multi-linked network.)

APPENDIX C

REFERENCE ROUND TABLE AND BEHAVIORAL MODEL

REGISTRANTS AT REFERENCE ROUND TABLE SECOND PRE-CONFERENCE INSTITUTE
March 1969
Houston

(Home addresses in parentheses where identifiable as such)

1.	Abrams, Fred Reference Librarian Rice University 1832 W. Main, Houston 77006	Bailey, Joe H. Associate Director, Public Services North Texas State University Denton 76203	11.
2.	Alcorn, Maxine Reference Librarian Houston Public Library 500 McKinney, Houston	Barnett, Jacqueline Basic Division Texas A & M University Library College Station 77840	12.
3.	Alley, Barbara (Mrs.) Children's Librarian Pasadena Public Library 1201 Minerva, Pasadena 77502 (4001 Crawford #181R)	Barnstead, Rosemarie Librarian Annunciation Library 1201 Hyde Park, Houston (?)	13.
4.	Allmand, Linda Branch Head Dallas Public Library 3039 South Lancaster, Dallas 75216	Bell, Valerie	14.
5.	Anderson, Sister Joseph Marie Librarian University of Dallas Route 2, Box 4, Irving 75060	Bennett, Betty Reference & Research Librarian Stephen F. Austin State College Library Nacogdoches (1525 Walnut, Nacogdoches)	15.
6.	Anglin, Irene (Mrs.) Branch Librarian Parkdale Branch Library 4444 Golihar, Corpus Christi 78411	Bichteler, Julie (Mrs.) Lecturer Graduate School of Library Science University of Texas at Austin 78712	16.
7.	Armstrong, Geneva M. (Mrs.) Librarian Euless Public Library 201 Ector Drive, Euless 76039	Bikshapathi, Adepu Library Student North Texas State University Denton (316 Fry, Denton)	17.
8.	Ashford, Daisy Cataloger Fondren Library, Rice University 5311 Valerie, Bellaire 77401	Blum, Sarah (Mrs.) Head, General Reference Department Fort Worth Public Library Fort Worth (2504 Dean Lane, 76107)	18.
9.	Atkinson, Marjorie Reference Librarian La Retama Public Library 505 North Mesquite, Corpus Christi 78401	Boothe, Gazella (Mrs.) Assistant Reference Librarian W. R. Banks Library Prairie View A & M, Prairie View	19.
10.	Aull, Sara (Miss) Science Librarian University of Houston Cullen Boulevard, Houston 77004	Boudreaux, J. B. (Mrs.) Librarian Hockley County Memorial Library Austin & Ave. H., Levelland 79336	20.

21. Bowden, Ann (Mrs.)
     Assistant Director
     Austin Public Library
     P. O. Box 2287, Austin 78767

Church, Ginger (Miss)   32.
Student, Graduate School of Library Science
University of Texas at Austin
Austin, Texas   (2017 C Red River)

22. Brannen, Dee Dee (Mrs.)
     3413 Cornell
     Dallas, Texas 75205

Claxton, R. W.   33.
Head, Literature & Biography Department
Houston Public Library
500 McKinney Avenue, Houston 77002

23. Brewster, John W.
     Interlibrary Loan/Asst.
        Periodicals Librarian
     North Texas State University, Denton
                                    76203

Clayton, Marguerite V.   34.
Assistant Professor
TWU School of Library Science
Denton, Texas 76204

24. Brown, Hugh A.
     Director of the Library
     Hardin-Simmons University
     Abilene, Texas 79601

Colburn, Frances (Mrs.)   35.
Technical Librarian
Celanese Technical Center Library
P. O. Box 2768, Corpus Christi

25. J. James Brown
     Librarian, Carole M. Anderson Library
     M. B. Smiley High School
     10273 E. Houston, Houston 77021

Collier, Jean P. (Mrs.)   36.
Librarian
Houston Academy of Medicine Library
Texas Medical Center, Houston

26. Burns, Dorothy (Mrs.)
     Assistant Reference Librarian
     Sterling Municipal Library
     Public Library Avenue, Baytown 77520

Connelley, Melba J.   37.
Librarian, Texas Electric Service Co.
Post Office Box 970
Fort Worth 76101

27. Busch, Valeria (Mrs.)
     Librarian
     Friench Simpson Mem. Library
     Drawer 269, Hallettsville 77964

Cook, Kathleen (Mrs.)   38.
City Librarian
Orange Public Librarian
300 North Fourth Street, Orange

28. Castle, Lavelle
     Basic Division
     Texas A & M Univ. Library
     College Station 77840

Covington, Pamela Smither (Mrs.)   39.
Reference Librarian
Houston Public Library
Houston, Texas   (8216 Fondren Rod. 77036)

29. Chadwell, Patricia
     Head, Southwest & Genealogy Dept.
     Fort Worth Public Library
     2966A McCart, Fort Worth

Cragin, Shelah-Bell (Mrs.)   40.
Assistant Director
El Paso Public Library
501 N. Oregon, El Paso 79901

30. Chamberlain, Enrique
     Librarian
     El Centro College
     Main and Lamar, Dallas

Crandall, Dorothy (Mrs.)   41.
First Assistant
Moody Branch, Houston Public Library
1242 LaMonte Lane, Houston 77018

31. Chesnut, Barbara (Mrs.)
     Cataloger
     Brooks County Public Library
     Drawer L, Falfurrias 78355

Crenshaw, Jan   42.
Special Grant - Clerical
Texas Christian University Library
3009 Greene Avenue, Fort Worth

43. Cunningham, Nell (Miss)
Assistant Librarian
Gates Memorial Library
317 Stilwell, Port Arthur 77640

54. Durden, Adelle (Mrs.)
Branch Librarian, Oak Forest Branch
Houston Public Library
1349 W. 43rd, Houston 77018

44. Cutley, Mercedes (now Mrs. Bierman)
Library Services Manager
John Wiley & Sons, Inc. Publ. Co.
605 Third Avenue, New York 10016

55. Dwyer, Charles L.
Coordinator of Reference Services
Sam Houston State College
Box 2085 S.H. Sta., Huntsville 77340

45. Dabek, Joan (Mrs.)
Circulation Assistant
University of Houston
8234 Garden Parks, Houston

56. Dwyer, M. J.

46. Davies, Margaret (Mrs.)
Reference Librarian
Rosenberg Library
823 Tremont, Galveston 77550

57. Dyess, Dessie Mae (Mrs.)
Catalog Librarian
West Texas State University
Canyon, Texas

47. Davis, Sarah (Mrs.)
Library Director
Alice Public Library
Alice, Texas

58. Dyess, S. W.
Assistant to the Librarian
West Texas State University
500 Holman Lane, Canyon

48. De La Cerda, Rosa
Librarian
Eagle Pass Public Library
Drawer 1248, Eagle Pass 78852

59. Dyke, James (Dr.)
Director of Libraries
Texas A & M University
College Station 77843

49. Devers, Howard L.
Circulation & Interlibrary Loan
Howard Payne College
Brownwood, Texas 76801

60. Easterly, Joe A.
Library Director
Jay-Rollins Library
Abilene, Texas 79605

50. Dollar, Betty Jo
Reference Librarian
Houston Public Library
500 McKinney, Houston

61. Eden, Mary L.
Assistant Librarian
Carnegie Public Library
111 S. Main, Bryan 77801

51. Donahue, Mary Kaye (Miss)
Assistant Director
Lubbock City-County Libraries
Lubbock, Texas

62. Edwards, Aliyah (Mrs. von Nussbaumer)
Technical Librarian
Dresser-Magcobar Research Library
3133 Buffalo Spwy., Houston

52. Duggan, Maryann (Miss)
Director, Industrial Information Svcs.
Southern Methodist University
Dallas, Texas 75222

63. Edwards, Andrea Y.
Interlibrary Loans Librarian & Reference
Houston Public Library
500 McKinney Avenue, Houston

53. Dunne, Patricia (Miss)
Assistant Librarian
Transcontinental Gas Pipe Line Corp.
P. O. Box 1396, Houston 77001

64. Eggert, Meris Morrison
Curriculum & Reference Librarian
Texas Southern University
3201 Wheeler, Houston 77004

65. Estok, Rita (Mrs.)
Assistant Research Librarian
Texas A & M University
College Station 77840

66. Eyth, Mary Jo
Adult Librarian, Literature-Biography
Houston Public Library
500 McKinney, Houston

67. Fair, Lucinda
Librarian
Turner Memorial
8301 W. Montgomery, Houston

68. Fingerla, R. P. (Mrs.)
Desk Assistant
Meyer Branch, Houston Public Library
5134 Lymbar, Houston 77035

69. Foreman, Ann
Circulation Assistant
University of Houston
6503 Flamingo, Houston

70. Foster, Mary K.
H.I.S.D.
Non-Public Title I Library
Houston

71. Foster, W. L. (Mrs.)
Reference Librarian
Brazoria County Library
Old Courthouse, Angleton

72. Franklin, Kay (Mrs.)
Graduate School of Library Science
University of Texas at Austin
Austin

73. Frazer, Georgia A.
Maps & Micromaterials Librarian
Rice University, Fondren Library
Houston 77001

74. Friedman, Ben (Mrs.)
Librarian
Congregation Beth Yeshurun
4525 Beechnut
Houston

75. Gable, Elizabeth (Mrs.)
Technical Processing Librarian
La Retama Public Library
505 N. Mesquite, Corpus Christi 78401

Garcia, John   76.
Acquisitions Librarian
Fondren Library, Rice University
Houston

Garland, Carol   77.
Branch Librarian
Houston Public Library
11203 Caribbean, Houston

Gayer, Mary (Mrs.)   78.
14330 Memorial
Houston 77024

Gervasi, Mildred (Mrs.)   79.
Librarian, Cody Memorial Library
Southwestern University
1612 Williams Dr., Georgetown 78626

Gilbert, Annie May   80.
Branch Head
Dallas Public Library
Dallas

Gill, Dorothy B. (Mrs.)   81.
First Assistant
Jefferson County Library
335 Franklin, Beaumont 77701

Gindorf, Jan (Mrs.)   82.
Assistant Librarian
Walter Branch, Houston Public Library
7660 Clarewood, Houston

Gohmert, Janice (Miss)   83.
Head, West Branch
Fort Worth Public Library
3855 Camp Bowie #7, Fort Worth 76107

Goldman, Marcene (Mrs.)   84.
Technical Librarian
Texaco, Inc.
Box 425, Bellaire, 77401

Goodman, Helen C. (Mrs.)   85.
Acquisitions Librarian
El Paso Public Library
501 N. Oregon, El Paso

Graves, Ann (Mrs.)   86.
Director, Reference Division
Texas State Library
Austin, Texas

87. Greear, Yvonne E.
Reference Librarian
University of Texas at El Paso
El Paso 79999

Hewett, Chlorys E. (Miss)   99.
Adult Librarian
Houston Public Library, Heights Branch
1400 Bonnie Brae, Houston 77006

88. Grisham, Edith P. (Mrs.)
Librarian, Business Technology Dept.
Houston Public Library
500 McKinney Avenue, Houston

Hickerson, Alice (Mrs.)   100.
Assistant Librarian, Research Medical Lib.
U. of Texas M. D. Anderson Hospital
Texas Medical Center, Houston 77025

89. Hall, John G.
College Librarian
Austin College
Sherman 75090

Hoke, Virginia P. (Mrs.)   101.
Head, Southwest Reference Department
El Paso Public Library
501 N. Oregon, El Paso 79901

90. Halloran, Helen K. (Mrs.)
Branch Librarian
Greenwood Branch Library
4044 Greenwood Dr.,Corpus Christi
                              78416

Holmes, Beverly (Mrs.)   102.
SCAS Reference Librarian
SMU Science Library
Dallas 75222 (3430 Cloverdale Ln.,75234)

91. Hamilton, Louise Bridge (Mrs.)
Head Librarian
Brooks County Public Library
Drawer L, Falfurrias 78355

Howard, John F. (Lynn)   103.
Peat, Marwick, Mitchell & Company
1400 One Main Place
Dallas 75250

92. Hancock, Margaret A.(Mrs.)
Reference Libearian
Texas A & I University
Kingsville, Texas

Howard, Mattie (Mrs.)   104.
Librarian
Butt-Holdsworth Memorial Library
505 Water Street, Kerrville

93. Harka, Marguerite (Mrs.)
Librarian
Silsbee Public Library
Santa Fe Park, Silsbee 77656

Huff, Martha E. (Mrs.)   105.
Assistant Librarian
Murry H. Fly Library, Odessa College
Box 3752, Odessa

94. Harper, Alvin E.
Reference Lib., Science & Industry
Dallas Public Library
1954 Commerce, Dallas 75201

Hughes, Sue Margaret   106.
Order Librarian
Baylor University Library
Waco

95. Harper, Anne (Mrs.)
Reference Assistant
Gates Memorial Library
317 Stilwell, Port Arthur 77640

Hull, Melicent T. (Mrs.)   107.
Asst. Reference Librarian
Pasadena Public Library
1201 Minerva, Pasadena 77502

96. Harris, Jeanette H. (Mrs.)
Head, History, Soc. Sci. & Gen. Ref.
San Antonio Public Library
371 Readwell Dr., San Antonio 78220

Hunt, Jerry E.   108.
Librarian
Denison Public Library
231 N. Rusk Ave., Denison

97. Herring, B. C.
Assistant Professor
Graduate School of Library Science
University of Texas at Austin
                    (1510 Glencrest 78723)

Hurst, Bernice   109.
Branch Librarian
Houston Public Library
Rt. 2, Box 118A, Angleton 77515

98. Hess, Jean (Mrs.)
1509-A West 35th Street
Austin 78703

Hyman, Ferne B.   110.
Asst. Gifts and Exchange Librarian
Fondren Library, Rice University
Houston

111.	Ingram, Virginia (Mrs.) Branch Librarian Walter Branch, Houston Public Lib. 7660 Clarewood, Houston 77036	Kazee, Nancy W. Personnel Department Houston Public Library 500 McKinney, Houston
112.	Irwin, Virginia P. (Mrs.) Reference Librarian Our Lady of the Lake College 114 Rosemary, San Antonio 78209	Kee, S.Janice (Miss) Library Services Program Officer Dept. of HEW, Region 7 1114 Commerce, Dallas 75202
113.	Jackson, Anna B. (Mrs.) Acting Reference Librarian Texas Southern University 3201 Wheeler, Houston 77004	Kelly, Cleo B. Acquisitions Librarian Stephen F. Austin State College Nacogdoches 75961
114.	Jackson, Gene H. (Mrs.) Interlibrary Loan Librarian University of Houston 3800 Cullen Blvd., Houston 77004	Kennerly, Sarah Law (Dr.) Professor of Library Service North Texas State University Denton 76203
115.	Jacobs, Louis Houston Post Company Houston	Kruse, Paul (Dr.) Dept. of Library Service North Texas State University Denton 76203
116.	Janaske, Paul C. Chief, Lib. & Inf. Branch Div. of Library Programs Office of Education Dept. of HEW, Washington 20202	Kuo, Margaret Acting Law Librarian Texas Southern University 3201 Wheeler, Houston 77004
117.	Johnscn, Carole (Miss) Hampton-Illinois Branch Library 2210 West Illinois· Dallas	Kuo, Richard D. Circulation Librarian Texas Southern University 3201 Wheeler, Houston 77004
118.	Johnson, G. T. Chief Librarian Bishop College Dallas	LaCook, Nancy Assistant Reference Librarian Rosenberg Library 823 Tremont, Galveston
119.	Johnson, Herbert M. Greenwood Press, Inc. New York, N. Y.	Ladner, Christine Hall Administrative Assistant Houston Acad. of Medicine Lib. for Texas Medical Center, Houston 77025
120.	Johnston, Maxine (Miss) Reference Librarian Lamar State College of Technology Box 10021 L.T. Sta., Beaumont 77705	Laird, R. Librarian Dickinson Library 4001 Highway 3, Dickinson
121.	Jones, Patricia Librarian Friendswood Library 109 Willowick, Friendswood	Lappala, June L. (Mrs.) Requisitions Librarian Rice University Library Houston

Right column numbers: 122., 123., 124., 125., 126., 127., 128., 129., 130., 131., 132.

133.	Lauten, Ellen New Librarian Bowie School 7501 Curry Rd., Houston 77016	MacDonald, Zula Zon (Mrs.) 144. Chairman, Dept. of Library Science Baylor University Box 6297, Waco 76706
134.	Lawrence, Gertie Mae (Mrs.) Librarian T.L.L. Temple Memorial Library Box 608, Diboll 75941	Mair, Verna (Mrs.) 145. School Librarian Oleson Elementary School 12165 Vickery, Houston (?)
135.	Laws, Marian C. (Mrs.) Student, G.S.L.S. University of Texas at Austin Austin (1210 Windsor Rd.#110,78703)	Manning, Kathryn 146. Director Irving Municipal Library 815 W. Irving Blvd., Irving 75060
136.	Ledlow, Elaine (Mrs.) Professor, Dept. of Library Service North Texas State University Denton 76203	Margosh, Rinette 147. Bibliographic Assistant University of Houston Houston
137.	Lentz, Lois (Mrs.) Acting Librarian Montgomery County Library Box 579, Conroe 77301	Marsales, Rita 148. Serials Catalog Assistant Fondren Library, Rice University Houston
138.	Lewis, Frances (Mrs.) Cr loger & Reference Librarian Sterling Municipal Library Public Library Ave., Baytown 77520	Martin, Ann (Mrs.) 149. Consultant Diocese of Galveston-Houston 1700 San Jacinto, Houston 77002
139.	Lewis, S. Madge Head Librarian Townsend Memorial Library Box 767, Belton 76513	Mason, Pauline M. (Mrs.) 150. Student, G.S.L.S. University of Texas at Austin Austin 78712 (3400 Duval Street, 78705)
140.	Lodge, Margaret Rose Librarian South Houston H.S. 3820 S. Shaver, S. Houston 77587	Mayers, Corinne (Mrs.) 151. Reference Librarian Sam Houston State College Huntsville
141.	Loomis, Elizabeth M. (Mrs.) Asst. Science Librarian Science Division, Univ. of Houston Houston (2016 Main St. #2415,77002)	McAdams, Nancy R.(Mrs.) 152. Architecture Librarian University of Texas at Austin Austin 78712
142.	Loomis, Louise Literature Chemist Mobil Chemical Company Beaumont Laboratory, Beaumont	McConnell, Ute 153. Reference Librarian Houston Academy of Medicine Library Texas Medical Center, Houston
143.	Lowry, Fae (Mrs.) Acting Library Director Tyrrell Public Library Box 3827, Beaumont 77704	McElderry, Stanley 154. Dean, G.S.L.S. University of Texas at Austin Box 7576 Univ. Sta., Austin 78712

155. McEnany, Helen (Mrs.)
Assistant Librarian
Bellaire City Library
5111 Jessamine, Bellaire 77401

156. McGeever, Nancy B.(Mrs.)
Assistant Head, Acquisitions Dept.
Rice University Library
Houston

157. Meador, Nancy (Mrs.)
Assistant Librarian
Lee College
Baytown

158. Miller, Hallie (Mrs.)
Librarian
Temple Public Library
101 N. Main, Temple 76501

159. Miller, Virginia (Mrs.)
Librarian
Bellaire City Library
5111 Jessamine, Bellaire 77401

160. Milliken, Callie Faye
Librarian
Abilene Christian College
ACC Station, Abilene 79601

161. Mintz, Marie (Mrs.)
Kendall Branch Library
Houston Public Library
14330 Memorial, Houston 77024

162. Montague, Katherine L.
Reference Librarian
George Storch Memorial Library
Trinity University, San Antonio 78212

163. Moore, Mary L.
Librarian - General Services
Humble Oil & Refining Company
Box 2180, Houston 77001

164. Moore, W.
Head Librarian
Southern Bible College
10950 Beaumont Hwy., Houston

165. Morales, Graciela (Mrs.)
Stenographer-Clerk
Brooks County Public Library
Drawer L, Falfurrias 78355

166. Moss, Evelyn
Assistant
Meyer Branch, Houston Public Library
Houston

167. Moss, Julia N. (Mrs.)
Catalog Librarian
Sul Ross State College
Alpine   (Box 515, Marathon
                                 79842)

168. Mounce, Mattie Sue (Miss)
Head, Reference Department
Science Library, SMU
Dallas 75222

169. Murphy, Pat
Community Action Librarian
Greenwood Branch Library
4044 Greenwood Dr., Corpus Christi 78416

170. Murphy, Virginia B.
Social Sciences Librarian
University of Houston
Houston 77004

171. Murray, Lucille (Mrs.)
Librarian
Robert T. Kleberg Public Library
4th & Henrietta, Kingsville

172. Neal, Frances (Mrs.)
Librarian and Executive Secretary
Arkansas Library Commission
506-1/2 Center Street, Little Rock, Ark.
                                          72201

173. Obenhaus, Adah May (Mrs.)
Librarian
San Marcos Public Library
Box 907, San Marcos 78666

174. O'Keeffe, Richard L.
Librarian
Rice University
Houston 77001

175. Oliver, Lee R.
Circulation/Reference
West Texas State University
Canyon

176. Olsen, Wallace C.
Inter-University Communications Council
9650 Rockville Pike
Bethesda, Maryland 20014

177.	Owensby, Mary P. (Mrs.) County Librarian Harris County Public Library 2502 Crawford, Houston 77004	Phillips, Thelma (Mrs.) Librarian Pioneer Memorial Library 115 W. Main, Fredericksburg 78624	188.
178.	Paddock, Rita L. (Mrs.) Associate Director, R.I.C.E. Fondren Library, Rice University Box 1892, Houston 77001	Piland, Reta D. (Mrs.) Head Librarian Jefferson County Library 335 Franklin, Beaumont 77701	189.
179.	Palmer, Helen H. (Mrs.) Chief Librarian Lone Star Gas Company 301 S. Harwood, Dallas 75201	Pitts, Ann Branch Librarian La Marque Public Library 402 Elmo, La Marque	190.
180.	Pancake, Edwina Student, G.S.L.S. University of Texas at Austin Austin	Plate, Margaret (Mrs.) Assistant Librarian U. of T., M. D. Anderson Hospital Texas Medical Center, Houston 77025	191.
181.	Pate, Tannie (Mrs.) Assistant Librarian Midland Public Library Box 1191, Midland 79701	Platz, James E. Associate Librarian Texas Technological College Lubbock	192.
182.	Patterson, Emma S. (Mrs.) Head Librarian The D. R. Glass Library, Texas College 2404 N. Grand Ave., Tyler	Poe, Jackie (Miss) Arkansas Library Commission 506-1/2 Center Street Little Rock, Arkansas 72201	193.
183.	Pauwels, Virginia (Mrs.) Director, Hutchinson County Library 625 North Weatherly Borger 79007	Pye, A. F. Head Librarian Brazosport Junior College Freeport, Texas	194.
184.	Paynter, John C. Public Services Librarian (Reference) Wharton County Junior College 602 Pecan, Wharton 77488	Redmon, A. J. (Mrs.) Assistant Head, Catalog Department Fondren Library, Rice University Houston 77001	195.
185.	Perrine, Richard H. Humanities Reference Librarian Rice University Library Box 1892, Houston 77001	Reindl, Ellene Cataloger Rice University Houston 77001	196.
186.	Peters, Carl M. Staff Assistant, Computer Center Southwest Center for Advanced Studies Box 30365, Dallas 75230	Renick, Alberta (Mrs.) Librarian Alcon Laboratories, Inc. 6201 S. Fwy., Ft. Worth 76101	197.
187.	Peters, Linda (Mrs.) Librarian Huntsville Public Library 1216-14th Street, Huntsville	Rhine, L. G. (Mrs.) President of Unger Library Board Unger Memorial Library Plainview (2810 W. 18th, Plainview 79072)	198.

199.	Richardson, Harold G. Editor The Texas List Box 13187, Houston	Schield, Sandra Assistant Science Librarian University of Houston Houston 77004	210.
200.	Richardson, Hazel (Mrs.) Head Librarian Carnegie Public Library 111 S. Main, Bryan 77801	Schulz, Nancy (Mrs.) Coordinator of Reference Services El Paso Public Library 501 N. Oregon, El Paso 79901	211.
201.	Roberts, R. L. Assistant Librarian Abilene Christian College Abilene	Schwartz, Shula (Mrs.) Manager, Central Library Services Texas Instruments, Inc. Box 5474, MS 925, Dallas 75222	212.
202.	Rodell, Elizabeth Assistant Librarian for Technical Services Rice University, Houston	Scott, Anita (Mrs.) Branch Librarian Houston Public Library 4502 Briscoe, Houston 77051	213.
203.	Roethlesberger, June Associate Librarian University of St. Thomas 3812 Montrose, Houston 77006	Scott, Elaine Bookmobile Librarian Robert J. Kleberg Public Library 4th & Henrietta, Kingsville	214.
204.	Rogers, Dorothy (Mrs.) Assistant Librarian & Reference Brooks County Public Library Drawer L, Falfurrias 78355	Scott, Sharon County Librarian Fort Bend County Library 1601 Liberty, Richmond	215.
205.	Sammis, Marian (Miss) Librarian Hermann Hospital 6411 Fannin, Houston 77025	Sharp, Camilla (Miss) University of Arkansas Technology Box 3017 Little Rock, Arkansas	216.
206.	Sanford, Jaspyr (Mrs.) Science Reference Librarian Sam Houston State College Huntsville	Sheel, Frieda Head, Public Services Rosenberg Library 823 Tremont, Galveston	217.
207.	Savage, Katrina (Mrs.) Assistant Documents Librarian Texas Technological College Lubbock	Shirkey, Retha A.(Miss) Reference Librarian NASA Manned Spacecraft Center Houston 77058	218.
208.	Sawyer, Ruth (Mrs.) Librarian, Library School Library University of Texas Austin (2826 San Gabriel, 78705)	Shultz, Marie (Mrs.) Director, Field Services Division Texas State Library Austin (2847 Shoal Crest, Austin 78705)	219.
209.	Scannell, Rosa (Mrs.) Reference Librarian Lee Davis Library, San Jacinto College 8060 Spencer Hwy., Pasadena 77505	Simmons, Jimmie Sue Assistant Librarian Sul Ross State College Box 5472, Alpine	220.

221. Simon, Carolyn (Mrs.)
Head, Business Information Center
Austin Public Library
Austin   (1910 Greenbrook Parkway)

222. Sitter, Clara (Mrs.)
Assistant Librarian
Amarillo College Library
Box 447, Amarillo   (6203 Hanson Rd.
                          79106)

223. Sivells, Wanda (Mrs.)
Dir. Learning Ctr., J. M. Hodges Lib.
Wharton County Junior College
Wharton

224. Skinner, Lanell (Mrs.)
Assistant Librarian
Sul Ross State College
Alpine

225. Smith, Helen T.
Libn., Education-Psychology Library
University of Texas at Austin
Austin   (4001 Sierra Drive 78731)

226. Smith, Roger Mae (Miss)
Reference Librarian
El Centro Junior College
Dallas 75202

227. Sprague, Julienne C. (Mrs.)
Interlibrary Loan Librarian
Texas State Library
Austin   (2820 Glenview)

228. Standley, Grace H. (Mrs.)
Asst. Librarian Social Science
Sam Houston State College
Huntsville

229. Stone, Thelma
Branch Head, South Branch Library
Fort Worth Public Library
Fort Worth   (112 Thornhill #10,76115)

230. Stricklin, Sammie Lou
Branch Librarian
Moody Branch, Houston Public Library
1603 Heights Blvd., Houston

231. Strong, Mary Bess (Mrs.)
Librarian
Junior High School
Falfurrias

232. Swafford, Ethel (Mrs.)
Librarian
McAllen Memorial Library
601 Main, McAllen 78501

233. Sykes, Christa M.
Assistant Librarian II
U. of T.,M. D. Anderson Hospital
Texas Medical Center, Houston 77025

234. Taylor, Jeanne M. (Mrs.)
Reference Librarian
Houston Public Library
500 McKinney Avenue, Houston

235. Taylor, Joy
Librarian
CRS Design, Inc.
3636 Richmond, Houston 77027

236. Taylor, Robin (Mrs.)
Librarian
Southwest Center for Advanced Studies
Box 30365, Dallas 75230

237. Thatcher, Gertrude (Mrs.)
Reference Librarian
University of Corpus
Box 6010, Corpus Christi 78411

238. Thomas, Dorothy
Department of Library Service
North Texas State University
Box 5217, N.T. Sta., Denton 76203

239. Thompson, Doris C. (Miss)
Baylor University Department of
   Library Science
Box 6297, Waco 76706

240. Thompson, Sara (Mrs.)
Reference Librarian
Pasadena Public Library
1201 Minerva, Pasadena 77502

241. Thornton, Chrystal
Librarian
Mesquite Public Library
300 Grubb Drive, Mesquite (5733 Goodwin)

242. Tolbert, Jean F. (Mrs.)
Religion Librarian
Baylor University Library
Waco

243. Totten, Herman L.
Head Librarian
Wiley College
Marshall 75670

244. Ulcom, Margaret E.
Assistant Librarian
Harris County Library
2502 Crawford, Houston

245. Valdez, Anthony F.
Head Librarian
Texas Southmost College
1825 May St., Brownsville

246. Van Horn, Virginia
Director
Brazoria County Library
Old Courthouse, Angleton 77515

247. Varner, Jeannette (Mrs.)
Head of Reference
Austin Public Library
Box 2287, Austin 78767

248. Venable, F.
Librarian
Woodforest County Branch
North Shore

249. Vermeulen, June
Acquisitions Librarian
Fondren Library, Rice University
Houston

250. Vogt, Meredith
5418 Pagewood Lane
Houston 77027

251. Wagner, Frank S., Jr.
Head, Information Center
Celanese Chemical Company
Corpus Christi

252. Wagner, Virginia Bratten
Desk Assistant
Houston Public Library
Houston   (3607 Murworth #1, 77025)

253. Waldron, John F.
Hydrologist & Librarian
Layne Texas Co.
Box 9469, Houston 77011

254. Walker, Carver Wallace
Librarian
Johnson Branch Library
3511 Reed Road, Houston

255. Wally, Anne C. (Mrs.)
Assistant Librarian
Ring Branch, Houston Public Library
Houston 77055   (8835 Long Point)

256. Wasserman, June
Head, Business & Technology Dept.
Fort Worth Public Library
9th & Throckmorton, Fort Worth 76102

257. Waters, Dick
Chief of Branch Services
Dallas Public Library
1954 Commerce, Dallas 75201

258. Weathers, Barbara
Reference Assistant
University of Houston
Houston   (7423 Magnolia)

259. Weaver, Ruby
Coordinator, Adult Services
Houston Public Library
Houston

260. Webb, David A. (Dr.)
Director of Libraries
North Texas State University
Denton

261. West, F. C. (Mrs.)
Librarian
Freeport Library
1410 West 4th Street, Freeport

262. West, Louis G. (Mrs.)
Business Librarian
Texas Southern University
Houston

263. Wheeler, Marjorie W.
5775 Viking
Beaumont

264. Whitmore, Ellie N.
Assistant Reference Librarian
North Texas State University
Denton 76203   (418 Texas Street, 76201)

265. Wilhite, Flora R. (Mrs.)
Library Director
Sterling Municipal Library
Public Library Ave., Baytown 77520

266. Wilkinson, Tom
Librarian
El Centro Junior College
Dallas

267. Williams, Frances C. (Mrs.)
Librarian
Midland County Library
Box 1191, Midland

268. Winfree, Erma V. (Mrs.)
Librarian
Waller County Library
Hempstead 77445

269. Winfrey, Dorman H. (Dr.)
Director and Librarian
Texas State Library
Drawer DD, Capitol Sta., Austin 78711

270. Winkler, Lorraine
Assistant Librarian
Meyer Branch, Houston Public Library
Houston   (5005 W. Bellfort)

271. Wisdom, L. R.
Interlibrary Loan Librarian
Fort Worth Public Library
Fort Worth (6701 Calmont #207, 76116)

272. Wong, Virginia
Adult Librarian
Houston Public Library
500 McKinney, Houston

273. Woodyard, Nancy (Mrs.)
Coordinator of YP & Children's Serv.
El Paso Public Library
501 N. Oregon, El Paso 79901

274. Wright, Jerry
2526 N. Britain Rd.
Irving 75060

275. Yoder, Saida (Mrs.)
Librarian
Weatherford Public Library
318 S. Main, Weatherford

Young, Heartsill   276.
Associate Librarian
University of Texas at Austin
Austin 78712

Zingler, Gilberta M. (Mrs.)   277.
Head, Acquisitions Dept.
Rice University Library
Houston   (5701 Jackson #609, 77004)

ADDITIONAL NAMES MENTIONED IN TLA RRT PRE-CONFERENCE INSTITUTE FOR WHICH
NO REGISTRATION SLIPS ARE IN EVIDENCE

278. Benton, Lynn
Deer Park Public Library
Deer Park

279. Boyvey, Mary (Mickey)   (Mrs.)
Library Coordinator
Texas Education Agency
201 East 11th Street
Austin 78711

280. Fahlberg, Willson J. (Dr.)
Council of Health-Science Libraries
Baylor Univ. College of Medicine
Texas Medical Center, Houston 77025

281. Hall, Beth (Mrs.)
Librarian
Haltom City Public Library
Fort Worth (?)

282. Hansen, Ann
Brazosport Junior College
Freeport

283. Hendricks, Donald (Dr.)
Director, Sam Houston State
   College Library
Huntsville

284. Holley, Edward G. (Dr.)
Director of Libraries
University of Houston
Cullen Boulevard, Houston 77004

285. Jones, Wyman
Director
Fort Worth Public Library
Fort Worth

286. Morris, Margaret F(rancine) (Miss)
Reference Librarian
University of Texas at Arlington
Arlington

287. Nance, Richard (Dr.)
Institute of Technology
Southern Methodist University
Dallas 75222

288. Schader, Freddy (Miss)
Arkansas Library Commission
506-1/2 Center Street
Little Rock, Arkansas 72201

289. Sinclaire, Dorothy
Director of S.E.T.I.N.A.
University of Houston
Houston 77004

290. Ward, Forrest
Coordinating Board of Texas College
   & University System
201 East 14th Street
Austin 78701

291. Wolford, Janet (Miss)
Reference Librarian
Mobil Research & Development Corp., FRL
Box 900, Dallas 75221

292. Yoes, Richard
T.E.M.P.
Communications Laboratory, Univ. of Texas
Austin

APPENDIX C.2
ROOM ARRANGEMENT AND NODE DESIGNATIONS

MARCH 6, 1969

JEFFERSON D. CASKEY, CHAIRMAN
MEETING ROOMS COMMITTEE
T. L. A. CONFERENCE
C/O HOUSTON BAPTIST COLLEGE
7502 FONDREN ROAD
HOUSTON, TEXAS 77036

DEAR JEFF:

THANK YOU FOR YOUR LETTER OF FEBRUARY 24. ONE EQUIPMENT
OPERATOR WILL BE ADEQUATE.

ENCLOSED PLEASE FIND A COPY OF THE DESIRED FURNITURE
LAYOUT, WITH ACCOMPANYING DIRECTIONS/SUGGESTIONS FOR ROOM 114
AND THE COPY FOR THE SIGNS.

IF YOU HAVE ANY QUESTIONS PLEASE DO NOT HESITATE TO WRITE
OR CALL.

SINCERELY,

RLW

RICHARD L. WATERS, CHAIRMAN
INSTITUTE PLANNING COMMITTEE
REFERENCE ROUND TABLE
TEXAS LIBRARY ASSOCIATION

RLW:IM

ENCLOSURE

CC: MAXINE JOHNSTON
RUBY WEAVER
MARYANN DUGGAN

FURNITURE LAYOUT DIRECTIONS/SUGGESTIONS

ROOM 114

HEAD TABLE:

SEATING FOR SIX (6).
BLACKBOARD, WITH CHALK AND ERASERS, ON PLATFORM.
PODIUM TO SIT ON TABLE.
IF PODIUM DOES NOT HAVE MIKE, BE SURE ONE OF THE TABLE MIKES
CAN BE USED BY PERSON AT PODIUM. THERE MUST BE TWO (2) MIKES
AT TABLE AS SHOWN ON DRAWING.
TABLE MUST BE COVERED WITH CLOTH WHICH WILL ALSO SERVE AS MODESTY PANEL.
TWO (2) WATER PITCHERS PLUS PAPER CUPS (12) ON TABLE.
FOUR (4) ASHTRAYS ON TABLE.

ROUND (60" DIAMETER) TABLES:

PLEASE NOTE WE WANT 24 TABLES INSTEAD OF 19.
TWELVE (12) CHAIRS PER TABLE — EVEN IF IT IS CROWDED.
TABLES MUST BE COVERED WITH TABLECLOTHS. RENT CLOTHS IF NECESSARY.
(PERHAPS RUBY WEAVER CAN HANDLE THIS IF YOU WISH.)
FOUR (4) ASHTRAYS PER TABLE.
TWO (2) WATER PITCHERS PLUS PAPER CUPS (24) PER TABLE.
TWENTY-FOUR (24) (INSTEAD OF 20) 4½' SIGN HOLDERS, ONE PER TABLE,
TO BE PLACED IN CENTER OF EACH TABLE.
TABLE NUMBERS AND SIGN LABELS CORRESPOND.

PROJECTOR TABLE:

SEATING FOR THREE (3).
ONE (1) WATER PITCHER AND SIX (6) PAPER CUPS.
TWO (2) ASHTRAYS.
TABLE TO BE CLOTHED.

COFFEE SERVICE:

IF COFFEE IS TO BE BROUGHT IN VIA PUSH CARTS, NO PROBLEM.
IF URNS TO SET ON TABLES, PROVIDE NEEDED NUMBER OF FOLDING TABLES WITH CLOTHS.
QUESTION: WHO WILL SERVE COFFEE?

ADDITIONAL SEATING:

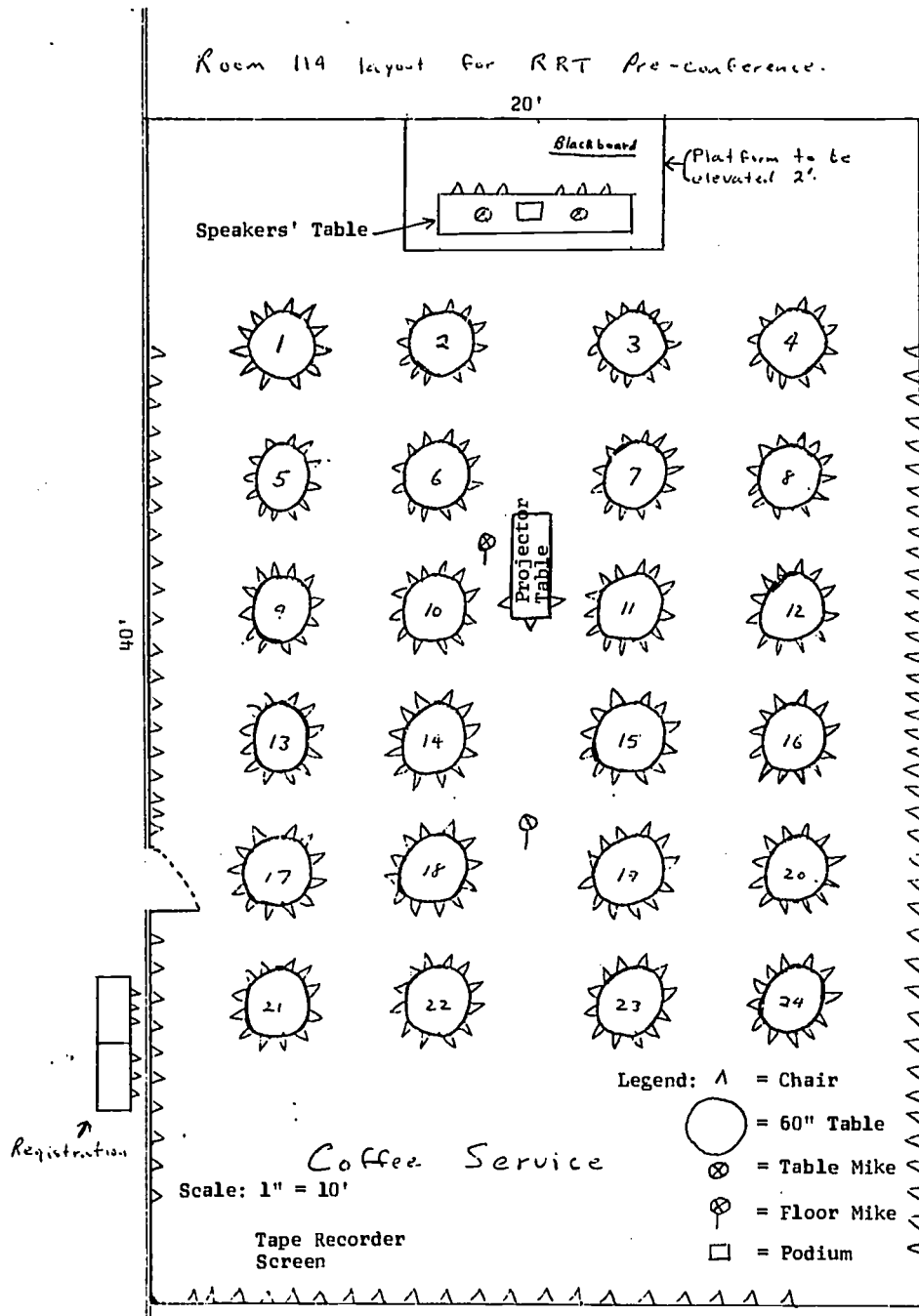AS SHOWN ON DRAWING. HOWEVER, IF ADDITIONAL SEATING CAN BE PROVIDED WITHOUT

C-18

EXTENDING BEYOND FIRST ROW OF TABLES PLEASE ADD.

REGISTRATION TABLE:

SEATING FOR SIX (6).
TWO (2) ASHTRAYS.
TABLES TO BE CLOTHED.

RLW
3-6-69

Room 114 layout for RRT Pre-conference.

20'

Blackboard — Platform to be elevated 2'.

Speakers' Table →

Legend: Λ = Chair
◯ = 60" Table
⊗ = Table Mike
⊕ = Floor Mike
▭ = Podium

Registration

Coffee Service

Scale: 1" = 10'

Tape Recorder
Screen

Projector Table

40'

SIGN LABELS*

Table No.	Copy
1	El Paso MRC
2	Law Libraries
3	School Libraries
4	Amarillo MRC
5	Special Libraries
6	Jr. College Libraries
7	Lubbock MRC
8	W. I. N.
9	San Antonio MRC
10	SWITCHING CENTER
11	Abilene MRC
12	State College & University Libraries
13	T. E. M. P.
14	Austin MRC
15	Private College & University Libraries
16	Fort Worth MRC
17	Corpus Christi MRC
18	Health Science Libraries
19	I. I. S./T. A. G. E. R.
20	I. U. C.
21	S. E. T. E. N. A.
22	Houston MRC
23	R. I. C. E.
24	Dallas MRC

* All lettering, EXCEPT 10, to be black on white.

  10 to be red on white.

  All lettering to be as indicated regarding caps, etc.

APPENDIX C.3

PACKET OF HANDOUTS AT REFERENCE ROUND TABLE BEHAVIORAL MODEL

March 26, 1969

TO: TLA REFERENCE ROUND TABLE PARTICIPANTS

Welcome to an exciting professional experience!! Big
things are planned for the RRT Institute on March 26. You
must be prepared if you are to "Play the Game of Networking."

The enclosed packet will prepare you to be a real, live,
active NODE!! Those who have planned the RRT this year need
your "feedback" in designing better networks. Please come
fully informed!

Bring the enclosed packet with you on March 26 — YOU
WILL NEED IT!! See you then , . . .

COOPERATIVE INTER-LIBRARY REFERENCE AND INFORMATION NETWORKS
A PRE-CONFERENCE INSTITUTE
Co-Sponsored By
TLA REFERENCE ROUND TABLE
And
THE TEXAS STATE LIBRARY
* * *

MATERIAL FOR DISTRIBUTION TO REGISTRANTS

* 1. Final Program

* 2. Preprint of President's Commission on Libraries Report

* 3. Bibliography on Inter-Library Networks, Modeling, etc.

* 4. Glossary on Inter-Library Networking (and Worksheet for additions to Glossary

* 5. Summary of First Meeting of RRT Statewide Network Committee, February 18, Dallas

  6. Worksheets for Networking Own Library

  7. List of ^uestions and Worksheets for Additional Questions

  8. Draft Copy of Proposed Inter-Library Loan Code

* 9. Draft Copy of Proposed "Ideal Inter-Library Network"

 10. Copies of Pertinent Parts of following "Laws":

    a. LSCA, Title III

    b. HEA, Title IX

    c. Western Information Network

    d. Library Systems Act

 11. Proceedings of 1968 RRT Institute on Cooperative Reference Services (For $1.50)

* Enclosed/Mailed to Pre-Registrants

COOPERATIVE INTER-LIBRARY REFERENCE AND INFORMATION NETWORKS

A PRE-CONFERENCE INSTITUTE
Co-Sponsored By
TLA REFERENCE ROUND TABLE
And
THE TEXAS STATE LIBRARY

Albert Thomas Convention Center, Room 114 — Downtown Houston, Texas
March 26, 1969

8:30 a.m. - Registration, Assignments to Nodes and Pick-Up of Network-
              ing Packets

9:00 a.m. - Opening Remarks and Objectives of the Institute
                  Maxine Johnston, Chairman, Reference Round Table

9:10 a.m. - Recent Developments on the National Scene
                  Richard Perrine, Pres., ALA Reference Services Div.

                  Ed Holley, Librarian on Office of Education Knowledge
                      Networks Task Force

9:30 a.m. - Texas Library Networks and Cooperative Reference Services
              Survey Results
                  Richard Waters, Chairman, RRT Institute
                  Planning Committee

10:15 a.m. - Questions and Discussion
10:30 a.m. - Coffee
10:45 a.m. - First Report from Official Listeners

11:00 a.m. - Preliminary report of Six Months Evaluation Study of Texas
              State Library Communication Network
                  Marie Shultz, Director, Field Services Div., TSL

11:30 a.m. - Reference Librarians and Networks: Houston Case Study of
                  LSCA Title III Special Project
                  Richard O'Keefe, Project Director

11:50 a.m. - Questions and Discussion
12:00 noon - Lunch
 1:00 p.m. - Second Report from Official Listeners

 1:15 p.m. - Reference Librarians and Networks: Dallas Pilot Model
              LSCA Title III Special Project
                  Maryann Duggan, Project Director

 1:35 p.m. - "Games Librarians Play" — or, A Day in the Life of an Inter-
              Library Loan Librarian
                  Francine Morris, University of Texas at Arlington

 1:50 p.m. - Conceptual Design of an Ideal Library Network for Texas —
              Preliminary Report of RRT Statewide Network Study Group

 2:20 p.m. - Model Library Networks and Library Network Modeling
                  Richard Nance, SMU Institute of Technology

 3:00 p.m. - Questions and Discussion
 3:15 p.m. - Coffee
 3:30 p.m. - Third Report from Official Listeners

 3:45 p.m. - Networking Your Own Library — Discussion and Critique from
              Attendees and Participants

 4:15 p.m. - The Future — Where Do We Go From Here? Final Report from
              Official Listeners, and Discussion

 4:45 p.m. - Reference Round Table Plans for the Future

OBJECTIVES OF THE INSTITUTE

1. To summarize development (national, state, and local) in cooperative reference and information services since the 1968 TLA Reference Round Table Institute.

2. To explore new thinking and approaches to the examination and use of cooperative reference services and library networks.

3. To apply network concepts to local library situations.

4. To develop an ideal statewide, inter-library reference network through participation of institute attendees and Official Listeners.

5. To identify future developments needed in cooperative reference and inter-library networks in Texas.

"OFFICIAL LISTENERS"

The following have been invited to serve as Official Listeners for this Institute. Their mission is to listen for key problems, concepts, trends — and to periodically report their findings or raise questions, thereby helping to direct the Institute toward clear thinking and realistic solutions.

Mrs. Mary Boyvey
Mrs. Lillian Bradshaw
Dr. Wilson Fahlberg
Mrs. Catherine Franklin
Dr. Don Hendricks
Mr. John Hudson
Mr. Paul Janaske
Miss S. Janice Kee
Mr. James L. Love
Mr. Stanley McElderry
Mrs. Frances Neal

Mrs. Dorothy Sinclair
Mrs. Wanda Sivells
Mr. James Stephens
Mr. Forest Ward
Dr. Paul Wasserman
Mr. Robert Whipple
Mrs. Flora Wilhite
Dr. Dorman Winfrey
Miss Jan Wolford
Mr. Heartsill Young
Mr. Richard Yoe

Mr. Wyman Jones

* * *

A SURVEY OF COOPERATIVE VENTURES* SERVING TEXAS LIBRARIES
Preliminary Report
By
Richard L. Waters

Richard Perrine, in his "Survey of Reference Services in Texas Libraries"
(Appendix C, 1968) listed 54 "union lists, regional catalogs and cooperative
ventures" which were reported by Texas Libraries. Those 54 lists, catalogs and
ventures served as the base for this survey. As was the case last year, a co-
ordinator for each MRC district was appointed and made responsible for collecting
data from specific ventures as listed by Perrine plus others they were aware of.

Thirty-nine ventures have been surveyed to date. (Some of those reported in 1968
were found to be listed more than once but by a different name; i.e., CORAL and
the Bexar County List correctly belong to the Council of Research and Academic
Libraries, San Antonio, Texas. Some others apparently have ceased to exist; i.e.,
the "Dallas List" and a "Union List of Serials in Dallas/Fort Worth Area.") The
39 have been divided into two broad categories: Networks and Union Catalogs.
For the purpose of this survey a Network has been defined as: An interconnection
of things (other than the printed word), systems or organizations. A Union Cata-
log has been defined as: Any compilation of printed material related by subject
or format in which two or more libraries share responsibility for publishing and/
or maintaining.

The "Networks" and "Cooperative Ventures" have been further divided geographically.
The divisions are:

    Local - Encompassing not more than three MRC Districts.
    State - Encompassing three to ten MRC Districts.
    Regional - Encompassing all or a portion of Texas plus extending into at
        least one other state. (A further division was made with regard to
        "Networks" by distinguishing between those headquartered in Texas and
        those whose headquarters are in another state.)

No attempt was made to survey national networks (i.e., EDUCOM, MEDLARS), nor all
but a few national union catalogs.

Following are the names and headquarters location (if known) of the 39 ventures,
by category.

LOCAL NETWORKS

    Centralized Processing Center - Fort Worth Public Library
    Council of Research and Academic Libraries (CORAL) - San Antonio
    Inter-University Council Private Line Teletype Network (I.U.C.) - University
        of Texas at Arlington
    Midland-Odessa Union Exchange List of Serials - Midland & Odessa
    Odessa-Midland Public Libraries Reciprocal Borrower's Agreement -
        Odessa & Midland
    West Texas Film Circuit, Inc. - Abilene Public Library
    Western Information Network Association (W.I.N.) - Lubbock

* Any activity involving two or more libraries and/or other agents.

STATE NETWORKS

    Council of State College Librarians (Texas Information Exchange) - No
        permanent headquarters
    Texas State Library Network - Austin

REGIONAL NETWORKS (HEADQUARTERED IN TEXAS)

    Industrial Information Services (I.I.S.) - Southern Methodist University
    Regional Information and Communication Exchange (R.I.C.E.) - Rice University
    Texas Medlars Search Station - Texas Medical Center, Houston
    Texas Technical Application Network (Tex-Tan) - Austin

REGIONAL NETWORKS (HEADQUARTERED OUTSIDE TEXAS)

    Bibliographical Center for Research, Rocky Mountain Region - Denver, Colo.
    Medical Library Association, Southern Regional Group - No permanent headqtrs.
    Southwestern Academic Library Consortium - No permanent headquarters.
    Southwestern Union List of Serials - Albuquerque, New Mexico
    Technology Application Center (TAC) - University of New Mexico, Albuquerque

LOCAL UNION CATALOGS

    Data Processing Bibliography - Dallas Public Library
    Newspaper Resources of District IV: A Union List - University of Houston
    Union List of Periodicals for the top 26 Counties of Texas - Amarillo
        Public Library
    Union List of Periodicals, Houston MRC - Houston Public Library
    Union List of Winchell Titles - Rice University

STATE UNION CATALOGS

    Catalog of Genealogical Materials in Texas Libraries - Texas State Library,
        Austin
    Catalogue of Research Facilities in Texas - Texas A & M University
    The Texas List - Houston (Phil Wilson, Publisher)
    Union Catalogue of Texana - Barker Library, University of Texas at Austin
    Union List of Serials of Texas Health Science Libraries - University of
        Texas Medical Branch Library, Galveston

REGIONAL (NATIONAL) UNION CATALOGS

    American Medical Speciality Board Bibliography Project - University of Arkansas
        Medical Center, Little Rock
    Comprehensive List of Periodicals for Chemistry and Chemical Engineering
        (ACCESS) - Chem Abstracts Service, Columbus, Ohio
    Geologic Field Trip Guidebooks of North America: A Union List Incorporating
        Monographic Titles - American Geological Institute, Washington, D. C.
    New Serial Titles - Library of Congress, Washington, D. C.
    Newspapers on Microfilm - Library of Congress, Washington, D. C.
    Union Catalog of Presbyteriana - Presbyterian Historical Society, Philadel-
        phia, Pennsylvania
    Union List of Biomedical Serial Holdings in the South Central Region - Uni-
        versity of Texas Medical Branch Library - Galveston
    Union List of Serials - Library of Congress, Washington, D. C.
    Union List of Serials for Public Utility Libraries - New York, New York

This preliminary report makes no attempt to relate other data about the above, ex-
cept to state that most ventures, especially those based in Texas, are in their
infancy and thus the information collected is often incomplete.

                                              March 10, 1969

PROPOSED BASIC ELEMENTS OF "IDEAL" STATEWIDE INTER-LIBRARY NETWORK

By Maryann Duggan

The following are offered for review and critique by the Reference Round Table. What should an "ideal" statewide network look like in Texas? What do YOU think? What do YOU propose?

As a minimum, it is suggested that such a network must have the following components or characteristics:

1. Organizational Structure - providing for fiscal, legal, planning, policy formulation and requiring commitment, operational agreement and common purpose.

2. Collaborative Development of Resources, providing for cooperative acquisition of rare and research material and for strengthening local resources for recurrently used material. Multi-media resources developing essential.

3. Identification of Nodes, providing for designation of role specialization as well as for geographic configuration.

4. Identification of Primary Patron Groups, providing for assignment of responsibility for library service for all citizens within the network.

5. Identification of Levels of Service, providing for basic needs of patron groups as well as special needs and identifying distribution of each service type among the nodes; must provide for "referral" as well as "relay"; for document transfer as well as "information transfer."

6. Legal Right of Access, providing fiscal, contractual, legal planning and policies.

7. Establishment of Bi-Directional Communication System, providing "conversational mode" format and designed to carry desired message/document load at each level of operation.

8. Common Standard Message Codes, providing for understanding among the nodes on the network.

9. Central Bibliographic Record, providing for location of needed items within the network.

10. Switching Capability, providing for interfacing with other networks as well as determining the optimum communication path within the network.

11. Selective Criteria of Network Function, providing guidelines of what is to be placed on the network.

12. Evaluation Criteria and Procedures, providing feedback from users and operators and means for network evaluation and modification to meet specified operational utility.

13. Training Programs, providing instruction to users and "operators" including policy and procedures.

IN SUMMARY, the so-called ideal statewide inter-library network should be so designed that any citizen anywhere in the state can have access to the total library and information resources of the state through his own local library.

BE PREPARED TO PRESENT YOUR IDEAS
ON AN IDEAL STATEWIDE INTER-LIBRARY NETWORK FOR TEXAS!!

DIRECTORY OF NODES
TLA REFERENCE ROUND TABLE PRE-CONFERENCE
INTER-LIBRARY NETWORK GAME

* * *

NODE NO.	NODE COMPOSITION
1	El Paso MRC
2	Law Libraries
3	School Libraries
4	Amarillo MRC
5	Special Libraries
6	Junior College Libraries
7	Lubbock MRC
8	W.I.N.
9	San Antonio MRC
10	SWITCHING CENTER
11	Abilene MRC
12	State College & University Library
13	T.E.M.P.
14	Austin MRC
15	Private College & University Library
16	Fort Worth MRC
17	Corpus Christi MRC
18	Health Science Libraries
19	IIS/TAGER
20	I.U.C.
21	S.E.T.E.N.A.
22	Houston MRC
23	R.I.C.E.
24	Dallas MRC

* * *

C-30

REAL LIVE CASES
OF INTER-LIBRARY "SITUATIONS"

WHAT WOULD YOU DO IF <u>YOU</u> WERE THE LIBRARIAN?
WHAT POLICY WOULD YOU FOLLOW? WHAT PROCEDURE?

Node **15** 1. A small private university needs a copy of a technical report for a professor who is submitting a research contract proposal. (You are that university librarian.)

Node **4** 2. A large public library has been asked for a copy of Chaucer's tales by a smaller public library in its MRC. (You are the librarian of the large public library.)

Node **17** 3. A small public library is requested by a local businessman to compile a bibliography on fuel cells, particularly articles with pictures.

Node **3** 4. The state university library in a medium-size town has been asked by a junior high school student to check out a book on nuclear reactions.

Node **18** 5. A teacher in a high school in a large city has asked the local building librarian for transparencies illustrating the circulation system of a frog.

Node **9** 6. A blind lady in a small town has asked the local public library for books in braille or for large print books.

Node **1** 7. The local judge in a medium size town needs a copy of the statutes of another state.

Node **16** 8. A local businessman needs recent census tract data on population statistics in another, larger city in the state.

Node **14** 9. A small public library is asked by a high school student to get copies of articles on dope addition from some medical journals.

Node **5** 10. A research scientist in a local industrial research laboratory has asked the local public library for information on availability of Russian translations of a specific article.

Node **12** 11. The fire chief of a medium size town has asked the state university library in the town to find copies of laws pertaining to labor unions for municipal employees.

Node **3** 12. A teacher in a local elementary school asked the building librarian to get a copy of an article from an education journal on new teaching methods. The teacher is taking a credit course in education from a nearby state university.

Node **7** 13. A local club woman has asked the medium size local public library for a book of Greek plays.

Node   14. A local club woman has asked the local private university library
15   for a book of Greek plays.

Node   15. A high school student has asked the local private university li-
16   brary for a book of Greek plays.

Node   16. A high school student has asked the librarian in an industrial
5   research library to use the library and to borrow a textbook on
             chemistry.

Node   17. A doctor in a small town has asked the local public library for a
17   copy of an article from a medical journal.

Node   18. A junior college student in a large city has asked the branch public
6   library for a book on accounting practices which is used by the local
             university as a text book.

Node   19. A practicing physician in a large city has asked the medical school
18   library to compile a bibliography on the side effects of birth con-
             trol pills.

Node   20. The regional planner for the local COG has asked the local state
20   university library to locate recent laws on air pollution in urban
             areas.

Node   21. The state library has been asked by a Major Research Center for a
10   medical book for one of the smaller libraries in the region.

Node   22. The local public library in a small town is asked by the president
1   of a service club for a movie on safe driving.

Node   23. The professor at a large private university needs a copy of a
23   geologic map of a distant state.

Node   24. The school board members in a small town ask the school librarian
2   for a copy of the senate hearings on education for disadvantaged.

Node   25. A large public library gets an inter-library loan request from a
22.   small public library and out of the state for a fairly common book
             on city management.

Node   26. A professor from the local university asks the local branch library
24   in a large city for a government document on lawn care.

Node   27. The Chamber of Commerce president in a medium size town asks the
14   local university library for a listing of all the economic develop-
             ment agencies in other states.

Node   28. The college student in an out of town state university asked the
19   local private university to borrow a book needed in his course work.

Node   29. A small private university gets an inter-library loan request for
20   a fairly common, in-print book from an out-of-town business library.

- 3 -

Node 30. A large public library has been asked by a local businessman to
22 borrow a copy of an out-of-print American imprint on history of bank-
ing in Europe.

Node 31. A local school principal in a small town asks the local public li-
21 brary for a film to use during the next PTA meeting.

Node 32. A local businessman in a medium size town (which also has a state
11 university and is nearby to an industrial research complex) asks
the local public library for a copy of an old U.S. patent.

Node 33. A local high school student asks the local public library to borrow
13 for him a book of British short stories required for reading in the
freshman English class at the local university.

Node 34. The local farmer in a small town has asked the County library branch
2 to get him a copy of a government report on soil conservation.

Node 35. The local housewife has asked the local junior college to use the
6 French I language tapes to prepare for a trip to Europe.

Node 36. The local lawyer in a small town has asked the State Library to com-
13 pile a list of laws on accidental poisoning by error in filling a
prescription.

Node 37. The local veterinarian in a small town has asked the local public
4 library for material on surgical procedures for heart transplants
in animals.

Node 38. The owner of a private nursing home in a large city has asked for a
9 book mobile stop once a month.

Node 39. The teacher in a private elementary school has asked the nearby
7 public elementary school library for a copy of a film strip on
civics unit.

Node 40. An employee of a business firm in the suburbs of a large city is
8 taking a college course over closed circuit TV from a distant state
university. He needs a book. Where should he go?

Node 41. The local waterworks chemist of a medium size city has asked the
23 local private university for a book on treatment of municipal water
supplies.

Node 42. The medical school librarian in a large city has received a request
18 from a local building librarian in the public school for trans-
parencies on the circulatory system of a frog.

* * *

LIBRARY SERVICES AND CONSTRUCTION ACT
AS AMENDED IN 1966
PUBLIC LAW 89-511

TITLE III — INTER-LIBRARY COOPERATION
AUTHORIZATION OF APPROPRIATIONS

Sec. 301. There are authorized to be appropriated for the fiscal year
ending June 30, 1967, the sum of $5,000,000; for the fiscal year ending
June 30, 1968, $7,500,000; for the fiscal year ending June 30, 1969,
$10,000,000; for the fiscal year ending June 30, 1970, $12,500,000; and
for the fiscal year ending June 30, 1971, $15,000,000; which shall be used
for making payments to States which have submitted and had approved by the
Commissioner State plans for establishing and maintaining local, regional,
State or interstate cooperative networks of libraries.

ALLOTMENTS

Src. 302. From the sums appropriated pursuant to section 301 for each
fiscal year the Commissioner shall allot $10,000 each to Guam, American
Samoa, the Trust Territory of the Pacific Islands, and the Virgin Islands,
and $40,000 to each of the other States, and shall allot to each State such
part of the remainder of such sums as the population of the State bears to
the population of the United States according to the most recent decennial
census.

PAYMENTS TO STATES

Sec. 303. From the allotments available therefor under section 302,
the Secretary of the Treasury shall from time to time pay to each State
which has a plan approved under section 304 an amount equal to the Federal
share which for the fiscal year ending June 30, 1968, shall be 100 per
centum of the total sums expended under such plan (including costs of admin-
istering such plan), and for any fiscal year thereafter shall be 50 per
centum of such sums, except that the Federal share for the Trust Territory
of the Pacific Islands shall be 100 per centum.

STATE PLANS FOR INTERLIBRARY COOPERATION

Sec. 304. (a) To be approved for purposes of this title a State plan
must —

(1) meet the requirements of paragraphs (1), (2), (4), and (5) of
section 103(a).

(2) provide policies and objectives for the systematic and effective
coordination of the resources of school, public, academic, and special
libraries and special information centers for improved services of a supple-
mentary nature to the special clientele served by each type of library or
center;

(3) provide appropriate allocation by participating agencies of the
total costs of the system;

- 2 -

(4) provide assurance that every local or other public agency in the State is accorded an opportunity to participate in the system;

(5) provide criteria which the State agency shall use in evaluating applications for funds under this title and in assigning priority to project proposals; and

(6) establish a statewide council which is broadly representative of professional library interests and of library users which shall act in an advisory capacity to the State agency.

(b) The Commissioner shall approve any State plan which meets the conditions specified in subsection (a) of this section.

* * *

PART F — NETWORKS FOR KNOWLEDGE

Sharing of Educational and Related Resources Among Colleges and Universities

Sec. 251. The Higher Education Act of 1965 is amended by redesignating title VIII as title XII, and sections 801 through 804 (and references thereto however styled in such Act, or any other Act, including such references heretofore made in this Act) as sections 1201 through 1204, respectively. The Higher Education Act of 1965 is further amended by inserting after title VII the following new title:

"TITLE VIII — NETWORKS FOR KNOWLEDGE

"Sharing Educational and Related Resources

"Sec. 801. (a) To encourage colleges and universities to share to an optimal extent, through cooperative arrangements, their technical and other educational and administrative facilities and resources, and in order to test and demonstrate the effectiveness and efficiency of a variety of such arrangements the Commissioner is authorized to enter into contracts and to make project grants for all or part of the cost of planning, developing, or carrying out such arrangements. Such grants may be made to public or nonprofit private colleges or universities. When in the Commissioner's judgment it will more effectively promote the purposes of this title, the Commissioner may make grants to other established public or nonprofit private agencies or organizations, including professional organizations or academic societies and he may enter into contracts with established private agencies and organizations.

"(b) Projects for the planning, development, or carrying out of such arrangements assisted under this title may, subject to the provisions of subsection (c), include —

"(1)(A) joint use of facilities such as classrooms, libraries, or laboratories, including joint use of necessary books, materials, and equipment; or (B) affording joint access to specialized library collections through preparation of interinstitutional library collections and preparation of suitable media for electronic or other rapid transmission of materials;

"(2) establishment and joint operation of closed-circuit television or equivalent transmission facilities (such as the instructional television fixed services); and

"(3) establishment and joint operation of electronic computer networks and programs therefor, to be available to participating institutions for such purposes as financial and student records, student course work, or transmission of library materials.

- 2 -

"(c)(1) Grants pursuant to clause (B) of paragraph (1) of subsection (b) may not be used to pay the costs of electronic transmission terminals.

"(2) In the case of a project for the establishment and operation of a computer network, grants may not include —

"(A) the cost of operating administrative terminals or student terminals at participating institutions; or

"(B) the cost, or any participating institution's pro rata share of the cost, of using the central computer facilities of the network, except (i) such costs of systems development and programming of computers and transmission costs as are necessary to make the network operational, (ii) the administrative and program support costs of the central facilities of the network, and (iii) the line-access costs incurred by participating institutions.

"Appropriations Authorized

"Sec. 802. There are authorized to be appropriated for the purposes of this title (and planning and related activities in the initial fiscal year for such purpose), $340,000 for the fiscal year ending June 30, 1969, $4,000,000 for the fiscal year ending June 30, 1970, and $15,000,000 for the fiscal year ending June 30, 1971.

"Authority for Free or Reduced Rate Communications Interconnection Services

"Sec. 803. Nothing in the Communications Act of 1934, as amended, or in any other provision of law shall be construed to prevent United States communications common carriers from rendering, subject to such rules and regulations as the Federal Communications Commission may prescribe, free or reduced rate communications interconnection services for interconnection systems within the purview of this title, whether or not included in a project for which a grant is made under this title."

* * *

WORKSHEET FOR NETWORKING YOUR OWN LIBRARY

OR

"TWENTY QUESTIONS ON NETWORKING"

The time has now come for decisions and action!!!!

Assuming the "nodes" in this room represent real types of libraries and locations of libraries, let us see what your node would decide on the following:

1. Does your "node" want to join a "network"?

2. Which network do you wish to join? Why?
    (Homogeneous or Hetrogeneous? Vertical or Horizontal?)

3. What type of node/network relationship do you wish?

4. What type of services or resources do you expect to get from the network? What selectivity criteria?

5. What type of services or resources does your node expect to offer the network? What selectivity criteria?

6. What B/L Radio do you anticipate for your node? What total B + L?

7. What type of network organization do you prefer? Directed or Undirected?

8. By what legal authority can you join a network? What type of formal agreement do you visualize? Who must approve contractual agreements?

9. Who will pay for the network operation? On what basis are allocation of costs among the network members determined?

10. What "communication channel" do you plan to use? How much will it cost per month? Per message? What message load do you anticipate? What turn-around time? What channel capacity do you need?

11. What geographic configuration do you wish in the network? Will it mix governmental units?

12. Do you plan to "switch" requests locally? In the MRC area? At the state level? Where and how should your node interface with other networks?

13. Who will work out the operating policies and procedures for the network and the node/network "rules of the game"?

14. How will you train your staff to use the network capability?

15. How will you evaluate the network performance? What criteria are important to your node? To the total network?

16. What patron group will you serve (a) as a requesting node and (b) as a receiving node? Are you going to emphasize Patrol Mobility or Material Mobility?

17. What role specialization do you visualize for (a) your node and (b) other nodes in the network and (c) the switching center (if there is one)?

18. How will network participation influence your own library policies and procedures on (a) book selection, (b) acquisition, (c) cataloging, (d) retention of material, (e) automation of technical processes and/or circulation systems?

19. Do you visualize any node/network conflict in goals? If such were to occur, how would you resolve the conflict — (a) leave the network, (b) try to modify the network goals, (c) modify your node's goals?

20. What other factors do you think are important?

A NETWORK PROBLEM

In the event that you have friends who believe library problems to be simple, or in case you have some time to spend solving problems, the following is offered to you. The solution will be provided during the discussion of library networks.

Problem:

Libraries A, B, C and D participate in a network. Currently each library transfers messages to the others by telephone. On an average daily basis each library has determined its messages initiated and received to be:

Library	Initiations	Receipts
A	50	55
B	100	45
C	35	95
D	65	55

Now the number of messages which can be sent by telephone from one library to another in a day is limited (obviously, by the staff size — only so many people available to answer telephones). Transfer of telephone messages between libraries also "costs" the communicating libraries. (These "costs" may be in terms of dollars or something else.) The limitations on messages which may be sent, and the cost per message for sending it are shown in the table below. In addition, the number of messages to be initiated and received by each library is shown.

INITIATIONS	ORIGINATING LIBRARY	RECEIVING LIBRARY (Upper cell value is cost; lower value () is the limit on messages.)			
		A	B	C	D
50	A	✕	12 (25)	8 (36)	10 (20)
100	B	20 (40)	✕	12 (65)	9 (35)
35	C	14 (15	9 (30)	✕	15 (25)
65	D	12 (20)	11 (30)	10 (35)	✕
Receipts →		55	45	95	55

Since Library A never sends messages to itself (nor does B, C, or D) the diagonal cells are crossed out. In each of the other cells is given the cost per message and the limit on the number of messages; for example, the cost per message for sending a message from A to B is 12, and a maximum of 25 messages may be sent from A to B during the day.

- 2 -

The problem is to send all the messages initiated during the day by each of the libraries to the others in a manner so that

1. All messages initiated are sent,
2. No more messages are received at any library than the library has agreed to receive (55 for A),
3. No more messages are sent from any library to another than the limit set for the two (25 for A → B), and
4. The total "cost" solution for all the messages sent and received is the minimum possible value.

This problem is not easily solved —that is the point. The minimum cost requirement (4) is the hooker, but you can easily try out some solutions on your own. For example, the solution

			COST
(A,B) = 20 ——→	20 x 12 =	240
(A,C) = 30	30 x 8 =	240
(B,A) = 40	40 x 20 =	800
(B,C) = 30	30 x 12 =	360
(B,D) = 30	30 x 9 =	270
(C,A) = 10	10 x 14 =	140
(C,D) = 25	25 x 15 =	375
(D,A) = 5	5 x 12 =	60
(D,B) = 25	25 x 11 =	275
(D,C) = 35	35 x 10 =	350
		3,210

meets all the initiation, receipt, and limitation requirements at a cost of 3,210. Can you specify the message transfers, meeting all requirements, which will result in a lower total cost?

Richard Nance

RN:rm

National Interlibrary Loan Code, 1968

INTRODUCTION

This code, adopted by the Reference Services Division, acting for the American Library Association on June 27, 1968, governs the interlibrary lending relations among libraries on the national level, among research libraries, and among libraries not operating under special or local codes. Libraries of a common geographical area or those specializing in the same field may find it advantageous to develop codes for their own needs. There is appended to this national code a model state code[1] which may be considered for adoption by such groups of libraries with common interests.

On the national level interlibrary loan requests should be restricted to materials which cannot be obtained readily and at moderate cost by other means. The costs involved in lending and the conflict in demand for certain kinds of materials necessitate this restriction.

The American Library Association has published[2] a manual explaining in detail the procedures which should be used in implementing the principles of this code. Libraries requesting materials on interlibrary loan are expected to have copies of this manual and to abide by its recommendations.

The present interlibrary loan system may be radically changed by less conventional methods of transmission of materials, such as telefacsimile and computer networks. Until such methods have gained widespread acceptance, their use must be based on special agreements among libraries.

I. *Definition.* Interlibrary loans are transactions in which library materials are made available by one library to another for the use of an individual; for the purposes of this code they include the provision of copies as substitutes for loans of the original materials.

II. *Purpose.* The purpose of interlibrary loans is to make available, for *research*, materials not owned by a given library, in the belief that the furtherance of knowledge is in the general interest. Interlibrary loan service supplements a library's resources by making available, for the use of an individual, materials from other libraries not owned by the borrowing library.

III. *Responsibility of Borrowing Libraries.*

1. It is assumed that each library will provide the resources to meet the study, instructional, informational, and normal research needs of its users, and that requests for materials from another library will be limited to

[1] Not included with this text. In preparation and to be published in the manual in 1969.
[2] Manual in preparation and not yet published as of September 5, 1968.

unusual items which the borrowing library does not own and cannot readily obtain at moderate cost. Requests for individuals with academic affiliations should be limited to those materials needed for faculty and staff research, and the thesis and dissertation research of graduate students.

2. Thesis topics should be selected according to the resources on hand and should not require extensive borrowing from other libraries. If an individual needs to use a large number of items located in another library, he should make arrangements to use them at that library.

3. The borrowing library should screen carefully all applications for loans and should reject those which do not conform to this code.

IV. *Responsibility of Lending Libraries.*

1. In the interests of furthering research it is desirable that lending libraries interpret as generously as possible their own lending policies, with due consideration to the interests of their primary clientele.

2. A lending library has the responsibility of informing any borrowing library of its apparent failure to follow the provisions of this code.

V. *Scope.*

1. Any type of library material needed for the purpose of research may be requested on loan or in photocopy from another library. The lending library has the privilege of deciding in each case whether a particular item should or should not be provided, and whether the original or a copy should be sent.

2. Libraries should not ordinarily ask, however, to borrow the following types of materials:

a. U.S. books in print of moderate cost

b. Serials, when the particular item needed can be copied at moderate cost

c. Rare materials, including manuscripts

d. Basic reference materials

e. Genealogical, heraldic, and similar materials

f. Bulky or fragile materials which are difficult and expensive to pack (*e.g.* newspapers)

g. Typescript doctoral dissertations, when fully reproduced in microfilm and readily available

VI. *Expenses.*

1. The borrowing library assumes the responsibility for all costs charged by the lending library, including transportation, insurance, copying, and any service charges. If the charges are more than nominal, and not authorized beforehand by the borrowing library, the lending library should inform the requesting library and ask for authorization to proceed with the transaction. Borrowing libraries should try to anticipate charges, such as for copies,

and authorize them on the original request,

2. It is recommended that in the interests of efficiency the lending library absorb costs which are nominal, such as for postage.

VII. *Conditions of Loans.*

1. The safety of borrowed materials is the responsibility of the borrowing library. In case of loss or damage the borrowing library is obligated to meet all costs of repair or replacement, in accordance with the preferences of the lending library.

2. The borrowing library is bound by any limitations on use imposed by the lending library. It is recommended to lending libraries that any limitations (such as "for use in library only") be based on the physical condition or the bibliographic character of the particular item rather than be imposed on all materials lent.

3. Unless specifically forbidden by the lending library, copying by the borrowing library is permitted provided that it is in accordance with copyright law and American Library Association policy.

VIII. *Placement of Requests.*

1. Libraries should exhaust local resources and make an effort to locate copies through the use of bibliographical tools, union lists, and union catalogs. Requests should be made to one of the nearer institutions known to possess the desired material. Care should be taken, however, to avoid concentrating requests on a few libraries.

2. In the absence of special agreements, requests should normally be placed by mail using the standard ALA forms, or by teletype using a format based on the ALA interlibrary loan form. When an urgent request is made by telephone, this initial request should be immediately followed by the confirming ALA form.

IX. *Form of Request.*

1. Materials requested must be described completely and accurately following accepted bibliographic practice.

2. Items requested should be verified and sources of verification given, and for this purpose borrowing libraries should have access to basic bibliographic tools. When the item requested cannot be verified, the statement "Cannot verify" should be included with complete information on the original source of reference. If this provision is disregarded and the bibliographic data appear to be incorrect, the request may be returned unfilled without special effort to identify the reference.

3. The name and status (position or other identifying information) of the individual for whom the material is being requested should be included on the request form.

4. A standard ALA interlibrary loan form should be used for each item requested (or an ALA photoduplication order form, when it

is known that copies will be supplied and payment required).

5. All correspondence and shipments should be conspicuously labeled "Interlibrary Loan."

X. *Duration of Loan.*

1. Unless otherwise specified by the lending library, the duration of loan is normally calculated to mean the period of time the item may remain with the borrowing library, disregarding the time spent in transit.

2. The borrowing library should ask for renewal only in unusual circumstances, and a second renewal should never be asked for without a specific explanation. The renewal request should be sent in time to reach the lending library on or before the date due. The lending library should respond to renewal requests promptly; if it does not, it will be assumed that renewal for the same length as the original loan period is granted.

3. Material on loan is subject to recall at any time and the borrowing library should comply promptly.

4. The loan period specified by the lending library should be appropriate to the type of material.

XI. *Notification and Acknowledgment.*

1. The lending library is expected to notify the requesting library promptly whether or not the material is being sent; if the material cannot be supplied, the lending library should state the reason.

2. Except in the case of very valuable shipments, no acknowledgment of receipt is necessary. If there is undue delay in receipt, however, the receiving library has a responsibility to notify the lending library so that a search may be initiated promptly.

XII. *Violation of Code.*

Continued disregard of any of the provisions of this code is sufficient reason for suspension of borrowing privileges. ■■

Gaylord Bros., Inc.
LIBRARY SUPPLIES AND EQUIPMENT
Syracuse, N. Y. 13201   Stockton, Calif. 95201

C-43

CRITIQUE

I think the "Ideal State-Wide Inter-Library Network" should also include:

I do not like the following in the proposed "Ideal Network":

Please complete and turn in   (Optional)
at the Reference Round Table
or mail to: Name_____

Maryann Duggan
Industrial Information Services   Library_____
Science Information Center
Southern Methodist University   Mailing Address_____
Dallas, Texas 75222
                                       _____

RRT INSTITUTE — EVALUATION SHEET

All participants sincerely seek your evaluation of this RRT Institute and your ideas on a topic for next year. You do not have to sign your name!!

INDICATE YOUR OPINION IN EACH SQUARE E = Excellent F = Fair G = Good P = Poor	PRESENTATION STYLE	GRAPHICS OR VISUAL AIDS	QUALITY OF CONTENT	PREPARATION OF SPEAKER	INNOVATION OF IDEAS	APPLICABILITY TO REFERENCE SERVICES
1. Total RRT Institute						
2. Official Listeners' Reports						
3. Networking Games and Cases						
4. Formal Papers:						
a. Perrine & Holley						
b. Waters						
c. Shultz						
d. Duggan						
e. Morris						
f. Nance						
5. Handout Packet Content						
6. Room Arrangement						
7. "Ideal Network" Design						
8. Discussion Periods						

GENERAL REMARKS: (anything you want to say!) _____

_____

_____

What would you like to see done next year? _____

_____

Your Name (optional) _____   Library _____

G L O S S A R Y

OF

TERMS RELATED TO LIBRARY COOPERATION

AND

INTER-LIBRARY NETWORKS

March, 1969

Prepared by

Maryann Duggan

Richard Nance

Jim Stephens

and others

* * *

NOTE TO THE READER:

We have tried to include in this glossary the various terms
and concepts that may be unique to librarianship or that we
are using in a special meaning. Please use the enclosed
"Glossary Work Sheet" to help make this Glossary more com-
plete. Mail your work sheet to Maryann Duggan at SMU, or
turn it in at the RRT Institute.

* * *

GLOSSARY OF TERMS
RELATED TO LIBRARY COOPERATION AND INTER-LIBRARY NETWORKS

ACCESS - The ability to use a system with or without constraints.

ALGORITHMS -

AREA - The Major Resource Center geographic areas designated by Texas State Library.

BATCH MODE - A request - answer - request sequence of transmitting messages or handling transactions. May be in series or in parallel.

BENEFIT/COST RATIO - The numeric ratio showing the units of benefit derived for each unit of cost.

B/L RATIO - The ratio of borrowing to lending transactions at any one node or within the total network.

B/L RATIO ZONE TECHNIQUE - A possible method of computing node/network relationships as a function of $\frac{B}{B+L}$ x B+L assigning Activity Zones which determine node/network balance.

BLACK-BOX - Any sub-system with all available input/output terminals to achieve any function at the wish of the designer.

BOMB-OUT - Failure to achieve mission; i.e., not finding requested document.

BOUNDARY - The "layer" between two systems which permits the possibility of energy transfers in either direction. It also is called an "interface." May also be described as that region separating one system from another; serves as a coding and decoding function.

BRADFORD'S LAW OF SCATTERING - The quantitative analysis of "hard core" resources as compared to little-used resources. A methodology applicable to the design of resource distribution in a network.

BREAK-EVEN ANALYSIS - The technique for determining effect on one variable when another linear variable is changed and for determining when each variable is equal.

CAPACITY, CAPACITATED - See CHANNEL CAPACITY.

CAPACITATED SYSTEM - Upper and lower limits of performance pre-determined.

CHANNEL - The device for communicating between nodes. See COMMUNICATION CHANNEL.

CHANNEL CAPACITY - The maximum number of messages which can be transmitted over the designated channel in a given period of time and at a given rate.

CHANNEL/NODE COMBINATION - The particular combination of a communication channel linking two nodes within the library network. The sub-system resulting from the combination of a given channel with a given node.

CHANNEL UTILITY - The benefit or utility derived from using a designated channel for a message transfer from Library A to Library B.

Example: Channel Utility may consist of the cost of communication between the 2 libraries, the probability that the library assessed can supply the desired answer, etc.

CODING:DECODING - Conversion of message language to standard format and symbols.

COMMUNICATION CHANNEL - The means by which messages are transferred to libraries within the network; i.e., courier, telephone, telex.

COMMUNICATIONS TECHNICAL TERMINOLOGY - See Glossary on pp. 404-415 of Edunet.

COMPATIBILITY - The quality which permits the interchange between systems.

CONSTRAINT SET - The set of equations representing the bounds on a particular problem solution.

COOPERATION/COLLABORATION -

COOPERATIVE VENTURES (re Waters) - Any activity involving two or more libraries and/or other agents.

CRITERION FUNCTION - The function representing the objective of the model.

CRITICAL PROXIMITY - Critical distance beyond which components cannot function in a system.

DECISION THEORY - CONDITIONS OF CHOICE - Choices made under conditions of (1) certainty; (2) risk, or (3) uncertainty.

Certainty assumes a given state.
Risk recognizes various states and predicts relative ratios.
Uncertainty - ignorance of probability of occurrence of various states.

DECISION VARIABLE - The decision of the amount to transfer from Library A to Library B using communication channel K.

DEPENDENCY/INTER-DEPENDENCY - A distribution between a node depending on the network as compared to a node contributing to the network. See also B/L RATIO.

DISCRETE - The smallest unit; a unit which can be distinguished from other units.

DOCUMENT - The generic term for a single bibliographic entity. Sometimes called "item."

DOCUMENT TRANSFER - The exchange or transfer of a document from one system to another system or from one node to another node.

DYNAMIC PROGRAMMING - A procedure for analyzing problems in a stage-by-stage fashion rather than attempting to solve the entire problem at one time.

ECLECTIC - The selective approach using some value system or criteria for solution.

ENTROPY - Energy cost unrecoverable in any system at any level of operation.

EXOGENOUS FACTORS - Factors outside the system that influence the system's performance.

FEEDBACK - The returning of information to the system to permit adjustments in operations. Ideally, should be automatic and invariant, and so regulate the system that it can maintain steady operation even under disturbed conditions.

FUNCTIONAL CONFIGURATION - The distribution of task specialization within a network organization.

GAME THEORY - The mathematical analysis of competitive situations where actions involve conflict.

GATE - Controls the rate of input-output flow.

GENERAL SYSTEMS THEORY (GST) - A cluster of strategies of inquiry; a set of unifying principles transcending the conventional compartments of academia; and a framework of general theory to stimulate inter-disciplinary thinking.

GENERAL THEORY OF INTER-LIBRARY NETWORKS - The objective of identifying basic factors that can be applied to any Inter-Library Network.

GEOMETRIC CONFIGURATION - The physical or geographic topography of the network (as compared to the organizational configuration).

GEOGRAPHIC CONFIGURATION - The geographic distribution of the nodes in the network.

GEOGRAPHIC LEVEL - The various geographic proximities from the base point; i.e., city, county, MRC area, State, Region, National, International.

GRAPH THEORY -

GRID - The graphical presentation of data on an X, Y scale in quantitative units. Also used to describe the coverage of a geographic area by a communication system.

GROUP THEORY -

INPUTS, SIGNAL - Messages received by the
system which require processing and/or
action.

HETEROGENEOUS HORIZONTAL NETWORK - A net-
work in which all nodes are of the same
type and same level of size or autonomy.

INPUTS, MAINTENANCE - Messages received
by the system that maintain its ability
to function.

HETEROGENEOUS VERTICAL NETWORK - A network
in which all nodes are of different
types and of different levels of size
or autonomy.

INPUT-OUTPUT ANALYSIS - The process of
quantitatively measuring the borrowing
and lending transactions in a given
node or in a total network to determine
net balance.

HEURISTIC - A teaching/learning situation
or experience.

IMPLEMENTATION - The process of putting
in to operations the set of previously
made decisions, usually on a pre-planne
schedule involving staff, space, money
and time.

HIERARCHICAL NETWORK - A network in which
doner nodes are contacted according to
a pre-determined sequence based on some
known decision criteria.

"HIT" - The process of locating a needed
document in the network and procuring it
over the network.

INPUT:OUTPUT - Messages or signals going
into or coming out of the system via
boundary and terminals. Require coding
and decoding.

HOMOGENEOUS HORIZONTAL NETWORK - A network
in which all nodes are of the same type
and same level of size or autonomy.

INTER-LIBRARY NETWORK - An organized,
planned inter-connection of different
libraries or library systems for pur-
pose of sharing resources or services.

HOMOGENEOUS VERTICAL NETWORK - A network
in which all nodes are of the same type
but of different levels of size or
autonomy.

INTERSECTION SWITCHING - Switching be-
tween sectors on a geographic and li-
brary type matrix.

HYPOTHETICAL SOLUTIONS - Use of quantita-
tive decision methods for trying out a
variety of solutions in a model mode.

LIBRARY TYPE - The various types of li-
braries as traditionally defined, such
as academic, special, school, public.

INFOMETRICS - The science of measuring or
analyzing information systems performance
or characteristics by using quantitative
problem-solving methodologies.

LINEAR PROGRAM - a problem statement where
the objective or criterion function is
related linearly to the decision varia-
bles and subject to given solution con-
straints; a method for seeking an opti-
mum of some objectives where variables
may be stated in linear form and scarce
resources must be rationed among many
alternative uses.

INFORMATION THEORY - Shannon's Information
Theory specifies mathematically the re-
lations between message volume, channel
capacity, message flow, etc., showing
maximum information capacity of a
channel.

$$C = W \log_2 (1 + S/N)$$

LINKAGE - The process of tie-in to a net-
work. May be organizational but usually
implies communication link.

INFORMATION TRANSFER - The process of ex-
changing or transmitting information
from one system to another system or
from one node to another node.

LINKS - See CHANNELS and ARCS

LINEAR UTILITY FUNCTION -

LOCATOR FILE - A file (record) showing loca-
tion of a given document.

MEANS - END CHAIN - A useful way to concep-
tualize the relationship between prime
and instrumental objectives showing
steps.

MEMORY - The storage of signal inputs.

MESSAGE - The unit of communication con-
cerning a transaction.

MESSAGE FORMAT - The format in which the
message is transmitted in; i.e.:

ILL Form
Letter
TWX
Telex
Phone
Etc.

MESSAGE TRANSFER - The exchange or trans-
mission of message from one system to
another system or from one node to an-
other node.

MESSAGE TYPE - Messages may be of several
types such as:

requesting documents
advising re status of request
confirming shipment
advising cannot ship

METHODOLOGY - The study of various methods
for achieving a task.

MOBILITY OF USER/MOBILITY OF MATERIAL -
Basic conflict in network concept which
must be resolved in formulating network
objectives.

MODEL, ANALYSIS -

MODEL, ANALYTICAL - A model which can be
solved mathematically in closed form.

MODEL, CONCEPTUAL - A verbal description
of basic concepts reqpresenting some
real-world situation.

MODEL, DESCRIPTIVE - See MODEL, CONCEPTUAL

MODEL, DETERMINISTIC - Models having only
a single value for each variable.

MODEL, ECONOMIC - An expression of the
economics of a system in terms of cash
flow, benefit/cost ratios, break-even
analysis as influenced by changes in
the system such as number of employees,
number of transactions, new equipment,
etc.

MODEL, MATHEMATICAL - An attempt to des-
cribe the essence of a real life con-
dition, or the main relationships
between real life conditions, by one
or more mathematical equations. Such
a model may permit mathematical manipu-
lation which will identify the optimum
or best "solution."

MODEL, PILOT - An experimental model of
limited size designed to simulate a
much larger real-world.

MODEL, PRESCRIPTIVE -

MODEL, PROBABLISTIC - Variables in the
model have random values; i.e., one of
several possible values each of which
has a specific likelihood of being the
particular value of the variable at any
point in time.

MODEL, SYMBOLIC - A model using symbolic
or symbolistic representation to
describe a system. Example: A flow
diagram, a block diagram, etc.

MODEL, SYNTHESIS -

"MODEL OF THE FIRM" - Use of modeling tech-
niques to simulate various functions
within the organization.

MODELING - The process of representing
the "real world" in some extract format
which permits analysis or simulation.

MORPHOLOGICAL RESEARCH - A method of
analysis proposed by General Systems
Theorist; a quantitative method for
study of structure and form of systems,
organizations, events, concepts, etc.

MULTI-CHANNEL NETWORK - A network where
there exists multiple connecting chan-
nels among the libraries; a channel
which permits more than one message
or message types to be simultaneously
transmitted - also called "Duplex."

MULTI-COMMODITY SYSTEM - A system in which
more than one type of request or serv-
ice can be satisfied.

NETWORK - A combination of individual li-
braries (nodes) into a planned coopera-
tive effort and usually including com-
munication channels, standard codes,
and previously determined policies and
procedures.

NETWORK (re Waters) - An interconnection.
of things (other than the printed word),
systems, or organizations.

NETWORK, DIRECTED - Networks in which a
predetermined sequence of action is fol-
lowed for message transmittal. Also
called Hierarchical Networks.

NETWORK - NON-DIRECTED - Networks in which
there is no established sequence of
action for message transmittal. Also
called Round-Robin Networks.

NETWORK ANALYSIS - A method for scheduling
complex tasks and to compute the "most
efficient" combination of a series of
related tasks. Two methods are:

CPM - Critical Path Method
PERT - Program Evaluation Review Tech-
nique.

NETWORK COMPONENTS - The parts of a network
such as nodes and channels or links,
switching center, locator file, etc.

NETWORK EFFICIENCY - The expression indi-
cating "user satisfaction" with the net-
work including total of efficiency of
all components and functions.

NETWORK ROLE - Task delineation either by
choice or by accident. Each node has
its own unique role.

NODE - The smallest autonomous unit in the
network through which a user can inter-
face with the total network.

NODE ACTIVITY COEFFICIENT - The individual
nodes activity as compared to total net-
work activity.

$$\frac{Bn}{Bn+Ln} \times Bn+Ln \text{ divided by } B+L$$
for total network.

See also B/L RATIO ZONE TECHNIQUE.

NODE DEMANDS - The number of messages re-
ceived or demanded at a library during
a stated period of time.

NODE, INITIATOR - A library which initiates
messages to other libraries within the
network.

NODE, RECEIVER - A library which receives
messages from other libraries within
. the network.

NODE, RELAY - A library which accepts
messages as input and relays them to
other libraries.

NODE REQUIREMENTS - The number of messages
originating at a given library during a
stated period of time.

NODE/NETWORK CONFLICT - Diverse goals be-
tween a node and the network.

NOISE - Random extraneous "conditions or
errors" that confuse the real message;
may be electrical, mechanical, humanis-
tic, or semantic.

OPERATORS OR PROCESSORS - Components in the
system which perform certain pre-de-
termined tasks on incoming messages.

OPTIMAL SOLUTION - The best solution in
terms of the stated problem; i.e., that
set of decision variable values which
gives the optimum value of the criterion
function.

ORGANIZATION THEORY -

PARALLEL - The processing of several trans-
actions simultaneously so that two or
more are completed during the same elap-
sed time. See SERIES.

PARAMETERS, OPERATIONAL - The operational
characteristics that identify the vari-
ous functions of the institution or
organization.

PARTICIPATING LIBRARY - Those libraries participating in the Pilot Model.

PRIMARY PATRON GROUP - The group of users of the system for which the system has the primary responsibility for satisfying total library needs.

PROBABILITY THEORY - Useful in dealing with the problems of uncertainty and where an act has several different possible outcomes.

PROBLEM-SOLVING - The logical analysis and synthesis of complex variables to reach alternate solutions.

PROGRAMMED DECISIONS - Decisions which are routine and repetitive in nature, thereby allowing generalization and one-time decision.

PURPOSES AND GOALS - A definition of objectives and an explicit statement of necessary constraints.

QUEUEING THEORY - Queueing occurs when (1) there is too much demand on existing facilities or (2) there is too little demand. Useful technique for scheduling for given levels of demand and assumed levels of capacity.

RANDOM VARIABLES - A variable which may have any range of values, the exact value of which at any point in time is determined by a chance process which can be described in the form of a probability distribution.

REAL TIME MODE - A system in which turn-around-time is "simultaneous" with input; i.e., minimum response delay.

REFERRAL - The process of referring a requestor to another source. The initiator node has fulfilled its responsibilities when the referral is made.

REFINED DECISIONS - The use of quantitative techniques to eliminate extraneous variables in the study of alternates.

REGION - A multi-state region including Oklahoma, Louisiana, Arkansas, New Mexico and Arizona.

RELAY - The process of switching or transferring the request to another source yet maintaining responsibility for completion of the transaction.

REQUEST - The message in which a specific bibliographic entity is requested.

REQUEST/HIT RATIO - The numeric ratio of the number of requests required before the desired document is located.

RESPONSE TIME - See TURN AROUND TIME.

ROLE SPECIALIZATION - The assignment of special tasks to specific nodes in the network.

ROUND ROBIN NETWORK - A network in which each possible donor node is contacted in series following a personalistic decision mode. Also called an "undirected network,"which see.

SECONDARY PATRON GROUP - The group of users of the system who are provided access by agreement with their primary "parent" system.

SERIES - The processing of transactions one after the other, end-to-end. The lapsed time is equal to the sum of time required on each transaction. See PARALLEL.

SET THEORY - A mathematical method of observing and analyzing "groups of items" to quantatively measure characteristic in common between all elements of the set and sub-sets.

SIGNAL ENERGIES - Energy which can do useful work.

SIMULATION - Use of large sample of transactions related to a mathematical model of a process or a phenomenon being investigated. Sample trials are performed by manipulation of the mathematical model rather than in a physical sense.

SOLUTION FINDING - The search for possible alternative solutions (i.e., proposal search) and the critical, objective evaluation of the proposed solutions. Requires a defined value system. See also OPTIMAL SOLUTION.

STATE OF A SYSTEM - The readiness of the system to perform functions. May be stable or unstable.

STORAGE - The property of the system which permits the delay of outputs beyond the minimal response time of the system.

SWITCHING - The process of relaying (or transferring) messages or documents in a network.

SWITCHING LEVEL - The geographic level (local, area, state, region or national) at which messages/documents/information is exchanged or relayed between systems.

SYSTEMS, CLOSED - Systems that function only within themselves and do not interface with other systems.

SYSTEMS, OPEN - A system which accepts and responds to inputs from without the system and is, therefore, somewhat dependent upon other systems.

TERMINALS - Access points into or out of a system.

"THREE-PARTY" TRANSACTION - A transaction involving three nodes in the network, usually a "requestor node," a relay or switching node, and a "receiver" node.

TIME SLICE - A segment of time cut-out-of a continuous process for purpose of detailed examination.

TRANSACTION - The unit of interaction between nodes including message and document transfer.

TURN AROUND TIME - Time required to receive reply or conclude transaction.

"TWO-PARTY" TRANSACTION - A transaction directly between requestor node and "receiver" node.

UNION CATALOG (re Waters) - Any compilation of printed material related by subject or format in which two or more libraries share responsibility for publishing and/or maintaining.

USER/SYSTEM INTERFACE - The "contact" between a user and the system. Boundaries must be crossed and messages decoded, etc.

UTILITY - An expressing of value system in a quantitative mode capable of measurement. May include time, cost, quality.

GLOSSARY WORK SHEET

I suggest the following terms be added to the Glossary:

T E R M	U S E D B Y
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
8. _____	_____
9. _____	_____
10. _____	_____
11. _____	_____
12. _____	_____
13. _____	_____
14. _____	_____
15. _____	_____
16. _____	_____
17. _____	_____
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29. _____	_____
30. _____	_____

* * *

PRELIMINARY PARTIAL BIBLIOGRAPHY

ON

INTER-LIBRARY NETWORKS, MODELING AND SIMULATION

AND

OTHER PROBLEM-SOLVING METHODS

Compiled by

James Stephens, Richard Nance, and Maryann Duggan with the assistance of
Richard Perrine, Prentice Selby and others.

March, 1969

Note to the Reader:

We welcome additions, suggestions and corrections in the attached biblio-
graphy. We believe we have listed the key publications pertinent to the
RRT Institute, but welcome your assistance in making this bibliography
more comprehensive.

PRELIMINARY PARTIAL BIBLIOGRAPHY

on

INTER-LIBRARY NETWORKS, MODELING AND SIMULATION,

and

OTHER PROBLEM-SOLVING METHODS

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(Title Page Only)

LIBRARY SERVICES FOR THE NATION'S NEEDS: toward fulfillment of a national policy

Report of the National

Advisory Commission on Libraries

October 1968

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APPENDIX C.4

March 7, 1969

OFFICIAL LISTENERS AND THEIR "CHARGES"

TO: ALL PARTICIPANTS AND LISTENERS — TLA REFERENCE ROUND TABLE
     PRE-CONFERENCE INSTITUTE

Time is moving rapidly toward March 26!! The Reference Round Table Insti-
tute on Inter-Library Cooperative Reference Services is going to be exciting
and well attended. Pre-registration is higher than anticipated, indicating
possibly 250 final registrants.

The draft copy of the final program is enclosed. Also enclosed is a list
of handouts which will be given to each registrant — either by advance
mail or at the meeting. Copies of those now available are enclosed for
your homework.

The room will be arranged in a network design with a switching center and
24 round tables pre-numbered to correspond to network nodes. Attendees and
Listeners will be assigned to the node representing their type of library.
We will have actual questions to be relayed through the network during the
afternoon session. In addition, each attendee will be asked to:

         1. Identify terminology requiring definition for
             use in compiling a finished glossary,

         2. Network their own library using worksheets and
             formula provided, and

         3. Actively critique the proposed ideal, statewide
             network.

We sincerely want full participation and involvement of all attendees.

Your role is important to the success of the Institute. In order to co-
ordinate our efforts and to plan our own activities to best meet the ob-
jectives of the Institute, could you please meet for a briefing session
on Tuesday, March 25, 8:00 p.m., Republic of Texas Room at the Rice Hotel
in Houston. Final details can then be discussed with all participants and
Listeners together. The "charge" for the Official Listeners will be as-
signed at this briefing session.

For those of you needing visual aids for your presentation, we will have
an overhead projector for transparencies. If you need other projection
facilities, please let me know by March 20.

See you on March 25, 8:00 p.m.!!

                              Maryann Duggan, Chairman
                              Reference Round Table
                              Statewide Network Planning Committee

MD:rm

Encl.

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January 29, 1969

File: Title III RRT

TO ALL PARTICIPANTS IN THE TLA REFERENCE ROUND TABLE
    PRE-CONFERENCE INSTITUTE MARCH 26, 1969

Enclosed is the preliminary program for the Cooperative Information and
Reference Services - Library Network Institute previously discussed with
you.

In addition to the program participants shown on the enclosure, we are ask-
ing the following to be "Official Listeners":

> Mrs. Mary R. Boyvey
> Mrs. Lillian Bradshaw
> Miss Janice Kee
> Mr. James Love
> Mr. Stanley McElderry
> Mr. Edward Montgomery
> Mrs. Marie Shultz
> Mr. Jim Stephens
> Dr. Paul Wasserman
> Mrs. Flora Wilhite
> Mr. Heartsill Young

The "Official Listeners" will be so designated on the final program and
will be asked to (a) sit as a group during the Institute; (b) reply to a
specific "charge" and (c) present a 35-minute critique of the ideas,
etc., disclosed at the Institute. In other words, the Official Listeners
are the ones to identify the useful contributions and to advise us on
future direction.

We have some exciting ideas about actually simulating a library network
during the institute. We need your reactions to these ideas. Also, our
Institute will be much more effective if all participants per the enclosed
program and above list would get together to coordinate presentations.
Thus, could you please come to a meeting of all Institute participants on
February 18, at 8:30 a.m., SMU Science Information Center, Room 119. Most
of you are getting a separate invitation to attend a Statewide Network
Study Group meeting at the same time and place. We intend to merge these
two functions in the same meeting to save you unnecessary travel, etc.

I look forward to seeing you on February 18.

Maryann Duggan

MD:rm

Encl.

COOPERATIVE INTER-LIBRARY REFERENCE AND INFORMATION NETWORKS

A PRE-CONFERENCE INSTITUTE
Co-Sponsored By
TLA REFERENCE ROUND TABLE
And
THE TEXAS STATE LIBRARY

* * *

PARTICIPANTS

Dr. Ed Holley
Miss Maxine Johnson
Miss Francine Morris
Dr. Richard Nance
Mr. Richard O'Keefe
Mr. Richard Perrine
Mrs. Marie Shultz
Mr. Richard Waters

OFFICIAL LISTENERS INVITED

Mrs. Mary Boyvey
Mrs. Lillian Bradshaw
Dr. Wilson Fahlberg
Mrs. Catherine Franklin
Dr. Don Hendricks
Mr. John Hudson
Mr. Paul Janaske
Miss S. Janice Kee
Mr. James L. Love
Mr. Stanley McElderry
Mrs. Frances Neal
Mrs. Dorothy Sinclair
Mrs. Wanda Sivells
Mr. James Stephens
Mr. Forest Ward
Dr. Paul Wasserman
Mr. Robert Whipple
Mrs. Flora Wilhite
Dr. Dorman Winfrey
Miss Jan Wolford
Mr. Heartsill Young
Mr. Richard Yoes
Mr. Wyman Jones
Col. Wilbur W. Hurt

GENERAL CHARGES TO ALL LISTENERS

During the Day:

Your role is to focus attention on pertinent topics by raising questions before and after presentations. Also, your role is to interpret importance of ideas and help define problems needing attention. Collectively, you will serve as our guide to clear thinking.

Enclosed is a suggested outline for each Listeners' Reporting Period with possible questions that may be pertinent at that time. I have also suggested who among you might wish to report on that topic at that time. This schedule and these questions are only offered for your guidance. Please feel free to identify appropriate issues as you wish.

Final Report:

At the 4:15 Reporting Period, we would like to pull together the main points, clarify issues, set goals for future action, and generally crystallize the concepts, procedures, problems and opportunities for improving inter-library networks and library development in the state. This is the critical charge!

Evaluation:

The following General Charges are offered to help us improve the concepts, etc. Please be observant of and be prepared to report on:

1.   Words that need definition or explanation.

2.   Weakness in logic, theoretical assumptions, or practical implications.

3.   Pertinency of theories or techniques to the particular task being discussed.

4.   Are we on the right track? If not, where are we off?

5.   Applicability of these methodologies and concepts to other states.

6.   Is total inter-library cooperation among different kinds of libraries a desirable goal?

7.   Are the state developments in inter-library networks compatible with national trends?

8.   Future action required on design of inter-library network for Texas.

SUGGESTED SCHEDULE AND TOPICS FOR LISTENERS' REPORTS

First Report: Broad Concepts, Policies, and Network Structure

Time: 10:45-11:00

Listeners: Young, Hendricks, Wilhite, Boyvey

Questions:

1. What is the relationship between the ALA Inter-Library Loan
   Code and Network Development?

2. Should a state attempt to be self-sufficient in library
   resources and special information services?

   How do you decide the point at which self-sufficiency
   should be developed?

3. How do you evaluate the effectiveness or efficiency of a
   library network?

   What criteria should be used?

4. What effect would a Texas Union Catalog have on the reference,
   referral, and relay services in the state?

   How do you compute Benefit/Cost Ratio?

5. Is local switching preferable to state or national switching?

   On what basis do you make this decision?

Second Report: Questions on Barriers to Inter-Library Cooperation and
               Questions on the Role of the Individual Library in the Network

Time: 1:00-1:15

Listeners: Neal, Hendricks, Jones, Love, Wilhite, Wolford, Hudson

Questions:

6. What seem to be the major barriers to inter-library cooperation?

7. What are some of the psychological barriers to development of
   networks and how can these be overcome?

8. What are the major barriers to interfacing "networks of knowledge"
   and "public library networks"?

9. Do library networks strengthen or weaken the individual library?

   What are the criteria for evaluating this?

Second Report, continued:

10. Do library networks tend to downgrade the role of the local library?

11. Can a library participate in a network in which the network goals conflict with the library goals?

12. Is the concept of primary patron group valid?

13. Is Role Specialization essential in designing an effective network?

     How do you determine the various roles?

14. Is a library justified in formulating selective policies on levels of service or types of transactions permitted on the network?

15. What are the functions of an MRC?

Third Report: Questions on Problem Solving Strategies, Funding and Education

Time: 3:30-3:45

Listeners: McElderry, Wasserman, Janaske, Fahlberg, Kee, Yoes, Franklin

Questions:

16. What problem solving strategy do you think is most applicable to the analysis and design and improvement of inter-library networks?

17. How practical is the use of modeling and simulation techniques in evaluating or designing networks?

18. Is it intellectually and realistically possible to evolve a Generalized Inter-Library Network Theory?

19. What is the most important "utility" within:

     a. A library, and

     b. A network of libraries?

20. Who shall pay for networks? The members? The users? The government?

21. Is the B/L Ratio Zone technique valid for developing rate structures for individual node participation in a network?

22. What effect will functioning library networks have on reference librarians in their day-to-day tasks?

23. What effect (or effects) will network development have on library education?

     On continuing education for on-the-job librarians?

<u>Final Report</u>:   Questions on Laws, Statewide Planning, and General Charges

Time: 4:15-4:45

Listeners: Winfrey, Ward, Young, Boyvey, Sivells, Kee

Questions:

24.   What laws (local, state, federal) influence network development--
      favorably or unfavorably?

25.   Are contractual library service agreements possible and legal
      in Texas among different types of libraries and different
      governmental units?

26.   How could the existing networks in Texas be redesigned to enhance
      their "utility"?

      Who should be responsible for this re-design?

27.   Who is responsible in Texas for

            a.   Statewide planning of library development

            b.   Inventorying resources

            c.   Designing systems

            d.   Setting standards

            e.   Training librarians?

28.   Who or what agency should be doing statewide library planning
      for <u>ALL</u> types of libraries in the state?

APPENDIX C.5
FORMAL PAPERS PRESENTED DURING
REFERENCE ROUND TABLE INSTITUTE
March 26, 1969

C.5-a

RECENT DEVELOPMENTS ON THE NATIONAL SCENE
By Richard Perrine*

The bibliography included among the materials supplied to the registrants of this institute is merely a preliminary partial bibliography, but it gives ample evidence in the variety of books and articles cited that cooperative library ventures (or interlibrary networks) are being carefully examined on the local, regional, nationa, and international levels. The bibliography's Section A on Networks and Networking contains two citations, numbers 9 and 10, to articles in the current issues of Library Quarterly and Library Trends, repsectively. These two publications of January 1969 are entirely devoted to articles on interrelations among different types of libraries and on existing library or information systems. Such concentration on the subject virtually forces librarians to become "network conscious."

The Library Trends issue is entitled "Developments in National Document and Information Services," and its articles on India, Latin America, Japan, South Afvica, Canada, Scandinavia, United Kingdom, United States, and Soviet Union each have lessons for us. The article on India mentions an organization, a National Institute on Technical Information, which is called "NITI." Perhaps this could be combined with a new unit to be named "Global and Regional Institute for Total Information." We should certainly be able to get to the heart of the network matter with a structure known by the acronym of "NITI-GRITI."

Library interdependence is increasing on the local scene in Texas, as elsewhere, and I am sure that everyone present today has participated in some form of cooperative library venture, if not in one of the organized networks operating in the state. These tentative patterns of collaboration are described in the Library Trends article on Scandinavian countries as being "like a map of small country roads with a few cross-roads over the national border." The development of more comprehensive coverage is likened to "the planning of an interstate highway system." The analogy is good, but oversimplified.

Recent developments on the information scene in this country, with its great varieties of media, methods of communication, and

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*Mr. Perrine is Reference Librarian, Rice University, Houston, Texas.

libraries, more closely resemble the complex integration of all forms
of transportation: airplanes, ships, railroad trains, as well as high-
way vehicles, both public and private. The fine articles by Joe
Becker, particularly that in Library Trends and the one co-authored
by Wallace Olsen in Volume 3 of the Annual Review of Information Sci-
ence and Technology, delineate this complicated mosaic and provide
what is probably the most thorough current coverage of networks in
this country. In the limited time here today I can only tell you what
I know about a few small pieces of the overall scene.

As you may know, Maryann Duggan, the chairman of this insti-
tute, is to be one of the two speakers at a program on library networks
during the Atlantic City conference of the American Library Association
this June. I believe that I can most effectively convey views on
national developments by referring to them in relation to the evolution
of the plans for the Atlantic City program.

The national information network-conscious attitude is essen-
tially recent in origin and certainly not exclusively the property of
librarians. Joe Becker describes network plans and developments under
way in libraries, education, government, industry, and professional
societies. Although the American Library Association included among
its 1967 Goals for Action a provision for "establishment of a network
between libraries to make available to all citizens the full range of
their resources," the development of national systems to handle infor-
mation is also of active interest to groups such as the following: The
American Society for Information Science; Association for Computing Ma-
chinery; COSATI, the Committee of Scientific and Technical Information
of the White House Office of Science and Technology; EDUCOM; CONLIS; and
others. Librarians who were aware of the activities of these organizations
became concerned about the consequences if a strong move was not made to-
ward the implementation of the stated A.L.A. goal. They felt a danger that
American libraries might be forced, by default, to accept decisions which
would not be in harmony with the total goals of library service for the

nation, or, decisions which represented partial solutions, likely to
prove incompatible with the total system which must inevitably be
designed for comprehensive library service.

The direct result of this concern was a combined effort by
representatives of three A.L.A. divisions which felt they had a
particular stake in the future of library networks. In November of
1967 the Reference Services, the Resources and Technical Services,
and the Information Science and Automation Divisions collaborated in
drawing up a proposal for a Spring 1969 conference to identify and
define the basic propositions fundamental to the establishment and
operation of library networks on a national scale. The conference in-
volved preparation of three commissioned papers, a three-to-five day
meeting of 20 leaders from library, communication and other fields,
and a report to be made to the profession at the Atlantic City con-
ference this June. The estimated cost was $24,000 and funds were
sought by applying for the 1968 J. Morris Jones-World Book Encyclo-
pedia-A.L.A. Goals Award.

The proposal failed to win the award and the librarians repre-
senting RSD/RTSD/ISAD looked around for other possibilities. They
realized that lively interest prevailed in the Federal Government in
support of the information network concept and they learned that the U. S.
Office of Education had been considering a similar conference on net-
works. During A.L.A.'s conference last June in Kansas City the librarians
met with officials from U.S.O.E. to discuss their common interest. As
a result two meetings were held in Washington during the fall of 1968
to consider the general goals of a potential conference on networks and
how such a conference should be planned. Early this year the three
A.L.A. divisions submitted a new proposal for "A Conference on Inter-
library Communications and Networks" to the U. S. Office of Education.
This would be a five day working conference of two hundred knowledge-
able persons to study the entire problem. Up to thirty experts would
prepare background papers dealing with the history, present state of

development, available technology and rationale of networking. Using
these background papers as a foundation, the conference attendees,
working in small groups, would summarize developments, point out
significant trends, outline the steps in a national network develop-
ment plan, and propose additional research to implement such a plan.
The minimum budget for this proposal is $90,000 and the conference
would probably be held in the spring of 1970. The proposal is still
under consideration.

The original RSD/RTSD/ISAD proposal of early 1968, which was
not funded, included a joint program meeting this June at Atlantic
City to report on the conference. This subject was no longer possible
but the three divisions agreed to sponsor a program with the title
"Resources and Services: Expanding Modes of Access." Joe Becker will
talk on "Telecommunication Networks: Background and Definition," and
Maryann Duggan will speak on "Library Networks and Library Service."
It is scheduled for Wednesday morning, June 25th, from 10 to 12, and
I hope that many of you who are present here today will be able to
take in that program.

C.5-b

NETWORKS FOR KNOWLEDGF:
TITLE VIII OF THE HIGHER EDUCATION ACT OF 1965
By Edward G. Holley*

Potentially one of the most promising pieces of federal legisla-
tion enacted during the past year is Title VIII of the Higher Education
Act of 1965, "Networks for Knowledge." Its basic aim, as stated in the
act itself, is to promote the sharing of all kinds of resources among
institutions of higher education. Specifically signaled out for mention
are libraries, closed-circuit television, and computers, though the last
mentioned has a restriction on the costs of central computer facilities
and administrative terminals. Surprisingly libraries get the most men-
tion of all in this particular act, which is included in one of your
handouts today. In addition to the normal encouragement of joint use of
libraries, including joint use of necessary books, materials, and equipment,
there is specific encouragement for the preparation of library systems
and educational media. Surely any cursory reading of this new title to
the Higher Education Act gives promise for substantial assistance to our
colleges and universities.

However, the broad-ranging nature of the title itself and the lim-
ited amount of funding requested by the out-going administration, raises
some serious questions about how quickly its somewhat grandiose promise
will be fulfilled. Although the title actually authorizes some $4,000,000
for Fiscal Year 1970 and $15,000,000 for Fiscal Year 1971, the Johnson ad-
ministration budgeted only $750,000 for Fiscal Year 1970. At this point
we do not know what alterations the Nixon administration will make in the
budget for next year, nor do we have a clear indication that even the
$750,000 will actually be appropriated. In this connection one is reminded
very much of the initial funding of LSCA Title III: much was promised but
little has been forthcoming up to this point in time. Certainly one of
the very clear needs on the part of those who do want to see this program

*Dr. Holley is Director of Libraries, University of Houston, Houston, Texas.

operable is for strong lobbying efforts with the current Congress.
I would certainly urge you to make your views known on this matter to
your own congressmen and senators, and that right away.

"Networks for Knowledge" was passed by the Congress and signed
into law in mid-October, 1968. What has been done since that time to
prepare for the various proposals which will surely come if funding is
provided in the next fiscal year? In late December, 1968, the Office
of Education appointed a Task Force from among its constituent branches
which would be interested in the Title's various provisions. Responsi-
bility for the implementation of the title was lodged with the Bureau of
Higher Education and heading the Task Force is Dr. William Adrian from
the Division of College Support. The Library Services Branch is repre-
sented on the Task Force in the person of Dr. Katherine Stokes, College
and University Library Specialist. For the past three months this task
force has been hard at work drawing up the Draft Regulations and the
Instructions for Submitting Applications. On the whole, the Task Force
has done an admirable job, but the largest share of credit should cer-
tainly go to Dr. Adrian, its chairman.

In addition to the Office of Education personnel, Dr. Adrian has
appointed a group of consultants from a wide variety of organizations to
give his Task Force advice on the general direction and priorities to be
established under provisions of the Act. The first group of consultants
met on January 23 and again March 14. That particular group included rep-
resentatives from the American Council on Education, the Great Lakes Col-
lege Association, the Kansas City Regional Council, EDUCOM, and several
other groups, with yours truly representing college and university library
interests. We were asked to criticize the various drafts and to give our
own input into the Task Force deliberations. A subsequent group represent-
ing other interests met last week and the Office of Education hopes to pull
together the divergent views in final form by late next month. Tentatively
Dr. Adrian hopes to send out the instructions by June 1 with a deadline
for submission of proposals either on September 1 or October 1, 1969. I

say "tentatively" because these dates will be subject to alteration
depending upon Congressional appropriations.

Because of the limited funds likely to be available during the
fiscal year 1970 there is little doubt that project support will focus
on comprehensive planning and/or pilot demonstration projects for estab-
lishing new cooperative arrangements or improving the effectiveness of
existing arrangements. Frankly, it seems likely that the Office of Edu-
cation will choose to fund several large projects rather than a host of
small projects, though the latter are not completely ruled out. I would
guess that those projects with the best chance of success will come from
already existing, formally organized cooperatives, where contractual
arrangements exist among institutions. It seems extremely unlikely to
me that any new group of institutions can organize themselves into a viable
unit and submit an attractive proposal within the constraints of time now
operating. This it would appear that the I.U.C., R.I.C.E., CORAL, etc.
are in the best position to make proposals under the "Networks for
Knowledge" title.

Should the small amount of money available and the other constraints
operating on the first fiscal year deter institutions from applying? As
a practical political view, no, for future funding will in part depend
upon making Congress aware that there is so much interest in this title
that the Office of Education could fund only an insignificant number of
the proposals it received. Moreover, I think it imperative for library
networks to submit excellent, innovative proposals the first time around
since they will now and in the future compete with such expensive propo-
sals as computers and closed-circuit television. This title was not writ-
ten solely for libraries, but we have been in the cooperative sharing
business for a long time and should be the best prepared to make use of
such funding. Therefore I would urge that you give serious attention to
the instructions when they appear and to consider carefully the submission
of a proposal for your existing or evolving library network.

I regret that I won't be able to be with you during the rest of
your deliberations today, but I do hope that you will look upon Title VIII

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as an opportunity and that you will let me know if there is any way
I can help you in your resolution of this most important problem: how
do we obtain the best network for our Texas libraries?

C.5-c
SURVEY OF

COOPERATIVE VENTURES IN TEXAS LIBRARIES
By Richard Waters*

What does CORAL have in common with R.I.C.E.? W.I.N. with
TAGER? TAC with TEX TAN?

What similarity exists between the Catalogue of Research Facil-
ities in Texas and New Serial Titles? Between the Union List of Peri-
odicals for the Top 26 Counties of Texas and The Texas List?

The former are all "networks" presently serving Texas libraries.
The latter are "union lists" which are also assisting libraries and
librarians in Texas. All are, for the purpose of this paper, "coopera-
tive ventures."

I have defined a "cooperative venture" as being any activity
involving two or more libraries and/or other agents.

Before we peek at the many "ventures" now in Texas, let me first
bring you up-to-date on how the data was collected, by whom, and point
out in advance some of the weaknesses of the survey.

Richard Perrine, in his "Survey of Reference Services in Texas
Libraries" (Appendix C, 1968) listed 54 "union lists, regional catalogs
and cooperative ventures" which were reported by Texas libraries. Those
54 lists, catalogs and ventures served as the base for this survey. As
was the case last year, a coordinator for each MRC district was appointed
by the Reference Round Table Chairman and made responsible for collecting
data from specific ventures as listed by Perrine plus others they were
aware of.

Many fine Texas librarians have had a hand in this survey. If
any good comes from it, it is due to their work. They are: Fred Abrams,
Rice University; John Chaffin, Dallas Public Library; Shelah-Bell Cragin,
El Paso Public Library; Janice Gohmert, Fort Worth Public Library; William
Gooch, Ector County Public Library; Alice Green, Amarillo Public Library;
Margaret Hancock, Texas A & I University; Robert Joyce, Dallas Public
Library; Katherine Montague, Trinity University; Richard O'Keeffe, Rice

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*Mr. Waters is Director of Branch Libraries, Dallas Public Library, Dallas,
Texas.

University; Col. Stanley Reiff, Inter-University Council; Helen
Smith, University of Texas; Barbara Wade, Abilene Public Library;
and Ruby Weaver, Houston Public Library.

The data gathering began last August. Most of the work was
done by mail. And therein lies the weakness of the survey. Volun-
teer projects produce good work. And this one has. But they also
lead to inaccuracies, misinterpretations, incompleteness. I am sure
that if all of us who had a hand in this survey could have personally
visited each venture surveyed, answered their questions, interpreted
all questions the same, we - and you - would have a better product.

Forty-seven ventures have been surveyed. Some of those repor-
ted in 1968 were found to be listed more than once but by a different
name; i.e., the above mentioned CORAL is an acronym for the Council of
Research and Academic Libraries, San Antonio, Texas. The "SMU Indus-
trial Associates" is correctly, I believe, the Industrial Information
Services (I.I.S.), headquartered at Southern Methodist University.

Some others apparently have ceased to exist: i.e., the "Dallas
List" and a "Union List of Serials in Dallas/Fort Worth Area." Still
others have merged into larger projects, as was the case of the Union
List of Scientific Serials in the Corpus Christi Area becoming a part
of The Texas List.

The forty-seven have been divided into two broad categories:
Networks and Union Lists. For the survey a Network has been defined
as: An interconnection of things (other than the printed word), systems
or organizations. A Union List has been defined as: Any compilation of
printed material related by subject or format in which two or more li-
braries share responsibility for publishing and/or maintaining.

The "Networks" and "Union Lists" have been further divided
geographically. The divisions are:

Local - Encompassing not more than four MRC Districts.
State - Encompassing five to ten MRC Districts.

Regional - Encompassing all or a portion of Texas plus
extending into at least one other state. (A
further division was made with regard to Net-
works by distinguishing between those headquar-
tered in Texas and those whose headquarters are
in another state.)

No attempt was made to survey national networks (i.e., EDUCOM,
MEDLARS), nor all but a few regional national union lists.

What type of information did we attempt to gather: We wanted
name, address and geographic coverage. We wanted to know something
about their organization, was it on a formal or informal basis? Did
they have a sponsor? How were they governed (Director, Board, Committee,
etc.)? Means of finance? Something about their staff and their last
annual operating budget. These we classed as being identification fac-
tors.

From identification we turned to the scope of their being. Who
were the participants and/or contributors? The consumers of their ser-
vice or product? What type of service did they provide (cooperative ac-
quisitions or processing, interlibrary loan, literature searches, etc.)?
And the type of communications equipment they utilized?

Finally, we asked about the growth of the venture from first year
to last and their long-range goals or plans.

We also wanted to determine the interfacing between networks in
Texas. On this score, to use a term contained in your glossary, we
"bombed - out." Why? Because "interface" appeared as "interfere." As
you would expect, no one said their venture interfered with another ven-
ture. So much for proofreading.

The survey, except for bringing together a few loose ends, is
now complete. What does it tell us about networks and union lists in
Texas?

Let us first look at our union lists.

On a local basis we find three excellent lists in Houston, each
appearing to be directed or maintained by the major libraries in the area.

Newspaper Resources of District V: A Union List, is a
project of the University of Houston. It is now available upon
request from the University. Houston Public is responsible for a
union list of periodicals in its MRC area. A Union List of Winchell
Titles is being maintained and kept current on computer by Rice Uni-
versity.

Two other good periodical holding lists are those in San Antonio
and Amarillo. The former is confined to the larger libraries of that
city. The Union List of Periodicals for the Top 26 Counties of Texas
is now serving Amarillo and vicinity in its first edition with a re-
vision on the way.

The Winchell project has an ambitious goal: "A statewide
union list of Winchell Titles, including those in supplements as pub-
lished, with future remote access by teletype." Dallas area librarians
are now investigating a project similar to this, so perhaps the goal
is not beyond reach.

By far, the most important statewide union list is The Texas
List. Now a commercial venture belonging to the Houston firm of Phil
Wilson, Publisher. The scope of this journal list was enlarged last
year to take in titles in the fields of business, commerce, and indus-
try - in addition to science and technology. The long-range goal of
editor Harold Richardson is to expand into the humanities and social
sciences by 1971-72. However, it is my understanding t'.at unless sales
of the list sharply rise in the near future this goal will be postponed
if in fact ever attempted. We, you and I, must not let The Texas List
die.

Three lists, or catalogs, of a specific nature are: The Catalog
of Genealogical Materials in Texas Libraries, a State Library project;
the Union Catalogue of Texana, housed in the University of Texas at
Austin Baker Library; and A. & M.'s Catalogue of Research Facilities
in Texas.

The latest addition to the state scene is the <u>Union List of Serials</u> of 'Fexas <u>Health Science Libraries</u>, sponsored by the Texas Council of Health Science Libraries.

Our survey of regional and/or national union lists/catalogs is by no means complete - nor was it intended to be. Included are such well known works as the <u>Union List of Serials</u> and <u>New Serial Titles</u>, to which 29 and 18 Texas libraries report their holdings.

A specialized list is that of the Public Utilities Section of Special Libraries Association, the <u>Union List of Serials for Public Utilities Libraries</u>.

Two Texas libraries, the University of Texas at Austin and Trinity University, report their holdings of materials relevant to the study of Presbyterianism to the Presbyterian Historical Society in Philadelphia for inclusion in the <u>Union Catalog of Presbyteriana</u>.

Thirteen college and university libraries in the state participate in <u>Masters Theses in Pure and Applied Sciences</u>.

From union lists and catalogs, let us turn our attention to the other half of the survey - networks. We earlier defined a network as being an interconnection of things (other than the printed word), systems or organizations.

Networks should also possess certain characteristics. They are (A) formal organization, (B) a means of communication, (C) bidirectional operation, and (D) switching capability and a directory. These characteristics will not be found in all Texas networks.

We find ten Local Networks. Two of'them, TAGER and TEMP, are educational TV networks - but with capabilities to perform "library" services. For instance TEMP (Texas Educational Microwave Project) states: "Our microwave facilities could be adapted with little cost to serve library interconnection . . . "

One of the oldest local networks is the Inter-University Council Private Line Teletype Network, I.U.C. for short. Established principally to expedite interlibrary loans between eight institutions in the Dallas/

Fort Worth area, it is now used for reference assistance and through
its sponsor, the Inter-University Council, is planning a union list
of newspapers, cooperative acquisitions, and processing. It is
working with TIE (Texas Information Exchange) and I.I.S., thus in-
creasing its own potential level of service as well as that of the
other two agencies.

The newest local is based here in Houston - SETINA - translated
to read South East Texas Information Network Association. Headquartered
at KUHT-TV, it consists of the "fifteen state supported colleges and
universities within the counties in the Houston MRC area." SETINA
has as a goal: "A desire to serve the needs of the colleges and schools
within our area through a sharing of resources, both local and imported,
and to develop materials which will strengthen each institution." They
also hope "to implement communication among institutions and to build
a cluster of services geared to the needs of each member."

The Western Information Network Association (W.I.N.) was created
by Texas Law H.B. 692. SETINA is also a result of that legislation.

Based in Lubbock, W.I.N. is composed of eighteen state and
junior colleges in West and Northwest Texas. The wealthiest of the
ten local nets, its budget last year was $100,000 - with plans to re-
quest $9.5 million for the next biennium. Much of that will be for
capital outlay to cover construction costs of microwave towers. Al-
though not designed as a library network, "W.I.N. will be a multi-user
network and libraries will share with other users on a basis to be
determined . . . " However, the broad band width of the planned net-
work indicates little initial constraint on users.

The Council of Research and Academic Libraries (CORAL) is a
prime example of cooperation at its very best. Consisting of academic
and research libraries in San Antonio, plus Texas Lutheran College and
Southwest Texas State, their list of achievements should be the envy
of every other metropolitan area in the state. For instance: Each
member library has selected certain subject areas to develop so as

not to overlap unnecessarily with one another; a delivery service
speeds interlibrary loans; reference assistance is provided; a com-
puterized pilot list of the journal holdings of three academic mem-
bers is nearing completion; shared book storage, using the old San
Antonio Public Library Central Building, is available; and a directory
of members has been printed which lists subject strength, hours of
service and the like. If the other metropolitan areas of our state
were as well organized I feel we would be a lot closer to a true
state network.

Why is the Knowledge Network not included in this report? It
is my understanding that it is a child of the Coordinating Board and
is still in the formulative stages. The idea has been approved - the
funding is to come.

From the local level we move to state networks. Five state-
wide operations have been reported. Two, the Council of State College
Librarians and T.I.E. (Texas Information Exchange) are concerned with
the academic world. The public libraries are looked after by the
State Library's Telex-based network. The Texas Council of Health
Science Libraries, Inc. network aids these special libraries. The
fifth member of this group, the State Technical Services Institute at
Texas A. & M. has industry as its main customer.

As a group, the state networks are not as well organized as
the local networks, not as well financed, and they do not have the
range of services of the locals. I shall let you draw your own con-
clusions.

As stated earlier, regional networks have been separated between
those based in Texas and those serving Texas libraries but headquartered
elsewhere.

Three of our four regionals with Texas headquarters are a result
of federal legislation - the State Technical Services Act.

These are Industrial Information Services (I.I.S.) of Dallas;
R.I.C.E., Regional Information and Communication Exchange in Houston;
and Texas Technical Applications Network (TEX TAN). The latter is

in reality the parent of the former two plus the state network
at College Station.

The principal thrust of these three is to serve business
and industry. In order to do this, they have of necessity linked
up with other local, state, regional and national networks and in-
formation centers. Thus their data base is much greater than that
of any state or local network in the state.

The other Texas regional network is the Texas MEDLARS
Search Station, whose service reaches into Arkansas, Louisiana, New
Mexico and Oklahoma from its Texas Medical Center headquarters.

Five regional networks with non-Texas headquarters were sur-
veyed. Two are located in Albuquerque, New Mexico; one in Denver,
Colorado; and the remaining two, Medical Library Association - Southern
Regional Group and the Southwest Academic Library Consortium, report
their "headquarters" move with the office of the current chairman.

The Technology Application Center utilizes facilities at the
University of New Mexico. Much of its strength is a result of its
hookup with NASA.

The other New Mexico operation is the Southwestern Union List
of Serials. Its inclusion in the network grouping stems from its com-
pleted questionnaire which states that interlibrary loans, reference
assistance, literature searches and current awareness information and/
or abstracting services are provided by the agency. This may be an ex-
cellent example of my earlier mentioned fear - dependence on the mails
with the possible result here of a Union List being classed as a network.

The elder statesman of all ventures surveyed is the Denver
based Bibliographical Center for Research, Rocky Mountain Region. It
dates to at least 1935 when a $35,000 grant from that greatest Friend
of a Library - Andrew Carnegie - got it off the ground.

As one reviews the services of these regional networks in com-
parison to the state and local organization, three points stand out:

1. Regionals provide a fuller range of services. Only
   one state network, Texas State Library Communication
   Network, undertakes literature searches - and this is
   qualified by saying "to some extent." Current awareness
   abstracting is provided by the Council of State College
   Librarians and no other state or local service. No local
   "net" performs lit searches.
2. Apparently only the regionals attempt to place a monetary
   value on information by making specific charges for work
   performed. For instance, a Custom Interest Profile with
   twenty-four updates per year will cost you $250 from
   Technology Application Center. R.I.C.E.'s charge for a
   reference question is $5.
3. Except for W.I.N., regional network budgets are consid-
   erably higher than those of their state or local counter-
   parts.

It would appear that these factors are related. More services
are a result of larger budgets which come via membership or user fees.
Public and academic libraries - should we be listening?

So we are now to the end of the road. With a once over lightly
we have surveyed nearly fifty cooperative ventures now serving Texas.
Undoubtedly we have missed some. Our apologies if you feel slighted.
Along the way we have asked a few questions - made a few observations.
Where has our journey taken us?

Without wishing to steal the thunder of the Texas State Library,
I believe Mrs. Shultz will tell us that the "hit" ratio of the State
Library Network is very low. I feel confident that one reason for the
low batting average is that we don't know where our materials are lo-
cated. We need a bibliographic center - or centers - in Texas - and
soon. And it appears that we may be closer to one than we think.
If we could combine The Texas List with the other local and state
periodical and newspaper union lists now existing we would have a good

base. Add to these the specialized catalogs we now are aware of
and our data base would be on firm footing.

We must also put our heads together and settle on a common
communication carrier in addition to the telephone. Will it be Telex,
TWX, teletype, TV or what? Let us get together. It makes little
sense to me that we at the Dallas Public Library can communicate via
a high speed printed message with El Paso Public Library, yet we can't
do the same with Southern Methodist University.

And last - let us also give serious thought to the value of
information. Any true statewide network we plan is going to cost
money - a lot of money. Can we forever give away our service? I
ask this question as a public librarian who has always been a pro-
ponent of "free" library service. But I am now beginning to have some
doubts about the wisdom of that philosophy.

This survey should not be allowed to stand without serious
questioning. I feel it raises as many questions as it answers. Let
us consider it an early step in a journey toward a Texas Library Network.

SURVEY OF LIBRARY NETWORKS SERVING TEXAS LIBRARIES

Please Read Carefully Before Completing.

The information provided via this questionnaire will constitute an
important portion of the 1968-69 Reference Round Table program and
Institute. Your assistance will enable all Texas libraries to give
better reference service.

Please be as specific as possible where necessary--generalize when
necessary. Some questions will require more than one answer.

You will not be able to answer all questions. Please indicate by
noting: answer not available (ana).

Thank you for your cooperation.

A. Identification.

    1. Name of Network_____

    2. Headquarters address_____

_____

    3. Name of Director_____

    4. Does Network cover more than one MRC area? Yes_____No_____

       a. If answer is Yes, state coverage_____

_____

B. Organization.

    6. What is the basis of the organization?

       a. Formal: Incorporated_____ Contract_____Agreement_____

          Other_____

_____

       b. Informal: Custom_____Oral agreement_____Other_____

_____

7. Is there a sponsor(s)? Yes _____ No _____

    a. If answer is Yes, please detail _____

_____

8. How is the Network governed?

    a. Director _____

    b. Director + Administrative Board _____

    c. Director + Advisory Board _____

    d. Administrative Board _____

    e. Advisory Board _____

    f. Other _____

_____

9. How is the Network financed?

    a. Contributions _____

    b. Government grants _____
       bb - List grants/agencies and explain _____

_____

    c. State and/or local taxes _____

    d. Costs absorbed by each institution without specific
       provision _____

    e. Fee structure _____
       ee - List schedule and explain _____

_____

    f. Memberships _____
       ff - List type and explain _____

_____

    g. Other _____

_____

10. How is Network staffed? _____

_____

11. Last annual operating budget? _____

C. Scope.

12. Who are the participants and/or contributors?

a. A list is not required but rather general statements, i.e.,
"private corporations", "small and medium size public
libraries", etc. _____

_____

13. Who are the consumers?

a. Answer as #12 above _____

_____

14. What is the nature of the service rendered? (Define categories,
limitations, levels of switching.)

a. Cooperative acquisitions (subject area, type of material)___

_____

_____

b. Cooperative processing _____

_____

c. Interlibrary loan _____

_____

d. Reference assistance _____

_____

e. Literature searches _____

_____

f. Current-awareness information and/or abstracting _____

_____

_____

g. Union lists:
gg1. Books _____

_____

gg2. Journals _____

_____

       gg3. Other materials _____

   h. Other _____

15. What equipment is utilized?

   a. Teletype _____ Telex _____ TWX _____

   b. Telephone _____

   c. Computers _____
      cc. Type, i.e., IBM 1401? _____

   d. Other EDP equipment _____

   e. Other _____

16. Publications of Network _____

   a. Please enclose sample(s) _____

D. Growth of Network, from first year co last reporting year?

17. Participants and/or contributors _____

18. Consumers _____

19. Financial _____

20. Service rendered _____

21. Book and/or journal titles _____

E. List other Texas Networks or Networks operating in Texas that you are aware of. _____

_____

F. Does your Network interfere with any other Network? _____

   22. If answer is Yes, please list and explain _____

_____

G. Long-range plans and goals of Network? _____

_____

_____

H. Other comments? _____

_____

_____

If your Network performs "reference" work, will you please answer the following, by percentages?

   23. Specific item inquiries _____

   24. "What do you have on this topic?" inquiries _____

   25. Comprehensive literature search of resources at hand _____

   26. Topic search using resources of other Networks, libraries _____
      (Note: 23 - 26 should total 100%)

   27. How often do you:

      a. Refer patron to another Network/library if you can not answer his question nor have specific item? _____

      b. Tell patron you will obtain needed material for him from another Network/library? _____

      c. Neither a nor b?

        (Note: a - c should total 100%)

I. LOCAL NETWORKS

   A. Identification

      1. Name, address, geographic coverage and survey code designation

         The Association for Graduate Education and Research
         of North Texas, i.e. TAGER (LN 10)
         Dallas, Texas
         "Dallas and Fort Worth MRC areas."

         Centralized Processing Center (LN 20)
         Fort Worth Public Library, Fort Worth, Texas
         "Thirty members in north and central Texas."

         Council of Research and Academic Libraries, i.e. CORAL (LN 30)
         Trinity University Library, San Antonio, Texas
         "San Antonio MRC."

         Inter-University Council Private Line Teletype Network,
         i.e. IUC (LN 40)
         Library, University of Texas at Arlington, Arlington. Texas
         "Fort Worth and Dallas MRC areas."

         Midland-Odessa Union Exchange List of Serials (LN 50)
         Headquarters not known
         "Lubbock MRC."

         Odessa-Midland Public Libraries Reciprocal Borrower's
         Agreement (LN 60)
         Headquarters not known
         "Lubbock MRC."

         South East Texas Information Network Association, i.e.
         SETINA (LN 65)
         KUHT-TV, University of Houston, Houston, Texas
         "Houston MRC."

         Texas Educational Microwave Project, i.e. TEMP (LN 70)
         KLRN-TV, Austin, Texas
         "Austin and San Antonio MRC areas."

         West Texas Film Circuit, Inc. (LN 80)
         Abilene Public Library, Abilene, Texas
         "Abilene, Fort Worth and Lubbock MRC areas."

         Western Information Network Association, i.e. WIN (LN 90)
         Lubbock, Texas
         "Abilene, Amarillo, El Paso and Fort Worth MRC areas."

B. Organization

    1. Is Network organized on formal or informal basis?

        a. Formal
            Agreement - 4 (LN 20, 30, 40 & 60)
            Incorporated - 2 (LN 70 & 80)
            Charter - 1 (LN 10)
            State Law (HB 692) - 2 (LN 65 & 90)

        b. Informal
            Oral Agreement - 1 (LN 50)

    2. Does Network have a sponsor(s)?

        a. No - 7

        b. Yes - 3
            Interuniversity Council (LN 40)
            University of Houston (LN 65)
            University of Texas at Austin, Department of
              Radio-Television (LN 70)

    3. How is Network governed?

        a. Administrative Board - 2 (LN 80 & 90)

        b. Other - 6
            Board of Governors and Board of Trustees (LN 10)
            Coordinated by Order Dept. of Fort Worth Public Library (LN 20)
            Board of Directors, two from each member institution.
              Officers elected are a President, Vice-President and
              Secretary/Treasurer (LN 30)
            Directors of IUC plus Executive Secretary (LN 40)
            Each state supported institution that joins is
              represented by its President or his representative (LN 65)
            Director, Administrative Board plus staff consisting of
              a Coordinator and an Operations Manager (LN 70)

    4. How is Network financed?

        a. Contributions - 2 (LN 10 & 70)

        b. Government grants - 2 (LN 10 received grant from Texas
            State Library. An NDEA Title VII grant built LN 70
            system, other grants have produced TV programs.)

        c. State and/or local taxes - 2 (LN 65 & 90)

        d. Costs absorbed by each institution without specific
            provision - 5 (LN 10, 20 (for actual purchase of books),
            30, 50 & 60)

        e. Membership and/or user fees - 3

Standard fees for inter-institutional per credit hour
courses range from $40 to $60. Fees for courses
offered to industry are $50 per semester hour (LN 10)
$75 per month plus proportionate cost of overhead (LN 40)
$1,000 each initial year - $500 per year thereafter (LN 80)

5. How is Network staffed?

Executive Director plus personnel of participants (LN 10)
Fort Worth Public Library Technical Services Dept. staff (LN 20)
Sponsor provides central administrative and fiscal staff.
Each participant provides necessary local staff (LN 40)
Coordinator, Operations Manager, clericals and production
assistants (LN 70)
Staff of administrative library (LN 80)
Full-time salaried staff (LN 90)

6. Last annual operating budget?

$55,000 (LN 20)
$ 7,500 (LN 40)
$69,498 (LN 70
$ 3,500 (LN 80)
$100,000 (LN 90)

C. Scope

1. Who are Network participants and/or contributors?

"Seven private colleges and universities in Dallas/Fort Worth
MRC area" (LN 10)
"Small and medium size public libraries" (LN 20)
"Academic and research libraries of San Antonio, but
including Texas Lutheran College and Southwest Texas
College at San Marcos" (LN 30)
"Libraries at NTSU, TWU, SMU, TCU, SMS, UTA, U of Dallas,
and Bishop College" (LN 40)
"Public and college libraries" (LN 50)
"Odessa and Midland libraries" (LN 60)
"The fifteen state supported colleges and universities within
the 31 counties indicated above" (LN 65)
"Public and private institutions of higher education" (LN 70)
"Public libraries" (LN 80)
"Eighteen state and junior colleges in West and Northwest
Texas" (LN 90)

2. Who are the consumers?

"Same as above plus employees of major industrial firms in
area" (LN 10)
"Small and medium size public libraries" (LN 20)
"The same institutions and their patrons" (LN 30)

"Staff, faculty and students at colleges and universities
  listed above" (LN 40)
"Same" as #1 above (LN 50)
"Residents of both counties" (LN 60)
"Same" as #1 above (LN 65)
"Undergraduate students in survey courses in the core
  curriculum of humanities and social sciences" (LN 70)
"Patrons of participating libraries" (LN 80)
"Same" as #1 above (LN 90)

3. What is the nature of the service rendered?

   a. Cooperative acquisitions - 2 (LN 30 reports that each
      library has selected certain subject areas to develop
      so as not to overlap unnecessarily with one another.
      LN 40 says "under development")

   b. Cooperative processing - 1 (LN 20 only. However, LN 40
      says "under study")

   c. Interlibrary loan - 3 (LN 30, 40, & 65, which is loan of
      videotapes)

   d. Reference assistance - 4 (LN 30, 40, 50 & 65)

   e. Union lists:
      Journals - 2 (LN 30 has computerized pilot list of the
        journal holdings of Trinity University, San Antonio
        College and St. Mary's University which is to be
        completed in early 1969. LN 50 has holdings of each
        library)
      Other materials - 1 (LN 40 preparing union list of
        newspapers for Dallas-Fort Worth region)

   f. Other service:
      Closed circuit classroom instruction provided by LN 10,
        65 & 70
      LN 30 has shared book storage for members
      Service of LN 60 is direct use of either library by
        residents of either county
      LN 80 provides 16mm films in packets rotated to each
        library over 6-week periods
      Two-way video and audio with additional voice grade
        circuits for any type of terminal connection desired
        part of LN 90

4. What equipment is utilized?

   a. Teletype - 3 (LN 30, 40 & 90)
   b. Telex - 2 (LN 30 & 90)
   c. TWX - 1 (LN 90)
   d. Telephone - 3 (LN20, 30 & 90)
   e. Computer - 2 (LN 30 uses IBM models 1401 and 360-44; LN 90
      states "any 3rd generation computer")
   f. TV and/or microwave - 4 (LN 10, 65, 70, & 90)

D. Growth of Network

    1. Participants and/or contributors:

        "Seventeen first year, 30 second year" (LN 20)
        "Nine members original charter to present 11 members" (LN 30)
        "Started with five schools, now includes eight plus inter-
           change with TIE" (LN 40)
        "1961 enrollment of participating institutions about 30,000,
           now about 45,000" (LN 70)
        "From six to seven" (LN 80)
        "From 12 to 18" (LN 90)

    2. Consumers:

        "Original TV enrollment about 1,000. Spring 1969 enrollment
           in TV about 3,600" (LN 70)
        "Same as #1 above" (LN 90)

    3. Financial:

        "As a cooperative group, the council members which were
           academic libraries were highly successful in receiving
           funds under the Higher Education Act of 1965, Title IIA" (LN 30)

        "Original budget about $40,000 per annum. Present budget
           about $70,000 per annum" (LN 70)

        "$100,000 now, $9.5 million requested" (LN 90)

E. Long-range plans and goals of Network

    "To provide the necessary planning to develop cooperative programs;
       to enhance graduate education and open avenues to obtain optimum
       utilization of faculties and other academic resources; to provide
       the greatest benefits to graduate students and participating in-
       stitutions of the North Texas area" (LN 10)

    "Increase number of member libraries" (LN 20)

    "To develop and strengthen information resources and services in
       greater San Antonio area through the development of cooperative
       programs and activities) (LN 30)

    "Continued improvement of collective resources in regional li-
       braries and maximum utilization of these resources through
       effective cooperation" (LN 40)

    "It is our desire to serve the needs of the colleges and schools
       within our area through a sharing of resources, both local and
       imported, and to develop materials which will strengthen each
       institution. We also hope to implement communication among the
       institutions and to build a cluster of services geared to the
       needs of each member" (LN 65)

"Expand with aid of state support (H.B. 692, 60th Legis-
lature) to serve all of Central and South Texas institutions
of higher education from Waco to the Rio Grande Valley,
exclusive of those already members of SETINA or WIN" (LN 70)

"To promote the educational programs of state-supported insti-
tutions of higher education in Texas by authorizing the es-
tablishment and operation of a cooperative system for commu-
nication and information retrieval and transfer between the
institutions and between the institutions and private educa-
tional institutions, industry, and the public. The system,
employing two-way, closed-circuit television and other elec-
tronic communication facilities, is to provide a means of
effecting the interchange of ideas, talents, faculties,
libraries, and data processing equipment and a means of
carrying out an approved program of instructional television"
(LN 90)

F.   Other comments

"Our microwave facilities could be adapted with little cost to
serve library interconnection via teletype, facsimile, data
transmission, or LDX or telephone" (LN 70)

"WIN will be a multi-user network and libraries will share
with other users on a basis to be determined by Board of
Directors. However, the broad band width of the planned
network indicates little initial constraint on users" (LN 90)

II. STATE NETWORKS

    A. Identification

        1. Name, address, and survey code designation

           Council of State College Librarians (SN 10)
           No permanent address

           State Technical Services Institute (SN 20)
           College Station, Texas

           Texas State Library Communication Network (SN 30)
           Texas State Library, Austin

           Texas Council of Health Science Libraries, Inc. (SN 35)
           Texas Medical Association Library, Austin, Texas

           Texas Information Exchange (SN 40)
           Fondren Library, Rice University, Houston, Texas

    B. Organization

        1. Is Network organized on formal or informal basis?

           a. Formal
               Agreement - 1 (SN 30)
               Incorporated - 1 (SN 35)

           b. Informal
               Custom - 1 (SN 10)
               Oral agreement - 2 (SN 10 & 40)

        2. Does Network have a sponsor(s)?

           a. No - 2

           b. Yes - 1
               Texas State Library under Title III, LSCA (SN 30)

        3. How is Network governed?

           a. Director - 1 (SN 10)

           b. Director + Advisory Board - 2 (SN 20 & 30)

           c. Other
               Elected officers - 1 (SN 35)
               Manual of Procedure - 1 (SN 40)

4. How is Network financed?

   a. Costs absorbed by each institution without specific pro-
      vision - 3(SN 10, 20 & 40)

   b. Government grants - 2 (LSCA Title III funds cover costs billed
      directly to Texas State Library - SN 30). (SN 35 has re-
      ceived a grant, type not known)

   c. Membership and/or user fees - 1 (SN 35)

5. How is Network staffed?

   Director and secretary (SN 20)
   Interlibrary Loan staff of each participating library constitutes
     staff (SN 30)
   Rice University donates time of people for maintaining records
     and billing (SN 40)

6. Last annual operating budget

   $7,744 (SN 20)
   $47,174 (SN 30)

C. Scope

   1. Who are Network participants and/or contributors?

      "All state supported senior colleges and universities in Texas"
        (SN 10)
      "All Texas public libraries are eligible to participate" (SN 30)
      "Medical and biological libraries, including medical schools" (SN 35)
      "Most state university libraries plus some private university
        libraries" (SN 40)

   2. Who are consumers?

      "Same" as #1 above (SN 10, 35 & 40)
      "All patrons of public libraries in Texas are eligible to use
        these services" (SN 30)

   3. What is the nature of the service rendered?

      a. Cooperative acquisitions - 1 (SN 10)

      b. Interlibrary loan - (All but SN 20. SN 40 states "on a one-to-
         one basis")

      c. Reference assistance - 2 (SN 30 & 35)

      d. Literature searches - 1 (SN 30 "to some extent")

      e. Current-awareness information and/or abstracting - 1 (SN 10)

      f. Union lists:
         Journals - 1 (SN 35 reports "in process")

4. What equipment is utilized?

    a. Teletype - 1 (SN 40)
    b. Telex - 1 (SN 30)
    c. TWX - 2 (SN 1G & 40)
    d. Telephone - 3 (SN 20, 30 & 35)

D. Growth of Network

  1. Participants and/or contributors:

     "Same participants but growth in all state supported senior
      colleges and universities in Texas" (SN 10)
     "Most medium size and large public libraries are contributing
      as is the State Library" (SN 30)
     "27 first year and 27 this year, expected to increase by
      about 5 during this year" (SN 40)

E. Long-range plans and goals of Network

"Facilitate co-operative and joint ventures and goals" (SN 10)

"To coordinate all State Technical Services programs at Texas A & M" (SN 20)

"Coordinate activities so that all types of libraries will participate
in one coordinated Network" (SN 30)

III. REGIONAL NETWORKS - HEADQUARTERS IN TEXAS

    A. Identification

        1. Name, address, geographic coverage and survey code designation

            Industrial Information Services, i.e. I.I.S. (RNT 10)
            Southern Methodist University Science Information Center,
            Dallas, Texas
            "Supply service to any business firm requesting; tie-in with
             library/information centers out of Texas"

            Regional Information & Communication Exchange, i.e. R.I.C.E.(RNT 20)
            Fondren Library, Rice University, Houston, Texas
            "Corups Christi, Houston, includes Lake Charles, La."

            Texas MEDLARS Search Station (RNT 30)
            Jesse Jones Library Building, Texas Medical Center, Houston, Texas
            "Arkansas, New Mexico, Oklahoma, Louisiana, Texas"

            Texas Technical Applications Network, i.e. Tex Tan (RNT 40)
            State Technical Services Program, Coordinating Board, Texas
            College and University System, Austin, Texas
            "Includes McNeese State College, Lake Charles, Louisiana"

    B. Organization

        1. Is Network organized on formal or informal basis?

            a. Formal
                Agreement - 3 (RNT 10, 20 & 30)

            b. Informal
                Oral Agreement - 1(RNT 40)

        2. Does Network have a sponsor(s)?

            a. Yes - 4
                State Technical Services Act (RNT 10 & 40)
                Rice University (RNT 20)
                M. D. Anderson Hospital & Tumor Institute; Baylor University
                 College of Medicine; Texas Medical Center, Inc.; and the
                 National Library of Medicine (RNT 30)

        3. How is Network governed?

            a. Director - 3 (all but RNT 10)

            b. Director + Advisory Board - 1 (RNT 10)

4. How is Network financed?

    a. Contributions - 2 (RNT 10 & 40)

    b. Government grants - 3 (RNT 10 & 40 report State Technical
        Services Act funds. RNT 20 reports following: Special
        Merit Grant, U. S. Department of Commerce; State Tech-
        nical Services Act; and National Science Foundation grant)

    c. Costs absorbed by each institution without specific provi-
        sion - 1 (RNT 30)

    d. Membership and/or user fees - 3
        Annual memberships: communicating, $1,500; special, $2,500;
        advanced, $5,000. One-time charges: photocopying, $3;
        reference questions, $5; referral service, $2; litera-
        ture searching, $5.   (RNT 20)

        Varies with participating institution (RNT 40)

5. How is Network staffed?

    Four professional librarians and three clericals (RNT 10)
    Director, Associate Director, Technical Director; Computer
      Specialist, three reference librarians and three clericals
      (RNT 20)
    Personnel of M. D. Anderson Hospital and Baylor University
      College of Medicine (RNT 30)
    STS program personnel (RNT 40)

6. Last annual operating budget.

    $114,000 (RNT 10)
    $ 89,000 (RNT 20)
    $148,460 (RNT 40)

C. Scope

    1. Who are Network participants and/or contributors?

        "SMU plus private corporations plus various special info
          centers plus IUC libraries" (RNT 10)
        "Private corporations, university libraries" (RNT 20)
        "Medical libraries" (RNT 30)
        "Participating university and college libraries" (RNT 40)

    2. Who are the consumers?

        "Private corporations" (RNT 10)
        "Private corporations, university libraries, major resource
          center" (RNT 20)
        "Persons involved in biomedical research or related fields" (RNT 30)
        "Private enterprise users (business, industry, and commerce)"
          (RNT 40)

3. What is the nature of the service rendered?

a. Interlibrary loan - 2
"Loans from SMU library plus loans from IUC and RICE (via switching); location of items in other libraries" (RNT 10)
"Standard rules except for business members for whom headquarters borrows from academic members" (RNT 20)

b. Reference assistance - 2
"Guidance in sources" (RNT 10)
"Headquarters staff answers reference questions from any academic member or business user or member, questions to academic members from business are referred to headquarters" (RNT 20)

c. Literature searches - 3
"Normal in-house searches; switching to computer searching at TAC, DATRIX, MEDLARS, etc." (RNT 10)
"Same" as for b. (RNT 20)
"Limited to bibliographies and all processing done on IBM computer" (RNT 30)

d. Current-awareness information and/or abstracting - 1
"SDI (interest profiles) from NASA data base" (RNT 10)

e. Other services - 1
"Special bibliographies on special subjects of broad technical interest; teaching users re literature and information sources" (RNT 10)

4. What equipment is utilized?

a. Teletype - 1 (RNT 10 uses IUC closed circuit facility)
b. Telex - 1 (RNT 20)
c. TWX - 1 (RNT 20)
d. Telephone - 4 (All RNTs)
e. Computer - 4
   RNT 20 & 30 report use of IBM 1401
   RNT 10 states "via outside centers 360 for mailing lists"
   IBM 1401 and 7094 used by RNT 30

D. Growth of Network

1. Participants and/or contributors:

"SMU Libraries (1st year) to IUC libraries, TAC, Datrix, API, MEDLARS (2nd year)" (RNT 10)

"From four to fourteen" (RNT 20)

2. Consumers:

"Twenty-one members plus 70 users (corporations) to 36 members and 180 users" (RNT 10)

3. Financial:

"Income $21,000 (1st year) to $38,000 (2nd year) for
services rendered" (RNT 10)

4. Service rendered:

"Six searches a month first year to 25 per month second
year; documents transferred from 3,000 first year to
6,000 second year" (RNT 10)

E. Long-range plans and goals of Network

"Increase switching and service capability by (1) agreements
with more out-of-state info centers; (2) use of telecommu-
nications; (3) development of special resources; (4) training
of users" (RNT 10)

"To assist in technology transfer to business and industry along
the Gulf Coast; enlarge the teletype network to include other
colleges, including Instituto Tecnologico in Monterrey, Mexico;
to use the computer to compile a bibliographic record of
regional holdings and provide direct access to the resources
of participating institutions, SDI (MARC tapes and commercial
tape services)" (RNT 20)

"To provide answers to problems of business and industry in
Texas" (RNT 40)

F. Other comments

"The Network is in initial stage of development. The
'Knowledge Network' recently approved in principle by the
Coordinating Board could provide necessary facilities" (RNT 40)

IV. REGIONAL NETWORKS - HEADQUARTERS NOT IN TEXAS

A. Identification

1. Name, address, geographic coverage and survey code designation

Bibliographical Center for Research, Rocky Mountain Region (RNNT 10)
1357 Broadway, Denver, Colorado
"Member organizations in North Dakota, South Dakota, Nebraska,
  Kansas, Oklahoma, Wyoming, Colorado, New Mexico, Utah,
  Arizona and Nevada"

Medical Library Association - Southern Regional Group (RNNT 20)
Office of the current chairman
"Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana,
  Mississippi, Missouri, New Mexico, North Carolina, Oklahoma,
  South Carolina, Tennessee and Texas"

Princeton University Industrial Associates (RNNT 25)
Princeton, New Jersey
"National"

Southwest Academic Library Consortium (RNNT 30)
No headquarters
"New Mexico, Texas, Oklahoma"

Southwestern Union List of Serials (RNNT 40)
The Dikewood Corporation (contracting agent)
1009 Bradbury Drive, Albuquerque, New Mexico
"The State of New Mexico and El Paso, Texas"

Technology Application Center (RNNT 50)
University of New Mexico, Albuquerque
"Primary service area is Texas and the four Southwestern
  Mountain states--with other 'natural resources' coverage
  provided nationwide"

B. Organization

1. Is Network organized on formal or informal basis?

   a. Formal
      Agreement - 1 (RNNT 30)
      Contract - 2 (RNNT 40 & 50)
      Incorporated (Supplemented by contracts in some instances) - 1
      (RNNT 10)

   b. Informal
      Charter and by-laws - 1 (RNNT 20)

2. Does Network have a sponsor(s)?

   a. No - 2 (RNNT 20 & 30)

   b. Yes - 3
      Mountain Plains Library Association (RNNT 10)
      New Mexico Library Development Council (RNNT 40)
      NASA. Network is one of six Regional Dissemination
      Centers under the Technology Utilization Division of
      NASA (RNNT 50)

3. How is Network governed?

   a. Director + Administrative Board - 1 (RNNT 10)

   b. Director + Advisory Board - 1 (RNNT 50)

   c. Other - 2
      By representatives at semi-annual meetings (RNNT 30)
      Executive committee (RNNT 20)

4. How is Network financed?

   a. Contributions - 1 (RNNT 20)

   b. Government grants - (LSCA Title III for FY-1958) - 1
      (RNNT 40)

   c. Costs absorbed by each institutions without specific pro-
      vision - 2 (RNNT 25 & 30)

   d. State and/or local taxes ("Some" of the financing) - 1   (RNNT 50)

   e. Membership and/or user fees - 3
      $1.00 per year (RNNT 20)

      Custom Interest Profile - $250 for 24 updates per year;
      Standard Interest Profile - $125 for 12 updates per year;
      Technical Interest Profile - $65 for 12 updates per year;
      Retrospective literature search - $125 (RNNT 50)

      Members (RNNT 10)
       Agencies covered by State-wide Support Plan: Amounts as
       negotiated and contracted annually, in accordance with
       services desired and rendered by the Center for the
       State Agency. Agencies covered by Direct-Support Plan:
       Amount to be one-fourth of one percent (.0025) of the
       current annual operating budget.

Non-members (RNNT 10)
  Individuals: $25
  Contributing supporters: $100
  Sustaining supporters: $500
  Patrons: $1,000

Special Fees (RNNT 10)
  Per request charges for non-members: $5
  Literature searches: Average hourly salary of staff
    performing search, plus clerical costs, plus
    overhead at 35%

5. How is Network staffed?

Ten FTE (RNNT 10)
Full time professional, administrative and clerical--aug-
  mented by faculty and top graduate students in technical
  areas and students in clerical duties (RNNT 50)
No paid staff. Elected Chairman and Secretary who serve
  for one year each (RNNT 30)

6. Last annual operating budget

$89,948 (RNNT 10)

C. Scope

1. Who are Network participants and/or contributors?

"Firms from the size of Texas Instruments, GE and Sandia
  Corp. down to little three and five-man operations"(RNNT 50)
"All types of libraries. In several states, state library
  agencies are contracting for service to one or more groups
  of libraries" (RNNT 10)
"Research libraries" (RNNT 25)
"University, college, public, medical, law, museum, military,
  science-technology and the State Library of New Mexico" (RNNT 40)
"College and university libraries" (RNNT 30)

2. Who are the consumers?

"Same" as #1 above (RNNT 10)
"Research libraries" (RNNT 25)
"Patrons of the cooperating libraries" (RNNT 30)
"Same" as #1 above (RNNT 40)
"Researchers, developers, degree candidates, professors
  (teaching aides, etc. (RNNT 50)

3. What is the nature of the service rendered?

   a. Cooperative acquisitions - 2
      "Stated in purpose but not carried out" (RNNT 10)
      "Plans for cooperative acquisitions are being
        drawn" (RNNT 30)

   b. Cooperative processing - 0

   c. Interlibrary loan - 5
      "Extensive via verification, location and referral
        of interlibrary loan requests - to lending libraries"
        (RNNT 10)
      "As necessary to serve client's specific requests
        for full copy" (RNNT 50)

   d. Reference assistance - 4 (RNNT 30 & 40 plus)
      "Subject and trade bibliographies" (RNNT 10)
      "As necessary - contact nationwide by telephone with
        centers of expertise in science and tech" (RNNT 50)

   e. Literature searches - 3 (RNNT 40 plus)
      "Occasional" (RNNT 10)
      "Computer search of NASA tapes - augmented by manual
        coverage of other sources as necessary to be ade-
        quately responsive to need" (RNNT 50)

   f. Current-awareness information and/or abstracting - 3
      (RNNT 40 plus)
      "Title pages of current journals in limited fields
        sent from one member to another" (RNNT 30)
      "Same coverage as lit search - against NASA update
        tapes of 5000-6000 new citations/month selected from
        tens of thousands of potential source articles" (RNNT 50)
      (RNNT 10 reports no presently but "a future goal")

   g. Union lists:
      Journals - 2 (RNNT 20 & 40)
        (RNNT 10 reports "project proposed")
        (RNNT 30 reports "members have exchanged lists of
         current journal acquisitions")

      Other materials - 0
        (RNNT 10 reports they "hope to work with union
         list of microfilms, microforms available in
         libs. of region")

4. What equipment is utilized?

    a. Teletype - 1 (RNNT 10)
    b. TWX - 4 (All but RNNT 40)
    c. Telephone - 4 (All but RNNT 20)
    d. Computer - 1 (RNNT 50 reports they use a "360/40 augmented")

D. Growth of Network

1. Participants and/or contributors
    "Began with 11 libraries; today 116 direct members" (RNNT 10)

2. Consumers
    "Expanded to cover commercial firms of all sizes - universities -
    local government firms and state technical services served
    in an eight state region" (RNNT 50)

3. Financial
    "Began with Carnegie Corporation grant of $35,000 in 1935" (RNNT 10)
    "Increasing income from fees - still subsidized by NASA and
    State of New Mexico" (RNNT 50)

4. Service rendered
    "Increasing spectrum from custom searches to standard profiles
    for selective dissemination and a strong specialization
    in the natural resources area - including remote sensing
    of earth" (RNNT 50)

5. Book and/or journal titles
    "Expanded from NASA tapes covering STAR and IAA, to include
    USGRDR, NSA, Engr. Index, Chem Abstracts, etc." (RNNT 50)

E. Long-range plans and goals of Network

"Not yet fully formulated. Would likely include cooperative pur-
chasing and to some degree exclusive journal subscriptions" (RNNT 30)

"NASA's program is experimental, however regional centers are
actively expanding to adapt to fill needs and potential within
the region they serve. TAC aspires to and expects to earn a
broader base of financial support and service spectrum throughout
its region" (RNNT 50)

F. Other comments

"The network served as a basis for Type 'C' grants to many of its
members during fiscal 1966-67" (RNNT 30)

V. LOCAL UNION LISTS

A. Identification

1. Name, address, geographic coverage and survey code designation

Data Processing Bibliography (LL 10)
Science & Industry Department, Dallas Public Library, and
Science Information Center, Southern Methodist University,
Dallas, Texas
"Dallas County"

A Directory of Libraries Located in Dallas County, Texas (LL 20)
Dallas, Texas
"Dallas County"

Newspaper Resources of District V: A Union List (LL 30)
University of Houston, Houston, Texas
"Houston MRC Area"

Union List of Periodicals for the Top 26 Counties of Texas (LL 40)
Mary E. Bivins Memorial Library, Amarillo, Texas
"Amarillo MRC Area"

Union List of Periodicals of Houston Major Resource Area (LL 50)
Houston Public Library, Houston, Texas
"Houston MRC Area"

Union List of Periodicals in the Larger Libraries of San Antonio
    (LL 60)
Our Lady of the Lake College, San Antonio, Texas
"San Antonio"

Union List of Winchell Titles (LL 70)
No headquarters
"Houston MRC Area"

B. Organization

1. Is List organized on formal or informal basis?

a. Formal:
        Agreement - 1 (LL 30)

b. Informal:
        Oral Agreement - 5 (LL 10, 20, 50, 60 & 70)
        Project of MRC Library - 1 (LL 40)

2. Does List have a sponsor(s)?

a. No - 2

b. Yes - 5
        Data Processing Management Association of Dallas (LL 10)
        Dallas County Library Association (LL 20)
        University of Houston (LL 30)
        Houston Public Library as Major Resource Center (LL 50)
        San Antonio unit of Catholic Library Association (LL 60)

3. How is List financed?

    a. Contributions - 4 (LL 10, 20, 30 & 60)

    b. Costs absorbed by each institution without specific provision - 5 (LL 10, 20, 40, 50 & 70)

    c. Subscription/sales - 2 (LL 20 & 60)

C. Scope

    1. Who are participants and/or contributors?

       "Southern Methodist University Libraries, Dallas Public Library and Data Processing Management Association" (LL 10)

       "Libraries in Dallas County" (LL 20)

       "Approximately 50 public, college and special libraries in the District V area" (LL 30)

       "Public, university, college and special libraries in top twenty-six Texas counties" (LL 40)

       "Size II libraries (and Houston Public) in the Houston MRC area" (LL 50)

       "Larger libraries in San Antonio" (LL 60)

       "Public and university libraries in Houston-Beaumont area" (LL 70)

    2. Who are the consumers?

       "Members of the association, interested library patrons of both libraries, other libraries nationwide" (LL 10)

       "All libraries" (LL 30)

       "Same" as #1 above (LL 20, 60, & 70)

       "Same as #1 above plus other Major Resource Libraries of Texas and State Library" (LL 40)

       "Size II and III libraries in Houston MRC area" (LL 50)

    3. What is nature of the List?

       a. Books - 1 (LL 10, in field of data processing and related fields only)

       b. Periodicals - 3 (LL 40, 50 & 60)

       c. Newspapers - 1 (LL 30)

       d. Other services - 2 (LL 20 is list of libraries and (to be) library resources in area. Will also include such information as loan regulations. LL 70 is list of Winchell holdings by libraries in area)

4. What equipment was used to produce the List?

    a. Computer - 2 (LL 10 & 70. LL 70 list stored on magnetic tape)

E. Long-range plans and goals of List

"To be a comprehensive list of all libraries, librarians and library resources in Dallas County" (LL 20)

"Keep current with frequent revisions until this method is obsolete" (LL 40)

"Statewide union list of Winchell titles (including those in supplements, as published) with future remote access by teletype" (LL 70)

VI. STATE UNION LISTS

    A. Identification

        1. Name, address and survey code designation

            Catalog of Genealogical Materials in Texas Libraries (SL 10)
            Texas State Library, Austin, Texas

            Catalogue of Research Facilities in Texas (SL 20)
            Texas A & M University, College Station, Texas

            The Texas List (SL 30)
            Houston, Texas

            Union Catalogue of Texana (SL 40)
            Barker Texas History Library, University of Texas, Austin

    B. Organization

        1. Is List organized on formal or informal basis?

           b. Informal:
               Oral agreement - 2 (SL 30 & 40)

        2. Does List have a sponsor(s)?

           a. No - 2

           b. Yes - 2
               Special Libraries Association, Texas Chapter, provides
                  editorial sponsorship (SL 30)

        3. How is List financed?

           c. Subscription/sales - (SL 30)

    C. Scope

        1. Who are participants and/or contributors?

            Part I (Virginia) participants and/or contributors included
              six academic libraries, one special library, 12 public
              libraries, and the Texas State Library (SL 10)

            "One hundred sixty eight contributing libraries" (SL 30)

            "Libraries with sizeable Texana holdings" (SL 40)

        2. Who are the consumers?

            "All types of libraries, though academic libraries lead,
             followed by special libraries" (SL 30)

            "Libraries and patrons interested in Texana" (SL 40)

3. What is the nature of the List?

    a.   Books - 2 (SL 10 & 40)

    b.   Periodicals - 1 (SL 30)

    d.   Other services - 1 (SL 20)
        "A listing of research facilities in Texas"

4. What equipment was utilized to produce the List?

    c.   Other - 1 (SL 30)
        "FotoList card deck, sequential camera, and standard
          offset press, collator and bindery equipment"

D. Growth of List

   1. Participants and/or contributors

      "Twenty-first contributor added for Part II (Kentucky)" (SL 10)
      "1963 - 50 contributors; 1968 - 168 contributors" (SL 30)

   2. Periodical titles

      "1963 - 8,000; 1968 - 40,000" (SL 30)

E. Long-range plans and goals of List

    "Its purpose is to provide a comprehensive list of genealogical
    materials in libraries of the state" (SL 10)

    "1971 Edition to include all serials (estimated titles 125,000)
    with possible inclusion of the geographic area now covered
    by Southwestern Library Association" (SL 30)

VII. REGIONAL (OR NATIONAL) UNION LISTS

A. Identification

1. Name, address, geographic coverage and survey code designation

American Medical Specialty Board Bibliography Project (RL 10)
University of Arkansas Medical Center Library, Little Rock, Arkansas
"Any medical library in the U. S. may join"

Comprehensive List of Periodicals for Chemistry and Chemical
   Engineering (RL 20)
Ohio State University, Columbus, Ohio
"U. S. and foreign libraries"

Dissertation Abstracts (RL 25)
Ann Arbor, Michigan
"Nationwide"

Geologic Field Trip Guidebooks of North America (RL 30)
Phil Wilson, Publisher, Houston, Texas
"North America"

Masters Theses in Pure and Applied Sciences (RL 35)
Purdue University, Lafayette, Indiana
"Nationwide"

Newspapers on Microfilm (RL 40)
Union Catalog Division, Library of Congress, Washington, D. C.
"International"

Union Catalog of Presbyteriana (RL 50)
Presbyterian Historical Society, Philadelphia, Pennsylvania
"Nationwide"

Union List of Biomedical Serial Holdings in the South Central
   Region (RL 60)
University of Texas Medical Branch Library, Galveston, Texas
"New Mexico, Oklahoma, Arkansas, Louisiana and Texas"

Union List of Microfilms (RL 65)
Philadelphia Bibliographical Center, Philadelphia, Pennsylvania
"National"

Union List of Serials for Public Utility Librarians (RL 70)
Special Libraries Association, New York, New York
"National"

B. Organization

1. Is List organized on formal or informal basis?

a. Formal
     Agreement - 2 (RL 50 & 65)
     Contract - 1 (RL 25)
     Other - 2
        "Grant from the Regional Medical Program of Texas" (RL 60)
        "Project of Public Utilities Section of SLA" (RL 70)

    b. Informal
        Oral agreement - 4 (RL 10, 30, 35 & 40)

2. Does List have a sponsor(s)?

    a. No - 3

    b. Yes - 7
        Geoscience Information Society (RL 30)
        Presbyterian Library Association (RL 50)
        Texas Council of Health Science Libraries, Inc. (RL 60)
        Philadelphia Bibliographical Center and Union Library
          Catalogue (RL 65)
        Union List Committee, Public Utilities Section, Special
          Libraries Association (RL 70)

3. How is List financed?

    a. Costs absorbed by each institution without specific
        provision - 3 (RL 10, 25 & 50)

    b. Government grants - 2 (RL 40 & 60)

    c. Subscription/sales - 3 (RL 20, 30 & 35)

C. Scope

1. Who are participants and/or contributors?

    "25 medical libraries in U. S." (RL 10)

    "Most graduate schools contribute their theses to University
      Microfilms" (RL 25)

    "Volunteer geoscience libraries in U. S. and Canada are
      contributors. Participants are subscribers as well" (RL 30)

    "200 different major universities" (RL 35)

    "Public, College, University and Research Libraries" (RL 40)

    "Primarily Presbyterian Library Association members--but
      entries included for any institutions when found" (RL 50)

    "Biomedical or health related libraries in the five state
      region" (RL 60)

    "Public, College, University and Research Libraries" (RL 65)

    "Public utility libraries" (RL 70)

2. Who are the consumers?

    "Hospital residents who are preparing for board examinations"
      (RL 10)

    "Participants and anyone who wishes to purchase" (RL 20)

"Exclusive use by graduate students, faculty, research
workers" (RL 25)

"Any purchaser or user. Almost all are libraries" (RL 30)

"Same as #1 above" (RL 40)

"Any interested students or scholars" (RL 50)

"Participants and smaller hospital libraries" (RL 60)

"Same as #1 above" (RL 65)

"Any library wishing to purchase" (RL 70)

3. What is the nature of the List?

a. Books - 2 (RL 10 & 30. RL 60 is "contemplating book list")

b. Periodicals - 3 (RL 20, 60 & 70)

c. Other services - 6
   Patents and monographic serials (RL 20)
   Theses (RL 25 & 35)
   Newspapers on microfilm (RL 40)
   Private and corporate manuscript materials relevant to
      subject (RL 50)
   Books and Manuscripts on microfilm (RL 65)

4. What equipment was utilized to produce the List?

a. Computer - 2 (RL 20 - IBM 350; RL 60 used IBM 7094,1800 & 360-50)

D. Growth of List

1. Participants and/or contributors

"Several more members have joined since the first year but
exact number not known" (RL 10)

"172 libraries in 1961 edition, 334 in latest" (RL 20)

"Began with 93 in 1955" (RL 35)

"24 in Texas to 33 in the five states" (RL 60)

2. Periodical titles

"From 7,000 to over 15,000 titles (RL 60)

E. Long-range plans and goals of List

"This catalog is one stage (mss.) of a more comprehensive U. S.
Presbyteriana bibliography. Other stages in various degrees
of development" (RL 50)

"Provide basis for five-state biomedical information transfer
system in the form of a decentralized Regional Medical Library
Program" (RL 60)

F. Other comments

"Not a one volume project. Committee is working on a people
network that forwards type of publication found in union list to
USGS for inclusion in their Abstracts of North American Geology"
(RL 30)

C.5-d

PRELIMINARY EVALUATION
TEXAS STATE LIBRARY COMMUNICATION NETWORK
By Marie Shultz

The following is a brief summary of a study currently being
printed on the evaluation of the first six-months operation of the
Texas State Library Communication Network, a public library Telex and
telephone interlibrary loan network in Texas. Copies of the study will
be distributed in July, 1969, to members of the Texas LSCA Title III
Advisory Council, to public libraries in Texas serving populations
over 25,000, to each of the 50 state libraries, the Texas library school
collections and to the ten largest college or university collections in
the state. Copies may also be borrowed from the Field Services Divi-
sion, Texas State Library.

The evaluation of the first six-months operation of the Texas
State Library Communication Network, July-December, 1968, is presented
in two sections: the first by Peat, Marwick, Mitchell & Company and the
second by the Field Services Division of the Texas State Library. The
Network is funded under Title III of the federal Library Services and
Construction Act, which is administered by the Field Services Division,
and assistance in planning is provided by an Advisory Council repre-
sentative of the various types of libraries and trustees. The Network
was established as recommended in the 1967 survey commissioned by the
Council and performed by Management Research International to fulfill
legislative intent to foster interlibrary cooperation.

PART I

The background describes the establishment of the Network which
became fully operational July 1, 1968, to serve all size Texas communi-
ties and library patrons in order to place the total resources of Net-
work libraries at the disposal of Texas public library patrons. The

*Mrs. Shultz is Director Field Services, Texas State Library, Austin.

basic Network consists of eleven Telex (Western Union teletype)
stations and provides direct communication between the small, medium-
sized and large public libraries. The Network is utilized when a
requested title or information is not available locally; successive
libraries are queried through the communication network until the
request is satisfied or all sources exhausted.

The evaluation criteria were based on the goals of Section
4.0 of the State Plan for the Library Services and Construction Act
for Texas, and are summarized in the following six paragraphs. The
data sources to measure these criteria were: 6,900 Network Transaction
Sheets (each representing a request on the Network), an evaluation
questionnaire, personal interviews, unsolicited data and Texas State
Library management records.

The Network cost figured in this part of the evaluation in-
cludes fixed direct costs (monthly rental on telephone and Telex equip-
ment) and variable direct costs (telephone and Telex message charges)
which totaled $7,666. Average direct cost per transaction was $1.60.
It is estimated that direct costs per transaction will decrease with
increased volume on the Network.

Improved interlibrary cooperation was determined by an in-
creasing trend in transaction volume and by favorable participant re-
action. The number of transactions, while related to fluctuations of
library circulation, showed an overall increase through elapsed time.
Questionnaire consensus rates present ability of the Network to foster
interlibrary cooperation as "good" with "excellent" potential. Eight
of eighteen unsolicited letters stated directly or indirectly that the
Network was fostering interlibrary cooperation.

Questionnaire consensus indicated three days as a reasonable
period within which to complete an interlibrary loan request; in an
average Size I library more than 70% of interlibrary loans were com-
pleted in this period while the average time for more than 90% of all
requests completed by Size II libraries is three days or less. The

Texas State Library Reference Division completed more than 80% of
all requests in three days or less. Accelerated processing of inter-
library loans was not accomplished when a request was referred on to
MRC libraries by the Reference Division. (50% of all such requests
were completed in three days or less at the beginning of the survey
period, but time for 50% _increased_ to 10½ days or less by the end of
the survey period.)

Improved patron satisfaction was measured by favorable reaction
of Network participants, favorable unsolicited comments and ratio of
referrals to population served. The consensus of questionnaire response
indicated present ability as "good" with "excellent" potential; seven
of the unsolicited letters mentioned patrons were pleased and there
were no unfavorable comments on this point. Analysis of use showed
wide variation in the volume of Network interlibrary loan activity to
population (computed as the annualized number of completed referrals
by each Size I library divided by the population served [in thousands]).
While patrons served were generally pleased it is unknown what effect
this service had on the general public.

Available data were not adequate to directly measure adequacy
of basic collections but data were summarized to show the number of in-
terlibrary loan requests filled (San Antonio filled the most); libraries
which filled more than they requested; and libraries which requested more
than they filled. The consensus of questionnaire responses indicated
current ability to identify collection weaknesses as "good" with "excel-
lent" potential. Libraries can draw evaluative conclusions about their
collections using the filled and unfilled requests handled locally.

Characteristics of Network use show that the majority of requests
do come through the telephone and Telex system (although a significant
amount still were mailed), that the requests were for adult nonfiction
(as intended), and the majority of the requests are for a specific title
rather than requests for information or answers to reference questions.
Because the patron status was the most frequently missing entry on the

Transaction Sheet no positive conclusions can be made about the type of patron the Network was serving.

Peat, Marwick, Mitchell and Company's recommendations for improvement included: formulation of an operating plan to contain cost objectives, desired levels of participation and desired time to complete a referral. After development of the operating plan the action program should be developed to contain definitions of what has to be done, who will do it, when it will be begun and when it will be completed. Control procedures should be established to provide Telex management with follow-up on specific unfilled requests and status reporting of all unfilled requests. (The major complaint expressed by participants was ignorance of request status.) The facilitate data collection and reporting the Transaction Sheet should be redesigned and simplified with consideration given to multi-part forms (allowing a suspense and patron file), multi-purpose forms (for internal data collection and Network evaluation) and electronic data processing for accurate, timely and economical tabulation. Transaction sheets should be forwarded monthly to Texas State Library for interim auditing and data correction. Evaluation should be made at six-month intervals.

Data evaluated and summarized is presented in exhibits, charts and graphs at the end of the report.

PART II

For benefit of those interested in more detailed understanding of the Network operation, the Field Services Division prepared additional conclusions and further calculations of the data gathered for this evaluation.

During the evaluation period, of the 354 Texas public libraries 250 used the service, 36 only once, 117 between two and ten times, eleven more than 100 times. Lubbock placed the largest number of requests (253). While wide variation in frequency of use is noted Network use has increased and a larger number of public libraries are making use of the service.

The quality of the transaction sheets also demonstrated extreme
variation. The Major Resource Centers include Abilene (excellent and
complete sheets reflecting 211 title, nine subject requests), Amarillo
(very fine sheets showing 202 title, 47 subject requests), Austin (213
title, 17 subject, two reference requests--submitted usually on ALA
forms), Corpus Christi (adequate sheets for 532 title, 86 subject, 44
reference requests), Dallas (very good sheets for 196 title, 12 reference
requests), El Paso (various forms submitted for 309 title, 65 subject,
one reference, two microfilm requests), Fort Worth (very good sheets
indicating 305 title, 28 subject, three reference requests), Houston
(usable sheets reflected 643 title, 65 subject, 32 reference requests),
Lubbock (marginal forms reflected 67 title, five subject requests), and
San Antonio (excellent sheets showing 1,154 title, 201 subject requests
on a wide range of subjects). Thirty-eight Size II libraries serve as
intermediate points in the Network, too many function only as referral
points to the MRCs, but most were very prompt in either filling or re-
ferring requests. Transaction sheets were either excellent (Arlington,
Baytown, Brownwood, Conroe, Denison, Haltom City, Longview, etc.) or
practically unusable with no middle area.

General evaluations disclose the majority of requests were for
adult non-fiction; several units gave true in-depth service; primary
complaints concern length of time to fill requests referred from State
Library and lack of status information, increased time to process a
request, need for more complete request information, need for more prompt
MRC response to Texas State Library queries, need for better biblio-
graphic verification, need for more Texas State Library personnel, more
clarity and fullness in transaction sheet completion, more judgment in
weeding and referring requests; and the Network, while not necessarily
speeding requests, has definitely broadened sources for filling re-
quests and has promoted interlibrary cooperation.

Plans for better future evaluation of the Network will be aided
if the following recommendations are implemented: monthly reports and

Transaction Sheets should tally, Transaction Sheets should be accu-
rate and complete, more of the public libraries should use the Network,
administrators should find opportunities to become more involved and
monitor Network operation.

While the fixed and variable communication costs total an av-
erage of $1.60 per transaction, a more complete consideration of commu-
nication plus supplies, personnel and postage brings the average cost
per request to a more realistic figure of $5.98 for the 5,000 filled
requests evaluated in the study.

The period July-December, 1969, will constitute the second period
for evaluation of the Network. The second study will be done by the
Field Services Division in early 1970.

C.5-e

REFERENCE LIBRARIANS AND NETWORKS
HOUSTON CASE STUDY OF LSCA, TITLE III SPECIAL PROJECT
By Richard O'Keeffe

You are well aware that Title III of the LSCA has to do with
interlibrary cooperation; funds may be used to establish and maintain
cooperative networks of libraries for the systematic and effective co-
ordination of the resources of academic, public and school and special
libraries as well as information centers in pursuit of the goals and
purposes of the Act. In fact, my understanding is that to be approved
for funding under this title a state must have a plan for this type of
coordination of resources. The Texas State Library has such a plan and
encourages such cooperation as a matter of policy.

The Fondren Library at Rice University, which serves as the
headquarters for a group of academic libraries working together and
serving business, commerce and industry, made a successful proposal to
the Field Services Division of the Texas State Library (as headquarters
of a Major Resource Center Library). We noted that, since many of the
goals and purposes of the State Library network and the R.I.C.E. are
the same oi similar, there was good reason to experiment with ways in
which such operations can work together.

The Information Exchange organizes the resources of seventeen
Gulf Coast academic libraries between Lake Charles, Louisiana and
Brownsville for the purpose of supporting higher education and research
and in order to focus college and university library resources on the
needs of business and industry on a regional basis. A computer system is
maintained at headquarters for operational and developmental uses, and
teletype (TWX and Telex) communications is supported in all academic
libraries for interlibrary loan and other purposes. A full-time pro-
fessional and technical staff works at the headquarters level to develop
and coordinate the work and progress of all Exchange activities and
proposals.

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*Mr. O'Keeffe is Librarian and Project Director, Rice University, Houston,
Texas.

In the larger academic libraries of the Exchange (University
of Houston, Rice University, and Texas A & M University, for example)
there are both general and special bibliographic, reference, and subject
literature resources that should be of immediate interest and assistance
to patrons and users of all the libraries in the counties covered by the
Houston MRC. Many of these resources are things the State Library, to
day nothing of the MRC libraries, should not have to purchase, catalog,
house and service so long as it has controlled and effective access to
them.

And, so, we have modest funding for a year's experimentation with
the Houston Public Library. We stress the experimental aspect of this
operation, for unless we can conclude on both sides of the experiment
that such diverse library and technical information services can be
worked together in ways that the complete public library network in Texas
might take appropriate advantage. There are, after all, strong academic
and public libraries throughout the state.

In order to keep records of all transactions and to be able to
promote services; note the source of inquiries; measure the impact of
our services, etc., we have it arranged that all inquires come through one
service point in the Houston Public Library (usually through one and the
same person, Miss Andrea Edwards) to one service point and person at Rice
(usually Mrs. Rita Paddock). All of the services of the Exchange, except
only searching of the technical literature, are available; that is, we
will attempt to answer reference questions, identify and verify materials
and sources of information, locate needed materials, refer inquirers to
more likely sources of help, lend library materials to other libraries
for the use of their patrons under the terms of the Interlibrary Loan
Code, arrange for photocopies of library materials that cannot be loaned,
etc. We are paid for the half-time of a clerical assistant and are com-
pensated according to a schedule of charges for these services.

The Houston Public Library is responsible for analyzing and
screening requests coming in over its own Reference Desks and from the

Size II libraries to determine what should be switched to us. We
encourage the Houston Public Library, of course, to tell us as much
as they can about the status of the inquirer (student, businessman,
etc.) and to give us the opportunity, as required, to get in touch
directly with him. Records are maintained at the H.P.L. and we are
benefiting from going down there at quarterly reporting times to
examine with them the questions that were submitted; the way we han-
dled them; how well or poorly we performed; the personal and/or com-
munication failures that can and should be eliminated in subsequent
dealings.

We are attempting through specially prepared and widely dis-
tributed leaflets to make this service known. We were guests at a
February, 1969 meeting in Orange of librarians of Size II libraries
to discuss this experiment and to answer questions and criticisms. If
I am convinced of anything so far in the brief history of this experi-
ment, it is to take nothing for granted. As well as we and the area
public librarians have known each other, it was necessary to hammer out
a new relationship in this program. Even great and strong resources
are not necessarily interpreted to others without pain and effort.
Confidence and mutual trust and respect must be established; we must not
give the false impression of doing a better job than other librarians,
but back them up with our special strengths and experience. In this
context, the series of seminars being held at the University of Houston
in cooperation with the Texas Chapter of the Special Libraries Associa-
tion are helpful to all of us in the Greater Houston area in terms of
promoting better understanding among libraries concerning resources,
special and common problems, and the present level and success of library
interaction. In developing a plan for effective cooperative effort that
will develop total library resources without interfering with anyone's
primary responsibilities, we can hope to contribute to the success of
the special project I have described today.

C.5-f

A PILOT MODEL OF INTERLIBRARY COOPERATION
IN THE DALLAS AREA - PROGRESS REPORT
By Maryann Duggan

(Note: This paper is reproduced here as presented during the
Reference Round Table meeting with the exception of the appendices
and data. That part of the Pilot Model is presented in detail in
Section IV of this final report. The ideas and methodology proposed
in the attached paper were further developed into LibNAT, which is
presented in detail in Section VI of this final report.)

I. INTRODUCTION

In November 1968 the Texas State Library Advisory Council
for LSCA Title III recommended that the 1968/69 State Plan include
an in-depth study of interlibrary cooperation in a metropolitan area.
This study was needed to assist in future planning of statewide inter-
library networks to improve the sharing of resources and services among
different types of libraries, as required under Title III.

As Director of SMU's Industrial Information Services program,
I had been concerned over the past two years with the complexity of
interfacing different types of libraries in an orderly manner. Also,
through an extensive current project known as Goals for Dallas Libraries,
we in Dallas were acutely conscious of the interdependency of the various
types of libraries in a metropolitan area. We were also acutely aware
of the difficulties and barriers to interlibrary cooperation. The Goals
for Dallas Libraries project had qualitatively identified possible means
for improving library services in the community but had not provided
any factual-quantitative data on the interlibrary dynamics in the
community. Thus, we at SMU eagerly submitted a proposal to the State
Library to run a pilot model in the Dallas area to

1. Quantitatively determine parameters and characteristics of
   existing interlibrary cooperation; and
2. Determine the "best way" to improve and enhance future
   interlibrary cooperation for purpose of maximizing some functions.

The proposed Pilot Model project included several phases, namely:

Phase I   -   Observation of existing practices

Phase II   -   Analysis and interpretation of existing practices

Phase III -   Modification of the system according to plan
               designed to enhance interlibrary cooperation

Phase IV   -   Observation of practices under new conditions

Phase V   -   Interpretation and recommendations.

We are now finishing Phase I and entering Phases II and III. The following is a brief summary of our experiences and findings as of March 14, 1969.

II. PROCEDURES

The first step was to identify participating libraries and to seek their cooperation in joining in the Pilot Model. Libraries of various types and sizes were selected with the intent that the participants be representative of the types of libraries and the situation across the state. For example, we wanted participants who were and were not members of various statewide networks. The following types and number of libraries were invited to participate:

Description	Number
Public School, Elementary	2 systems
Public School, Secondary	2 systems
Junior College, Public	1 system
Private University, Large and Departmentalized	1
Private University, Small	1
State University, Large and Non-Departmentalized	1
Medical School	1
Private Research Institute	1
Industrial Library, Large	2
Industrial Library, Small	1
Public City Library, Large	1 system
Public City Library, Small	2 systems
Public County Library	1 system
Switching Center	1

All of the above except one public school system agreed to participate on initial contact in January 1969. As of March 14, data have been received from all the active participants. As of March 11, the second public school system agreed to a sampling of data from three of the libraries in the system; this sampling will be done during early April.

The second step was to determine what data would be indicative of the existing, on-going interlibrary cooperation among the participants and between the participants and the "outside world." Recognizing that interlibrary cooperation should include many functions such as cooperative acquisitions, cooperative cataloging, cooperative reference services, cooperative storage, etc., it was decided to limit Phase I to a study of interlibrary loan transactions. This one characteristic of interlibrary cooperation could be quantitatively measured. Furthermore, the Texas State Library was seeking information on how to improve the interlibrary loan network sponsored under LSCA Title III. Thus, data on interlibrary loan transactions from each participant were collected for a 30 day period. Those libraries maintaining past records submitted their data for October 1968; the remaining participating libraries collected data for the period most convenient to them, such as January 15-February 15, 1969, etc. Each library submitted data for their borrowing and their lending transactions for the sampling period. The variables included were:

1. Date of transaction
2. Name of borrowing or lending library
3. Location of borrowing or lending library
4. Type of borrowing or lending library
5. Format of request message, i.e. phone, ILL form, TWX, Telex, IUC, letter, other
6. Nature of the requested item, i.e. serial, monograph, journal, document, other
7. If item available, how supplied, i.e. loan, photocopy, microform, other
8. If item not available, why not, i.e. not in collection, in use, non-circulating, other.

9. Time lag from date of request to date of completion
of the transaction.

Daily Lending and Daily Borrowing Record Forms and the Monthly Lending
and Monthly Borrowing Forms were developed.

Step Three was to collect the data on these forms and to code
each transaction for computer processing for the analysis phase. The
codes for each variable were developed. The Southwest Center for Advanced Studies donated to the project the necessary data processing
skill and computer time.

III. DATA ANALYSIS AND INTERPRETATION METHODOLOGY

We are presently engaged in this phase of the Pilot Model. It
became obvious that a large number of variables can be examined from
the data collected. Many things can be learned about the interlibrary
dynamics and interdependency from these data. For example, the following characteristics of the "network performance" could be examined:

1. Input/output analysis for each node and total network
2. Borrowing/Lending ratio for each node and total network
3. Interaction among various types of libraries as a
    function of
   a. Geographic location
   b. Type of item
   c. Format of request, i.e. channel availability
4. Relative "success" in filling transactions as a function of
   a. Type of library
   b. Type of item, i.e. locator guides
5. Relative volume of "local switching" compared to switching
    at other geographic levels (and reasons why)
6. Relative relationship between a node and the total network,
    as a function of type of library, channel availability,
    utility, etc.

Basic decisions have to be made as to which of the possible factors
are the most significant in understanding interlibrary transactions and in
generalizing from the pilot model to the design of a statewide interlibrary
network. The conceptual framework necessary for understanding the pilot
model data is being developed and is presented here for your evaluation.

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1. Each participating library can be categorized as a
given type and at a given geographic level. Therefore, each transaction
among the participating libraries and between the participating libraries
and the "outside world" can be categorized as to (a) type of library,
(b) geographic location, and (c) direction of flow. Thus, each trans-
action can be symbolized by a "reaction formula" and the total trans-
actions in the network so summed by transaction formula.

2. Each participating library has Borrowing Transactions
and Lending Transactions. The relative number of B to L and the actual
number of total transactions is significant in identifying the role of
that library in the network and the total level of network activity.
Specialization of roles becomes apparent.

3. The relative effectiveness of the network can be evalu-
ated based on "success" and "request/hit ratios" and turnaround time
and costs. Possible reasons for existing conditions can be examined
and thereby possible methods of enhancing transactions success identified.
The quantity of "utility" can be examined.

4. The integral components of an interlibrary document
transfer system can be identified and their relative contributions
evaluated. The decision-making mode of the network operations can be
reviewed quantitatively when all alternates are known.

5. The configurations (geographic, organizational, functional
and systematic) can be identified and evaluated.

6. The factors of selectivity as to which requests are submitted
to the network are important considerations. Policy as to "levels of
service" by patron group needs clear definition as networks become more
complex. Fixed policy vs. variable policy may present conflicts. Node
policy vs. network policy might be another area of conflict. The ideal
combination of policy ingredients will be illustrated this afternoon with
our networking games.

7. The applicability of known theories to interlibrary dynamics
can be reviewed. Possible applicable theories include:

      General Systems Theory
      Information Theory
      Decision Theory

Theory of the Firm
Sets and Group Theory
Game Theory
Organizational Theory
Queueing Theory
Network Theory
Graph Theory

8. In like manner, the applicability of known problem-solving strategies can be reviewed. Possible applicable strategies include

Operations Research
Decisions Under Uncertainty
Allocation Algorithm
Modeling and Simulation
Input/Output Analysis
Break-Even Analysis
Benefit/Cost Ratios

In other words, the microscopic study of the interlibrary dynamics in the Dallas Pilot Model has given new insight and understanding. It has stimulated the formulation of "a way of looking at networks" which we believe is applicable to library networks in general. We are no engaged in an in-depth analysis of the pilot model data within these and other conceptual frameworks.

IV. **PRELIMINARY RESULTS**

The following quantitative data have been collected to date:

1.	Number of Active Participants	19
2.	Number of Total Transactions (B+L)	1967
3.	Number of Filled Borrowing Transactions	657
4.	Number of Filled Lending Transactions	867
5.	Total Number Filled (3+4)	1524
6.	Total Number Unfilled (2-5)	443 (i.e. 23%)

V. THE FUTURE: SEEKING METHODOLOGY

The Pilot Model will be continued until June 30th. One more month of existing interlibrary transactions is being collected. At I.I.S., we plan to install a TWX/Telex interface to tie together the public library and the academic library networks and observe the resulting problems. Every effort will be made to encourage local switching to determine the capability of the metropolitan area to supply its own library needs from the resources within the area. Two months of interlibrary transactions will be collected after the TWX/Telex interface is operational. Barriers to local switching will be identified. Criteria for "going on the network" will be observed and identified. The search for a "generalized network theory" and appropriate methodology will continue. The mathematical model described by Dr. Nance this afternoon will be used for experimental simulation and possible evaluation of various alternate network configurations, both geographic and functional. The reasons for the relatively high number of uncompleted transactions will be reviewed and possible solutions proposed and evaluated.

The final report of the Pilot Model is due July 1, 1969. We do not know, at this time, the final results of this study. We are sincerely seeking insight into the interlibrary network relations and systems, and ways to enhance these relations. Possibly a new technology--Informetics--may emerge. We welcome advice and guidance--our philosophy must be: The depth of man's questioning is far more important than the answers.

VII. ACKNOWLEDGMENT

This work would not have been possible without the patience, understanding and encouragement of many, particularly

> Marie Shultz
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> Janice Kee
> Jim Stephens and his staff
> The good people on I.I.S. staff
> SMU administration
> Ross Peavey and Carl Peters at SCAS

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All the enthusiastic participants who donated their time and data
Those of you who have faith that "the truth shall set you free."

STRANGLE THE MACHINE, I CAN'T HEAR MYSELF THINK!
By Margaret F. Morris

When I was asked to speak on the general subject of living
with a communications network, I was startled but enthusiastic. In-
vitations to "read a paper" rarely filter down to the working level
of academic librarianship. Heads of divisions, library directors,
and system coordinators usually know more about the subject, are more
experienced, and exude a greater air of confidence and lofty wisdom.
But division heads and library directors do not share an office with
a teletype--although I understand that this is the case at the Library
of Congress. Certainly they do not contend with garbled transmissions,
nonexistent articles, and journals that change titles with the moon.
If you want to know what really happens at the business end of a tele-
communications system, you must ask the girl who owns one.

The University of Texas at Arlington is a member of two net-
works. The Inter-University Council (or IUC) system is a private-line
operation connecting eight colleges and universities in that Cambridge
of North Texas, the Ft. Worth-Dallas-Denton area. Texas Information
Exchange (or TIE) is made up of all state-supported colleges and their
medical, legal, and dental appendages. It interfaces with the Regional
Information and Communication Exchange--known in the trade as RICE and
frequently confused with Rice University--through Houston. Arlington
serves as the relay or switching center, between IUC private schools and
TIE. We have two machines, the 60 wpm private line and the 100 wpm TWX.

Telecommunications belong to interlibrary loan, itself an off-
shoot of the Reference Department. Two librarians, one clerk and five
15-hour-a-week students staff Reference. While certain ones are "assigned"
to interlibrary loan, somehow we all get involved. We handle all ILL
requests initiated on our campus and those received from other libraries.
Our clerk and students have been trained to verify in national bibli-
ographies and union lists, and handle all routine matters. Problems go

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*Miss Morris is Reference Librarian, University of Texas at Arlington.

to Maxine, our clerk, and real horrors end up with one of the li-
brarians. The clerk and students handle all materials physically--
locating books, charging them, wrapping and mailing, typing request
forms, sending teletype messages, receiving and recording material,
making copy, and typing invoices. Photocopying is done by our Audio-
Visual department which has custody of the Xerox and reader-printer.
We loan all microforms. During a rush, or when illness or vacations
cut the staff, the librarians can, and do, take care of everything.
In addition, one of the librarians works closely with faculty members
and graduate students embarking on lengthy projects. The more we know
about a project, the better service we can give. This has included
corresponding with foreign, private, or shy libraries, making special
arrangements to open private collections, and so on. It keeps us off
the streets. To give you an idea of what goes on, we logged one Mon-
day in November during an average period. The names have been changed--
to protect me from the wrath of some present. I was about to quote
"Dragnet" on changing names but somehow, the word "innocent" does not
fit in any discussion of communications networks.

        As I unlocked the workroom, the TWX began to clatter out a five-
item photocopy request from Tech. Softly cursing the early bird out in
what Paul Crume calls "the high baldies", I looked for a student. One
was trying to sort out the mess left in the reference room by Sunday
night's last-minute Charlies. Tech's need being greater than _Britannica's_,
she pattered off to check the serials catalog, corner the journals, and
induce A/V to copy them.. Our clerk staggered in with a stack of ILL
books turned into Circulation over the weekend, all needing to be sent
home. At 8:30, we received an indignant query from TCU about the non-
arrival of material from Houston, and were we sure we relayed the request
last Tuesday? I fled to my own office next door and was greeted by a
graduate student on the verge of hysteria. Late Sunday night, he dis-
covered a citation to that well-known classic work, "Incidence of Tooth-
Decay in Fossil Shark's Teeth of the Bohemian Tertiary Chark", by

by Tyrannosaurus Bedrock. Copy was needed ten minutes ago, and
please, how does he fill out the request form? My student called
down from Periodicals. One of Tech's citations didn't fit the jour-
nal. It was Monday, all right. Meanwhile our clerk reassured TCU,
cut a tape, and sent four requests to Rice. She called a faculty
member to remind him to return a book, and departed for the Biblio-
graphic Center to commune with the Union List about some requests
turned in at 4:57 Friday afternoon. The brownies hadn't verified them
over the week end after all. At 9:00, I went down to the information
desk, ready for a reasonable hour of showing students how to use the
subject catalog, answering the phone, and directing lost souls to the
water fountain.

In this same hour, our clerk verified several titles, cut
the tapes, and sent requests to libraries said to own them. We would
later discover that one library had never heard of the learned journal
of which it was alleged to possess a full run. Hence the phrase, "to
lie like a union list." She then read the teletype carbons from Friday
and Saturday, recorded copy sent and received, and double checked that
we had answered all messages. We had missed one. East Texas was, she
hoped still patiently awaiting an answer to a request they sent to us
Friday morning. She knew they were waiting, but how patiently she
dared not guess. When a short message comes in just below another
short one, it can be over-looked, especially if the office is empty
when it comes in. We manage this at least twice a month. We are em-
barrassed and very apologetic, but it still happens.

At 10:00, I fled for coffee. When I got back, all was quiet.
Maxine was caught up, the eternal statistics were posted, out-going
mail was ready, and the machines were asleep. You understand, this
cannot last. Enter stage left, our mail boy with the week-end first
class. Maxine went to work on her share, an assortment of requests,
notices of return, replies to our requests, and, joy forever unconfined,
a check from NASA for $6.90. I had a note from the English department

about securing copy of reviews of a very obscure novel published
about 1902 in even more obscure newspapers, all of which seemed to
have died shortly after the first World War. As the learned gen-
tleman has never figured out how to get the requisite information
on one of our request forms, I transcribed the information and checked
Newspapers on Microfilm. Ordering hard copy from some places would
require letters, so I drafted one and left it for Maxine to type
later. Then I checked the problem from Lubbock in the Engineering
Index and discovered that the date and volume numbers had been vic-
tim of a gremlin in transmission. No student was available and Maxine
was up to her ears in the mail, so I located the article and took it
to be copied. For a blessed forty-five minutes I could get on with
something else.

At 11:15, our friendly mail boy returned . . . seven envelopes
of copy and twelve packages. Maxine looked at them with some resigna-
tion and went to lunch. As both teletypes started to clatter, the
telephone rang. A faculty member wanted to know if his book had come
from Berkeley. I told him I would check the package mail and call back.

There are few things we loathe more that what I call "the
moulting jiffy bag". You all know the familiar padded bag. The things
are advertised as safe, convenient, and time-saving. When describing
a new bag only slightly larger than the book inside, this is true.
But when a small, sharp-cornered book is shoved into a used jiffy bag
which would easily accommodate two volumes of the Oxford English Dic-
tionary, the corners rip the inside of the bag as the parcel bounds
through the mail. If you have never seen the end result, I offer in
evidence Exhibit A. The plastic wrap was supplied in self-defense by
the post office. This unfortunate once contained a fat book and a skinny
one, unwrapped, unpadded, and unsung. Ten cubic feet of shredded fluff
lurk within waiting to burst out if the little horror is opened inju-
diciously. Even when all precautions are taken--don apron, remove staples
gently, hold breath, and STAND WELL BACK--you are likely to be showered

with jiffy bag stuffing. Our students, being young and agile, man-
age to come out of the conflict clean. Maxine has elevated opening
jiffy bags to the status of an art form. I get jiffy bag innards all
over me. I checked in the book from Berkeley, called the faculty mem-
ber, and congratulated myself for two hours on my restraint when he
asked, "It wasn't any trouble, was it?" He should have heard the jani-
tor.

When Maxine returned from lunch, she spent forty-five minutes
opening the package mail and checking it in. All kinds of satanically-
contrived statistics have to be kept on this sort of thing--date received,
postage, insurance, date due, and so forth. Several books were ours.
She cleared her records and returned the books to Circulation. Notices
were phoned or mailed to patrons whose books or copy had come in, in-
voices on copy filed, and those to be charged to on-campus accounts put
aside for vouchers. Then a request from the University of Oklahoma Med-
ical School sent her up to periodicals. One normal transactions of this
sort takes about ten minutes. If the volume is not on the shelf or some-
thing is wrong with the citation, it takes longer. Sometimes much longer.

During the rest of the afternoon, she ran down six requests from
the University of Houston, Texas at Austin, and Prairie View and sent them
to be copied; spent twenty minutes looking for our copy of the Texas List;
and worked a telephoned "urgent" request from LTV. Another twenty minutes
was invested in trying to get out on our switch board and in on LTV's.
Around 3:30, she rechecked the tear sheets before asking North Texas for
a report on a request she sent them the preceding Wednesday. North Texas
replied that they not gotten the request and assumed it to be floating
around in the ozone somewhere. But they would check on the requests
(which she had repeated), and call us back. Oh, and by the way, was it
sleeting in Arlington? She also forwarded a student with a problem to
me.

Margaret was hurt. As my senior student assistant, a graduating
senior English major, and candidate for admission to library school, she

was crushed that she was unable to verify a simple American imprint.
The faculty member making the request was trustworthy in his citations,
the request was legible, the citation made sense (not like one of our
more infamous examples, "Alfred A. Knopf, 1835"), and LC had never heard
of it. She had verified an earlier edition in the British Museum cat-
alog, and both BIP and CBI listed paperback abridgements. I retired
to the Bibliographic Center and made a great discovery. The 12th cen-
tury agricultural writer, Walter of Henley, is cited in major bibliog-
raphies as "Walter of Henley". Writers on English medieval history
from Bishop Stubbs to Sidney Painter call him "Walter of Henley". I
call him Walter of Henley. But not the Library of Congress. In their
hallowed halls, he is known as "Henley, Walter of". I verified him and
sent him to Austin. I still don't know how they enter him. Probably
as "of Henley, Walter".

The "south campus" must have thought we had it in for them that
day. Walter was followed by a seven item relay from SMU, all in what
appeared to be the German equivalent of IEEE. It took fifteen minutes
just to cut the tape. At 4:30, Maxine assembled the insured and first
class mail, sent for a boy to carry it down to her car, tucked the stamp
envelope into her purse, and departed. The stamps were in case our scales
hadn't agreed with those at the post office. They frequently don't.

We do not have a postal substation on campus. Nothing can be
insured or registered without a trip downtown, and for reasons that those
of you associated with state institutions can guess, we do not have a
blanket insurance policy. New postal employees have never heard of
"library rate", so we keep a Xerox copy of the appropriate page of the
Postal Manual with the stamps. We recommend this to anyone with sim-
ilar problems.

It must seem that we are so disorganized that it's some kind of
miracle that we ever get anything done. Were it not for an interested
clerk and intelligent student assistants, we wouldn't. The first require-
ment for making a telecommunication system work is good clerical help.

Your clerk must like and understand the work, be able to deal tact-
fully with the faculty and sympathetically with graduate students,
understand the use of all sorts of locators and verification tools,
and have that sixth sense for locating weird items. Hers is the day-
to-day administration of a Chinese fire drill . . . six or eight
people running around in an aboriginal folk dance to the music of two
teletypes with occasional telephone chords. Days have gone by with
nothing unusual happening. Then there are the others . . . when the
TWX intercepts twelve lines of five-letter code groups intended for a
local aerospace plant, when the private line "runs open", making noises
like a demented typewriter, or when an electrical storm upsets both of
them at the same time and the lights go out. There are days when every
member of the faculty first dismisses his classes to "work in the li-
brary", then drops by or calls; when a request gets so garbled in trans-
mission that you can't tell who sent it, much less what they wanted;
when labels get switched in someone's mailing room and you receive a
mysterious book you know you don't want; or when an item clearly cited
in a reliable standard bibliography seems to have vanished from human
ken. Keeping statistics is a complicated, exacting chore, moulting
jiffy bags cover the workroom with dreadful-looking grey fluff that makes
everybody sneeze, the Xerox breaks down too late in the day to get the
service man--you know, 9:00 on Tuesday morning and the mail is slow.

Bennett Cerf used to ask on "What's My Line", "Do you deal in a
service?" Yes, we do. The requests are handled faster than they ever
were. Information gets to the people who need it with, believe it or
not, a minimum of fuss and feathers. And that is the name of the game.
We deal in a service and telecommunications networks improve that ser-
vice. We know what photocopy will cost, the billing is handled centrally,
and though our volume has increased 200% in the last two years, our service
is much better. And there is one other benefit. The librarians running
it collect a lot of good stories.

APPENDIX

The following log was kept by staff members actually involved in all forms of interlibrary loan work for two days, November 26 and 27, 1968. It has been transcribed exactly as entered. It does not claim complete accuracy. As may be noted, many separate operations were logged together with a single block. We tried logging each part of a transaction (or operation), i.e., checking the catalog, X minutes; locating the material, Y minutes; and so on; but found it too much trouble to carry the clipboard and stopwatch around. Despite this deficiency, I believe the log gives a fairly accurate picture of two days of operations of a "multi-circuit" (mail, telephone, teletype) network.

CAST

MFM	Your humble servant, Reference Librarian
MYB	Reference and Interlibrary Loan Clerk
MMS	Senior student assistant, Reference and ILL
KKH	Student assistant, Reference and ILL

ABBREVIATIONS

RQ	Request
ILLRQ	Interlibrary Loan Request (distinct from photocopy)
P'copy	Photocopy
msg.	Message
NIL	Not in library collection
NOS	Not on shelf
Jl.	Journal. Used for all serial publications shelved in Periodicals
SC	Serials Catalog
PC	Public Catalog
SL	Shelf List
Bib. Cen.	Bibliographic Center. Contains Union Lists, national catalogs, and other bibliographic tools and locators
IIS	Industrial Information Services

In almost all cases, NUC symbols are used to identify requesting and supplying libraries.

Appendix, p. 2

TIME STUDY, INTERLIBRARY LOANS

26 Nov. 1968		
Initials	Operation	Time
MYB	Checked tear sheet from yesterday	5.40 min.
MFM	Checked RW from SMU, NOS, replied	5.40
MFM	Adjusted paper and straightened carbon paper on TWX	4.78
MYB	Neg. reply from TCU on ILLRQ sent yesterday, checked previous places requested and sent to TWU	5.00
MYB	Bookkeeping on ILLRQ, posted statistics	12.10
MYB	Relayed msg. to TxDaM from TxHU	3.49
MYB	Received 2 ILLRQ from SMU, checked PC. 1 NIL; went to 3d floor for other, NOS. Checked Circulation records, noted due date, sent report to SMU	16.77
MYB	Rec'd ans. to TxHU relay from SMU, made tape and sent to TxHU	4.79
MYB	Sent ILLRQ to TxHU	3.00
MYB	3 books returned in mail. Unwrapped, cleared my records, returned to Circulation and discharged	9.69
MYB	ILLRQ from IIS. Checked SC, got jls. on 5 and took to 6 for copy, answered msg.	10.80
MYB	Sent 3 ILLRQ to SMU	2.10
KKH	Verified 4 RQ from faculty member, couldn't find 1. Gave 3 to Mrs. B. and 1 to Miss M.	20.47
MYB	P'copy RQ from TxHU. Checked SC, located jl. and took for copy. Picked up copy made earlier, entered copy on book and prepared for mail, sent reply to TxHU	12.78
MYB	Answered msg from IIS	3.20
MFM	Took RQ Karen couldn't find. Citation looked funny, rechecked source. Bad citation. Called patron to reverify what he wanted. He will resubmit.	15.60

Appendix, p. 3

TIME STUDY, INTERLIBRARY LOANS (contd.)

Initials	Operation	Time
MYB	P'copy req. from TxLT. Checked SC, found jls. and took to 6 for copy. Picked up earlier copy for TxHU. Answered TxLT, did bookkeeping on copy and prepared for mail	13.20
MYB	ILL forms in mail from TI, Baylor, and OU Med. School. Checked PC, sent student to collect. 1 NOS, not checked out. Asked Circulation to search. Charged books and posted records. Marked forms for return	15.68
MYB	P'copy RQ from TxPRC. Checked SC, went to 5 Jl. NOS. Searched, asked Periodicals to continue search	20.78
MYB	5 P'copy requests submitted, tried to verify and locate, couldn't find Texas List. Hunted, finally found on top of PC. Verified and sent RQs on TWX	25.46
MYB	Picked up copy of TxLT, returned jls. to 5. Posted copy in record book and prepared for mail	11.20
MYB	Checked yesterday's tear sheets and today's to see if NTSU had answered RQ. Asked for report	2.10
MYB	Wrapped, weighted, and otherwise prepared for mail 3 packages	20.20
MYB	Typed 4 ILLRQ forms, filed orange copies	5.73

27 Nov. 1968		
MYB	Checked tear sheets from both machines, did statistics	15.80 min.
MYB	Sent long relay to TxDaM from TxNACS. Rec'd copy from TWU, posted it and sent to patron in campus mail	20.82
MYB	ILLRQ from TxCOMT. Checked PC, got book and charged; sent report to TxCOMT	12.50
MYB	Call from patron asking for renewal; called another patron with a status report on his RQs	8.47

Appendix, p. 4

TIME STUDY, INTERLIBRARY LOANS (contd.)

Initials	Operation	Time
MMS	Requested renewal from SMU, they said OK, called patron	5.00
MYB	Inf. only RQ from General Dynamics relayed by TCU. Checked PC & SC, replied	12.56
MYB	ILLRQ from IIS for 4 items; checked PC, went to 3 for books, all NOS. Checked Circulation records and noted due dates, sent report	15.76
MMS	P'copy RQ from UD. Checked SC, located jls. and took for copy. Waited for copy, returned to 2 and sent reply, left copy for Mrs. B. to post and send	10.33
MYB	Typed interdepartmental charges and vouchers for seven items of copy. Marked records and sent to bookkeeper	15.68
MYB	Patron returned 3 books, cleared records and prepared for mail	10.35
MMS	ILLRQ from TxLT. Checked SC, got jls., took to Miss M. to ask if we could loan because of color plates. Charged them in Periodicals, prepared for mail and replied	19.87
MYB	Rec'd report from TxHU, noted in on records; answered phone call about another loan	7.34
MFM	Worked 4 RQ in Bib. Cen. Verified & left for forms to be typed	35.69
KKH	Took RQ from patron, worked in Bib. Cen. Couldn't verify for sure, gave to Miss M.	12.55
MYB	Worked mail. Posted copy received, notified patrons. Gave ILL forms to Margaret, checked in books, recorded, notified patrons	52.75
MMS	Checked PC on above, located 3. Got books, charged, prepared for mail. Made notations on forms and gave to Mrs. B. to post on records	24.30

Appendix, p. 5

TIME STUDY, INTERLIBRARY LOANS (contd.)

Initials	Operation	Time
MYB	Typed ILL forms. Had to get more mailing labels from supply room to include	11.15
MMS	Took TWX msg. to Mr. Hudson, waited for answer and sent it to NTSU	15.69
MFM	Reworked Karen's problem in Union List. Verified	5.40
MYB	Sent copy RQs to NTSU. Rec'd 2 ILLRQ from TCU. Checked PC, got books, charged, prepared for mail and sent reply	12.42
MYB	Copy RQ from TCU. Checked SC, went to 5, jl. in bindery. Notified TCU	15.10
MYB	ILLRQ from TWU. Checked PC, NIL. Answered	5.0
MYB	Prepared books we are returning for mail	5.20
MMS	ILLRQ from NTSU. Checked PC, NIL. Answered	5.15
MYB	Query from TxCOMT about RQ. Re-checked tear-sheet, had missed it. Checked PC, got book, charged &c., replied	13.50

C.5-h

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AN ANALYTICAL MODEL OF A LIBRARY NETWORK

RICHARD E. NANCE

An Analytical Model of a Library Network*

Networks and network models of industrial and military systems have received much attention in operations research literature. The extension of network modeling to library networks provides some interesting twists of the usual models. A general library network is offered, a mathematical statement of the network problem is given, and the solution of the problem is discussed. An example of the use of the model in evaluation and design situations is provided. The necessity for further work in both theoretical and applied areas is cited in the summary.

RICHARD E. NANCE †

Computer Sciences Center
Institute of Technology
Southern Methodist University

• Introduction

NETWORK THEORY

A directed network or directed linear graph $G = [N;A]$ consists of a collection N of elements x,y, · · · , together with a subset A of the ordered pairs (x,y) of elements taken from N (1, p. 2). The elements of N are termed "nodes," "vertices," and, in specific cases, "sources," "sinks," etc. Members of A are called "arcs," "edges," "branches." The interested reader may consult Berge (2) or, more recently, Kaufmann (3) for precise definitions associated with the theory of graphs. The node-arc terminology used in (1) will be followed in this paper.

The study of networks and flows in networks has received much attention in the operations research literature. Theoretical foundations of network flows are given in (1), and solution procedures are covered in (3), (4), and (5). Library networks, in some cases, may be analysed using the existing algorithms for solution of network problems. Simplification under certain assumptions for library networks is possible, but the modeling of library networks in the most general sense requires an extension of the current network models. Extensions of the models and algorithm development for analysis of

library networks are reserved for a later paper and are not discussed.

LIBRARY NETWORKS

Consider a process involving the exchange of information among a group of libraries. The information involved may be classified generally into either:

(a) inquiries or messages regarding the availability or location of resources (services, a document or documents, etc.); or
(b) information in document form.

The transfer of information among member libraries constitutes an information network. This network may be modeled by classical methods; however, some important characteristics distinguish such a network from the usual models. The model also is dependent on which of the two classifications of information is of interest. Model development in this paper will be done for (a), and an important difference in analysis for (b) will be identified.

An essential fact regarding the analysis of library networks should be noted. The decision problem for a single library differs from that of a network. Administration of a single library, be it associated with information transfer, personnel, or supplies, etc., has the goal of deriving the most benefit for that library or its users or funders. For a network, the decision problem is to derive the most possible benefit for the total group. In certain cases, this decision process may not render the most benefit possible for any individual member.

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● Model Development

PRELIMINARIES

Consider a network of n libraries. Each library may serve as an initiator or a receiver of inquiries or messages. In addition, some libraries may serve as "message relays," which means that library A, attempting to send an inquiry to library C, may choose to send this message to library B and have B relay it to C. Each initiator, receiver, and relay library defines a node in the network. Nodes are characterized by the arcs related to them.


Initiator   Receiver   Relay
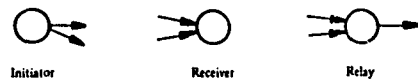
Nodes

A library network composed of n libraries may be described with $2n+\gamma$ ($0 \le \gamma \le n$) nodes, where γ denotes the number of relay libraries. We shall assume the total number of nodes is N; i.e., $N = 2n+\gamma$.

Arcs

The media over which messages may be transmitted are represented by the arcs joining the nodes. The number of arcs joining any two nodes in the network may vary, since certain pairs of libraries may communicate via LDX, teletype, etc., in addition to standard communication channels such as by person, mail, or telephone. Nodes are linked by a number of communication channels. It is assumed that for each pair of nodes:

1. All communication channels between the nodes can be identified;
2. For a selected time period of analysis, the channel capacity is known and constant; and
3. Associated with each channel is a value determined by the channel used and the node being accessed—this value is called a utility.

Node A   Node B
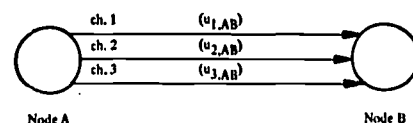
The example above shows three channels connecting nodes A and B with channel capacity and utility values identified and known for each.

Channel/Node Utilities

Utility values assigned to a particular channel/node link may represent some combination of:

1. the cost of communication between the two libraries (nodes) using the designated channel;

2. the probability that the library (node) being accessed can supply the desired answer, or perhaps any answer, to the question stimulating the message; and
3. any other factors governing the transmission and reply to a potential message [e.g., the confidence in the answer given by a particular library (node)].

Node Requirements and Capacities

Each library operating within a network has some need to communicate with other members of the network. In turn, each can respond only to a finite number of messages transmitted to it by other libraries within the network. It is assumed that for each library during the period of analysis:

1. the number of messages originating at that library (a_i, i=1,2, · · · , n) is known and constant;
2. the number of inquiries received at that library (b_i, i=1,2, · · · , n) is known and constant; and
3. the set of messages to be communicated within the network is homogeneous.

SYMBOLIC MODEL

A configuration of libraries forming a network can be symbolically represented as in Fig. 1, where the libraries (nodes) forming the network, the multi-channel communication media linking them (double-lined arcs), and the varieties of links that may exist among libraries are illustrated. The number of originating messages and inquiries for each library is shown also. Describing each link (two libraries and the channels connecting them) is a set of channel capacities and channel to node utilities (e.g., $[c_{\kappa(1,q_{11})}; u_{\kappa(1,q_{11})}]$ shown above).

The symbolic model and consequently the general statement of the mathematical model permits two occurrences that are neither necessary nor allowed in library networks:

1. the transfer of a message from a library in the set of initiator nodes to the same library in the set of receiver nodes; and
2. transfer of messages among either initiator libraries or receiver libraries.

MATHEMATICAL STATEMENT OF THE MODEL

In the mathematical statement of the relationships symbolically shown in Fig. 1, the basic notation will be retained. Subscripts, however, are changed slightly from and channel-to-node utilities.

Let

x_{ijk} = the number of messages sent from node i to node j over channel k,

u_{ijk} = the per-message utility for sending a message from node i to node j over channel k,

a_i = the total number of messages initiated at node i during the analysis period,

b_j = the total number of messages received at node j during the analysis period,

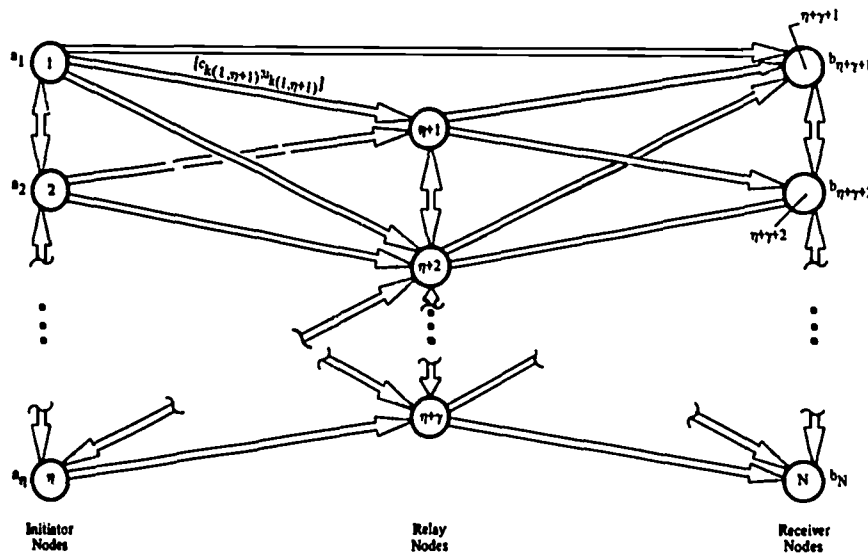$r(i,j)$ = the total number of channels connecting node i to node j, and

FIG. 1. Symbolic representation of the generalized library network

c_{ijk} = the capacity in terms of messages for channel k connecting node i to node j;

where

$i = 1, 2, \cdots, N; j = 1, 2, \cdots, N; k = 1, 2, \cdots, r(i, j).$

The problem statement following the general capacitated network statement (2, p. 113) and incorporating the multichannel characteristics follows.

$$\max f(z_{ijk}, u_{ijk})$$

subject to (s.t.)

$$\sum_{\substack{j=1 \\ (i \neq j)}}^{N} \sum_{k=1}^{r(i,j)} (z_{ijk} - z_{jik}) = a_i \text{ for } i \in I,$$

$$\sum_{\substack{i=1 \\ (i \neq j)}}^{N} \sum_{k=1}^{r(i,j)} (z_{ijk} - z_{jik}) = b_j \text{ for } j \in E,$$

$$\sum_{\substack{j=1 \\ (i \neq j)}}^{N} \sum_{k=1}^{r(i,j)} (z_{jik} - z_{ijk}) = 0 \text{ for } i \in R,$$

and

I denotes the class of initiator nodes $(i = 1, 2, \cdots, \eta),$

E denotes the class of receiver nodes $(j = \eta + \gamma + 1, \eta + \gamma + 2, \cdots, N)$, and

R denotes the class of relay nodes $(i = \eta + 1, \eta + 2, \cdots, \eta + \gamma).$

In addition, the individual channel capacity constraints give

$$z_{ijk} \leq c_{ijk} \qquad \begin{array}{l} \text{for } i, j = 1, 2, \cdots, N \\ k = 1, 2, \cdots, r(i, j) \end{array}$$

The formulation of the multichannel network problem shown above is more general than is necessary for library networks. The N nodes describing the library network $(N = 2\eta + \gamma)$ may be looked upon as belonging to one of three mutually disjoint sets or classes of nodes. Within two of the three classes (I = the class of initiator nodes and E = the class of receiver nodes) no path (Y) exists joining any two nodes of the designated class; i.e.,

$$\begin{array}{c} \forall i, l \in I \\ (Y_i, Y_l) = \phi \quad (Y_l, Y_i) = \phi \end{array}$$

and likewise

$$\begin{array}{c} \forall Y_m, Y_n \in E \\ (Y_m, Y_n) = \phi \quad (Y_n, Y_m) = \phi \end{array}$$

For library networks any node from the initiator class (I) serves only as an initiator of messages, and any node from the receiver class (E) receives only. Thus, the second of the unallowable relationships of the general model is removed. The first relationship—transfer of a message from a library to itself—is removed by ordering the li-

braries forming the initiator and receiver sets. The ordering results in a correspondence between nodes of $n+\gamma$ subscript difference in the network; i.e., node 1 and node $(n+\gamma+1)$ refer to the same library, in the first case (1) acting as an initiator of messages, and in the second $(n+\gamma+1)$ acting as a receiver. Using this ordering relation, no library is allowed to transfer messages directly to itself or indirectly through a relay library to itself. The general problem may be restated as

$$\max f(x_{ijk}, u_{ijk})$$

s.t.

$$\sum_{\substack{j=n+1 \\ j\neq n+\gamma+i}}^{N} \sum_{k=1}^{r(i,j)} x_{ijk} = a_i \quad \text{for } i=1,2,\cdots,n \ (I),$$

$$\sum_{\substack{i=1 \\ i\neq j-(n+\gamma)}}^{n+\gamma} \sum_{k=1}^{r(i,j)} x_{ijk} = b_j \quad \text{for } j=n+\gamma+1, n+\gamma+2, \cdots, N \ (E)$$

$$\sum_{j=1}^{N} \sum_{k=1}^{r(i,j)} (x_{jik} - x_{ijk}) = 0 \quad \text{for } i=n+1, n+2, \cdots, n+\gamma \ (R),$$

$$x_{ijk} \leq c_{ijk} \qquad \text{for } i,j=1,2,\ldots,N$$
$$k=1,2,\ldots,r(i,j).$$

From this general statement of the library network model, extensions or assumptions will permit the development of specific analytical models.

Note that the formulation above permits message transfer in the case where a library serves as a relay and may relay messages that it either initiates or receives. In these situations the need for additional channel capacity or the comparative attractiveness of available channels is assumed to prompt the decision. In essence, when acting as a relay each message transferred through the library (node) incurs the relay "overhead" including those initiated and received by the library itself.

• Development of Specific Model Forms

LINEAR CRITERION FUNCTION

The functional quantity $f(x_{ijk}, u_{ijk})$, which is the criterion function or, alternatively, the total network utility function, can play an important part in the efficiency of any solution procedure for the model. If $f(x_{ijk}, u_{ijk})$ can be restricted to a linear form, the model can be expressed in terms of a linear program (6, p. 369). The statement of the model, demonstrating the characteristics of the constraint set, is shown in Fig. 2.

Restricting the criterion function to a linear form simplifies the solution procedure.[1] The size of the constraint set may become quite large. Fig. 2 shows that a

[1] If the criterion function is nonlinear but has "nice" properties (continuity and concavity) the problem can still be solved without undue complexity, since the constraints are linear.

network of n libraries with γ of them having the relay capability produces a set of $2n+\gamma+r(n+\gamma)$ $[n+\gamma-1]$ constraints, where r is the maximum number of communication channels. The total number of structural variables involved is $r(n+\gamma)$ $[n+\gamma-1]$. In addition to the structural variables, in general, an equal number of slack variables will be required to gain the equality conditions on the capacity constraints. Thus a moderate-size network of 10 libraries with three relays and a maximum of four communication channels might require a linear programming statement with 647 constraints and 1248 variables (including slacks). At the same time, no guarantee exists that the solution will result in integral values of the decision variables. The availability of special algorithms for solving large network problems seems a necessity.
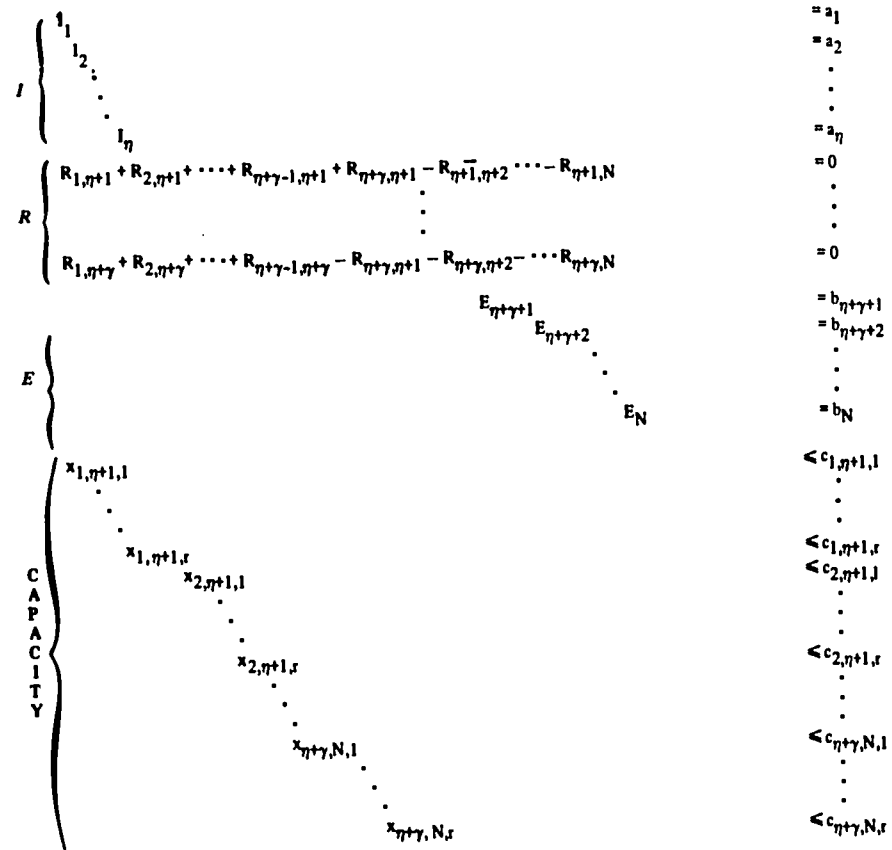
MESSAGE CLASSES

Development of the general model of a library network included the assumption of homogeneity of messages. This assumption may be relaxed, and the model may be extended to allow for different classes of messages. For example, initiation of requests for books may be considered differently from requests for Xerox copies of reports, and specific search requests may be distinguished from generic search requests.

This problem may be classified as a multicommodity network problem. Solution methods for this class of problems are discussed in the two papers by Jewell (7, 8).

TRANSFER OF DOCUMENTS

In the opening paragraphs, information is classified as being: (a) inquiries or messages regarding the availability or location of resources; or (b) information in document form. This distinction, which seems quite natural for a library, is necessary for modeling the network in a precise manner. The difference between transfer of messages and transfer of documents is that the decision of the initiator library to send a message to one of the relay or receiver libraries, and the choice of channel over which the message is sent, is assumed to be predicated on the utilities of the channel/node combinations available. The decision in the case of a single document must include whether that document was requested by the destination library as well as the utilities describing the transfer choice. This

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$$\max f(x_{ijk}, u_{ijk}) = \sum_{i=1}^{\eta+\gamma} \sum_{j=\eta+1}^{N} \sum_{k=1}^{r(i,j)} u_{ijk} \, x_{ijk}$$

$$I \begin{cases} I_1 & = a_1 \\ I_2 & = a_2 \\ \vdots & \vdots \\ I_\eta & = a_\eta \end{cases}$$

$$R \begin{cases} R_{1,\eta+1} + R_{2,\eta+1} + \cdots + R_{\eta+\gamma-1,\eta+1} + R_{\eta+\gamma,\eta+1} - R_{\eta+1,\eta+2} \cdots - R_{\eta+1,N} & = 0 \\ \vdots & \vdots \\ R_{1,\eta+\gamma} + R_{2,\eta+\gamma} + \cdots + R_{\eta+\gamma-1,\eta+\gamma} - R_{\eta+\gamma,\eta+1} - R_{\eta+\gamma,\eta+2} - \cdots R_{\eta+\gamma,N} & = 0 \end{cases}$$

$$E \begin{cases} E_{\eta+\gamma+1} & = b_{\eta+\gamma+1} \\ E_{\eta+\gamma+2} & = b_{\eta+\gamma+2} \\ \vdots & \vdots \\ E_N & = b_N \end{cases}$$

$$\text{CAPACITY} \begin{cases} x_{1,\eta+1,1} & < c_{1,\eta+1,1} \\ \vdots & \vdots \\ x_{1,\eta+1,r} & < c_{1,\eta+1,r} \\ x_{2,\eta+1,1} & < c_{2,\eta+1,1} \\ \vdots & \vdots \\ x_{2,\eta+1,r} & < c_{2,\eta+1,r} \\ \vdots & \vdots \\ x_{\eta+\gamma,N,1} & < c_{\eta+\gamma,N,1} \\ \vdots & \vdots \\ x_{\eta+\gamma,N,r} & < c_{\eta+\gamma,N,r} \end{cases}$$

I_i = All messages initiated at node i,

R_{ij} = All messages relayed from node i to node j, and

E_j = All messages received at node j.

FIG. 2. The network model as a linear program

relationship between the item of flow and the nodes from and to which the flow occurs adds a degree of complexity. This extension of the problem cannot be solved by current algorithms.

● A Network Example

The following example of a network analysis illustrates the use of the model developed for optimizing the total network utility for transfer of messages within a library network. The specific objective for this example is to minimize network disutility (the reciprocal relatum to maximization of utility). The size of the problem is small so that the analysis can be followed at least to the point of problem statement.

DESCRIPTION OF THE NETWORK

Libraries A, B, C, and D participate in a network. Currently, each library transfers messages to the others by telephone only. On an average daily basis each library has determined its messages initiated and received to be:

Library	Initiations	Receipts
A	50	55
B	100	45
C	35	95
D	65	55

Data were collected by the libraries to characterize the n . :e of the decisions regarding the transfer of messages within the network. This data is given in Table 1.
The conversion of cost and probability values to utilities is done by the formula

$$u_{ijk} = \frac{\text{Cost}_{ijk}}{P_{a_{ijk}} \cdot P_{c_{ijk}}}$$

where

i = library originating message,
j = library receiving message, and
k = channel used in message transfer.

This conversion formulation is assumed to produce utility values that are valid for this application and meet the necessary requirements for utilities (g).[a]

Conversion of the cost and probability values of Table 1 into utilities results in Table 2, which also provides the

TABLE 2. Channel/node utilities and capacities for the network

Originating library	Channel	Receiving library (Cell values represent utilities and (capacities))			
		A	B	C	D
A	telephone (capacity)	X	12 (25)	8 (30)	10 (20)
B	telephone (capacity)	20 (40)	X	12 (65)	9 (25)
C	telephone (capacity)	14 (15)	9 (30)	X	15 (25)
D	telephone (capacity)	12 (20)	11 (30)	10 (35)	X

[a] The values u_{ijk} shall be referred to as "utilities," although they might more appropriately be termed "disutilities" or "expected costs," since the higher value of u_{ijk}, the less the attractiveness offered by the associated value of u_{ijk}. Rather than incorporate additional terminology, u_{ijk} shall be considered a utility with the understanding that for the example problem the optimization objective is one of minimizing the total network "disutility."

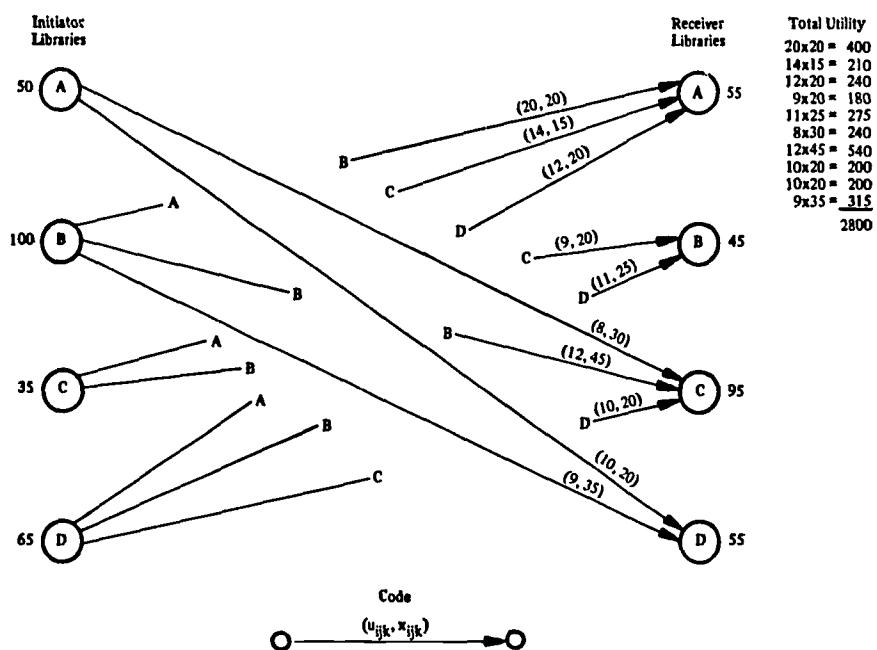channel capacities for sending telephone messages within the network.

The consideration of a linear utility function for the network enables solution by various algorithmic methods. The solution procedures used may produce different decision values (x_{ijk}), but the value of the criterion (utility) function must be the same for any optimal algorithm. Figure 3 provides an optimum solution for this example problem, which gives the minimum value of the criterion (disutility) function as 2800.

AN ALTERNATIVE STRUCTURE

Suppose that the group of libraries forming the network considered the installation of a union catalog within the existing network. The union catalog, which may be described as a relay node, will use two communication channels—telex and telephone. Telex capability will cost the member libraries $4.50 per message with a capacity of 20 messages between any of the four original nodes and the relay node. Telephone communication requires a cost of $4.00 per message with a capacity of 10 messages. Offsetting the high cost of sending messages is the relay node's capability of making

P_a (the probability that the message can be handled

TABLE 1. Values determining channel/node utilities

Originating Library	Channel	cost [a]	A P,[b]	P,[c]	B cost	P,	P,	C cost	P,	P,	D cost	P,	P,
A	telephone		X		3.50	.50	.60	3.20	.50	.80	3.50	.50	.70
B	telephone	3.50	.35	.50		X		3.00	.50	.50	3.70	.50	.50
C	telephone	4.20	.60	.50	2.70	.50	.60		X		3.00	.23	.80
D	telephone	2.40	.40	.50	3.30	.50	.60	2.80	.40	.70		X	

[a] Cost = the cost per message for transfer over designated channel to library link.
[b] P_a = the probability that the message can be handled by the receiving library.
[c] P_c = the probability that, if handled, the message is handled correctly by the receiving library.

Fig. 3. An optimum solution for the library network

by the receiving library)=1 for E and for all libraries to which D forwards a message, and

P_e (the probability that, if handled, the message is handled correctly by the receiving library)=1 for E.

Table 3 provides the values determining channel/node utilities for the altered network. All values for A, B, C, and D are the same as in Table 1. The union catalog (the relay node) is designated as E, and the utility values

for E are adjusted upward to the nearest integer utility value.

Table 4, corresponding to Table 2, includes the utility values and channel capacities for the relay node, E. In this table the channel/node capacities are shown in parentheses beside the utility values.

The initiations and receipts remain the same within the network.

TABLE 3. Values determining channel/node utilities for the altered network

Originating library	Channel	A			B			C			D			E		
		Cost	P_e	P_e	Cost	P_e	P_e	Cost	P_e	P_e	Cost	P_e	P_e	Cost	P_e	P_e
A	telephone		X		3.50	.50	.60	3.20	.50	.80	3.50	.50	.70	4.00	1.00	1.00
	telex				—	—		—	—		—	—		4.50	1.00	1.00
B	telephone	3.50	.35	.50		X		3.00	.50	.50	2.70	.60	.50	4.00	1.00	1.00
	telex	—	—					—	—		—	—		4.50	1.00	1.00
C	telephone	4.20	.60	.50	2.70	.50	.60		X		3.00	.33	.60	4.00	1.00	1.00
	telex	—	—		—	—					—	—		4.50	1.00	1.00
D	telephone	2.40	.40	.50	3.30	.50	.60	2.80	.40	.70		X		4.00	1.00	1.00
	telex	—	—		—	—		—	—					4.50	1.00	1.00
E	telephone	4.00	1.00	.50	4.00	1.00	.50	4.00	1.00	.67	4.00	1.00	.60		X	
	telex	4.50	1.00	.50	4.50	1.00	.60	4.50	1.00	.67	4.50	1.00	.60			

TABLE 4. Channel/node utilities and capacities for the altered network

Originating library	Channel	Receiving library (Capacities in ( ) beside utility values)								
		A		B		C		D		E
A	telephone	X		12	(25)	8	(40)	10	(20)	4 (10)
	telex			X		X		X		5 (20)
B	telephone	20	(40)	X		12	(65)	9	(35)	4 (10)
	telex	X				X		X		5 (20)
C	telephone	14	(15)	9	(30)	X		15	(25)	4 (10)
	telex	X		X				X		5 (20)
D	telephone	12	(20)	11	(30)	10	(35)	X		4 (10)
	telex	X		X		X				5 (20)
E	telephone	8	(10)	7	(10)	6	(10)	7	(10)	X
	telex	9	(20)	8	(20)	7	(20)	8	(20)	

A solution for the altered problem is shown in Figure 4. Note that the optimum value of the criterion function is 2610, compared to the original 2800 value. As a design aid, the solution suggests that implementation of a union catalog should be done if the fixed utility for doing so is less than 190 per day over an appropriate "payment" period.

● Summary

Library networks may be modeled as general capacitated networks with multichannel flows when the message

transfer function is the only consideration. The assumptions required for such a model may be relaxed to consider classes of messages, but when document transfer is the concern, the general capacitated network formulation breaks down. Development of special algorithms to solve the type of network problems resulting from message and document transfer among libraries is required.

The usefulness of the analytical model of a library network is illustrated in two hypothetical examples. In the first example, the model provides an evaluation tool for indicating how a library network should behave in order to derive the maximum benefit for the entire network.
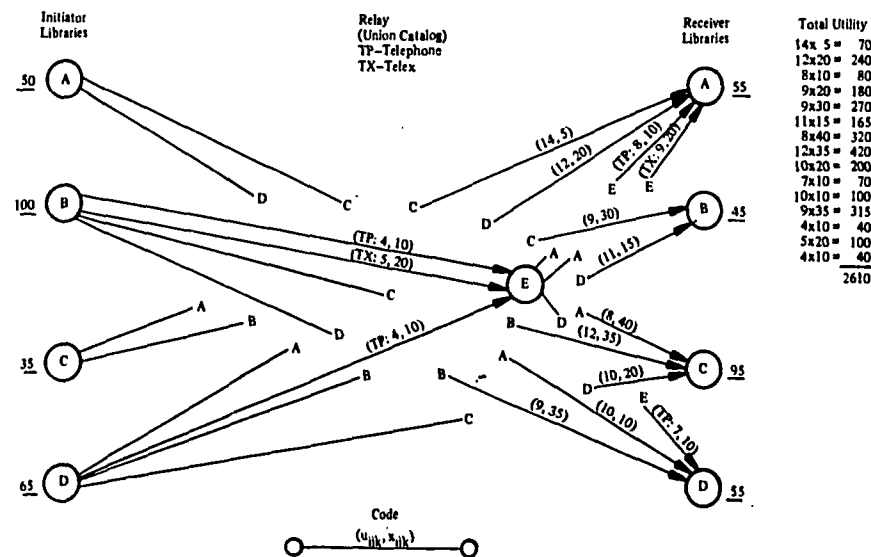
FIG. 4. An optimum solution for the library network including the union catalog

Fig. 5. Centralised and decentralised structure of library networks

The model serves a design function in the second example. Installation of a union catalog within the network is shown to increase the benefit of the network (by reducing the total network disutility from 2800 to 2610).

The analytical model would seem to be useful in some other applications also. The model could be used in specific cases to evaluate alternative structures of library network—the centralized and decentralized, pictured in Figure 5, representing two alternative forms.

Adaptation of the analytical model might be helpful in problems of interfacing existing library networks also. Because of the extremely large number of possible configurations in the interface problem, one would most likely settle for heuristic solutions rather than optimum values. At present, the most restrictive bound on the use of the analytical model for any application appears to be the development of algorithms for its solution.

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APPENDIX C.6

TRANSCRIPTION OF DISCUSSION AND BEHAVIORAL MODEL

APPENDIX C.6-a

SIGNIFICANT EXCERPTS OF PROCEEDINGS,
TEXAS LIBRARY ASSOCIATION REFERENCE ROUND TABLE
Houston, Texas
March 26, 1969

Miss Maxine Johnston, Chairman:

Attention, please. Will all of you now please find chairs and go
to the network with which you belong.

The Reference Round Table Texas Library Association's Second Insti-
tute on Cooperative Reference and Information Networks is now convened.
Welcome to Houston. Your presence here today in such great numbers sug-
gests to us that we have a program which interests you, and I'm sure
that you will not be disappointed. First, may I acknowledge our indebt-
edness to the Texas State Library. Without their continued interest
and support and active participation, this and last year's Institutes
would not have been possible. Next, there are a few foreigners among
us today, so let us identify who we are, what we are, and what we are
about.

The Reference Round Table is an organ of the Texas Library Association,
which organizes itself into types of library division, and type of activity
round tables. Each member of the association may select one of each for
his basic dues. Obviously, we represent reference librarians in all
types of libraries, or, in deference to the special librarians, we might
say documentalists or information specialists, etc. Our Round Table also
has chapter status in the Reference Services Division of the American Li-
brary Association. Our noble purpose, as defined in our By-Laws is, and
I quote, "to advance the informational, bibliographical, and research ser-
vices in all types of libraries and at all levels within the State of
Texas." Now this is the broad umbrella under which we can gather and
effect many projects. Many of you are aware that for the last three years
the Reference Round Table has been gathering data and planning. The 1968
Institute on Reference Services in Texas Libraries was a tremendous success,
and the Proceedings of that conference are now in print and many of you

have had an opportunity to examine them. They are on sale in the
hallway today. The basis for this year's work was provided by a reso-
lution introduced in our business meeting last year. You have on the
tables before you the Minutes of last year's Reference Round Table
meeting, and proposal number 2 on the second sheet is the basis for
this year's work.

This year the work of the Institute has been planned and quarter-
backed by Richard Waters, Chief of Branch Services, Dallas Public
Library; and by Maryann Duggan, Director, Industrial Information Ser-
vices, SMU, Dallas. Later I shall sing psalms of praise to both of
these redoubtable librarians. Let us acknowledge now that they have done
all of the thinking and most of the work for this Institute.

Since many of you have not had an opportunity to examine your packets,
let me briefly read to you the objectives of our work today:

1. To summarize developments (national, state and local) in
    cooperative reference services since the 1968 TLA Reference
    Round Table Institute;

2. To explore new thinking and approaches to the examination and
    use of cooperative reference services since the 1968 TLA
    Reference Round Table Institute;

3. To apply network concepts to local library situations;

4. To develop an ideal statewide interlibrary reference network
    through participation of Institute attendees and Official
    Listeners; and

5. To identify future developments needed in cooperative reference
    and interlibrary networks in Texas.

Now these objectives are self-explanatory and they need no elaboration
from me. While some of them may sound extremely ambitious, we do not
apologize for them; perhaps this challenge is what we need to help us
measure ourselves against our potential. Reference librarianship has
need of our heads in the clouds as well as our feet on the concrete.

And now, may I introduce to you the person who will preside at this
meeting today, and who is responsible for its organization: Richard
Waters, Dallas Public Library.

Mr. Richard Waters, Dallas Public:

We are going to play some games today and how well we play the game
and how well we participate--really get with it--will in a long way
determine the success of this Institute.

Now each of you have received--either by mail if you preregistered
soon enough, or given today--various bits of information. I'd like to
quickly review that with you and tell you what is expected of you some
time during the day. Stapled together you should have several sheets,
including a program, prefaced by a green sheet. Back in that--near the
latter part are some real live cases of interlibrary situations. There
are 42 cases, each one identified by a number on the left. Let me first
say that each one of you are in a node for a specific reason; we have
the MRC node--now, please do not misinterpret--this does not mean the
Major Resource Center Library--it means the Major Resource Center Area.
So within, for instance, the Austin MRC we should have some people from
Austin Public, from the University of Texas, and other libraries in and
around that area. We have specific types of librarians such as the health-
science librarians or special librarians. Unfortunately, we could not
assign everyone according to his job to the right node, but we've done
the best we can. We ask that you play the game and participate with us
regardless of what node you are in. So during the day, we're going to
ask you nodes to answer some of these real live cases; how would you
handle this situation? If you choose to appoint a spokesman for your
node, that's fine. We're not going to tell you with much advance notice
when you're going to be asked to respond. We have floor mikes--one on
my right and one on my left near the center of the room--which are on
and which are to use. Anyone who wants to ask any questions--make any
comment--would they please come to the mikes, because the PA system is
hooked up to the tape recorder, and we hope to get everything down here
today.

So, in addition to the problems, you've also been given a pink sheet
which is a networking sheet. This is a game of "Twenty Questions." At
3:45 you will network your own library. We would ask that each node,
beginning with the El Paso MRC and going on down numerically, would
answer the question that corresponds to their table number. This will

mean that Tables 21, 22, 23 and 24 will not have a specific answer.
We may or may not ask you for your answer to those questions, but
please do fill them out individually or collectively and leave them
at the registration table at the conclusion of the day's meeting.

You've also been given a Glossary work sheet that I think is
self-explanatory.

You have a blue sheet of paper, a Critique. Please fill it out
individually and leave it at the registration table or, if you want
more time, you can return it by mail to Miss Duggan. Her address is
on the bottom of that sheet.

And finally, one other piece of work we want you to do is to
evaluate this Institute on a white RRT Institute Evaluation Sheet.
Again, you may either leave that here at the conclusion of the day,
or fill it out at your leisure and return it to Miss Duggan.

I cannot overemphasize the importance of you people doing these
things, because we don't know what we have here today, but we think we
have several hundred people who can collectively come up with some
real ideas as to the future of reference service and networking in
Texas--and we need everybody's participation and everybody's thinking.

Maxine mentioned that there were some Official Listeners in the
auditorium; I'd like to introduce those very briefly--just ask them to
stand--we'll be hearing more from them later. So as I call their names,
would they please stand   Mickey Boyvey from the Texas Education Agency;
Wilson Fahlberg from Council of Health-Science Libraries; Catheryne
Franklin, Graduate School of Library Science of the University of Texas;
Don Hendricks, Sam Houston State College; Jan Kee, HEW; James Love,
Library Trustee; Stanley McElderry, University of Texas Graduate School
of Library Science; Frances Neal, State Librarian for Arkansas; Dorothy
Sinclaire, SETINA; Wanda Sivells, Wharton Junior College; Forrest Ward,
Texas Coordinating Board; Bob Whipple, Western Information Network
Association; Dorman Winfrey, Texas State Library; Jan Wolford, Mobil
Research and Development Lab; Heartsill Young, University of Texas Library;
Wyman Jones, Fort Worth Public Library; and Richard Yoes, Texas Education
Microwave Project. Those are the Official Listeners and we will be hearing
from them a little later at various times.

Now, we're on a very tight schedule. We're going to give you an
awful lot of information--we hope--today. At least we've got to pre-
sent it all. We've got to keep moving right along. We have a 15-minute
coffee break scheduled this morning and this afternoon. We hope to
limit it to 15 minutes. Bring your coffee back to the table. We have
an hour for lunch. And now we're ready to start--we're already five
minutes behind time.

Richard Perrine--Dick Perrine--Rice University Assistant Librarian
in Charge of Planning, who is also President of the Reference Services
Division of the American Library Association, and Dr. Ed Holley, who is
Director of the University of Houston Library and a consultant on the
Library Task Force of the Office of Education Knowledge Network, are
going to tell us about some recent developments on the national scene.*
(*Editor's Note: All formal papers presented during RRT are reproduced
in Section C.5 of the Appendix, with discussion or questions following
each paper included herein.)

Perrine Paper   (C.5-a)
Holley Paper   (C.5-b)

Waters:

On the program you will notice at 10:15 we have a question and discussion
period. We have question and discussion periods at other points in the
day. These will be used for two purposes: (1) to ask any questions or
to raise any discussion about anything that has been said earlier in the
day; and (2) to then attack some of these real live situations--these 42
problems that you have ready, presented to you, and that hopefully you
have begun some thinking about. You know, when you're moderating a pro-
gram such as this and then you have to introduce yourself, it's kinda
difficult to do, so I'll introduce myself by telling you the one library
joke that I know. (Editor's Note: joke deleted.) My charge is to tell
you about a survey, and so let's get on with the business.

Waters Paper   (C.5-c)

Waters:

It's now time for questions and discussion from the floor. Would you
come to the microphone, please.

Frank Wagner, Corpus Christi:

What do you mean by a literature survey?

Waters:

What do I mean by a literature search?

Wagner:

Search, yes.

Waters:

. . . and what you may mean are two different things.

Wagner:

I suspected as much--

Waters:

This is, as I say, one of the weaknesses of this survey, as to our interpretation and our hopes for the answer--

What we intended by a literature search would be that if someone came in to a library and wanted to get say the last--all of the journal data--all of the data available for the last ten years--on a specific subject, and then you would do a literature search and give him a bibliography. That was what we hoped would be the definition of a literature search, but I'm sure that it varies from place to place.

Wagner:

Is there any such service now being offered by any of these networks that you have specified in Texas?

Waters:

I know that I.I.S. at SMU does this for a good sum of money. I think R.I.C.E. does it. I believe TAC in Albuquerque does it. There may be others--MEDLARS on a national basis, or the Texas MEDLARS Research Station. Any other questions?

Yvonne Greear, University of Texas at El Paso, Reference:

How do the libraries involved in CORAL get their users to agree to cooperative acquisitions? That is one of our problems--

Waters:

This I can't answer. You'd have to talk with some of those--

Greear:

Well, that's one of things that I think has stood in the way, many times, of cooperative ventures on acquisitions is that you find your users

say "I don't want to be told to use something at another library, or even wait to have it, I want it here."

Waters:

I would suggest that you try to find somebody from the San Antonio area. As I said, I think they have the best thing going in the state down there.

Do you want to transfer that question to the network? To relay your question to the San Antonio MRC? San Antonio, you're on . . . . Don't all get up at once!

While we're waiting for a response--see this is one of the network problems, you know, you get on the network and you've got to get on and off fairly quickly.

(Inaudible from audience---something about using the San Antonio Major Resource Center)

Waters:

Well, you wouldn't use the San Antonio Major Resource Center. Is there anyone there from Trinity or Southwest Texas State? Well, I know there is someone here from Trinity at another table--here she comes now.

Unidentified Person:

I'm from Trinity and I feel a little bit guilty about not knowing the answer to this question because I helped with the survey. From the little I've heard discussed on this subject in staff meetings, I would say that this is likely to have been done on an informal basis--just conversations among acquisitions librarians and perhaps head librarians of the universities and I think probably it has involved major sets--bibliographical sets and things of that kind as well as informal decisions as to which field which institution will buy in. I'm sorry I don't really know the answer to the question, but I'll try to find out if any of you want to see me later.

Waters:

Are there other questions?

Mrs. Shula Schwartz, Texas Instruments, Dallas:

The Texas List is an example of an evolvement of an informal cooperative activity. You said in your statement that the Dallas List and the Dallas-Fort Worth Union List of Serials disappeared. It didn't. It became part

of the _Texas List_, along with the _Houston List_, and it's an example
of local activities evolving into state activities, which finally
became a commercial venture. I think that we have to consider in
any type of regional activity or statewide activity what is already
begun. I think your survey indicates that many of these activities
that are statewide or regional now began as local informal cooperative
ventures. Are we ready and willing to go into what will eventually have
to be commercial type operation? And are we willing to foot the bill?
You said that I.I.S. is expensive, or R.I.C.E. is expensive, but the
people who are subscribing are willing to pay for it. Now the question
comes up, who's going to pay for public library services outside of
the area of the taxpayer who's paying for that service now?

Waters:

I hope you're not expecting me to answer that question.

Schwartz:

By the end of the day I hope we have an answer.

Waters:

We hope to get some understanding of an answer today, and I think
one of the questions on the Twenty Questions sheet is specifically to that
point of financing and legality.

Harold Richardson, with _The Texas List_:

I heard mention made that someone hoped that _The Texas List_ would
take in newspapers, or that _The Texas List_ would maybe become a union
catalog of books as opposed to just serials. _The Texas List_ can and will
list anything which the budget will allow. If the people want to pay
the cost, we will put out a union catalog of every book in Texas. It
will be expensive.

Waters:

All right, he's told it like it is! Are there other questions? Go ahead--

Julienne Sprague, Texas State Library:

I would just like to add one comment. I notice that there is a
union catalog we use quite a lot that is not listed. It's the _Union List
of Periodicals in the Library of the Abilene Christian College-Abilene Area_,
and it is quite useful to us. Others might find it useful to them also.

Maryann Duggan, I.I.S., SMU:

May I introduce this gentleman who is here from Bethesda, Maryland.
This is Wallace Olsen, the co-author with Joe Becker of the chapter on
"Library Networks" in the Annual Review of ADI. I feel he deserves a
little special attention; we're pleased and honored he came all the way
from Maryland to join us.

Waters:

You had a question, Mr. Olsen?

Olsen:

I'm not going to make a speech, but I have several questions. Since
we're a switching center I'll switch the first one to Dr. Holley. What type
of proposals do you think are apt to gain the money this coming year in
the network funding?

Holley:

I think that probably we're talking about projects in the neighborhood
of $100,000 to $250,000 per proposal. We're probably talking about
comprehensive planning documents that deal with things such as costs,
models that have generalizability and transferability--that is, more than
local type situations--that encourage institutions to get together on
things like record keeping, admissions, all kinds of developments of this
sort. The linking--the knottiest one--and nobody seems to know why it was
put in--is this business on the use of computers. Now I think the inter-
pretations are going to be somewhat more liberal than the initial reading
of the act might indicate. That is, if you use computer facilities for
developmental purposes rather than the on-going operating and adminis-
trative cost, that you may indeed be able to put these into the project,
because one of the situations--one of the parts of the act involves
specifically the building of inter-institutional library catalogs. Now
I think that the instructions will read that funds will be available
for producing this kind of an animal, whether it be on film or computer
tape, or in printed form, or whatever. I think the attitude of the
committee was, or at least the consultants, to stimulate some good
proposals that possibly cost a great deal of money but have applicability
farther than the local region. There are going to be some preliminary

proposals requested, and these will be sifted out and then other--
the ones that look the best are going to asked to write rather com-
prehensive proposals. The funding for a project need not be limited
to the first year, although obviously the federal government can
guarantee only the first year. But there's a possibility here of
having a two or three year project in the comprehensive proposal stage.

Olsen:

I'd like to expand my question, if I may. Is it not true that the
multi-media approaches are apt to drag off the greater share of the
money as opposed to a simple TWX or teletype network functioning be-
tween libraries? I raise this question because it seems to me you in
Texas here have immense potential for communications systems, the likes
of which I think will be most appropriate under this Act if I read what
has happened in the past correctly. May I direct my other two questions--
I'll sit down and listen to both of you again.

There seemed to be a reference to three or four industrial library
service units, Mr. Waters, in what you mentioned--several that you listed.
How do these interfunction now? Could someone give us a thumbnail sketch
on what sorts of services they switch between themselves, or don't they
work together at all? They seem to be geographically distributed about the
state. How now do they interfunction either by telecommunications or in
services of any sort? Another question of personal interest--in the Winchell
Union List, what is its chief purpose? Is is--the Rice list--is it for
referral or is it for location for loan, and if it's the latter I'd like
to know how that was overcome?

Waters:

May I suggest that Maryann Duggan answer your first question regarding
the industrial services, since she is director of one such service.
Dick, do you want to answer the Winchell question?

Perrine:

The true goals of the Winchell list have never been formulated and
set down, but I think it is primarily a "finding" list to locate the
existence of a particular title in Winchell. We haven't come to the
point of loans, and so this is a knotty problem we've not resolved.
There is another element of the Winchell list which has not been mentioned
so far, but it is hoped that this list can serve as the basis for a coop-
erative acquisitions program to fill in the gaps that now exist.

Holley:

Since I was in on the earlier part of this, I think that the Winchell list was primarily designed for the public library in this MRC area, and particularly for the smaller libraries who wanted to know where reference items are located. Since under the MRC program they can call and ask reference questions, they could call the closest library to them. That was the way the thing got off the ground. It was not the intention to loan the reference books but to know where they were so that you could direct reference questions to these particular units. Then some of the rest of us got in the program, and it expanded to an acquisitions type situation and is growing on from there.

Waters:

Maryann, would you care to answer his question regarding the inter-connection between the industrial networks?

Duggan:

I'll speak of it very briefly. Actually, there are several other nodes in the room who can make a contribution here too. I see Rita sitting over with the W.I.N. node--that's a long way from R.I.C.E.! I.I.S. got started as a State Technical Services Act project. We had great plans; we had great dreams; we had hopes of a statewide communications network where any business firm anywhere in the state could go into their local public library and have access to the specialized information services developed through State Technical Services Act funding. Somehow there's a big gap between plans, dreams and reality and what you're able to really implement. So we have wound up at I.I.S. serving 67 counties in North Texas. We have signed a contract with the Inter-University Council so that any of the material in the I.U.C. libraries can be made available to industry through I.I.S. We have signed a contract with the Technology Application Center in New Mexico so that any of their specialized computer-based searching services would be available to business firms through I.I.S. We are eager to interface with R.I.C.E., with W.I.N., with TEMP, with anybody, but when you sit down to try to interface with some of the other nodes it's like a poker game. These are some of the things I hope we'll see today as we play the network game. What are some

of the problems of interfacing networks? Dick listed four criteria
of networks; those are the minimum essentials, but if you don't have
a common communication channel it's pretty hard to interface. If
you don't have identifiable services that you can offer, and levels of
services, it's pretty hard to interface. If you can hardly even talk
together in a common language, it's pretty hard to interface. So these
are some of the fun things we look forward to doing today.

Waters:

Are there other questions? Then let's break for 15 minutes for
coffee. It's at the back of the room, and be prepared when you come back.

INTERMISSION

Waters:

Before we have our first report from our Official Listeners, we're
going to plug into Node 14, the Houston MRC, and ask them to respond to
a case: A small public library is asked by a high school student to get
copies of articles on dope addiction from some medical journals. Houston
MRC, would you--I'm sorry--Austin MRC--Node 14? Are you organized and
receiving the message?

Unidentified Person:

The leader of our node left the room and she would speak to that.
Would you go to another node, please.

Waters:

Well, there's another real live problem--see, you switch into a network
and the head reference librarian is on coffee break! (Laughter) These are
problems that have to be faced and this is the way the game is played, I
think. Let's go up here to the very first node, the El Paso MRC, and see
if they're ready--

A local judge in a medium sized town needs a copy of the statutes of
another state. Does the El Paso MRC have a response?

(Inaudible buzz)

Waters:

Are they organized? How would you respond to that case?

__Unidentified Person__:

We would refer him to his MRC.

__Waters__:

He is in the MRC.

__Unidentified Person__:

O.K., fine. We would--ah--attempt to get it from the--tell the local judge to get it from his county library, or from the Texas Law Library at the University of Texas.

__Waters__:

Well, are you saying that you kick it out of the MRC?

__Unidentified Person__:

If we did not have it in our area, we would go outside the area for him, or refer him to the source outside the area.

__Waters__:

You would refer him? You would not do the referral yourself?

__Unidentified Person__:

The library itself would do it, or, preferably, if it were quicker to send it to him directly, we would tell him to get it directly from them.

__Waters__:

All right, thank you. Now there are no right answers nor any wrong answers on any of these questions, and any questions that I might, or anyone else might direct back to the nodes is intended just to illustrate various cases and to see your response.

It's now time for our first report from our Official Listeners, and I think they know who's going to respond. So, Official Listeners, you're on!

__Heartsill Young, University of Texas Library at Austin__:

I have questions to raise. I can't answer questions at this point-- it's a little too early in the game. But this is my response to the discussion so far. I think that it has been made clear by our speakers that while we are developing individual networks in the state and are con- sidering here the development of a state library network--reference network or information network--that we should think of these as cogs in a national system. I want to read you a sentence from the Report of the National Commission on Libraries, "Library Services for the Nation's Needs," and I

don't know whether you got this in your packet or not, but the full
report of the Commission appeared in the January 1969 issue of A.L.A.
Bulletin, and if you haven't read it, I urge you to do so--this para-
graph from it:

> "It follows from the foregoing paragraphs that naturally
> evolving systems that clearly serve the needs of users should
> be given support in their own right at this time. No one
> can perceive the final nature nor the quality of a national
> information system with a single exception. The exception
> is that such a system will finally be made up of a large
> number of highly specialized components, each one of which
> should be designed to serve the needs of a designed user
> group"

and I would add to this, and so does the report a little later on,

> "be compatible with each other."

We mentioned making available the full range of library resources and
so we get into the matter of self-sufficiency. The report of the Commis-
sion also touches on this. There are other reasons why libraries can
less and less attempt to serve as self-sufficient entities, but must more
and more derive strength in membership in regional or national systems
or networks. This doesn't mean, however, that at the state level we
shouldn't attempt to reach a certain degree of self-sufficiency. But
what is this degree? Now one of the components of a state system should
be the collaborative development of resources providing for cooperative
acquisitions of rare and research materials and for strengthening local
resources for recurrently used materials. But, I repeat, what should our
degree of self-sufficiency be within the state? The speakers have also
touched on two other basic problems relating to development of reference
and information systems: those of bibliographic access and physical access.
If we are to make the full range of library materials accessible, we
are faced with both of these basic problems, which again the National
Commission on Libraries considered. We need to identify the resources
in the state if we are to develop a statewide system. Now we've made
an attempt at this through union lists, union catalogs, etc. These have
grown up individually--I think that we would agree that we need some

point of central bibliographical control, but I raise the question--
what degree of identification of resources do we need? Do we really
need to identify every book and every serial owned by every library in
the State of Texas? When do you reach the point of diminishing returns?
Also, union lists and catalogs, of course, are of value in performing
a certain level of reference service; that is, if you know what you
want and request a specific author and title, then fine, these union
lists serve you well. But now not long ago we received a reference ques-
tion at the University Library requesting more than this level of service.
We were provided with an outline of a thesis and were asked to provide
the bibliography and the books listed in the bibliography. Well, we're
not prepared to offer this kind of service--but this goes beyond simply
requesting titles.

Suppose--and a number of the cases on these sheets reflect this type
of service--you are asked for bibliographies. You're asked for a liter-
ature search, or you may be asked for abstracts of articles, so the
detailed finding list won't help you here. However, a general descrip-
tion of resources will. Now I'm referring to the initial attempt to
identify resources included in the Holley and Hendricks study of the
resources of college and university libraries in the state in which
they identified special collections, describing strengths in general
terms.

Now to physical access--you were given a copy of the National
Interlibrary Loan Code. I don't know whether one of the later speakers
intends to discuss this or not. But if we follow this National Inter-
library Loan Code to the letter, we're going to restrict the service
that reference and information networks can offer, and I refer speci-
fically to--let's see, it's "III - Responsibility of Borrowing Libraries":

> "It is assumed that each library will provide the resources
> to meet the study, instructional, informational and normal
> research needs of its users, and that requests for materials
> from another library will be limited to unusual items which
> the borrowing library does not own and cannot readily obtain
> at moderate cost. Requests for individuals with academic

> affiliations should be limited to those materials needed
> for faculty and staff research and the thesis and dis-
> sertation research of graduate students."

Now as a member of the Association of Research Libraries, the
University of Texas received some months ago a preliminary draft of a "Model
State Interlibrary Loan Code." I don't know whether any others of you are
familiar with this or not, but it provided for much more liberal lending
than provided by this National Interlibrary Loan Code. In other words,
I think we're going to have to go beyond the National Interlibrary Loan
Code if we are going to develop an effective reference referral system.

Now, we have said that through networks we should make the full range
of library resources accessible to all. Do we really mean this? Are we
going to attempt to place the total library resources of the University
Library at Austin at the doorstep of the local public library? Surely
we don't expect the writer of a thesis in a small college to depend en-
tirely on materials located elsewhere in the state. So, just what do we
mean by this access? Again, the report of the National Commission touches
on this:

> "Means must be found to make the full text of documents avail-
> able in some suitable form and at locations convenient to
> all users with minimum delay and at manageable and equitably
> distributed costs."

This is the point I'm getting at--to what extent do we really intend
to make our resources available? What is feasible in this respect?
Now, as I say, I've just raised questions, but I think that the Lis-
teners are going to be listening for answers to these questions as the
discussion continues. Mickey Boyvey has some remarks to make.

Mrs. Mickey Boyvey, Texas Education Agency:

School libraries are coming late to the network idea. Too long we
have been considered autonomous units or characterized by the public
library or the college and university libraries as "prime users" but not
contributors to this sort of cooperative arrangement. In the 59th Legis-
lature in Texas, educational media centers were created. These are
regional media centers--20 in the State of Texas. The next Legislature

superimposed on top of these media centers an education service center
concept providing much broader services. Now we have this much potential
already established in school libraries. Schools also are highly struc-
tured from the district level through the regional level to the state
level. I think probably schools will have to come quickly to the idea
of setting some parameters here where we can fit into a network, what
we can contribute, where we can use funds that are available to save
duplication of effort to fill in gaps. We are also concerned, of course,
with as broad a coverage--a multi-media approach to this--as possible,
because we do have access at the regional level, at the large district
level, to pretty sophisticated computer services that could tie into
this. I think once we look at it a little more closely that we will have
a lot more questions that we need to ask these more sophisticated devel-
opers of networks to find out exactly what our role is here--what we can
contribute, what we can receive. But we're eager--we'd like to work in it.

Waters:

We'll now direct the question regarding the medical journals requested
by a high school to the Austin MRC again.

Jeannette Varner, Austin Public Library:

There's some mix-up here. Mrs. Bowden here is the Assistant Director
of the Library. She was the one on coffee break. I was here all this time.

Waters:

You mean they don't let the reference librarians take coffee breaks?

Varner:

I took a coffee break, but I was told that I was on a coffee break,
so I didn't answer when I was here.

We've been discussing this question at our table and we really feel
that it's not a typical question, because the high school student would not
ordinarily be asked to provide information from articles in medical journals,
but rather be expected to find his information in the general type maga-
zines which are indexed in the Reader's Guide, rather than in ones which
would require an index of the medical journals. The type of literature
that we've been receiving in the general magazines, particular on this
subject--"dope addiction"--have been technical and scientific enough to
meet the needs possibly of high school students.

Waters:

Well, let's assume for a minute that he's very specific, and maybe he's an honors student in a senior level program in this high school--

Varner:

Well, at our libraries we would not have the indexes to the scientific medical journals, and we wouldn't have the journals themselves either, so that the question would have to be referred to a medical library.

Waters:

So you'd refer it to the health-science libraries, perhaps?

Varner:

Perhaps, because of course the Texas Medical Association is primarily for use of the Texas Medical Association.

Waters:

So you're switching the question then to Node 18. Would they like to pick it up at this time? Health-science libraries--

Unidentified Person:

If she's in the Austin area, she would refer it to Pauline Duffield at the Texas Medical Association Library, and she has the indexes to the medical journals and would be able to give him any information he needed. Is that the right answer?

Waters:

As I say, there are no right answers, and no wrong answers in this, but we now see an illustration of switching here--switching from the public library to a special library to answer this type of question.

Unidentified Person:

And we do receive many handwritten notes and letters from high school students who write directly to medical libraries: "My project for senior semester is such and such and such--" and sometimes they're quite involved projects too, and in that case we have to usually ask them to refer through their local library to our library, because we do not serve individuals in an outlying town 65 miles away or something like that, so we ask them usually to go through the interlibrary loan system. But we do make any material available through interlibrary loan.

Waters:

Thank you. Other response?

Varner:

That was my point, that I thought we should do everything possible
with the local resources rather than refer it to a technical professional
library. I actually don't know how much time the Texas Medical Association
library would have from the membership--the needs of their own members--
to tend to the high school student, which seems to me is the responsi-
bility more of the public library.

Waters:

Thank you very much. Our next two speakers, Marie Shultz and Dick
O'Keeffe, will tell us about a preliminary report of a six-month evaluation
study of the Texas State Library Communications Network, and Reference
Librarians and Networks, a Houston Case Study of LSCA Title III Special
Project. Mrs. Shultz, as I'm sure all of you know, is the Director of
the Field Services Divison of the Texas State Library. Richard O'Keeffe
is the Director of the Rice University Library, and also Director of the
Regional Information and Communication Exchange Network. Marie--

Shultz Paper (C.5d)

O'Keeffe Paper (C.5e)

Waters:

Question and discussion period again. Are there any questions that
you would like to direct to either Marie or to Dick at this time? (Silence)
All right, then, let's switch if we might to Node 15, which I believe is
the private college and university libraries, and get their response to
the case: A small private university needs a copy of a technical report
for a professor who is submitting a research contract proposal. You are
that university librarian. Is Node 15 organized to respond?

Miss Mattie Sue Mounce, SMU Science Library:

I don't know that SMU would likely be called a "small private uni-
versity," but here is what I do when I get a request of this type. If
the technical report number is given, I search to see if we have it,
because we have NASA and AEC reports and from 1962 through 1966 we re-
ceived Defense Department Reports because we were one of the technical
report libraries that received these reports. I would search to see if
we had it first, and the; of course, if we didn't have it and I had the
AD or the PB number, I would write for it from the Clearinghouse--order it

from the Clearinghouse, and the trouble with that is that it will
probably take from two to four weeks, and if the professor needs it
tomorrow, you have a problem! But I have recently found out that there
are a couple of libraries in the United States--I believe the University
of Colorado is one of them--that receive all the reports from the Clear-
inghouse, and I might try borrowing it from there and see what happens
about that.

Waters:

Would you go directly to University of Colorado yourself?

Mounce:

Oh, well, we might try borrowing it on interlibrary loan. I have
never done that because I have just recently found out that they do get
all the Clearinghouse reports. If the professor were in a great hurry,
I think I would try that and ask them to send it Air Mail. It would
probably be on microfiche.

Waters:

Any questions or discussion?

Wagner:

I wonder if anyone's had any experience with using the Department of
Commerce field offices to put the prod on the Clearinghouse to get some
of these reports out fast. We need 'em fast! I wanted them yesterday,
not six weeks from now, and sometimes they come back later than six weeks!
Is there any experience with regard to the local field office?

Miss Margaret Morris, University of Texas at Arlington:

Our documents people have tried contacting the field office in
Dallas without a great deal of success. We have finally ascertained
the telephone number of a little man in Springfield, Virginia, and we
pick up the telephone, tell the college operator that we need to talk to this
little man and ask him to get cracking. And this does speed things up by
about three days! It cuts the time down to something like three weeks
and three days instead of a month. We also see if SMU has it.

Rita Paddock, R.I.C.E.:

We call Miss Huff at our field office down here. I find that if she
sees something interesting in the notices of reports that are coming
out, she'll order five or ten copies, and she'll have them down there
for us. She'll also call Washington for us. If you have a personal

relationship with somebody like that, it's great. It doesn't
speed it up all the time, but it helps in a lot of cases.
Waters:

Thank you. Shula Schwartz--
Schwartz:

I have a question I'd like to ask Mattie Sue in relation to where
she's going for this report. We're talking here about cooperation and
cooperative activities, and I want to know why she never went to any of
her special libraries in her local area before she went to Colorado.
Most technical libraries and industrial libraries do have a lot of good
collections of technical reports, and wouldn't she like to go there first?
Waters:

Switch to the special libraries. Whatever node the special libraries
is, would they like to comment on this case?
Richardson:

I know of no special library from my days when I worked in a special
library that wouldn't loan any report to anybody as long as it wasn't
proprietary. I know when I was with Columbia many of the libraries
did request special reports from us if they were in the field of gas
technology where we had a large collection.
Duggan:

How did these other libraries know your library had these particular
reports?
Richardson:

We sat around and drank beer at the previous SLA meeting!
Waters:

I'd like now to move down the page to Node 17, the Corpus Christi
MRC and direct this case: A small public library is requested by a local
businessman to compile a bibliography on fuel cells, particularly articles
with photographs, illustrations, etc.
Unidentified Person:

I'm with the Corpus Christi MRC. We're not the small library, so I
take it that the request is coming in to us from a small library. We
also hope that the small library has determined what fuel cells they are
referring to, as I believe there are several types. Since I'm not a
science specialist, I wouldn't know. If this request were coming in

to us from a small library, we would search our own literature first
for it, and then if we do not have it we send it on in turn to Austin.

Waters:

To the State Library?

Unidentified Person:

Yes.

Waters:

You would not send it to a special library in your area?

Unidentified Person:

We don't have--but, ah--I don't think one that we'd have in our area
would have this material, because they're chemical--

Waters:

All right, then. We've switched it to the MRC, which includes--
now remember, we're not talking about the Austin Public Library--

Unidentified Person:

That's right. State Library.

Waters:

You've switched it to the State Library. Would they like to pick it
up now, please. Marie, maybe that's you. Or Ann Graves if she--Ann,
where are you?

Ann Graves, Texas State Library:

I think first I'd ask somebody who had some information about fuel
cells. I think the determining factor here is how technical the material
requested is.

Waters:

Let's assume the question has come in and he wants a bibliography or
a literature search on everything written in the last five years on fuel
cells.

Graves:

Well, I think we would first look in our indexes that we have in our
State Library such as the Applied Science and Technology Index. Well, I
think probably we would refer it to the Industrial Information Services
at SMU to see if they could add to our compilation.

Waters:

Node 19, you're on.

Schwartz:

Well, I have to agree with here answer--that's where it should go, to Industrial Information Services. But, I think that the requestor has to be directed to the Industrial Information Services, because it must be remembered that this is a service that would have to be paid for. So, the businessman would have to be directed to us, and we in turn would make our agreement to provide this bibliography for him or this literature search at a fee.

Duggan:

Why not refer the requestor to R.I.C.E., which is closer to Corpus Christi?

Schwartz:

Oh, excuse me, I forgot where the area was. Or R.I.C.E.

Waters:

Does the R.I.C.E. node care to make any comment?

Wagner:

I'd like to suggest to the Corpus Christi MRC librarian that she might visit some of the special libraries and become acquainted with those in the Corpus Christi region that might have material on fuel cells. I know two which might have that very material, including the bibliography already prepared.

Paddock:

That's what I was going to say. If there is a bibliography already prepared, maybe a special library would have it, but I don't believe that a special library will do bibliographies for other businessmen--you know, this is not something--I had a question more than a comment, on how far a public library will go in preparing bibliographies--this I really don't know--in doing literature searching. What is the limit?

Waters:

Does any public library wish to speak to this question?

Unidentified Person:

I have a question. I don't have an answer to her question. I want an answer to that one too.

Waters:

What's the question first, if we might--

Unidentified Person:

I want to know--Frank (Wagner)--if I asked you that question about fuel cells, would you answer it for me?

(Inaudible comment)

Waters:

We've got several librarians from the MRC libraries--the public libraries here. Would one of them like to answer Rita's question as just to how far the public library would go in preparing a bibliography of this sort? Mr. Harper--

Alvin Harper, Dallas Public Library:

Ordinarily the public library would tell the patron, "We have the index material" and invite them down. We don't have the staff nor the time to compile bibliographies for everybody who needs bibliographies. I'm sorry.

Waters:

I think what we've seen here is a need for some of this bibliographic control, or access, or knowledge as to where things are. If I understood what Mr. Wagner said correctly, this question was switched to two or three places when the answer was right there in Corpus Christi where somebody had already done the work. There was a printed bibliography on this particular subject, but we didn't know this. So where--how do we find out about these things? And so on and so forth--

Well, it's just about lunch time. We'll see you all back here at one o'clock.

NOON INTERMISSION

b

Waters:

Before we have our second Official Listener's report, I think we'll
ask another question or two. I'd like to direct this one to Node 11,
the Abilene MRC: A teacher in a high school in a large city has asked
the local building librarian for transparencies illustrating the circu-
lation system of a frog. Is Abilene organized?

Helen Smith, University of Texas at Austin:

There's no one here from the Abilene MRC. I think the key to this
could be "large city" in that you would have a media center in which
the transparencies would be available, or would be made. In some cases
the teacher may go through the librarian, but in many cases I think the
teacher would go directly to the media center herself.

Waters:

Any questions? All right, let's jump down to Node 3 here, up in the
front--the school librarians: A teacher in a local elementary school
asked the building librarian to get a copy of an article from an educa-
tion journal on new teaching methods. The teacher is taking a credit
course in education from a nearby state university. Are the school
librarians organized? Question 12--

Boyvey:

This would probably go to the central office level in the district
first. Most central office levels do subscribe to most journals that
are used. If not, the school librarian would probably go directly to
the nearest teacher training institution at the college level for this,
and it would come back on interlibrary loan, just a printout on it.

Waters:

Well, let's assume it was switched to the state colleges and uni-
versities, which is Node what--12, I believe? Would they like to pick that
up now? Any representative of the state college and university libraries?
The question has been asked, "Should the building librarian of that
school serve the teacher on that kind of a need?"

Millie Gervasi, Southwestern University:

We're not a state college, but we sure do believe in them. But if I
were in a state college and this came to me on interlibrary loan, we just
simply communicate with them and ask if they would like to have photo-
copies. We prepare that after receiving their O.K.

Waters:

All right, thank you. Let's now have our second report from the Official Listeners. Again, I will not call on a specific person-- I think they are ready. Listeners?

Miss Jan Wolford, Mobil Research and Development Corporation:

I don't have any answers either, but I have some questions that have come to mind. I wondered first of all about the make-up of the people in these different nodes. Just for curiosity, could we have a show of hands?--how many of you wonder why you're at the node at which you're sitting--that you really don't understand? O.K. Well, that shows something.

Another thought I had, this wonderful world of networks that we've been hearing about--it strikes me that at the top we're getting some understanding of the philosophy, but down at the working level we seem to have a little confusion. I'm not quite sure at what point switching should occur, and what types of questions. And in the playing of this game it strikes me as--beginning to show.

And my last comment is on the I.I.S. literature searching. As for the cost, if we didn't think it were worth it, we wouldn't pay for it.

Waters:

Are there other reports from the Official Listeners at this time? All right, let's move on then. This morning Dick O'Keeffe told us about the Title III special project involving R.I.C.E. and Houston Public Library. He referred to a second special project being done under this title as it involves the Dallas area and the Industrial Information Services at SMU. Maryann Duggan will tell us about the Dallas Pilot Model. After Maryann tells us about the Title III project in Dallas, Francine Morris, who is the reference librarian at the University of Texas at Arlington, will tell us about "Games Librarians Play, or a Day in the Life of an Interlibrary Loan Librarian." And then will come the most challenging thing we'll have presented to us--at least intellectually-- this afternoon, when Dr. Richard Nance of SMU Institute of Technology describes "Model Library Networks and Library Network Modeling." Dr. Nance is not a librarian, but he has worked closely with libraries both in SMU

and before that at Purdue where he did get his Ph.D. The Library
Operations Research Study Group he was associated with there, and
he had a special interest in automated information research and storage,
as well as operations research. We will then have another question
and answer period--discussion period--at the conclusion of Dr. Nance's
presentation. So let's back up now to the LSCA Title III special project
in Dallas. Maryann--

Duggan:

This whole meeting today is an experiment to see if we can put our-
selves in the role of the real library world here in a room--in an arti-
ficial environment, and this came about in brainstorming how to fulfill
the charge that Dick Waters, Dick Perrine and Maxine Johnston issued to
design a so-called "ideal statewide interlibrary network." And I want
to share with you a little bit of our experiences on which kind of
triggered this experience this afternoon.

Duggan Paper (C.5f)

Waters:

All right, let's get back on the network here and let's see--let's
go to Node 16 which is the Fort Worth MRC. Let's ask them to respond
to Case Number 8: A local businessman needs recent census data on
population statistics in another larger city in the state.

Miss Janice Gohmert, Fort Worth Public Library:

I assume this comes from either one of the number 3 or number 2 libraries
to a large public. This material is available in the MRC library; if the
man is a Fort Worth user, he would be directed to come to the Fort Worth
Public Library. Otherwise, the material would be duplicated and mailed
to him.

Waters:

So you would handle the question in the MRC Area? All right. Let's
see who we haven't asked anything of. Oh, let's go to Node 8. Have we
asked Node 8? Which is W.I.N.* I was told in the hall at lunch time
that nobody at Table 8 knows anything about W.I.N., but we won't let that
throw us. We'll just ask the question anyway, which is Question 40:

*Western Information Network

An employee of a business firm in the suburbs of a large city is taking
a college course over closed circuit TV from a distant state university.
He needs a book. Where should he go? Node 8? Have we got a respondee?
Unidentified Person:

Well, I just joined Table 8, so I'm not qualified to answer, and
I don't know anything about W.I.N. either. But it strikes me that you
want to know what kind of a book. If it's a textbook, I think he ought
to buy it out of his own pocket. If it's supplementary reading and it's
a large city, I think he ought to go to the public library, and if it is
an MRC deal and they don't have it in the public library, I think the MRC
should take over. Thirdly, I suppose his distant state university might
be somewhat concerned and have sent him a reading list with some idea of
where he could get the material. I don't know about that last part
because I haven't had any experience with it.
Waters:

Well, does that state university have an obligation (since it is
their TV course that this man is taking) to furnish him with the infor-
mation as to where he can get the book? Would Node 12, the state col-
lege and universities, care to reply? Who is the primary group here--
the local public library or its branch? Or the agent who initiated the
request, or the need for the request--the state university? Are state
and college universities prepared to speak?
Young:

I can't give you an answer, but this raises the question again of
the clientele the library is to serve and the purposes for these loans.
And let me digress a little bit and get back to questions which have
been asked over and over here. Our last Official Listener asked "What
kind of book?" And we've had this question asked over and over. The
one regarding fuel cells--the librarian asked "What kind of fuel cells?"
And what level--that is, what is the purpose for which this bibliography
is to be used? The one pertaining to drug addiction--articles in
medical journals--and the question was raised--does the student really
want articles at this level? The question pertaining to statutes of
another state wanted by a Texas judge--well, I think the decision was to

refer it to the law libraries, but then, wouldn't they ask a refine-
ment of the question; that is, what statutes? Or statutes on a par-
ticular subject--surely not all the statutes of another state? And
so we come to this importance of the initial face-to-face contact, at
which point the reference librarian finds out exactly what is needed,
the purpose for which the information is needed, and it seems to me
that this is one of the most critical steps in the whole network process--
finding out initially what's called for, or otherwise you'll end up with
information that doesn't serve, like copying the articles from medical
journals and then finding that what the student wanted was something at
a lower level. And I hope that the question will be answered eventually:
"To what extent is refinement of the initial question necessary?" I think
some of those who have had experience with operation of networks may be
able to answer this question.

Waters:

Let's keep that question in mind, because, as Heartsill has pointed
out, it has come up almost every time. It's not directly--been directly
implied.

Morris Paper (C.5g)

Nance Paper (C.5h)

Waters:

Before we break for coffee, let's see if we have any questions or
any discussion about anything that Maryann or Francine or Dr. Nance has
raised in their presentations. Mr. Wagner--

Wagner:

I wonder if Dr. Nance is the one who left the definition of "algorithm"
blank in the glossary?

Nance:

Definitely not--an algorithm is nothing more than a set of rules.
I just probably did not communicate. The channel was over-capacitated!

Waters:

Shula--

Schwartz:

I'd like to direct my question to Maryann in relation to her survey
on the interlibrary loan activities in the Dallas area in one month. I
wrote down your figures. You had an overall 43 per cent bomb-out, 73 per

cent public library bomb-out, 49 per cent state and so on down the line,
to--I believe it was--one point something per cent in junior colleges--
that's what I forgot to get, and we notice it begins to go down the line
to the smaller units. Now is this really a question of the library re-
ceiving the request not fulfilling its obligation, or is this really a
reflection upon the library placing the interlibrary loan automatically
assuming that the larger unit will have it·and perhaps being more selective
in what they send to the junior college, special library, and so forth?
Duggan:

Shula, we don't really know the answer to that. We don't know why
the free public library system as surveyed was unable to fill 207 requests
in one month. Now we don't know whether that's because the requests
really should never have been sent to them, or whether this is a reflection
of the need to build resources, you see? Maybe our resources are simply
inadequate. We do know that the public library system received a total
of 276 requests, which is 14 per cent of the total number of requests
transacted in the Pilot Model. The state university system that we were
studying received 12 per cent of the requests, and they were unable to
fill 49 per cent of the requests they received. The private university
studied--it's interesting, it turned out for that one month that they, too,
received 12 per cent of the total number of transactions in the Pilot Model
study. They were able to fill all but 18 per cent, you see? So this is
interesting. We've got to go back and find out why this is. You can
conjecture that maybe people are more selective in sending requests, for
example to the private universities, although the number of requests was
essentially the same as what the state universities got, but the private
university was able to fill them more, and yet I feel reasonably sure they
don't have any better resources. You go down to the special libraries,
and the industrial libraries, they received 11 per cent of the total number
of transactions in the Pilot Model. They were able to fill all but six
per cent of them. So again, this looks like--it looks like if you'll go
back--when we go over the so-called "ideal components" of the network,
that this selectivity of what you put on the network and who you direct
it to is important in your success of completing the transaction. There
are lots of questions here: What does it cost to handle this total of
443 transactions which were not successful? We feel in I.I.S: in our

studies that every time you get a request for a document it costs you
almost as much to check that out to see if you have it as it does to
ship it. So, this is an interesting study. I'm sorry I can't give
you the exact answers. We hope, with Dr. Nance's model--now we can
begin to input some of these data and see what happens when we change
the operating parameters.

Waters:

Yes, a question in the back?

Andrea Edwards, Houston Public Library, Interlibrary Loans:

Regarding the number of requests that are not filled by the public
library, I think the public library has become a dumping ground. You get
the feeling, and you can ask any reference librarian, and people that call
you up will say, "Well if I can't answer that question, I'll call the local
public library." And there's one reason you can't answer all these ques-
tions, because some of them are so specialized on such type information
you cannot answer. Then it comes up to the thing of time. When you get
all these requests coming in, you have one person working on interlibrary
loans or with reference, you don't have time--you can't answer that--you
can't answer this question. You know probably where you can get the in-
formation, but then you don't have time and that patron doesn't have time
to get it back, because you don't have the staff to do it. And that's one
reason the public libraries just cannot answer, whereas the university
libraries might have more staff to work with. And then when you're sending
to the special libraries and university libraries, we don't even send
them questions that we don't think they might have. So, they're not going
to get that many questions, because I think public libraries would not
send a special library or a university library a question or some request
that they wouldn't have. So, more likely the university libraries are
going to be able to answer requests that come in rather than a public
library where we get just everything coming in.

Waters:

Is there a comment over here?

Unidentified Person:

Well, I want to defend the college libraries a little bit. They don't
have the staff that the larger public libraries have, but they do have
someone to concentrate on interlibrary loans. In the public library--we

do it in addition to everything else, and that makes a big difference.

Waters:

Maryann--

Duggan:

We're just trying to get the facts, ma'am. We're making absolutely no value judgments. We're simply trying to take a reading and see what is happening, and I think you have to have a "willing abandonment" of disbelief--you have to try to approach this semi-scientifically. One of the things I heard recently made me feel better. After Dick Nance had struggled and struggled with his algorithms for working out these interlibrary network relationships, he shook his head, and he said, "I don't see how you librarians have been doing it. This cannot be computed mathematically."

Waters:

Shula--

Schwartz:

I didn't intend to get an argument started over public library service versus university library service. What I want to ask--or just throw out really, is--we're talking about developing networks and we're talking about utilization of these networks, and what I was trying to emphasize (or to find out in order to emphasize) is that one of the things we hope to accomplish eventually in a network is development of resources. But I wanted to be sure before we assume that public libraries have not fulfilled these because they don't have the resources--to get back to us as librarians, to be careful how we present our requests and to whom we present our requests, that we can do this on an informal basis and not be hurt. But if we're going to tie in to a network which is going to cost money, that we should be sure that our requests are not wasted, and that we know these factors that enter into who we send our requests to. I didn't mean to start any arguments, I just want to clear that!

Waters:

Any other comments at this time? Well then, let's have coffee break now and be back 10 minutes after three.

AFTERNOON COFFEE BREAK

Waters:

In a little while we will have our third report from the Official
Listeners, I think we'll play the "network game" a little bit now, and
we'll turn to the Dallas MRC and ask them to reply to this case: A
professor from the local university asks a local branch library in a
large city for a government document on lawn care.

Unidentified Person:

I'm representing the Dallas MRC. If a professor came into the
branch library and asked for a document, first of all, we'll take it
generally that he just said he wanted a document on lawn care, and if
we have done selection properly, our vertical file may contain this
pamphlet on lawn care. If not, the central library of the Dallas Pub-
lic Library is a partial depository. Therefore, hopefully we would gain
a line to the main library as a patron to ask the question of our gov-
ernment documents librarian: Do we have such a document? After perusing
the Monthly Catalog, he would determine whether or not we had such a
document. Now if we do, we still must send the patron to the central
library, because the document is not sent to the branches. Now, more
hypothetically, let's say this: that upon questioning the patron we
actually find out that the professor does not want a general document on
lawn care, but really wants to know what is the latest chemical available
on how to kill grubworms in a St. Augustine lawn. New, we found out the
specific information he requires, and he doesn't really necessarily need
a document. He just thought this would give him the latest information.
He wants to know the chemical. So, in most cases, since he wants the
very latest information, we would still call our central library and relay
the message. Now, hopefully, the Dallas Public Library could answer the
question. If it still could not, the patron's request would have to go
on Telex, or better still, hopefully the Dallas Public Library would call
SMU who, in turn, through the Inter-University Council, would answer his
question.

Waters:

Are you suggesting it might be turned over to I.U.C.?

Unidentified Person:

Yes, sir.

Waters:

All right, I.U.C. node, would you like to pick it up, please?

Joe Bailey, Public Services, North Texas State University Library:

I'm probably the only member of the I.U.C. Council on Number 20, so it simply means that I'm the authority in the field here today.

We wouldn't have any trouble, I don't think, in filling the government document request, either out of Arlington, out of SMU, or North Texas State. But I suspect the Dallas Public would have it.

Waters:

All right, thank you. Let's switch up here to the junior college node, Node No. 6, and ask them Case 35: A local housewife has asked the local junior college to use the French I language tapes to prepare for a trip to Europe.

Frances Pye, Brazosport Junior College: It just so happens that's the one we didn't discuss at the table. I'll have to answer it by myself. First of all, it would depend on whether you have an agreement to allow your materials to be used by your local clientele, and sometimes this is possible. However, at our particular junior college, this agreement has not been worked out. So if I could arrange with the classroom teacher to allow this person to go to the lab and use them, I would do so. If not, there is a service from the University of Texas, I believe, a tape service where you can send a blank tape and have tapes made for this person.

Waters:

All right. One more before we have a Listener's report. We'll go to the Houston MRC (Node 22) and ask them Case Number 30: a large public library has been asked by a local businessman to borrow a copy of an out-of-print American imprint on the history of banking in Europe.

Edwards:

Ah, well, we talked about this, and we felt that if our library didn't have it, we would check the local libraries here in town to see if they had it--University of Houston and Rice--but I think, too, usually we check everybody in town that we think might have it. If there is a business organization that has a library, we'll check them first. And if it's not here in town anywhere, then we'll try our state library because we're

hooked up in that network--to see if anybody in any of the other ten
major resource libraries has the item. If the patron has time--it
depends a lot on whether the patron has time--if we can't find it here
in the state public library, we go to the special libraries. At least
we here at HPL go to the special libraries--check the directory for the
special libraries and see what business libraries might have the publi-
cation and borrow it from them. That's the normal process we go through.
Waters:

All right, if I interpret you right, after checking--and we'll assume
for the sake of discussion, unsuccessfully, in Houston--you couldn't
find it, you kicked it out of Houston and went to the State Library, put
it on the State Library communication network. So, Austin MRC--or better
yet, perhaps Ann Graves--if she's still with us--how are you going to
handle this request?
Graves:

Well, first we would communicate with the other--with the 10 MRC
libraries to see if it was available in any public library with which we
can communicate in the state.
Waters:

Well, may I interrupt?--would you ask them one by one or would you
pick out one in particular?
Graves:

We would query them one at a time individually, starting with the
nearest library geographically.
Waters:

Nearest to Houston?
Graves:

Yes, nearest to the borrowing library. After we try to locate the book
in one of the 10 MRC libraries, we usually look it up in the National
Union Catalog to see if a library in Texas has it. Then we look in our
Subject Directory of Libraries and try to find an appropriate library,
either a university or a special library, and we type the request on an
interlibrary loan form and send it in the mail to an appropriate library.

Waters:

All right, let's continue this assumption then and assume that you found it at a private university library in the State of Texas. We won't say which one, we'll just say a private university in the State of Texas. We've ruled out the Houston area, because Houston Public checked it here and couldn't find it, so would Node 15 like to pick it up now?

Georgia Frazer, Rice University Library:

The group of people that are at this table have felt that in answer to this question, that if the private college or university has a copy of this particular imprint, they would send it to the other borrowing library on interlibrary loan.

Waters:

So the fact that it is out-of-print wouldn't mean that you would want to keep it in the house? You would send it on loan?

Frazer:

It would still go on interlibrary loan. If they did not have a printed copy and it was on a--let's say, a microprint copy--it would possibly go on interlibrary loan.

Waters:

All right, Maryann--

Duggan:

How many transactions have we had for that one request now?

Waters:

Well, it came from the local businessman to the Houston Public Library, it was not in that collection, so I guess that's one transaction. They checked Rice, the University of Houston, maybe three or four special libraries in the city, maybe two or three special collections in the city--

Duggan:

How did they check them?

Waters:

By guess and by gosh, I guess.

Unidentified Person:

We telephone them and ask the librarian.

Waters:

Yes, but you'd have to have some reason why you'd telephone
Person A as opposed to Person B, would you not?

Unidentified Person:

For libraries in the city, you don't, because you don't know their
resources so what you do is go by--you know--what you know about that
library.

Waters:

So you'd have a frame of reference here as to what you've been
able to procure from a library, or what their strengths might be?
Some of what Harold said this morning, drinking beer after a meeting,
you've kinda learned who has what. Yes?

Duggan:

In our Pilot Model study preliminary data we found that the
success ratio of hits for monographs, which as this illustrates, was
terribly low. There were as many, sometimes, as nine requests before
they were eventually filled. Now I don't know how to tackle this.
Does the absence of a union catalog mean we're really struggling here
to find these things? And I don't mean to be pointing at any one library,
I just want to ask a question: If you had a union catalog, a National
Union Catalog and knew that, say, the John Crerar Library in Chicago
had that monograph--that out-of-print book on the history of banking
in England, would it now have been preferable--I'm asking, I don't know--
for the Houston Public or whoever was contacted first, to go, say,
directly to the John Crerar instead of getting on the network?

Waters:

Here's an answer perhaps.

Sprague:

I'm the interlibrary loan librarian at the State Library, and
when we get a request of this nature, we, of course, assume that Houston
has exhausted their resources. When it comes to us, we place it on the
network and query the other MRC's. Houston should have explained to
their patron that the public libraries will be checked first. If we
don't find it in a public library, we send the request to a library in Texas
if the National Union Catalog indicates that a library

in the state has it. If not, and the patron is a legitimate patron--
the professional businessman, not a high school student--we will go to
the Library of Congress.

Waters:

But you'll do that after you've queried the nine other MRC libraries?

Sprague:

Yes, unless a rush has been indicated. We do query the public
libraries because the request has been placed on the public library system.

Waters:

Yes--

Morris:

Dick, we don't handle it quite the same, but for what it's worth--I
think the other academic people will probably agree with me. When we
receive a request, we check N.U.C. first, to find out--well, not only to
verify the information of course, but if a library in the state is listed
as having it, unless it's--and I say this in all kindness and candor--
we do not bug the University of Texas at Austin if we can possibly avoid
it--because the poor souls down there have more than they can do anyway.
If the thing is available at O.U., we will go to the University of Okla-
home before we hit Tech or the University of Houston, because we have
discovered that we have fast mail return there. In our case, we work
on expediency as opposed to channels, which may defeat the idea of
networks, but on the other hand this is the way we do it, and I think
a lot of other people do too. If all else fails, we write N.U.C. and
say, "Dear Mr. Schwegmann: Do you know anybody who has this wretched
book?"

Duggan:

Why do you write him--why don't you teletype him?

Morris:

Because they don't have a teletype in the catalog file room.

Unidentified Person:

I may be changing the question, but I would just like to throw out
a question. When she said to check the Union Catalog and find that the
Library of Congress has it, but she would check the others in the State
of Texas first to see if they had it, unless it was a rush? Is anyone

else experiencing the problem? I was telling someone today, my--one of
my latest worst cases from the Library of Congress is 19 days mail problem.
They mailed it 19 days before I ever received it. Is anybody else
experiencing this problem with mail service--you go out to your local
libraries--I think in the State of Texas first--even exhausting all the
universities and everything else, because it's taking so long to come
from farther points. I have, at least, experienced this, so I'm just
wondering if I'm the only one that experiencing a mail problem?

Waters:

Does anyone want to respond to that? Or show hands as to who all is
experiencing mail problems? (Must have been overwhelming from the laughter.)

Unidentified Person:

Would anyone care to stand in line behind me on this? This was something
that was mail problem with us, not from out-of-state, but a package that
was postmarked and dated in Austin and I received it 10 days from the time
it was dated. In other words, the package was mailed on, say, the 13th;
we received it the 23rd. So we don't know where the hangup is; we
suspect that it could either be their outgoing mail or our incoming mail,
or perhaps even between in the U. S. Mail.

Waters:

Or a combination of all three, perhaps.

Waters:

Well, to answer Maryann's first question, I think we've had about 20
transactions here on this out-of-print imprint before it had been filled.
This is very costly. If what someone said is true, that is, it costs as
much to check it and not have it as it costs to check it and send it.
This is one of the real problems. I see a hand--or saw a hand back in the
back. Fred, was that you?

Fred Abrams, Rice University:

Assuming that the private institution has received the book, who gets
the book? The State Library or the public library? And who gets notifica-
tion on this book? Because we've never encountered a situation like this.

Waters:

Well, now, the State Library sent the loan request to the private university. Did they say to send it back to the State Library or to send it directly to the public library?

Shultz:

We say to send it back to the public library which initiated the request (that is, the borrowing library) and we notify the borrowing library that it is being sent by the library which is sending it.

Unidentified Person:

If we had received a request at our college library from the Texas State Library, then we'd send the book back to the State Library.

Waters:

Even if the State Library asked that you send it directly to the borrowing library?

Unidentified Person:

It depends upon the particular message which I had received. Let's say that they did not say that it would be sent back to the Texas State Library, but if the message came from there--well, first of all, logically, at least in my way of thinking, that if the question came from the Texas State Library and they said to send it back to the Texas State Library, I would send it there. I they did not, I think logically I would have chosen to send it back to the Texas State Library anyway.

Waters:

All right, I think we'd better move on now and have our third report from our Official Listeners.

Dean Stanley McElderry, University of Texas at Austin GSLS:

I have a feeling I should start out by saying,"Mission Control, this is Gumdrop. We are in orbit, do you still read us?"

In responding to some of the questions on the third report, I wanted to just state a few reactions to where I think we are on the network concept. I think we're talking at a very preliminary design stage where we understand generally the concept. Our thinking is based primarily on our current level of technology, and we can see some potential solutions to the problems that have just been discussed here. I think we can see

the general organizational structure required, which is based on a
recognition that we are interdependent upon each other and that some
way of cooperating has to be worked out that is better than the current
method. I have a feeling that improvements are going to come very slowly
in the area, and that we won't see a solution to the kinds of problems
discussed here very soon. The reason for this is that I think we need
much more detailed, specific information about what the information needs
are on the local basis. I think we have to define what level of service
we're going to provide. We can't assume that information needs generally
from any source are going to be handled in the same way that we would
handle requests for research material, which is a large basis for inter-
library loan activity now. In other words, we are going to have to
evaluate information needs of school children, the general public in a
community and others, and decide just how far a local library ought to
go. I think once we know the nature of these requests, and in much more
detail than we do now, that we'll be in a position to define the resources
required locally, which is where I think we have to start. I don't think
that we can make the assumption that our objective is to share what we have
throughout the State of Texas or throughout the United States. I think
we really assume much more of a structure than that.

I think it is obvious that the access to bibliographic information is
far too limiting now in order to share adequately the resources that do
exist for whatever purposes that we feel are legitimate. Until we have
more detailed information about resources in various kinds of libraries,
whether they are in nodes or in the State Library or whatnot, we're just
not going to be able to respond very easily. We tend to transfer the
burden of running down material from one library to another without any
formal compensation between them, and we just simply can't do this ef-
ficiently without recognizing what it costs. I think the ability to trans-
fer information, to provide physical access to information, is going to be
a long time coming; that is, the technology that theoretically is available,
I don't think is going to reach us very soon. I think we're still going
to depend very heavily on U. S. mails or maybe station wagon delivery from
the libraries in a geographic region.

Now, looking generally at some of the questions posed to this group, I think it's obvious that we've got to define what the problem is much more thoroughly before we can decide what problem solving strategy we're going to use; that once we have detailed enough information that we can evaluate--it has to be a very broad sampling at different levels--then we can make some assessment of what the need is. The modeling presentation was based on evaluation of communication channels, and I think it's obviously desirable in that context; I think modeling also has other applications. We can't afford to build a network of information systems without knowing what the outcome is going to be in more detail before we start. In other words, it's too expensive; it takes too long a time. We've got to use some simulation techniques to make some of the basic decisions, so I think it will be very useful there. In regard to a network theory, if I understand theory in the general sense of describing a generalized phenomenon, I think that obviously we will be able to describe a network theory when we've been able to design it more adequately, and I don't see any problem there.

The question in regard to the most important utility within the library or the network of libraries--if by utility we mean the resources we have to work with, such as the materials, the people, bibliographic equipment, communication systems, and so on, I'll put my bet on the people all the time. They're the ones who, because of their intelligence, experience and ingenuity, can really make the system work. Without them we have nothing.

I'm distressed over the question of who pays for the network, because I think our system of libraries, particularly in the public field, is based on the library as a public utility. I think when we begin to look at it in terms of people paying for the information that they use, that we're going to destroy the basis on which public library service is rendered today. I think it's obvious that people need information to conduct their business and daily lives--and this is sort of the basic assumption that we operate on, that we should make this as widely available as possible. When we put it on a dollar and cents basis I don't think people are going to use it as they would need to. There are many cases--well, one of the

ones that I can think of most obviously is when something like audio-
visual services in an academic institution are put on a charge basis,
the use suddenly falls off, whereas if you support it broadly through
a university or college budget, then it will be used in accordance
with the way people feel it can be used. I think this is the way
library service should be.

I think the borrower/lending ratio zone technique at the present
time is a kind of poor basis on which to evaluate funding. I think
we've got to exploit information as fully as possible to see what the
real need is, and build up resources as much as possible before we
begin to evaluate what the transfer of information is under existing
conditions. This is like trying to meter the use of water when your
supply is a well, rather than when you have modern plumbing. Until
you have these kinds of facilities, it's hard to tell what the real
need is, and we know that as improvements in service come about, then
the demand increases.

I think it's obvious on the last two questions that technological
changes--developments in networks--are going to have a substantial
impact on the way libraries operate, and I think the library training
agencies are certainly going to take a hard look at what the impact
of these changes are and what the people working in libraries would be.
I think we're going to have a much bigger responsibility in continuing
education than we have ever had in the past; in fact, I think that cur-
rently we do very little about this and that we should be planning for
the future in offering educational opportunity.

Waters:

Thank you. Are there other reports at this time from the Official
Listeners? Jan--

Miss Janice Kee, Office of Education:

I think from what I have to say, it will be obvious to you that
Listeners listen from various vantage points. This is the listener
who is neither fish nor fowl--sort of an in-between kind of person who
is not a reference librarian with all the frustrations of trying to
make interlibrary loan transactions work and work well, and not a person

at the policy level or administrative level who is trying to hammer
out some policies and procedures to make networking work, a person
with absolutely no expertise in technology and making networking
work. So, from what point do I listen?

I've been listening today in terms of my responsibility in this
part of the country, and this is to look at how well--at least to what
extent--we are planning and coordinating our efforts. And even if I
comment just on the immediate past session, what I heard, it seems to
me, is that we have a real network consciousness in Texas. We're in-
terested--we are not only interested--we are engaged. We're--some of
us--some of the people--some of the librarians in Texas are in it up
to their necks and maybe over their heads. We are trying to learn to
swim without, in some cases, having really good lessons in swimming.
If I put myself in a role-playing position and play like I'm a librarian
in Texas, I think I can take great comfort in knowing that we have going
on in the state two approaches--at least two--the scientific approach,
as was demonstrated by the efforts of Dr. Nance and the objectives of
the Dallas Pilot project, and at the same time a real operation such
as the R.I.C.E. project where we're actually trying to make it work.

I'm glad that we are doing both things. I do want to urge that we
give a great deal of serious consideration to practicing what I've heard
suggested a number of times--and far be it from me to say that all of
the administrators of the networks in Texas should get together for a
beer bust, but it might be a very good thing once in a while if we sat
around the same table and hammered out some policies and procedures to
see what we can do in the great big complicated State of Texas where
networks are flourishing all over the place.

Waters:

I'll drink to that. Any other Listener reports at this time?
All right, we're going to have a little working session here now. Take
your Twenty Questions pink sheet. Will you please write out an answer
to Question 1--a consensus of that table--and so on down the line. I'm
going to give you ten minutes to do this, and then we're going to quickly
record your answers to these questions, and then recall that individually
we'd like to answer these too. So my watch says ten and a half minutes

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until four. At four o'clock we'll start getting answers to these
twenty questions.

<div align="center">WORKING PERIOD</div>

Waters:

All right, here we go. We've got Node 1 ready with Question 1,
"Does your node want to join a network?" Would you give your name and
identify your node, please.

Yvonne Greear, Node 1, El Paso Major Resource Center:

We have two answers. One is a facetious one. If we said "No," we're
afraid it would stop everybody up. Now for our serious answer, because
it would be impossible for even one system to serve adequately the infor-
mational needs of the area, and despite the presently exhibited disad-
vantages, we would find it desirable to join a network.

Waters:

Thank you. Node 2, are you ready to answer Question 2, "Which network
do you wish to join and why?"

Lynn Benton, Deer Park Public Library, Node 2:

Let me preface our decision with the information that at the Law
Libraries table, there's not a law librarian, so forgive us if we
fail to think exactly as law librarians. Now, on first perusal of the
question, it would seem logical that perhaps we would prefer to join a
homogeneous network because, being a special library, we might assume that
our inability to answer a question would come from lack of depth in our
collection. However, our second thoughts on the matter brought us to
the conclusion that legal questions impinge on all aspects of everyday
living, and so, I presume that we are able to select only one type of
network, is that correct?

Duggan:

No, you're not limited.

Benton:

Of course, we thought we wanted all types.

Duggan:

Would you like to serve as a resource center for the other nodes
in other networks?

Benton:

Well, that's possible. Yes. But we would also--well, I beg your
pardon--

Waters:

Would you like to poll your delegation?

Benton:

Yeah, thanks. He gave me the best idea--to go back and poll my
delegation! We were thinking more in terms of getting than giving!

Duggan:

That's called node-network relationship.

Benton:

So we wanted all sources available to us, but of course we realize
that if you get, you must give, and if we could select only one type
of network then we decided that the heterogeneous network which gave
us all types--now, let's see, it was heterogeneous vertical, is that
right?--gave us more--a broader expanse of types of libraries to which
we could go.

Waters:

Thank you. Janice--Question 16, "What patron group will you serve
(a) as a requesting node and (b) as a receiving node? Are you going
to emphasize Patron Mobility or Material Mobility?"

Janice Gohmert, Fort Worth Public, Node 16:

What patron group will we serve as a requesting node? We got
specific. We would serve all members of the community who were not the
primary public of any other type of library; for instance, speaking as
a public librarian, I would not go overboard to serve a school library
because we would supplement their primary function. On the other side
of the coin, we would be extremely generous, and on (b) as the receiving
node, we would serve all requests sent to us, assuming that the ref-
erence librarian who sent the question to our library would have sent
it to the correct spot. Are we going to emphasize--it took us 10 minutes
to define patrol mobility (as listed in the sheet), and then we found
out it was "patron."

Duggan:

You see what happens when you get a typographical error in the teletype message?

Gohmert:

I had trouble with "interfere" too and "interface." My notes: the patron mobility would be limited to local material when we were the requesting node. For local patrons we would say, if the local patron is there--the local material is there--we would send the patron to the material. If we have exhausted our resources in our area, then we would try to get the material to the patron. In this instance we would send a request to another library and hope they would send the material, rather than moving the patron.

Waters:

Thank you. Harold--here's Question 17, "What role specialization do you visualize for (a) your node and (b) other nodes in the network and (c) the switching center (if there is one)?

Harold Richardson, Node 17:

Speaking for the special librarians--first we had to try that age-old problem of defining a special library, and we defined it as "a library not public, not academic, and not school, generally privately owned." Our consensus was that, subject to management's approval, the special libraries would act as a relay; they would offer specialized reference within their areas of competence; they would loan highly specialized material that was not otherwise available in the area, but only to those people with a real need to know.

Waters:

Thank you. Frieda--Question 11, "What geographic configuration do you wish in the network? Will it mix governmental units?"

Frieda Sheel, Rosenberg Library, Node 11:

From the standpoint of Abilene, it needs to be at least a regional, West Texas, or preferably statewide. We had trouble defining what was meant by "mixing governmental units," city, county, state, or is this types of libraries? Well, the general consensus was that a network going through the public library system first, then a network which would permit us to go to university and/or special libraries, whether this would first

be done on a regional basis would depend on the type of question,
how fast you need the material, whether you go to Abilene Christian
College for material or go to the State Library. If you need it
immediately, then you'd probably have to go to Abilene Christian
for something that's needed that day. But, preferably go through
the network, primarily from the standpoint that most of the college
librarians feel like, well, they're busy--I can't speak for them,
we had some at the table, but they're busy enough with the college
problems without handling things that could be handled by the public
library.

Waters:

Thank you. Mickey--Question 3, "What type of node/network rela-
tionship do you wish?"

Boyvey, Node 3:

I'm speaking for the school libraries, so schools are structured
from the local campus unit to the district to the regional center to
the state. So far, the regional centers have provided primarily films,
because they have been in operation only one year. Now these are
jointly funded by local funds and by the state level. Let me say now,
the regional media centers or the education service centers have all the
powers of a local district except taxing powers. This means that they
are in a position to effect contracts. We have been approached by small
public libraries to borrow films. We hope that services will expand to
include books and many other types of media, but mandated under the law
was, of course, the circulating film library which had to be started im-
mediately. It seems to me there are some possibilities that we could
work out from interfacing at the district--or at the regional level. Most
of this so far has remained in the schools and is an up and down flow
through schools. We'd like to learn the rules of the game, though; we
want to play!

Waters:

Let's move to this side now, please--Question 4, "What type of services
or resources do you expect to get from the network? What selectivity
criteria?"

Beth Hall, Haltom City Library speaking for Node 4, Amarillo MRC:

I would expect an expansion of what we do, actually, in our own
library. We're kind of a middle man, so to speak; we are an area
library. Backing up and speaking from the small library, I would say
that they would expect from us any materials that we might be able to
furnish from our collection first. And then if we did not have it,
they would expect to go on to the MRC which is Fort Worth. We would
expect in this area going on as a Size 2 library the materials that
we couldn't find in our library, besides things that possibly we could
not afford in our library, being a smaller place. For example, we
haven't made requests yet--but we may someday want transparencies, films,
and we would especially like to ask for copying materials of things that
could not be checked out from the MRC. Now, if they don't have the
material, then we would expect from them to go to the Texas State Library
or any source where the material is available. And in the second part
of the question, "What selectivity criteria?"--Well, I don't think I read
this question in the first place. It says, "What type of services or
resources would you expect to get from the network and what selec-
tivity criteria?" I think that they would expect from us to certainly
try to give them a source like BIP or maybe Wilson Catalog, or anything
that we had in our library that we could give them as criteria, or--
and we would expect them to use whatever they have at their hands to pass
on to get the book for us.

Waters:

Thank you. Shula--

Schwartz:

Well, I'm representing Node 19, which is the Industrial Information
Services-TAGER Network, and we sat here and tried to answer all these
questions and after I got up here I decided that that was really foolish,
because we have the Director of I.I S. sitting right up there and I
think she ought to answer her own question! (Laughter) Because none of
us are part of I.I.S. except as possibly members.

Duggan:

Question 19, "Do you visualize any node/network conflict in goals?
If such were to occur, how would you resolve the conflict--(a) leave the net-
work, (b) try to modify the network goals, (c) modify your node's goals?"
was designed to illustrate something that Dr. Nance mentioned and some of

the things that you all have talked about today in looking at the cases.
There will come a time in networks when there will be a conflict between
the interest of the node and the interest of the network, and I think this
is one thing that when the network is being organized--you've got to con-
sider this and have a policy in your own mind of which takes priority--
the node or the network? This is just to raise the question and to do
some thinking about it. You could get mad in a huff and pull out of
the network, you see? Then what happens? Or, if you have a vehicle for
expressing this conflict--a committee or an advisory council or a board,
then you can try to modify the goals of the network to resolve the con-
flict, or you may have to modify your own node's goals. Some of the
libraries who are trying to be all things to all people may have to
reshape and rethink their own policies and their own goals.

Schwartz:

We agreed--we all said what you said--but I would like to take it a
a step further. There are definitely going to be conflicts in the fact
that Industrial Information Services-TAGER is a network of some sort
already, so there can be conflict. There is a possibility--and I hope
Maryann will correct me if I'm wrong--that there might be legal questions
raised in the possibility there is a conflict, such as how it's funded
and who it's supposed to serve. If a conflict comes in tying in with
a network--not as a receiver but as a giver--would you be restricted in
who you may serve for this network? So, all these possibilities are there,
even to the extent of having to leave the network. I hope I'm not incorrect--

Duggan:

Right, these are just here to give us a spark to think.

Unidentified Person:

Our question was Number 7--can you hear me? Our question was Number
7: "What type of network organization do you prefer, directed or undirected?"
Since most of the libraries in the Lubbock MRC node are rather small
libraries, we had two points of view. Because of our small collections,
we would prefer, of course, undirected systems, so that we felt that we
could at least write to where we thought the source was. But we realized
that ultimately about three libraries would receive the majority of our

requests, which would happen probably statewide. So we believe that
a more realistic approach would be to suggest a directed network, for
the simple reason it would encourage smaller libraries such as ours
to build locally, to have the things they should have, to emphasize
the need perhaps for statewide bibliographic development on many levels.
We feel this way the load would be shared and the resources throughout
the state would be utilized to their fullest extent. However, the patron
might suffer in terms of how quickly he might receive the answers to his
questions or books that he might need.

Waters:

Thank you. Let's move over here now, please to Node 15, with the
question, "How will you evaluate the network performance? What criteria
are important to your node? To the total network?"

Gertrude Thatcher, University of Corpus Christi, Node 15:

Well, we felt we'd evaluate it as a node from the number of
"successes" as against the number of "failures" in getting requests
filled. "What criteria are important?" We thought the number of suc-
cessful fulfillments, the time involved in getting these fulfillments,
and the cost per request, and we felt that these, too, were the criteria
for the whole network.

Waters:

Thank you. Let's move back on to my left now, please to Node 12,
with Question 12, "Do you plan to "switch" requests locally? In the MRC
area? At the state level? Where and how should your node interface
with other networks?"

Meris Eggert, Texas Southern University, Node 12:

Well, being a state university library, yes, we would plan to switch
requests locally, and in the MRC area, and at the state level if requested.
I think that as an interlibrary loan request, our service as a state
library would be more for receiving requests from other incoming sources
since we're going to be sending out interlibrary loans for faculty members
and graduate students, and all of our other things, I guess, would be
requests to the public library, if it's a student asking for a request,
since we wouldn't do interlibrary loans for a student, if we didn't have
the information, he would have to seek it on his own.

Waters:

And now for Node 17, your question is "What role specialization do
you visualize for (a) your node and (b) other nodes in the network,
and (c) the switching center (if there is one)?"

Marjorie Atkinson, La Retama Public Library, Corpus Christi, Node 17:

Our group is a member of the Texas State Library Network, and it
a hierarchy of libraries, and therefore in role specialization, I'll
start with the lower and work up to the State Library itself. The lower
libraries--basically their role is to screen requests and to communicate
them to the higher level once it's determined that they cannot be filled
at the lower level. And then our role is more or less the central one.
We receive requests. We also initiate requests from our own users, and
then we verify requests before forwarding in the referral service. And
then the switching center would be the State Library as the coordinator
of the system, switching requests among the 10 major resource centers.
They also serve as a lender in the system, but that wouldn't be in their
capacity as the switching center.

Duggan:

Would you want a node in the total network that had a specialized
role like the law libraries or like the technical information center
like R.I.C.E., or like a film media center?

Atkinson:

Well, we would like to be associated, I think with--have access to
another network such as this. But in the network as it is now set up,
these are the roles that we fulfill, and it would be nice to have
access to the other.

Waters:

All right, let's come back to this side now to Node 8, and your
question is "By what legal authority can you join a network? What type
of formal agreement do you visualize? Who must approve contractual
agreements?"

Jim Platz, Associate Librarian, Texas Tech, representing Node 8:

I was asked to join Node 8 because I'm from Lubbock and there's
a rumor that W.I.N. will be located there, and they didn't know anything

about W.I.N. and I didn't either, so they thought I'd be eligible.
It was decided by the table--the node--that we would choose the public
library, and I'm not sure we are correct in doing this, but it said
"a network," and I admit this is a case of "the blind leading the
blind" if there ever was a case. We decided the public library is
governed by the Lubbock City-County Library, by the County Commissioners
and the Mayor, and the City Commissioners. That is the legal authority.
What type of formal agreement do we visualize? We decided that it would
be a contract. Who must approve contractual agreements? We again pulled
it out of the hat--out of the air--and decided it would be the library
administration plus this governing board of the commissioners. Now,
if this is not the answer needed by you people for Question 8, it would
be connected with W.I.N., then there is a rumor that W.I.N. would be run
through Texas Tech, the governing board of that institution would then
be the contractual party and the library administration and the governing
board--the board of directors would be the contractual party. I hope
that answers this question.

Duggan:

Suppose someone in the Corpus Christi area wanted to join W.I.N.?

Platz:

I would assume they could join because I understand it's west--

Waters:

Oh, W.I.N. consists, as we said earlier, of 18 colleges and
junior colleges in West and Northwest Texas. It has a board of directors.
It's created by state legislation, House Bill 692. It is headquartered
in Lubbock. I don't believe it's at the Texas Technological College; I
think it's somewhere else in the city. It has not performed any services
to date, but it has grand plans.

Platz:

I'm informed. I thank you.

Waters:

All right, let's move over here now with the question for Node 18,
"How will network participation influence your own library policies and
procedures on (a) book selection, (b) acquisition, (c) cataloging, (d) re-
tention of material, (e) automation of technical processes and/or
circulation systems?"

Jean Collier, Houston Academy of Medicine of the Texas Medical Center:

I represent Node 18, the Health-Science Libraries. Are you speaking of any network participation or a particular network participation?

Duggan:

Just any network.

Collier:

All right. Well, we do belong to a Texas Council for Health-Science Libraries, and we have made application for a decentralized South Central Regional Medical Library. Now this participation would influence our library policies and procedures. On book selection, you will probably end up with a subject specialty. In acquisitions, there will be a cooperative major acquisitions program. The cataloging should be compatible; the classification undoubtedly will want to be NLM; the retention of materials will be the large medical research libraries. For example, the small hospital libraries will not be able to retain long back files of journals, and the major ten resource libraries will; and automation of processes is in the wind. It's coming, and also the automation of circulation systems undoubtedly will be effected.

Waters:

Ann, how about Question 14?

Ann Bowden, Austin Public Library, Node 14, Austin MRC:

My question is: "How will you train your staff to use the network capabilities?" We felt that the only solution was constant staff development using detailed procedural manuals and workshops--workshops both at the network level and at the local level. The procedural manuals and the workshops should be constantly updated. In the interest of serving our patrons most expeditiously, we felt that the staff should have a thorough knowledge of all local facilities, both library and non-library, and that this, in turn, would prevent unnecessary questions from reaching the network. Of course, Austin is a unique situation, but we prefer the horizontal network to the vertical.

Waters:

Thank you. Next is Node 6, and the question is "What B/L ratio do you anticipate for your node? What total B + L?"

Ann Hanson, Brazosport Junior College:

Our question has to do with the borrowing/lending ratio that we anticipate in our node. At this time, I believe we would anticipate a 90 per cent borrowing and a 10 per cent lending ratio. Now we feel like this is what it would be unless junior colleges form some kind of cooperative effort within themselves to borrow and lend.

Waters:

Thank you. Next please is Node 9, with the question "Who will pay for the network operation? On what basis are allocation of costs among the network members determined?"

Louise Hamilton, Brooks County Public Library, Falfurrias, Node 9:

We're answering our question--attempting to--from the view of a major resource center since our table states San Antonio Major Resource Center, although no one at our table represents a major resource center. The question is: "Who will pay for the network operation?" And our decision was that we might visualize an imaginary sign such as we all see on our highways: "Your tax dollar is at work." This would be the manner in which this thing would be funded. Then the second question is" "On what basis are allocation of costs among the network members determined?" And here we thought--we remembered that in this session today we have not--no one seems to have been able to ascertain the cost of the present systems, and so we would really be unable to answer this, except that we believe it would be based upon the demands made upon the major resource center and the manner in which they meet these demands or the extent to which they meet them.

Waters:

Thank you. Let's move on this side, please, to Node 20, and the question, "What other factors do you think are important?"

Ginger Church, Student at G.S.L.S., University of Texas at Austin:

I just happen to be sitting at Table 20, Inter-University Council, and our suggestions of other factors that we thought were not covered in the questionnaire really consist of sort of a shadow network--I guess you'd say. It's the possibility of having review and evaluation sessions of representatives of the disparate kinds of libraries to gain an appreciation of each other's kind of collections and needs and an awareness of the alternate networks other than just the ones that they may be legally prescribed to be in.

Duggan:

Very good.

Waters:

Thank you. Mr. McElderry, Node 13's question is "Who will work out the operating policies and procedures for the network and the node/network 'rules of the game?'"

McElderry, Node 13:

We take the long view of this question and feel that it is basically a national problem. There is some initial advantage to be gained through local networks as described here today. We think this provides a basis for enlarging the scope of the resources available, and we think that a fruitful starting point would be to base evaluation and building of resources on established bibliographic tools; something on the order of the Winchell Checklist mentioned this morning. But in the long run, to realize the full potential of information transfer, we feel that this problem has to be handled on a national basis. So we foresee a federal agency of some type (growing out of the permanent National Library Commission) which would contract research projects, develop task force approaches to the problem, conduct pilot studies that are carefully monitored to develop a suitable overall national pattern. The reasons why this seems the best long term approach is that we need the expansibility that comes from compatibility between local, regional, state networks. We think the cost and the talent required to develop an adequate network is something more than smaller networks are in a position to provide; that the basic technology required to develop full potential here utilizing computers, microtechnology and other mechanical devices are basically expensive. They require a broad national market to be developed, and this can't be done by building up networks on incremental local bases. Further, we feel that we will not in one fell swoop design the ultimate network; that it will be a continuing problem requiring study and refinement, and that this can only be done economically and efficiently on a national basis.

Waters:

Thank you. Now I know it's getting late. We ask about 20 more minutes of your time. Francine--

Morris:

You forgot Node 10, with the question, "What 'communication channel'

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do you plan to use? How much will it cost per month? Per message?
What message load do you anticipate? What turn-around time? What
channel capacity do you need?"

Node 10 is a switching center, and since nobody is quite sure
what a "switching center" is, we hypothesized--I think is the word--
a marvelous switching center to take care of all the other nodes.
We will require a multi-channel capability of TWX, teletype, telephones,
television, the whole works. The cost, both per month and per message,
will be prorated on the basis of capital outlay, the cost to the ini-
tiator and our overhead. The message load will be variable, the turn-
around time minimal, and channel capacity unlimited!!

Waters:

I think we just designed our ideal model network.

Well, we realize that these were really springing a lot on you to
grapple with these right now and, as we said, there are no perfect
answers, but we think the responses we have here, when we get all this
put down in black and white, will be important and make interesting
reading. Did you have a question, Mr. Wagner?

Wagner:

I'd like to make some supplemental comments on Miss Church's remarks.
I feel that over all today we've discussed far more about mechanics than
we probably should have. In my opinion, and I feel my opinion is as good
as the next person's, probably better, there are interpersonal psychological
problems involved that throw into considerable shadow some of the problems
of financial matters, legal matters, mechanical matters of making com-
puter systems and switching networks work. I think that these problems
have to be solved by personal contact between people that actually do the
work rather than head librarians who merely make decisions. I think
they have to get together and become acquainted with one another on a
personal basis over a continuing period of time. A very valuable ser-
vice that the Texas Library Association can offer is to make sure that
they do get together over a continuing period of time. I'd like to see
it more widespread and more definitely applied to people that are in
information networks and are concerned with this sort of problem.

The other matter is that many of these information services or networks are based on data banks that are in atrocious condition. I'd like to point out, for example, the microfilms of U. S. patents that are put out by the U. S. Patent Office. Those microfilms conform to the bare requirements of the G.S.A. microfilm quality specifications, so that if you have a very good reader and it's in perfect focus, you sometimes can make out what it says.

Waters:

Yes, I think you're pointing out a problem that all of us here realize and one of the many problems that will come to the surface--or already have surfaced in designing a network.

"The Future-Where Do We Go From Here?"--this is to be the final report from the Official Listeners, and I'll ask now for that report. I'm not sure who is to make it. Don't everybody jump up at once. Heartsill, would you like to have the honor?

Duggan:

Maybe Maxine--

Waters:

All right. Let's have a caucus of Listeners and let's skip down just a moment to the Reference Round Table plans for the future, which is a clever or unclever way of saying "We have to have a short business meeting of the Reference Round Table." Would our chairman please approach the platform? You all have copies of the minutes, so we won't have to read them, thank God!

Johnston:

You think you've got problems? You're cold. You don't know why you're at the table that you're at. And you've got an awful lot of paper that you're not sure what you're supposed to do with, and you've got to fill a good deal of it in and turn it in at the door as you leave. But I've got more problems. I have become lacking in gorgeousness during the day because of other things in the room. I've torn stockings on chairs and dropped coffee all over me, and assorted other ills I can complain of, including the fact that Miss Duggan, Mr. Waters and Mr. Perrine seem to have shared their virus with me. My throat is beginning to bother me. All right, the business session of the Reference Round Table is now in order. We will not have any minutes read, because we have taken the

precaution of printing them. They are on every table in the room.
I trust you have read every glorious word and are there now any cor-
rections or additions to these minutes? If not, we will approve them
as printed in the mimeographed form.

We will now have the treasurer's report. We have a secretary-
treasurer, Carole Johnson, who has performed magnificent services
for us in the last day or two--in the last few weeks, I should say.
She will now report on the treasury.

Johnson:

Our balance before this Conference's intake and expenses was $362.13.

Johnston:

Carole, while you're at the microphone, suppose we also have your
report on the registration.

Johnson:

The best we could figure out, 288 people registered, but 256 are
present. All right. Three committees which have been much in evidence
today--we will not ask reports from: The Planning Committee chaired by
Richard Waters; the Model Network Committee chaired by Maryann Duggan;
and the Local Arrangements Committee, chaired by Ruby Weaver. Obviously,
you have been enjoying their work and getting a report on it all day
long. For the record, Richard Waters was aided by Janice Gohmert and
10 Major Resource Center coordinators. Miss Duggan had a large com-
mittee of about 20 people, and we will not bother to enumerate those, but
they too have served nobly and contributed their services to this project;
and of course, Ruby Weaver's feet should be soaking by now, because she's
made many a mile in our behalf, and we would like also to thank Jean Taylor,
Jeff Caskey, and Parker Williams for their efforts in our behalf on
local arrangements.

I would like now, if possible, to have a report from the Steering
Committee, chaired by Richard Perrine, and composed of Sarah Aull,
Maryann Duggan, Richard Waters and Janice Gohmert.

Perrine:

Well, this Steering Committee has the skeleton of a resolution. Maryann,
do you still have that?

Duggan:

(Inaudible comment).

Perrine:

We do want to recommend on-going action--

Johnston:

Would you like to have another minute and let me go on to another committee? All right, we'll move on to the next committee and let Dick and Maryann have a minute to find their resolution. All right, may we now have the report of the Nominating Committee, Julie Bichteler, Chairman?

Bichteler:

The report of the Nominating Committee is "for Chairman Elect, Maryann Duggan, Director, I.I.S., Dallas, Texas; for Secretary, Nancy McAdams, Architectural Librarian, University of Texas at Austin. Respectfully submitted, Albert Bradley, Marguerite Clayton, and Julie Bichteler."

Johnston:

As you know, last year you elected Janice Gohmert to be Vice Chairman-Chairman Elect, and we would like at this time to have Janice Gohmert pointed out to you if you haven't already heard her at the microphone a couple of times today. You may not have known that she is your Chairman for the coming year. Janice, would you stand up and let everybody see you? And now, according to protocol, we have to have an opportunity for ominations from the floor. Are there any nominations from the floor for the office of Vice Chairman? Are there any nominations from the floor for the office of Secretary-Treasurer? Julie, would you care to move that this slate be nominated by acclamation? Is there a second? Now a question--all opposed--I mean, all in favor, please say "Aye."

All:

Aye.

Johnston:

Anybody opposed? How dare you(??????)

Now I would like to have the report of the Publications Committee, please, and Nell Cunningham could not be with us, but she has given the report to Edith Grisham, a member of her committee.

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Grisham:

"Printing was completed on the 1968 Reference Round Table Proceedings, and flyers with order coupons were included in the pre-Conference material, which was mailed to all Reference Round Table members, as well as all other interested libraries. In March 150 copies were received from the publisher and the committee began filling orders. Before the start of the conference, 73 copies had been sold. A table was set up at the conference and 27 copies were sold. One thousand order coupons will be placed in the TLA booth, as well as extra copies of the Proceedings. Purchase orders and checks which have been received prior to publication were returned to the ordering libraries with cover letter and order coupons for the booklets at the new price of $1.50. Because some institutions have no provision for prepayment, invoices have been printed so these may be billed. If the unsold number warrants it, letters will be sent to out-of-state libraries which may be interested in purchasing. Respectfully submitted, Marjorie Wheeler, Edith Grisham, Nell Cunningham, Chairman."

Based on this report, I would like to submit the following motion: "That the Proceedings of the Pre-Conference Institute on Cooperative Library Reference and Information Networks be published in full in the Spring 1969 issue of the Texas Library Journal; that if the Texas Library Journal cannot publish said Proceedings in full in said issue, the Reference Round Table of the Texas Library Association seek and receive permission from the Executive Board of the Association to publish said Proceedings itself on a self-liquidating basis."

Johnston:

The motion has been made. Is there a second?

Adelle Durden, Houston Public Library:

I'd like to second this motion.

Johnston:

Is there any discussion of this motion? Any comment?

Unidentified Person:

As Chairman of the Publications Committee, I'm afraid that it would be out of the question for the Journal to publish the Proceedings in full.

<u>Waters</u>:

I'd like also to make a comment. I'm sorry that this was not transferred to the Publications Committee, but the <u>Texas Library Journal</u> editor has already asked for and received some acknowledgment of publishing selected papers and proceedings in the Summer issue of <u>Texas Library Journal</u>. I would wonder if the Committee would want to withdraw their motion?

<u>Johnston</u>:

We assume that if any problems developed in getting them published that you might want the option. If not, I'm sure Mrs. Grisham would be willing to withdraw the motion. Do you want it withdrawn?

<u>Waters</u>:

I think it should be withdrawn or amended. It's impossible--there's no way they can do it in the Spring issue. They're already set up' for what they're going to print in the Spring issue.

<u>Johnston</u>:

That was a misunderstanding that I conveyed to them. I thought you said Spring issue and you said Summer. She can amend her motion if that's all right. Yes, she can amend her motion to Summer '69 instead of Spring--

<u>Waters</u>:

And perhaps substitute "selected" instead of "in full."

<u>Johnston</u>:

Do you accept Mr. Waters' amendment to the motion--I assume that this is an amendment?

<u>Waters</u>:

Yes, I would make an a--a motion--or an amendment to the motion that we substitute Summer issue for Spring issue, and instead of "in full," "selected" or "a portion of" the <u>Proceedings</u>.

<u>Johnston</u>:

Do you accept these amendments? All right, then we don't have to vote on them.

Is there further discussion? If not, let's have the question, all in favor, "Aye", please. Those opposed? (Silence). Then we assume the motion passes.

That completes the committee reports, with the exception of one
committee, the Publicity Committee, chaired by Carrie Eagan, and also
with Harold Richardson serving, and I'm sure that their work will be
in evidence soon in _Flash_ and in other places, so we will not call on
that committee for a report. Is there any unfinished business? Well,
wait a minute, let's go back and see if Dick Perrine's ready for his
committee report.

Perrine:

The Steering Committee wanted to assure that some of the _Proceedings_
were published. This is one thing we've just discussed. The Steering
Committee also feels that a permanent stateiwde network study group
should be formed, with representation from five different groups: from
each of the MRC's, from the Title III Advisory Council, from the Library
Development Committee, from the Texas--T.E.A.--what is it?

Boyvey:

Texas Education Agency.

Perrine:

--also from the State Library and from the Coordinating Board, and
with representation also from each existing operating network. The
Steering Committee would also like to recommend that the Reference Round
Table seek ways and means to contrive the analysis and designs of networks,
with the ideal of specific implementation steps and cost figures to be
presented at the Reference Round Table meeting in April of 1970.

Johnston:

Is this in the form of a motion, Dick? That this proposal be adopted?
All right, Mr. Perrine has moved that this proposal be adopted. Would
you repeat the motion?

Perrine:

To form a permanent statewide network study group with wide represen-
tation, which I will not enumerate, to seek ways and means to contrive
the analysis and design of networks, the ideal network, with specific
implementation steps and cost figures to be presented at the next
Reference Round Table meeting in 1970.

Johnston:

Mr. Perrine has moved that this proposal be adopted. Mr. Waters has seconded. Is there anyone who would like to discuss it? Miss Kee--

Kee:

I'd like to ask him if "wide representation" includes the Advisory Council members of the Title III Interlibrary Cooperation Program?

Perrine:

Yes, that was the second one mentioned.

Johnston:

Is there further discussion? Or questions? Then may be have the question, all in favor of the motion, please say "Aye."

All:

Aye.

Johnston:

All opposed, "No." The motion is carried. That completes committee reports. Is there any unfinished business that anyone is aware of to come before the meeting? Is there any new business? Then there is one announcement that I have been asked to make room for, and I would very much like to have Mr. Richardson to go to a microphone right now for an announcement about The Texas List.

Richardson:

Dick Waters stole part of my thunder this morning in his speech. I don't know who had really tipped him off semi-officially. It is now the announced plan of The Texas List that the 1971 edition will contain the Social Sciences, the Humanities, and the Fine Arts, and thus round out all of the serial holdings in the State of Texas. Obviously, there will be an increase in price.

Johnston:

Now that is all of the announcements that I know about. Does anyone else have one? Then I believe Roberts' Rules of Order says that I need a move of adjournment of the business session, but not of the conference in progress, because we still have some Listeners to hear from. So may I hear a move for adjournment of the business session?

Mrs. Clayton moved and I'm sure somebody seconded. All right, the business session is adjourned.

Waters:

Before we have the Listener's report, we have our very distinguished
Texas Library Association President with us, Mr. Sam Whitten, who would
like to make an announcement.

Whitten:

I'm not going to make a speech--don't panic! I have been very pleased
with what I heard here and I wish I could have heard the rest of your
meeting. I think we'll have to find some way to get these Proceedings
published, because you people seem to have acquired the vocabulary today,
and the rest of us are going to have to read what happened here or we won't
be able to communicate with you.

Waters:

Thank you, Sam. Now are we ready for the final report from the
Listeners? Jan Kee--

Kee:

Let me make it clear that I may not be the only Listener who will
wish to speak, although I was asked to speak first. I think the reason
I asked Dick Perrine to reread the recommendations or the proposal is
that he has been a good listener himself from our point of view; he has
heard what we consider to be some of the needs for the next steps, and
that is the establishment of an on-going study or survey or group to
continue the examination of the potentials and possibilities for networking
in Texas. I think it's quite obvious today to anyone who is here, even
though you've been busy participating and not charged with full-time
listening, that there are many, many unanswered questions on procedure, on--
really the nitty gritty procedure of how we can do it--on policy that would
give us some kind of uniformity, so that we'd all be aiming at the same
general goal; and also a very important question of "who pays", and I would
like to emphasize the importance of carrying along quite careful con-
sideration of the source of funds.

"Where is the money coming from?" is a very good question that you'll
be facing with governing·bodies, with legislators, and alas--with Congressmen.
If I have been tuned in today, I've heard many references to the source--
to the federal government as an important source of funds in carrying on the

programs that are now in progress. The State Technical Services Act,
the Library Services and Construction Act, the Medical Library Assistance
Act, the Higher Education Act, the National Science Foundation source
of funds, the Bureau of Research; there is a tremendous potential of using
these funds and a very important business of coordinating and planning the
very best use of them. We can't do this unless we get together. Again and
again I heard you talk about the importance of simply getting acquainted
on a personal basis. Now, not that I think we can organize networks on a
personal basis, but there is a certain--as was pointed out--impersonal
relationship that is absolutely necessary--we've got to get over some
of the psychological, traditional operational barriers which sometimes
can be broken down if we're good friends and understand that all of us
are trying to get to the same mountaintop.

So I'm glad to know that you have adopted the proposal of continuing
the study. If I might just say one more thing, somebody slipped in the
suggestion that maybe we should give some attention to the model Inter-
library Loan Code. For a long time I personally--and I am sure there are
others with me--who have been concerned about the junior college, the
growing junior college library, and nobody here today has mentioned the
area of the vocational school and the tremendous amount of vocational training
that's going to be taking place in all parts of this country. These
students are, from my point of view, a bit out in the cold, when it comes
to the present network structuring in this state and other states. And
there are a lot of us who are worrying about this, and I hope that we give
some careful attention to a national suggestion--and by the way I was
interested in Dean McElderry's taking the long view and saying many of
our problems are going to be ironed out at the national level. And I'm
glad he said that and I didn't, but I do think that the nation has spoken
to us. The Interlibrary Loan Committee that revised the Interlibrary Loan
Code has spoken to us on a very important matter. They've said the Inter-
library Loan Code is too restrictive for many library users, and each state
might adapt this model code. Now the model code is around--it's been sent
to the State Library; it's been sent to Heartsill Young; there are a lot
of people who have it; and I think it needs attention. I hope the

Reference Section will take this up and work on that.

To again summarize, I think we have many problems--many unanswered questions about networking--this conference has been a brush-over-- not lightly and yet lightly--of many, many questions that have to be answered. I hope that everybody here will go home and ponder these as good fodder for the mill at staff meetings, board and administrative meetings, district meetings, and, as somebody suggested, beer drinking parties. Thank you.

Waters:

Thank you, Jan. Are there other Listeners who would like to comment at this time?

Well, when we started planning this program, we said we wanted to be through by five o'clock, not because it's five or a minute or two before or after; but we thought we wanted to get out of here by five. And by gosh, we're going to make it, just about. We want to thank all of you who have come today, not only Reference Round Table members, but many of the special librarians and school librarians who are not RRT members. We appreciate your interest; we need your help; we're all in the same game, and the name of the game is "better library service to all citizens of Texas." We'll see you later on in this conference, or sometime later on during the year, if not next year in Amarillo. Good day.

C.6-b

ANALYSIS OF BEHAVIORAL MODEL (NETWORKING GAME)

Interspersed with the formal papers and "official listeners" reactions, certain Real-Live Cases of Interlibrary Situations were put on the simulated network during the RRT Seminar. The network was set up in the room as explained in Appendix C.2; the cases are listed in Appendix C.3-g. The transcription of how the cases were actually handled in the Behavioral Model is reproduced in C.6-a and should be reviewed by the reader for full comprehension of the following analysis.

After one false start, a total of 11 cases were actually simulated. Each case is listed below and a symbolic model illustrates the starting node and the route of the case through the network. The numbers in the circles represent the node numbers as described on page C-29. The case numbers correspond to the numbers used for the cases at the RRT and do not reflect the sequence followed in the game playing which corresponds to the order in which the cases are listed below.
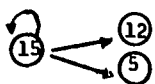
7. The local judge in a medium size town needs a copy of the statutes of another state.
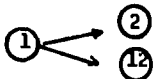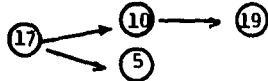
9. A small public library is asked by a high school student to get copies of articles on dope addiction from some medical journals.

1. A small private university needs a copy of a technical report for a professor who is submitting a research contract proposal. (You are that university librarian.)
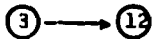
3. A small public library is requested by a local business-
   man to compile a bibliography on fuel cells, particularly
   articles with pictures.

$$(17) \rightarrow (10) \rightarrow (19)$$
$$\searrow (5)$$

5. A teacher in a high school in a large city has asked the
   local building librarian for transparencies illustrating
   the circulation system of a frog.
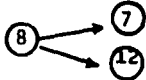
$$(3) \rightarrow (3)$$

12. A teacher in a local elementary school asked the building
    librarian to get a copy of an article from an education
    journal on new teaching methods. The teacher is taking
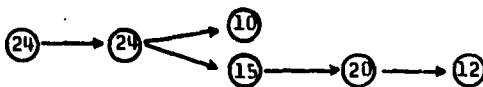   a credit course in education from a nearby state university.

$$(3) \rightarrow (12)$$

8. A local businessman needs recent census tract data on
   population statistics in another, larger city in the state.
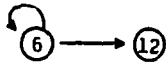
$$(16)$$

40. An employee of a business firm in the suburbs of a large city
    is taking a college course over closed circuit TV from a
    a distant state university. He needs a book. Where should
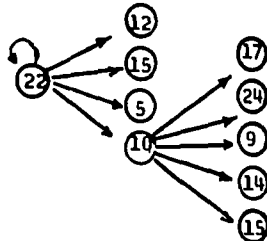   he go?

$$(8) \rightarrow (7)$$
$$\searrow (12)$$

26. A professor from the local university asks the local branch
    library in a large city for a government document on lawn care.

$$(24) \rightarrow (24) \rightarrow (10)$$
$$\searrow (15) \rightarrow (20) \rightarrow (12)$$

35. The local housewife has asked the local junior college
to use the French I language tapes to prepare for a trip
to Europe.

⟳
(6) ⟶ (12)

30. A large public library has been asked by a local business-
man to borrow a copy of an out-of-print American imprint
on history of banking in Europe.

⟳ (12)
(22) ⟶ (15)
     ⟶ (5)   (17)
     ⟶ (10) ⟶ (24)
            ⟶ (9)
   ⟶ (14)
            ⟶ (15)

A composite "sociogram" of the interaction exhibited by these
cases is presented in Figure 1 on a grid corresponding to the network
physical room arrangement during the simulation.

Further analysis of each case behavior considers type of library
and geographic level of participatory nodes and the use of a switching
center in the transaction. Using a symbolic model, it is possible to
identify each transaction linkage as follows:

        P = public library
        S = special library
        A = academic library
        PS = school library
        SW = switching center

Figure 1. Composite Sociogram for Networking Cases   C-227

Room 114 layout for RRT Pre-conference.
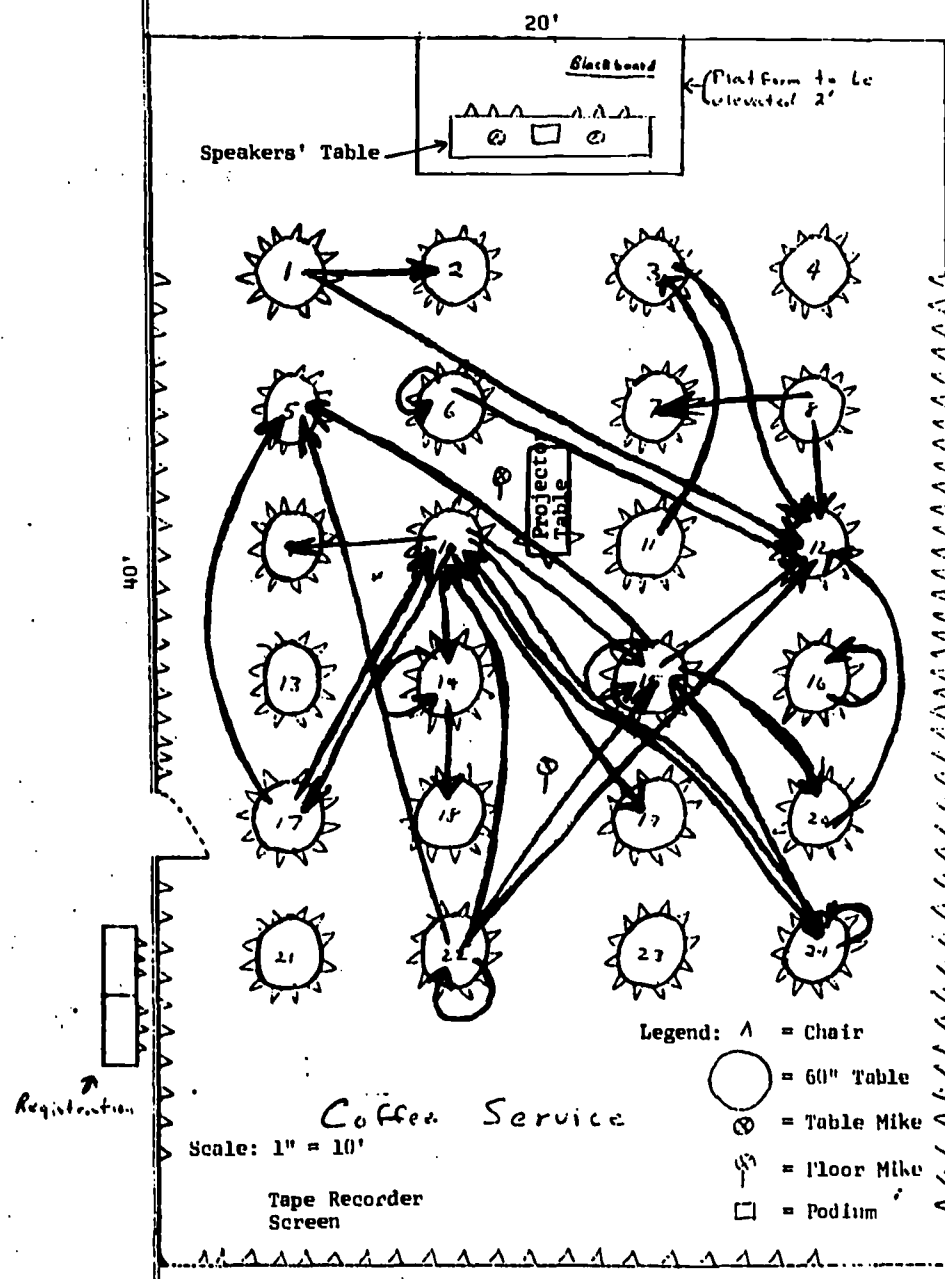
Geographically, the following subscripts are used:

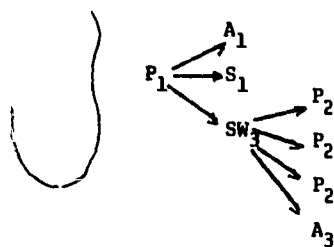|	
1 = local	4 = regional
2 = area	5 = national
3 = state	6 = international

Thus each of the simulated cases can be illustrated by the following transaction formula:

Case Number	Transaction Formula
7.	$P_1 \rightarrow S_3$ $\searrow A_3$
9.	$P_1 \rightarrow S_1$
1.	$A_1 \nearrow^{A_3} \searrow_{S_1}$
3.	$P_1 \rightarrow P_2 \nearrow^{SW_3 \rightarrow S_3} \searrow_{S_1}$
5.	$PS_1 \rightarrow PS_2$
12.	$PS_1 \rightarrow A_1$
8.	$P_1 \rightarrow P_1$
40.	$A_1 \rightarrow P_1$ $\searrow A_3$
26.	$P_1 \rightarrow P_2 \nearrow^{SW_3} \searrow_{A_1 \rightarrow SW_1 \rightarrow A_2}$

35. $A_1 \longrightarrow A_3$

30.

The 11 cases involved a total of 27 transactions. Three of the 11
cases involved only one type of library*(Cases 5, 8, and 35); the remaining
cases involved at least two types of libraries.** The combinations of
types of mixes possible would be 25; 13 possible types of mixes were

Receiver:	P	S	A	PS	SW	Total
Initiator:						
P	3	4	3	0	3	13
S	0	0	0	0	0	0
A	1	1	3	0	1	6
PS	1	0	1	0	0	2
SW	3	1	2	0	0	6
Total	8	6	9	0	4	27

actually observed, as shown by the accompanying grid. Of the 27 trans-
actions, 13 were "initiated" at a public library, six at academic, and two
at school and six at switching centers. The academic libraries were
"receivers" of nine transactions out of the 27; the public library received
eight, and the special libraries received six. The most frequent trans-
action was public to special, i.e. P $\longrightarrow$ S.

The following composite "sociogram" by type of library illustrates
this observed intermixing as simulated in these 11 cases.

_____

* Homogeneous transactions.

**Heterogeneous transactions.

Initiator: Receiver:

P   3   P   3
        4
      3 1   S   1
        1
A   1   3   A   2
        1   3
PS   1   PS

SW   SW
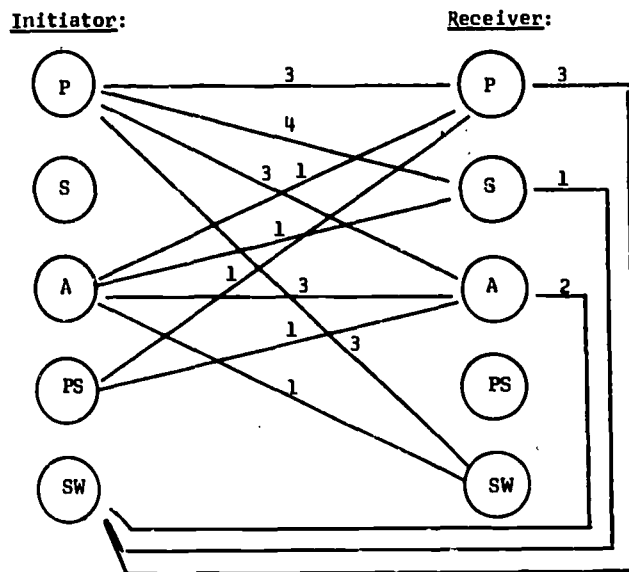
      The transaction links also exhibited parallel and series type transactions. Six of the 11 exhibited parallel strategy. Sequential transactions were involved in three of the 11 cases.

      With regard to geographic level of the transactions, 36 combinations were possible. The cases demonstrated the following mix of geographic levels:

Receiver:	1	2	3	4	5	6	Total
Initiator:							
1	8	4	6	0	0	0	18
2	2	0	2	0	0	0	4
3	0	3	2	0	0	0	5
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0·	0	0	0	0
Total	10	7	10	0	0	0	27

Of the possible 36 combinations, only seven were demonstrated by the simulated behavior. The most frequently occurring combination was 1⟶1, i.e. "local switching." The next most frequent level of switching was 1⟶3, i.e. local to state level. Seventeen of the 27 transactions involved switching between geographic levels, i.e. vertical as opposed to horizontal switching.

All of the transactions can be classified as belonging to the following four classes of transactions:

1. Homogeneous vertical, i.e., between two libraries of the same type but at different geographic levels;

2. Heterogeneous horizontal, i.e., between two different types of libraries at the same level;

3. Heterogeneous vertical, i.e., between two different types of libraries at different levels;

4. Homogeneous horizontal, i.e., between two libraries of the same type and the same geographic level.

The 27 transactions simulated in the networking game were in the four classes as follows:

	Class	Number	Percent
1.	Homogeneous Vertical	6	22
2.	Homogeneous Horizontal	1	4
3.	Heterogeneous Vertical	13	48
4.	Heterogeneous Horizontal	7	26
	Total	27	100

In other words, 48 percent of the transactions involved two types of libraries at different geographic levels. Only four percent of the transactions involved the same type of library at the same geographic level as compared to 26 percent involving different types of libraries at the same geographic level. Seventy-four percent of the transactions involved two types of libraries.

These data, although collected on a very limited sample, would seem to indicate the need for improved local switching among types of libraries in metropolitan areas and at the state level.

Texas Library Journal

The 1969 Reference Round Table
Pre-Conference Institute:

An Overview

MARYANN DUGGAN
MAXINE JOHNSTON
RICHARD L. WATERS

A small public library is requested by a local businessman to compile a bibliography on fuel cells, particularly articles with pictures.

The fire chief of a medium size town has asked the state university library in the town to find copies of laws pertaining to labor unions for municipal employees.

A local lawyer in a small town has asked the State Library to compile a list of laws on accidental poisoning by error in filling a prescription.

A large public library has been asked by a local businessman to borrow a copy of an out-of-print American imprint on history of banking in Europe.

These situations are real; they occur every day in our libraries throughout the state. As long as they can be satisfactorily "answered" by the first library asked, then there is no problem. What happens, however, when the large public library does not have in its collection the out-of-print American imprint on the history of banking in Europe? But, we are getting ahead of our story. Let us back up to the origin of the four "real" questions.

The reference librarians of Texas engaged in a real-life simulated inter-library network on March 26, 1969, at the Third Annual Reference Round Table Pre-Conference Institute. Approximately 280 reference librarians were involved in analyzing inter-library cooperation and in brainstorming the design of an ideal statewide network. The Pre-Conference Institute was jointly sponsored by the TLA Reference Round Table and the Texas State Library with partial funding under Title III of the Library Services and Construction Act. The authors are indebted to the dozens of interested librarians who helped make this Reference

Maryann Duggan and Richard L. Waters field questions from the floor.

Round Table Pre-Conference Institute a smashing success. The list of names of all the librarians who contributed is too long to publish at this time; however, particular appreciation and a debt of gratitude is acknowledged to Miss Carole Johnson, Hampton-Illinois Branch, Dallas Public Library; Richard Perrine, Reference Librarian, Rice University, Houston; Jim Stephens, Science and Engineering Librarian, S o u t h e r n Methodist University, Dallas; Miss Janice Kee, Library Services Program Officer, U. S. Office of Education, Region 7, Dallas; and Heartsill Young, University of Texas at Austin. We are particularly grateful to the Texas State Library for partial funding of this experimental program. We also acknowledge the invaluable assistance of Miss Ruby Weaver of the Houston Public Library in handling the local arrangements for the Institute.

The Institute

The Institute had five objectives:
1. To summarize national, state, and local developments in cooperative reference and information service since the 1968 TLA Reference Round Table Institute.*
2. To explore new thinking and approaches to the examination and use of cooperative reference services and library networks.
3. To apply network concepts to local library situations,
4. To develop an ideal, statewide, inter-library reference network through participation of Institute attendees and Official Listeners.
5. To identify future developments needed in cooperative reference and inter-library networks in Texas,

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*Proceedings of 1968 Reference Round Table Conference are available for $1.50 from Miss Maxine Johnson.

In summary, it was our desire to come to grips with library networks, what they are, where they are, how to use them, and how might Texas benefit from them. The utopian goal for the Institute was to design an "ideal reference and information network" for Texas. As a step toward fulfilling these objectives, it was decided that the Institute participants and attendees might better understand, appreciate, and enjoy the day's activities if they were situated in a network atmosphere. Thus, the 282 registrants found themselves seated, not in conventional theatre seating, but rather around pre-labeled tables, 12 to a table. Each table was intended to represent one "node" in a network. The MRC's, special libraries, W.I.N. (Western Information Network), private colleges and universities, school libraries—these and other groupings each had a table of their own. One table was designated as the "Switching Center."

The Registrants

The 282 in attendance included 120 public librarians, 115 from colleges and universities, 30 special librarians, and 12 school librarians. The balance were students, trustees, friends, and sales representatives. Total involvement of all participants in the planning and design of an ideal statewide inter-library network was the intent of the program. By being assigned by nodes, and by simulating real-life library situations in coping with the problems assigned in each node, each participant had an opportunity to get involved.

There were comments from "Official Listeners" throughout the program. The Listeners were charged with focusing attention on pertinent topics by raising questions before and after presentations, interpreting the importance of ideas, and helping to

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define problems needing attention. Collectively, they were to serve as the Institute's guide to clear thinking. The Listeners were: Mrs. Mary Boyvey, Texas Education Agency; Miss Janice Kee, U. S. Office of Education; Miss Jan Wolford, Mobil Research and Development Corporation Library; Stanley McElderry, Dean, Graduate School of Library Science, University of Texas; and Heartsill Young, University of Texas Library.

There were seven speakers, each charged with a specific assignment. Interspersed with the speakers and the reports from the "Official Listeners" were coffee breaks, lunch, and (most importantly, as it turned out) several of the above-mentioned "real" questions. In addition, all attendees received a healthy stack of literature. The two pieces of greatest importance were a *Glossary of Terms Related to Library Cooperation and Inter-Library Networks,* and a *Bibliography on Inter-Library Networks, Modeling and Simulation and Other Problem-Solving Methods.* The meeting concluded with each node

*Copies available from Maryann Duggan for duplication costs: Glossary, $2.00; Bibliography, $1.00.

answering a specific question regarding network design. A full day was planned—to begin at 9:00 a.m.—to conclude by 5 o'clock. The schedule was met. So much for the mechanics of the program.

Who Said What?

Richard Perrine, Fondren Library, Rice University and President of ALA's Reference Service Division, reviewed some of the current writings on library networks and networking. He also sketched the proposed ALA Atlantic City program which brings together three ALA divisions in one joint effort on "Resources and Services: Expanding Modes of Access."

Dr. Edward G. Holley, Director, University of Houston Libraries, and a consultant to the Office of Education Knowledge Network Task Force discussed Networks for Knowledge (Title VIII of the Higher Education Act of 1965). Dr. Holley predicted that the Office of Education will choose to fund several large pilot demonstration projects as a means of testing the Knowledge Network. Existing, formally organized library co-operatives, where contractual arrangements exist among institutions, will

probably receive first priority. He also urged that applications for projects be submitted, even though the initial money flow as appropriated by Congress may be quite small.

The results of a survey of existing networks and cooperative ventures now serving Texas libraries was reported by Mr. Waters. This survey showed 47 ventures now being utilized in the state. Some are true networks, such as R.I.C.E. (Regional Information and Communication Exchange) and CORAL (Council of Research and Academic Libraries). Others are union lists, such as the *Union List of Periodicals for the Top 26 Counties of Texas.* Isolated, their influence and strengths are diminished. If banded together and coordinated, they could form the nucleus of a statewide library network. Two principal needs were pinpointed by the survey. First, a bibliographic center, or centers, for Texas is needed to assist in locating resources and in "switching" requests. Secondly, a common communications carrier (Telex or TWX) is needed to enhance inter-library cooperation within the state by "interfacing" existing networks.

Mrs. Marie Shultz of the Texas State Library reported that an evaluation study of the public library network was in process. Preliminary data based on an analysis of over 5,000 loan transactions indicated an average communication cost per transaction of $1.53. The final evaluation report is expected to be published before June 30, 1969, by the Texas State Library.

Richard O'Keeffe next reported on the Houston LSCA Title III Special Project. It involves the linkage of R.I.C.E. and the Houston Public Library, thus expanding the resources of both by interfacing the public library network with the university library network along the Texas Gulf Coast.

The Dallas Pilot Model

Miss Duggan stated that the conceptual design of an ideal inter-library network is being developed from a Dallas Pilot Model of Inter-library Cooperation, sponsored as a Special Project under the Library Services and Construction Act Title III. In the Dallas Pilot Model, 18 libraries volunteered to participate for the purpose of analyzing the on-going inter-library loans in the Dallas Metropolitan Area. As much as possible, "typical" libraries representing all types of service needs were selected to participate in the Pilot Model. An analysis for the month of October 1968 of the inter-library loan borrowing/lending activities of 18 Dallas County libraries shows that special libraries have the highest "hit" percentage of items requested of them. Public libraries are at the low end of the scale. It was suggested by an Institute participant that the reason for the public libraries' low "batting average" is the tendency to dump everything on them if no one else is considered a good prospect for owning the needed item. Unfilled requests are 43 per cent of the total transactions in the first sampling.

This Pilot Model study produced a methodology for analyzing inter-library networks and inter-library loan transactions and certain concepts regarding network dynamics were developed. A borrowing/lending ratio formula which can be used as a tool for understanding inter-library networks was presented by Miss Duggan. The work in the Dallas Pilot Model led to the development of "node dependency coefficients" and "network activity coefficients" which can be used in designing and analyzing inter-library network behavior. Types of

inter-library relations were identified as "homogeneous vertical" or "homogeneous horizontal," or "heterogenous vertical" or "heterogeneous horizontal," depending upon which sector of' the four types of libraries''and on which geographic level the interlibrary transactions occurred. The Pilot Model looked at the geographic levels of transactions, as well as the direction of flow of transactions among the libraries and between the participating libraries and the "outside world." The type of material requested, as well as the format or channel of the request, was also considered in the Pilot Model.

Games Librarians Play

"Games Librarians Play"—or, "A Day in the Life of an Interlibrary Loan Librarian" was uproariously detailed by Francine Morris, Reference Librarian, University of Texas at Arlington. The printed word cannot do justice to Francine's delivery. All we can say is that it is no easy chore to get book A to library B via the United States Postal Service—or in any other manner either. The need for coordination and planning was clearly shown by Francine's recount of one hectic day!

Various new methodologies have been developed for problem solving strategies in the past few years. The bibliography prepared for the Reference Round Table summarized some of the more pertinent methodologies, such as operations research, modeling and simulation. These are particularly amenable for use in studying complex library situations. Dr. Richard Nance, Professor of Information Sciences at the Institute of Technology, Southern Methodist University, presented a paper on "Modeling and Simulation of Library Networks," using an analytical · mathematical model. Networks and network models

of industrial and military systems have received much attention in operations research literature. The extension of network modeling to library networks provides some interesting insights into inter-library systems design. Dr. Nance offered a general library network model and a mathematical statement of a network problem. Possible solutions of the problem were presented. An example of the use of the model in evaluation and design situations was provided. The necessity for further work in both theoretical and applied areas was emphasized by Dr. Nance.

Dr. Nance's work showed that library networks may be modeled as general capacitated networks, with multi-channel flows when the message transfer function is the only consideration. The assumptions required for such a model may be relaxed to consider classes of messages, but when document transfer is the concern, the general capacitated network formulation breaks down. Development of special algorithms to solve the type of network problems resulting from message and document transfer among libraries is required. Dr. Nance offered two hypothetical examples to show the use of analytical models in designing library networks. In one example, the model provided an evaluation tool for indicating how a library network should perform in order to derive a maximum benefit for the entire network. The models serve a design purpose in the second example in which the installation of a Union Catalog or bibliographic center within the network is shown to increase the benefit of the network by a measurable quantity. Dr. Nance also suggested that the model could be used in specific cases to evaluate alternative structure of library networks, such as centralized versus decentralized. Adaptation of the ana-

lytical model might be helpful in problems of interfacing existing library networks. Because of the extremely large number of possible configurations in the interfacing problem, one most likely would settle for heuristic solutions rather than optimum values. The work presented by Dr. Nance was mathematically rigorous and does provide a new tool for use by library network designers and for evaluating library networks.

These eight papers set the stage for the Institute's previously stated utopian goal—the presentation of an ideal reference and information network. This impossible task had been given to Miss Duggan by Miss Johnston and Mr. Waters. She, working with a Statewide Network Study Group, accepted the challenge and presented to the conference a summary of the 14 basic elements of an ideal network. The elements are:

1. An ideal network must contain an organizational structure providing for fiscal, legal, planning, policy formulation, and requiring commitments, operational agreements, and a common purpose.

2. A statewide ideal inter-library network must result in collaborative development of resources, providing for cooperative acquisition of rare and research material, and for strengthening local resources for recurringly used material. It was also felt that multi-media resources development was essential.

3. The actual nodes in a network must be identified, providing for designation of role specialization, as well as for the geographical configuration of the network.

4. Each node or participant in the network must identify their primary patron group, providing for assignment of responsibility for library service for all citizens within the network area.

5. Each node and the network must identify the "levels of service," thereby providing for basic needs of patron groups, as well as special needs, and for identifying the distribution of each of the service types among the nodes.

6. The network must provide capability for "referral" as well as for "relay," and for document

transfer as well as for information transfer.

7. It was also felt by the Statewide Study Group that the ideal state-wide inter-library network must provide for the legal right of access, providing fiscal contractual policies.

8. The establishment of a bi-directional communication system permitting "conversational mode" format is also essential. The bi-directional communications system should also be designed to carry desired messages and document transfer load at each level of operation throughout the network.

9. A common standard message code is essential for providing for understanding among the nodes on the network if communication is to be effective.

10. The Statewide Study Group also felt that a central bibliographic record or locator file was essential to provide for location of needed items within the network, thereby minimizing the number of "false drops" or "misses" in the network.

11. If the network is to be totally effective and efficient, there must be a built-in switching capability, which would provide for interfacing with other networks as well as determining the optimum communication path within the network. Decision on switching at local level·or at state level must be determined by appropriate studies and analysis.

12. Determining the type of material or the type of question to put on the network must be done by use of "selectivity criteria" of network function, which would provide guidelines of what is to be placed on the network.

13. The ideal network, furthermore, should have designed within the system an evaluation criteria and procedure, providing feedback from users and operators, and providing a means for a network evaluation and modification to achieve maximum operational utility.

14. Additionally, there should be built into the program of the ideal network training aids, short courses, seminars, and workshops, as well as instructional guides to provide the users and operators

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up-to-date information on policies and procedures. These training programs should also give feedback information to enhance the network's operational conditions.

In summary. Miss Duggan stated that the statewide inter-library network should be so designed that any citizen anywhere in the state can have access to the total library and information resources of the state through his own local library, either academic, public, school, or special.

Each node was then given an opportunity to network their node within the conceptual design of the ideal network. This was accomplished by asking each table to formulate their policy on one of 20 policy problems in designing an interlibrary network. The participants were advised that time had now come for decisions and action, and it was assumed that the nodes represented real types of libraries and locations of libraries. The nodes were asked to respond to such questions as: Which network do you wish to join? What type of services or resources do you expect to get from the network? What selectivity criteria will you use? What type of services or resources does your node expect to offer the network? By what legal authority can you join a network? What type of formal agreement do you visualize? What communication channel do you plan to use? How much will it cost? The nodes were also asked to define the geographic configuration they wished in the network, and whether it would mix governmental units and types of libraries. The nodes were asked to respond to a question regarding local switching versus statewide switching versus switching at an MRC level. Where and how should the nodes interface with other networks was also a question raised for discussion. Cri-

teria for evaluating network performance was another topic discussed by the nodes. Relative emphasis on patron mobility or material mobility was a basic question. What role specialization does each node visualize? The final question concerned node/network conflict in goals.

The Reference Round Table Pre-Conference Institute did indeed generate sparks. Just a few of the events that occurred since this Institute on March 26 are as follows: Mr. Richard Nance's paper, "An Analytical Model of a Library," has been submitted for publication by the American Society of Information Sciences. The *Wilson Library Bulletin* has asked permission to publish Miss Francine Morris's paper. Miss Duggan was contacted by a publisher from New York suggesting that the entire Pre-Conference Institute be widely published and that "The Games Librarians Play," and "Networking Your Own Library" be marketed for use in library schools. The American Library Association has offered an opportunity for Miss Duggan to present a summary of this Institute and some of the developments in networking dynamics to a June 25 joint meeting of the American Library Association RSD/ISAD/RTSD. Some of the concepts developed at the RRT Institute were thought to be of sufficient importance to be included in the TLA Library Development Committee's "Work Program" for 1969-70.

The formal proceedings of the 1969 Reference Round Table Pre-Conference Institute will be published as a separate monograph, either by TLA or the Texas State Library. Those wishing to receive copies should contact Maryann Duggan, Director of Industrial Information Services, Southern Methodist University, Dallas, Texas 75222.

APPENDIX D

DALLAS AREA PILOT MODEL*

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*The reader should review the descriptive paper on this study as reproduced in Appendix C.5-f.

APPENDIX D.1
D.1-a
DALLAS AREA PILOT MODEL
PRESENTATION TO JANUARY 14, 1969 MEETING

A. **Purpose**

1. To acquire understanding of interlibrary relations
    inter- and intra- Dallas area leading toward improved
    design of interlibrary cooperation.

2. To determine the best way to interface public, university,
    special, school libraries to optimize (a) document trans-
    fer, and (b) cooperative planning.

B. **Strategy**

1. Select participants; obtain commitment
2. Identify pertinent operational parameters*
3. Develop data collection tools*
4. Collect data
5. Install TWX/Telex interface
6. Encourage use of TWX/Telex
7. Observe and collect new data*
8. Analyze patterns of use; identify problems*
9. Prepare report with recommendations.

C. **Network Parameters Considered**

1. Identification of nodes
2. Geographic configuration
3. Organizational configuration
4. Communication channel
5. Switching node
6. Type of message
7. Frequency of message
8. Length of message

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*Tasks to be performed cooperatively with personnel from Southwest
Center for Advanced Studies per enclosed Agreement.

C.   Network Parameters (continued)
    9. Turn-around time
    10. Interfacing with other networks
    11. Linkage configuration
    12. Percent of "hits" at each level
    13. Policy on handling "no-hits"
    14. Borrowing/lending relationships
    15. Cost analysis
    16. Financing and funding.

Summary of Meeting

All present agreed to participate and submit necessary data.
It was agreed to hold a second session for briefing on the data
collection procedures.

PROGRAM
LIBRARY SERVICES AND CONSTRUCTION ACT - TITLE III
LUNCHEON - JANUARY 14, 1969

11:50 a.m. - Introduce Guests

12:00 noon - Luncheon

12:30 p.m. - Review of Inter-Library Cooperative Programs
in the Dallas Area:

1. Inter-University Council

2. Dallas County Library Association

3. Metropolitan Library Association

4. Industrial Information Services (STSA)

5. Title III, State & Local, Projects

6. Goals for Dallas, ITFLWG

1:30 p.m. - Review of LSCA Title III National Programs and
Future National Developments

2:15 p.m. - The Future of Inter-Library Cooperation in Dallas

2:30 p.m. - Adjourn

* * *

D.1-b

PARTICIPANTS
LIBRARY SERVICES AND CONSTRUCTION ACT - TITLE III
LUNCHEON - JANUARY 14, 1969

Dr. C. C. Albritton, Dean
Graduate School of Science & Humanities
Southern Methodist University

Mrs. Mary Ann Allan
Goals for Dallas
Library Task Force

Miss Linda Allmand
President
Dallas County Library Association

Miss Marguerite Anderson
Librarian
Richardson Public Library

Miss Lois Bailey
Fondren Librarian
Southern Methodist University

Mrs. Violet Baird
Librarian
Southwestern Medical School

Mrs. Dee Dee Brannen
Goals for Dallas
Library Task Force

Mr. Truman Cook
Grants and Contract Administration
Southern Methodist University

Miss Anita Decker
Texas State Library
Field Consultant

Mr. Robert Dillard
Goals for Dallas
Library Task Force

Miss Maryann Duggan, Director
Industrial Information Services
Southern Methodist University

Dr. LeVan Griffis
Vice Provost
Southern Methodist University

Mr. John Hudson
Director of Libraries
University of Texas at Arlington

Mr. George T. Johnson
Head Librarian
Bishop College

Miss S. Janice Kee
Department of Health, Education
& Welfare
U. S. Office of Education - Dallas

Miss Dorothy Kittel
Department of Health, Education
& Welfare
U. S. Office of Education - Washington

Mrs. Mary Langford
Library Coordinator
Irving Independent School System

Mr. Lowell Lindsay
Director of Municipal Library
Garland, Texas

PARTICIPANTS
LSCA TITLE III LUNCHEON - January 14
Page 2

Mr. Ed Montgomery
Bio-Information Planning
Southwestern Medical School

Miss Mattie Ruth Moore
Library Consultant
Dallas Independent School District

Dr. Richard Nance
Institute of Technology
Southern Methodist University

Mrs. Mayrelee Newman
Librarian
Dallas County Junior College

Mr. Pierson Ralph
Goals for Dallas
Task Force Coordinator

Mr. David Reich
Associate Director
Dallas Public Library

Col. Stanley Reiff
Executive Secretary
Inter-University Council

Miss Ammarette Roberts
Manager, Information Services
Lone Star Gas Company

Mr. Prentiss Selby, Manager
Technical Information Center
Texas Instruments, Inc.

Mr. Jim Stephens
Science/Engineering Librarian
Southern Methodist University

Mrs. Elizabeth Stetson
Librarian
Dallas County Library System

Mrs. Robin Taylor
Librarian
Southwest Center for Advance Studies

Mr. Robert M. Trent
Director of Libraries
Southern Methodist University

Mr. Peter Van't Slot
Associate Director of Development
Southern Methodist University

Mr. Dick Waters
Branch Coordinator
Dallas Public Library

Mrs. Julius Wolfram
Goals for Dallas
Library Task Force

Dr. H. F. Yarbrough, Manager
Technical Information Center
Mobil Oil Corporation

D.1-c

Date: _____

TO WHOM IT MAY CONCERN:

I have reviewed the SMU/TLA/GFD Title III LSCA Proposal dated November 14, 1968, entitled "A Proposal for a Library Inter-Network Study, Demonstration and Pilot Model".

I am willing to participate in the "pilot model" as proposed therein. I am willing for my normal daily salary to be recorded as matching funds for this project for the days I spend on the pilot model project. This will require that I submit a summary statement showing hours spent on the project and estimated total salary committment. There will not be an actual cash transfer; only a record of time spent and estimated value.

Signed: _____

Phone: _____

S U M M A R Y   D-8

COMMITMENT OF TIME AND EXPENSES
TO THE SMU TITLE III LSCA PROJECT

TO WHOM IT MAY CONCERN:

I hereby verify that the following donated time and/or expenses
have been contributed toward SMU's Title III LSCA Matching Funds
Requirements:

TIME (Attach Separate Sheet for Each Person)

DATES		PERSON	PURPOSE	HRS.	EST.COST
From	To				

EXPENSES (Attach Separate Sheet for Each Trip. Travel not to exceed $_____
per diem.)

DATES		TYPE OF EXPENSE	PURPOSE	COST
From	To			

_____
Participating Institution

_____   By: _____
Date Submitted   Authorized Signature

D.1-d

AGREEMENT BETWEEN INDUSTRIAL INFORMATION SERVICES, SOUTHERN METHODIST
UNIVERSITY, AND THE SOUTHWEST CENTER FOR ADVANCED STUDIES

The Industrial Information Services, Southern Methodist University,
(hereinafter referred to as IIS) holds a contract with the Texas State
Library under Title III of the federal Library Services and Construction
Act to study ways and means of interfacing existing state-wide library
and information networks serving all types of users.

The IIS and the Southwest Center for Advanced Studies (hereinafter
referred to as SCAS) agreed that SCAS can make a contribution to this
study through the computer processing and visual display of data gathered
by the IIS under this contract.

The IIS and SCAS therefore agree as follows:

1. Library data provided by IIS will be subject to computer analysis
by SCAS to determine the following factors:

    a. Number of interactions with and between five levels of
        libraries, i.e. directions and magnitude of message flow.

    b. Relative borrowing/lending ratios by individual libraries
        and by types of libraries; i.e., role of the individual
        library in the network.

    c. Comparison of types of items with types and levels of
        libraries; i;e;, the dependency situation.

    d. Preparing the data in necessary format to input into a
        mathematical model developed by IIS under the Title III
        project.

    e. Cooperatively with IIS staff, evaluating the data sample
        and identifying other types of data needed for further
        implementation of the mathematical model.

    f. Cooperatively with IIS staff, identifying preferred
        methodology for this type of data analysis.

    g. Presentation of the results of data analysis phase in
        visual forms, slides, graphs, charts and overlays.

2. Preliminary input data will be provided by IIS to SCAS on
or before February 21, 1969. SCAS will conclude preliminary
computer analysis and visual display of data so provided prior
to March 26, 1969. As requested by IIS, SCAS will conduct further
refinement and analysis of the data by June 30, 1969.

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3. SCAS will provide the foregoing analyses and visual displays at no cost to IIS, such costs not to exceed, however, $4,000. SCAS will verify on forms provided by IIS the actual costs of personnel time, computer charges and other expenses contributed by SCAS under this Agreement.

4. By mutual consent, this Agreement may be extended to August 31, 1969.

Entered into this _____ day of _____, 1969.

On behalf of IIS   On behalf of SCAS

_____   _____

_____   Assistant to the President
                                          Southwest Center for Advanced Studies

January 28, 1969   File: Title III
                                                     Dallas Pilot Model

TO ALL PARTICIPANTS IN THE DALLAS PILOT MODEL
    OF INTER-LIBRARY COOPERATION (Per Enclosed List)

May I express to you my personal appreciation for your enthusiastic at-
tendance at the January 14 luncheon at the Hilton Inn. Thanks to you,
Miss Dorothy Kittel was very much impressed with Dallas libraries and
librarians!!

We have now received enough favorable response from most of you to indi-
cate that we should proceed with the Pilot Model project in Dallas. As
many of you have indicated, you would like to have an opportunity to dis-
cuss the details of the proposed model. Thus, we are scheduling an in-
depth planning session for all participants to discuss all aspects of data
gathering, data analysis, data interpretation, installation of TWX/Telex,
experimental use of facsimile transmission, statewide switching service,
conceptual model of ideal network for Dallas, etc.

This planning session will be held Wednesday, February 12, SMU Science
Information Center, Room 119, 9:00 a.m. to 12:30 noon, followed by Dutch
treat lunch. A proposed agenda is enclosed. Your participation is needed
to make the Pilot Model the successful experiment we all desire. If for
some reason you cannot come, please assign a deputy so that your thinking
and organization will be represented. A reservation form is enclosed for
your use.

If you have any questions concerning any aspect of the Pilot Model, I can
be reached at EM3-3011, 8:30 to 5:30 Monday through Friday, or BL3-6082
after 8:00 p.m. evenings.

I look forward to working with you on this exciting project.

                                    Maryann Duggan

MD:rm

Encl.

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PROPOSED AGENDA
DALLAS PILOT MODEL PLANNING MEETING
FEBRUARY 12, 1969
ROOM 119, SMU SCIENCE INFORMATION CENTER

* * *

9:00 a.m.   Purpose of Pilot Model

9:15 a.m.   Data Collection Phase - Discussion

9:30 a.m.   Data Analysis Phase - Discussion

10:00 a.m.   Network Modelling - Richard Nance -
             Discussion

10:30 a.m.   Coffee

10:45 a.m.   Conceptual Design of Ideal Dallas Library
             Network

11:30 a.m.   Demonstration Phase - TWX/Telex/Facsimile
             Transmission

11:45 a.m.   Where Do We Go From Here?

* * *

Above is Only Guide
to Discussion

D.2-b

SUMMARY OF

DALLAS LIBRARIES PILOT MODEL*
SECOND MEETING - FEBRUARY 12, 1969

PARTICIPATING LIBRARIES

Southwest Medical School of Univ. of Texas
Dallas Public Library
Bishop College Library
SMU Science Library
SMU Fondren Library
Dallas County Junior College
Univ. of Texas at Arlington
Academy of Computer Technology
Mobil Research Library
Lone Star Gas Library
Texas Instrument Libraries
Inter University Council
Richardson Public Library
Dallas Independent School District
Irving Independent School District
Southwest Center for Advanced Study
Dallas County Library System

The purpose of the pilot model is to identify and define
the parameters of the interlibrary relationships, specifically
at the present in the interlibrary loan area. Hopefully the
study will answer the following items:

1. What is the direction of flow of
   interlibrary loan borrowing and
   lending, and to and from whom.
2. What is the volume of interlibrary
   loans
3. What are the categories of borrowed
   materials
4. What is the message channel, or format
   of the request.

In setting up a system for studying the directions of flow,
Maryann Duggan presented geographical categories made up of the
following components:

1. The Pilot Model Libraries
2. Libraries within city limits of Dallas
3. Libraries within Dallas Co. limits
4. Libraries within Dallas MRC area
5. Libraries within Ft.Worth MRC area
6. Libraries within Texas state lines
7. Multi-state, interstate, regional libraries
8. Libraries within United States continental
   jurisdiction
9. International, e.g. those outside of U.S.

---
*Summary prepared by Virginia Brannen.

Page 2 - DALLAS LIBRARIES PILOT MODEL   Second Meeting

CRITIQUE OF FORMS

The critique of the forms presented at the last meeting of the Dallas Libraries Pilot Meeting is in the form of questions and answers and statements made.

1. How is anyone else accounting for the time lag? Ans: There appears on the monthly summary a time element, which answers this in averages, but does not account for the individual items time lag.

2. There needs to be a line for subtotals at the bottom of the daily forms.

3. The location of the other library in terms of town and type of library will be translated to the geographical and type of library categories.*

4. The type of material, its format, needs to be defined. What is a document? Does a technical report belong under the document category? Ans: Place technical report under document.

5. Mail needs to be defined. Where does a form letter belong? Place form letter under ILL form, and individually created letter under mail.

6. Under items not supplied, OTHER means at bindery or can't find it.

7. Spheres of influence such as IIS and RICE need to be defined as far as categories of libraries. Define IIS, RICE as switching centers.

LIBRARY NETWORK - Dr. Richard Nance

If one removes the library, a network consists of two things (x) vertices and (----) arcs. Vertices are defined as being entities, and arcs as the action between entities.

Vertices

O ʌ---ARCS--->O
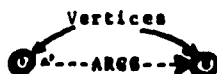
The library network which Dick Nance presented is limited to sending messages, where for the sake of definition, there are initiator libraries and receiver libraries. There exists a subset of libraries which act as relay libraries (also defined as switching centers). These Relay Libraries have such material as finding guides (Union Catalogs) TWX, TELEX. In theory they never initiate, but act strictly as relay libraries. Not all libraries can function as vertices, therefore the relay libraries.

---

*Note: This proved to be a future coding problem of considerable magnitude.
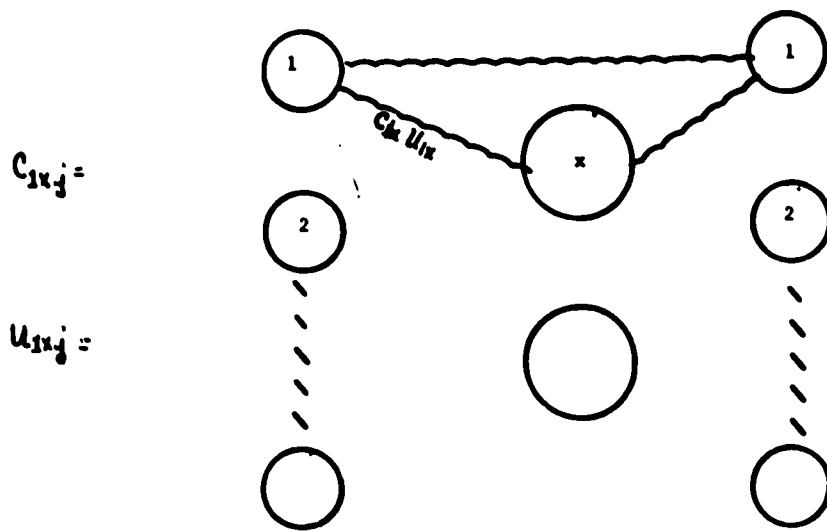
Channel capacity = $C_{1x} = j$
So many messages can be sent over
channel C from 1 to x, limiting the
number of ILL's a library can process.
Utility of channel = $U_{1x} = j$
Defined as the utility of the channel
1 to x. This is not called cost because
other factors such as time are involved/

IF:
    i = number of messages
    j = channel capacity (or limitation on utility)
    k = channel
THEN:
    U_{ijk} is the utility to be gained through messages to be sent

    What we will attempt to do is maximise i, j, and jk

$$\sum_i \sum_j \sum_{jk} U_{ijk} X_{ijk}$$

Page 4 - DALLAS LIBRARIES PILOT MODEL   **Second Meeting**

I_1 has some number of messages is is going to send, and R_1 has
some number of messages which it is going to receive. The
message line could be I_1 to R_1 without the relay. However
this may not be the most optimal use. X_{ijk} may not be the
best for I_2, but may be the best for total network. Need
te give up something to join network inorder to arrive at some
beneficial result for all.

Graphically, the mathematical modeling will define the
peak of the utility of a channel in ratio to the number of
messages sent, and how sent.

Utility   what is peak?

No. of messages, how sent
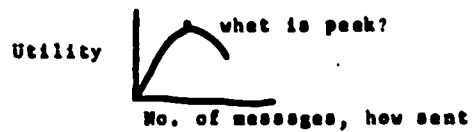
Decisions need to be made at state wide level of networks,
on should you switch nationally, regionally, to SMU, Autin or
University of Texas. At what geographical level should you
switch. The mathematical modelling will give us some insight
to solving the problem, but will not solve the problem;
It will define way which it is to be done, and at this point
can find max. on this level.
The utility function needs to be defined. Utility may be
different between libraries.
Another question is are all messages the same. We know
that in the real world that they are not, therefore $\sum$

$$\sum_i \leq \sum_j \leq \sum_k \leq \sum_l \quad X_{ijkl} \, U_{ijkl}$$

The greatest benefit will be the structuring of the problem.
It will set the criteria on when you go to Austin or when you
go locally. It will gain some insight within the Dallas Area
of concepts of interrelations.

Col. Reiff stated that it is not what would be best, but
what is used will be defined.

The model that Dick Nance presented is a multi-commodity
capacitated multi-linked network. In the case of 10
libraries in the network, with 2 relay libraries and 3 channel,
it is possible to have 688 linear equations.

So far this is only a message network. If documents
enter into a network, this is a location allocation problem
which have not been solved mathematically.

Page 5 - DALLAS LIBRARIES PILOT MODEL   SECOND MEETING

FUTURE in terms of what needs to be done, and what can be done.

1. Define terms
2. Jim Stevens is having a bibliography done on this subject
3. Reference questions may be answered by mathematical modelling in the future.
4. The Utility functions need to be defined, which may be different at different libraries
5. Identify what kinds of information should be collected and how gathered.

It is conceivable that library patrons can be identified, and the lending and borrowing of not normally library patrons can be detected. The problems with finding this type of information is how to capture this data and then define how incomplete the data is. Each library has its own level of methodology. At least this pilot model may create some sort of standardization.

Based on the network model of Dick Nance, it is hoped the answers to many of the interlibrary relationships in terms of the patrons will be found.

Note: In retrospect, this meeting of February 12 contained the seeds of failure! Too much time was spent on theoretical considerations and not enough time on what was to be done with the data, what type of data were needed and how Dr. Nance's work would relate to the work of Mr. Peters at SCAS. Due to the inexperience of the investigator, however, these "seeds of failure were not recognized until too late.

MD, December 1971

APPENDIX D.3

RAW DATA COLLECTION

A.   Procedure and Instruments

Each participating library was supplied the following four
forms for collecting data on one month's interlibrary loan trans-
actions--both borrowing and lending.

1. Monthly Summary - Borrowing
2. Daily Borrowing Record
3. Monthly Summary - Lending
4. Daily Lending Record

Copies of these forms are enclosed. Most of the data
elements requested on the form are self-explanatory except for
the following:

S = Serial (Monographic)

D = Document (Federal or State)

M = Monograph (Book, non-serial)

J = Journal (periodical)

The forms were completed by the participating libraries
and returned to the investigator for processing and analysis.
The month of October 1968 was selected as the standard time
period to be studied, with the exception of two participants
who supplied January/February data.

It was initially intended to collect one month of data
prior to the pilot model TWX/Telex installation to compare these
data with another month later in the pilot model period. This idea
had to be abandoned after it was learned that the computer analysis
would not be possible.

MONTHLY SUMMARY - BORROWING

LIBRARY _____

MONTH _____

	S	D	M	J	OTHER	TOTAL	%
NO. ITEMS REQUESTED							
LOCATION OF LENDER:							
In Dallas County							
In Texas							
Out of State							
TYPE OF LENDER:							
Special							
Public							
College & Univ.							
School							
Government							
Other							
FORMAT OF REQUEST:							
Telex							
TWX							
ILL Form							
Telephone							
Letter							
Other							
NO. REQUESTS REQUIRED							
RATIO: REQUESTS / ITEM							
ITEMS SUPPLIED BY:							
Loan							
Photocopy							
ITEMS NOT SUPPLIED:							
Not in Collection							
In Use							
Non-Circulating							
Other							
TIME LAG - DAYS							
Request to Receipt							

YOUR LIBRARY _____

DAILY BORROWING RECORD

MONTH _____

DATE	LENDING LIBRARY	LOCATION	TYPE	FORMAT OF REQ	TYPE OF ITEM REQD					SUPPLIED BY			NOT SUPPLIED			
					S	D	M	J	O	L	P	M	NIL	IU	NC	O

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MONTHLY SUMMARY - LENDING

LIBRARY _____

MONTH _____

	S	D	M	J	OTHER	TOTAL	%
NO. ITEMS REQUESTED							
SOURCE OF REQUEST:							
In Dallas County							
In Texas							
Out of State							
TYPE OF REQUESTER:							
Special							
Public							
College & Univ.							
School							
Government							
Other							
FORMAT OF REQUEST:							
Telex							
TWX							
ILL Form							
Telephone							
Letter							
Other							
NO. ITEMS SUPPLIED							
ITEMS SUPPLIED BY:							
Loan							
Photocopy							
Microform							
ITEMS NOT SUPPLIED:							
Not in Collection							
In Use							
Non-Circulating							
Other							

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YOUR LIBRARY _____

DAILY LENDING RECORD

MONTH _____

DATE	BORROWING LIBRARY	LOCATION	TYPE	FORMAT OF REQ	TYPE OF ITEM REQD					SUPPLIED BY			NOT SUPPLIED			
					S	D	M	J	O	L	P	M	NIL	IU	NC	O

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D.3-b

B.   <u>Gross Results</u>

Fourteen libraries submitted the requested data. The total
number of interlibrary loan transactions reported was 2,036.
Of these, 1,524 (67 percent) were filled and 443 (23 percent)
were unfilled. Table I lists the participants and the number
of transactions (and relative percentage of transactions)
reported during the study.

TABLE I

PARTICIPANTS IN THE DALLAS AREA PILOT MODEL

Name of Library	Code	Geog. Location	Type Library	Total Trans.	%
1. Dallas Public (Main)	21	Dallas (City)	Public-MRC*	255	12
2. Richardson Public Lib.	23	Richardson (Co)	Public-Type III*	8	<1
3. Nicholson Memorial Lib.	22	Garland (Co.)	"	3	<1
4. Dallas County Library	20	Dallas (Co.)	Public-County	6	<1
5. El Centro Jr. College	06	Dallas (City)	Acad.-Public	8	<1
6. Bishop College	05	Dallas (City	Acad.-Private	28	1.1
7. SMU-Science/Engineering	02	Dallas (City)	"	120	5.9
8. SMU-Fondren	03	Dallas (City)	"	128**	6.0
9. U. of Texas at Arlington	04	Arlington (Adj. County)	Acad.-Public	247	12
10. Southwestern Med. School	07	Dallas (City)	Acad.-Special	412	21
11. Southwest Ctr. Adv. Studies	24	Richardson(Co.)	Acad.-Special	203	9.9
12. Industrial Inform. Svcs.	01	Dallas (City)	Acad.-Switch.	400	20
13. Mobil R & D Corp.	08	Dallas (City)	Spec.-Indust.	64	3.2
14. Texas Instruments Inc.	09	Richardson(Co.)	"	152**	7.5
15. Univ. Computing Corp.	10	Dallas (City)	"	2	<1
16. Dallas Ind. School Dist.	12-17	Dallas (City	School-Public	0	0
17. Irving School System	18-19	Irving (Co.)	"	0	0
			Total	2036	

* Major Resource Center.

**Jan./Feb. data; Oct. data not available.

APPENDIX D.4

CODING OF RAW DATA

D.4-a

CODE DESCRIPTION

In order to input the raw data of each transaction into the computer to analyze the variables, it was necessary to code each transaction for key punching. The code designators used for each data element variable are presented in Table II. Each transaction was coded on a key punch sheet in the 80 column card format presented in Table III.

A total of 869 transactions were coded and keypunched for computer input. The coding time proved to be excessive within the time and cost constraints of the project. Thus, the decision was made to stop the data input at that level and to concentrate on analysis of variables by less quantitative means.

The raw data are in the archive files of the project for future computer manipulation, if desired. Future investigators of interlibrary loan transactions should beforewarned that the problems associated with coding and data input of the pertinent data elements are a tedious, time-consuming, and costly experience. The original data collection instruments should be designed with this fact in mind.

TABLE II

CODE DESIGNATIONS USED ON PILOT MODEL DATA

Type of Library	Code
1. Special	10
(1) Industrial	11
(2) Academic-Medical	12
2. Public	20
(1) City	21
(2) County	22
(3) City/County	23
3. Academic	30
(1) Jr. College	31
(2) Private	32
(3) Public	33
(4) Research Institute	34
4. School	40
(1) Elementary	41
(2) Secondary	42
5. Government	50
6. Other	60
7. Switching Center	70

Geographic Location	Code
City (Dallas)	1
County (Dallas)	2
Dallas MRC Area	3
Fort Worth MRC Area	4
State	5
Region (5 states)	6
National	7
International	8

TABLE III

PUNCH CARD LAYOUT FOR INPUT
OF CODED DATA, DALLAS PILOT MODEL

Card Col.	Designation of Field
1- 6	Date of Transaction, Month, Day, Year
7-25	Name of Lending/Borrowing Library
26-27	Type Code for Library in 7-25 (See Table II)
28-47	Geographic Location of Library in 7-25
48	Geographic Location Code for " " (Table II)
49-55	Format of Request
56	Blank
57-61	Type of Item Requested
62	Blank
63-65	Item Supplied by
66	Blank
67-70	Not Supplied by
71	Blank
72-73	Participating Library Code (See Table I)
74	Blank
75	B = Borrowing Transaction, L = Lending Transaction
76	Punched - Switching Center Transaction
77	Blank
78-80	Card Sequence

APPENDIX D.5

SIGNIFICANT VARIABLES AND RESULTS

One of the other difficult aspects of the pilot model was
determining significant variables to analyze. The following variables
were considered:

1. Volume of borrowing and lending for each library as a
   function of the total sample.
2. Ratio of borrowing and lending at each library.
3. Geographic location of borrowing and lending transactions
   and "net in-out balance" of the pilot model area.
4. Type of "transactions mix" by type of library (432 possible
   combinations!)
5. Type of document requested.
6. Format of message.
7. Success ratio (filled requests).

With the assistance of the Southwest Center for Advanced Studies
personnel, computer programs were written in PL-1 for the following
analysis:

1. Summary of lending by type of library.
2. Summary of borrowing by type of library.
3. Summary of lending by geographic location of requestor.
4. Summary of borrowing by geographic location of requesting library.
5. Calculation of borrowing/lending ratio by type of library.
6. Summary of borrowing and lending by type of item requested.
7. Summary of borrowing and lending by format of request.
8. Comparison of all of above seven variables by geographic
   location in a graphic plot.

About the time the programs were written, de-bugged, and the 869
transactions run as a test (June 1969), the Southwest Center for Advanced
Studies underwent considerable reorganization, the programmer was re-
assigned and time constraints prevented documentation of the programs.
The program listings are in the archive files of the project for review
by future investigators, if desired.

Due to the above situation, it became necessary to resort to manual analysis of the raw data. The following tables present these findings on a refined sample of valid raw data.

Table IV summarizes the network activity by type of library participating in the pilot model. Certain "node-network coefficients" were evolved to analyze these data, as follows:

Bn = number of borrowing transactions originating from the node

Ln = number of lending transactions received by the node

$\dfrac{Bn}{Bn + Ln}$ = Node Dependency Coefficient, i.e. relative percent of borrowing by a node compared to total activity at the node

Bt = total borrowing transactions originating from all participants

Lt = total lending transactions initiated by all the participants

$\dfrac{Bn + Ln}{Bt + Lt}$ = Node Activity Coefficient, i.e. relative percent of all transactions among the participants occurring at a given node

The Node/Network Dynamics Grid illustrated in Figure 1 was developed as an analytical tool to assist in understanding the pilot model interaction.

TABLE IV

NODE/NETWORK DYNAMICS OF TOTAL TRANSACTIONS REPORTS*

	Library	Bn	Ln	Bn + Ln	$\frac{Bn}{Bn + Ln}$	$\frac{Bn + Ln}{Bt + Lt}$
1.	DPL - Main	17	252	269	0.06	0.16
2.	Richardson PL	4	0	4	1.00	0.01
3.	Garland PL	3	0	3	1.00	0.01
4.	Dallas Co. Lib.	0	5	5	0.01	0.01
15.	Type Total	(24)	(257)	(281)	(0.08)	(0.18)
5.	UTA	72	176	248	0.28	0.15
6.	SMU-Sci/Eng	22	98	120	0.18	0.07
7.	SMU-Fondren	28	59	87	0.32	0.05
8.	Bishop	25	3	28	0.90	0.03
9.	DCJC	8	0	8	1.00	0.02
16.	Type Total	(155)	(160)	(491)	(0.32)	(0.31)
10.	Mobil R&D	61	3	64	0.96	0.04
11.	Univ. Comp. Co.	2	0	2	1.00	0.01
12.	Texas Instr.	138	14	152	0.89	0.09
13.	UT SW Med. Sch.	105	295	400	0.26	0.25
14.	SCAS	211	3	214	0.99	0.13
17.	Type Total	(517)	(315)	(832)	(0.62)	(0.51)
	Total	696	908	1,604		

---

* Includes filled and unfilled transactions.

D-30a

Figure 1

Node/Network Dynamics Grid

Zone I = Low Node Dependency and Low Node Activity
Zone II = Low Node Dependency and High Node Activity
Zone III = High Node Dependency and Low Node Activity
Zone IV = High Node Dependency and High Node Activity
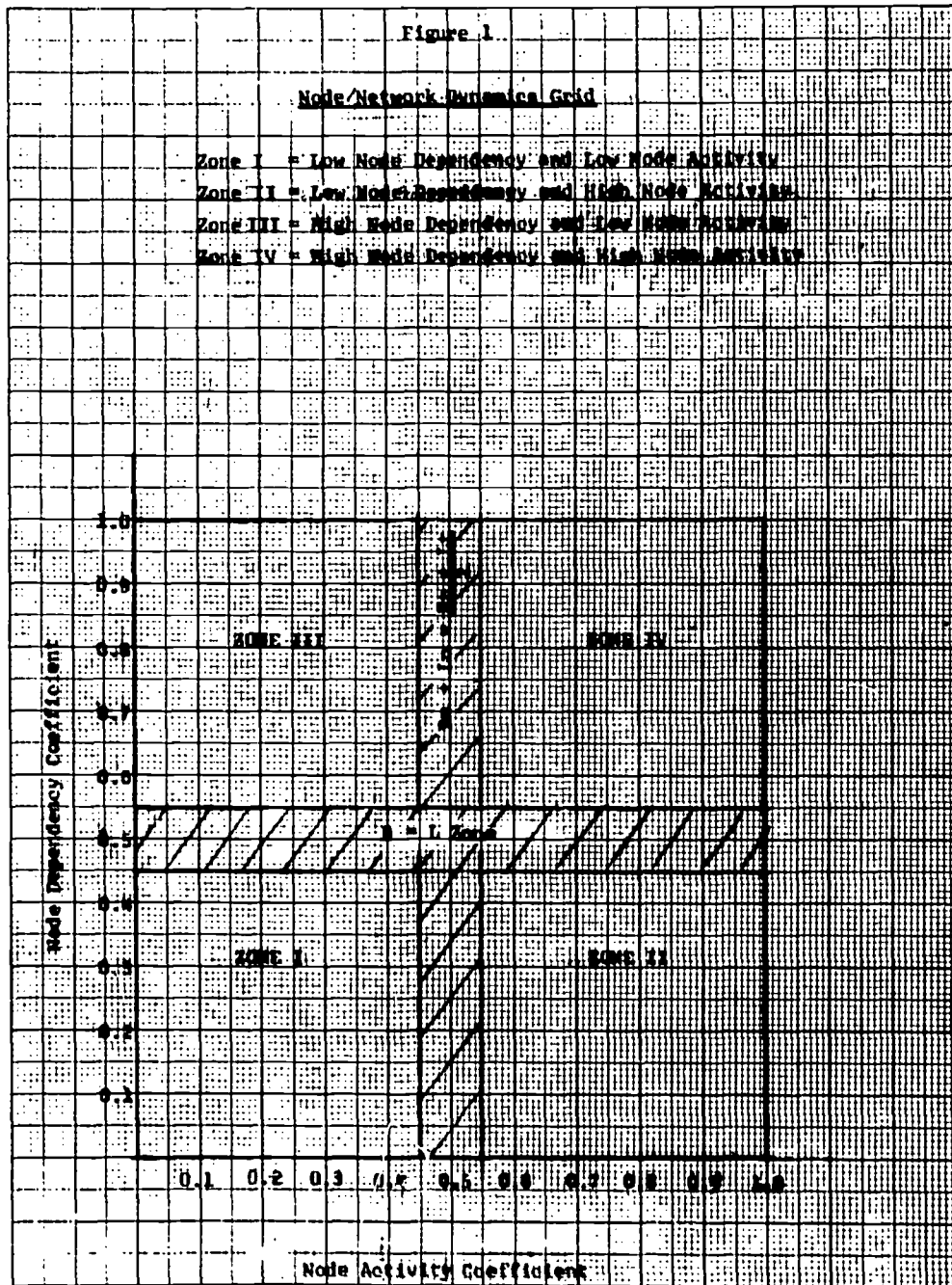
A.   Borrowing Parameters

Table V presents the summary data on the borrowing trans-
actions, reported by the participated libraries. A total of 696 items
were requested. By type of library, the borrowing requests originated
in the following distribution:

Originating Library Type	Distribution of Borrowing, %
Special	77
Public	4
College & University	19
School	0
Government	0
Other	0

In other words, 77 percent of the borrowing originated from
special libraries.

Of the 625 borrowing transactions for which lending source
was identified, 52 percent w.re obtained from libraries within Dallas
County, 28 percent from Texas, and 20 percent from out of state.

Of the 631 borrowing transactions for which lending sources
by type of library was identified, the following distribution was observed:

Lending Library Type	Distribution of Borrowing, %
Special	15
Public	5
College & University	73
School	0
Government	2
Other	5

In other words, 73 percent of the reported borrowing was
filled by college and university libraries.

Comparing type of borrower with type of lender, the following
"mix" by library types was observed:

Type of Lender:	Type of Borrower:						
	A	B	C	D	E	F	Total
A) Special	90	2	1	0	0	0	93
B) Public	20	12	2	0	0	0	34
C) College & Univ.	332	6	112	0	0	0	450
D) School	0	0	0	0	0	0	0
E) Government	12	6	0	0	0	0	18
F) Other	35	0	0	0	0	0	35
Total	489	26	115	0	0	0	630

These data indicate that 66 percent of the borrowing transactions involved an exchange between two different types of libraries. The greatest volume of interlibrary transactions occurred between special/academic libraries. Public and academic libraries tend to borrow more from their own type of library. For example, 45 percent of the requests originating from the public libraries were filled by public libraries, whereas only 2 percent of the requests originating from special libraries were filled by special libraries.

Another way of demonstrating the intermixing of borrowing among types of libraries is to show percentage distribution for each of the 12 types of transactions:

Transaction Type	Number of Transactions	% of Transactions
Sp ⟶ Sp	90	
Sp ⟶ Pub	20	
Sp ⟶ Acad	332	52
Sp ⟶ Govt	12	
Sp ⟶ Other	35	
Pub ⟶ Sp	2	
Pub ⟶ Pub	12	
Pub ⟶ Acad	6	
Pub ⟶ Govt	6	
Acad ⟶ Sp	1	
Acad ⟶ Pub	2	
Acad ⟶ Acad	112	19
Total	630	

Regarding the format or communication channel used for the requests
of the 613 transactions for which this parameter could be identified,
49 percent were transmitted by telephone, 27 percent by mail, and 21
percent by TWX or Telex. Of the 582 items borrowed by the reporting
libraries, 62 percent were obtained on loan and 38 percent by photocopy.

The data on the other borrowing parameters shown in Table II are
not sufficiently reliable to interpret.

TABLE V

SUMMARY OF BORROWING BY TYPE OF LIBRARY

	Public	County	State Univ.	Private Univ.	Junior Coll.	Indust.	Medical School	Research Inst.	Total
NO. ITEMS REQUESTED	24	0	72	74	8	201	105	212	696
LOCATION OF LENDER									
In Dallas County	11	0	22	1	2	101	18	175	330
In Texas	5	0	44	18	6	33	56	17	179
Out of State	10	0	5	16	0	34	43	8	116
									625 Total
TYPE OF LENDER									
Special	2	0	0	1	0	14	75	1	93
Public	12	0	1	0	1	19	1	0	34
Coll. & Univ.	6	0	71	34	7	81	41	210	450
School	0	0	0	0	0	0	0	0	0
Government	6	0	0	0	0	8	0	4	18
Other	0	0	0	0	0	35	0	1	36
									631 Total
FORMAT OF REQUEST									
Telex	2	0	0	0	0	0	0	0	2
TWX	0	0	66	6	0	1	36	15	124
ILL Form	13	0	5	12	6	62	64	0	162
Telephone	11	0	0	0	·2	·111	17	166	307
Letter	0	0	0	0	0	1	0	9	10
Other	0	0	0	0	0	8	0	0	8
NO. REQUESTS REQUIRED	27	0	71	?	10	?	?	?	613 Total
RATIO: REQUESTS/ITEM	27/24	-	1/1	?	10/8	?	?	?	?
ITEMS SUPPLIED BY									
Loan	13	0	23	22	5	63	44	195	365
Photocopy	0	0	23	13	2	85	73	21	217
									582 Total
ITEMS NOT SUPPLIED									
Not in Collection	4	0	10	2	0	?	?	6	22
In Use	2	0	1	1	1	?	?	1	6
Non-Circulating	4	0	6	0	0	?	?	0	10
Other	3	0	3	1	0	?	?	1	7
TIME LAG - DAYS, AVG.									451 Total
Request to Receipt	10-30	-	?	5-13	5	?	?	?	?

B.   Lending Parameters

Table VI presents the summary data on the lending transactions reported by the participating libraries. A total of 840 items were requested. By type of library, the requests to lend were received in the following distribution:

Type of Library	Number of Requests Received	% of Requests Received
Special	325	38
Public	243	29
College & University	272	33
School	0	0
Government	0	0
Other	0	0
	840	

Of the 840 lending requests received, the reporting libraries were able to fill 530 or 63 percent. The percent of "fills" by type of lending library is shown below:

Type of Library	Requests Received	Requests Filled	% Filled
Special	325	312	96
Public	243	49	21
College & University	272	169	62
School	0	0	0
Government	0	0	0
Other	0	0	0
	840	530	63

Of the 310 items requested but not filled, the reporting libraries gave the following reasons for not being able to fill the requests:

Reason	% of Non-Fills
Not in collection	61
In use	1
Non-circulating	0
Other	38

The geographic location of the requesting libraries as
reported by the lending libraries was as follows:

Location	Percent
Dallas County	36
In Texas	61
Out of State	3

The "mix" of transactions between two types of libraries is
illustrated in the following table:

Type of Borrower:	Type of Lender:						
	A	B	C	D	E	F	Total
A) Special	249	1	66	0	0	0	316
B) Public	1	235	5	0	0	0	241
C) College & Univ.	63	6	136	0	0	0	205
D) School	0	0	3	0	0	0	3
E) Government	2	1	3	0	0	0	6
F) Other	0	0	1	0	0	0	1
Total	315	243	214	0	0	0	772

The data indicate that only 19 percent of the lending transactions
of the reporting libraries involve a mix of two types of libraries. The
greatest volume of lending transactions occurred between libraries of the
same type. Of these transactions involving two types of libraries, the
greatest volume was between special and academic. Of the 36 possible combi-
nations of lending transactions, 14 types were observed in this report.
The distribution of these combinations is as follows:

D-37

Transaction Type	Number of Transactions	% of Transactions
Sp ⟶ Sp	249	32
Sp ⟶ Pub	1	
Sp ⟶ Acad	66	
Pub ⟶ Sp	1	
Pub ⟶ Pub	235	30
Pub ⟶ Acad	5	
Acad ⟶ Sp	63	
Acad ⟶ Pub	6	
Acad ⟶ Acad	136	17
Sch ⟶ Acad	3	
Govt ⟶ Sp	2	
Govt ⟶ Acad	3	
Other ⟶ Acad	1	
	772	

Regarding format or channel by which the lending library received the requests, 27 percent were received by telephone, 21 percent by mail, and 52 percent by Telex or TWX.

Of the 530 items supplied by the lending libraries, 66 percent were delivered as loan items, and 34 percent were sent as photocopies.

TABLE VI

SUMMARY OF LENDING BY TYPE OF LIBRARY

	Public	County	State Univ.	Private Univ.	Junior Coll.	Indust.	Medical School	Research Inst.	Total
NO. ITEMS REQUESTED	240	3	176	96	0	17	305	3	840
SOURCE OF REQUEST									
In Dallas County	34	3	67	19	0	4	171	2	300
In Texas	204	0	107	65	0	10	118	1	505
Out of State	2	0	2	9	0	3	6	0	22
									827 Total
TYPE OF REQUESTER									
Special	1	0	66	0	0	9	238	2	316
Public	232	3	0	5	0	1	0	0	241
College & Univ.	6	0	108	28	0	6	56	1	205
School	0	0	0	3	0	0	0	0	3
Government	1	0	1	2	0	1	1	0	6
Other	0	0	1	0	0	0	0	0	1
									772 Total
FORMAT OF REQUEST									
Telex	189	0	0	0	0	0	0	0	189
TWX	0	0	127	26	0	1	61	0	215
ILL Form	22	0	48	21	0	11	66	1	169
Telephone	29	3	0	7	0	5	165	2	211
Letter	0	0	1	0	0	0	3	0	4
Other	0	0	0	0	0	0	0	0	0
									788 Total
NO. ITEMS SUPPLIED	49	?	76	93	0	14	295	3	530 Total
ITEMS SUPPLIED BY									
Loan	49	?	22	46	0	0	231	2	350
Photocopy	0	?	53	47	0	14	64	1	179
Microform	0	?	1	0	0	0	0	0	1
									530 Total
ITEMS NOT SUPPLIED									
Not in Collection	102	?	83	3	0	1	10	0	199
In Use		?	3	0	0	1	0	0	4
Non-Circulating		?	0	0	0	0	0	0	0
Other	101	?	16	0	0	1	0	0	118
									321 Total

C.   Node-Network Dynamics

As discussed in other sections of this report, the methodology for analysis of these data had to be evolved. Although the borrowing data and the lending data individually provide some insight into the interlibrary loan behavior of the participating libraries, these data did not quantify the interlibrary network dynamics believed essential for planning and evaluation.

Thus the Node-Network Dynamics Coefficients discussed earlier were developed in an effort to develop quantitative insight into the pilot model data. The plot of these data on the grid are illustrated in Figure 2 for the total transactions reported (filled and unfilled) by each individual library and by the three types of libraries. With one exception, all the libraries exhibit relatively low node activity (i.e., less than 50 percent of total transactions occurring at a given node). Seven of the libraries exhibit relatively high node dependency with relatively low node activity. Five of the libraries exhibit relatively low node dependency and low node activity.

Figure 3 illustrates these relationships for the refined sample data by the types of libraries.

Based on this analysis methodology, it is possible to identify the relative contribution or dependency of an individual library or a group of libraries in a network organization. The relative location of the individual library on the grid by zone could be used to determine reimbursement formula or pricing of services, as explained previously. Applying this principle to the Dallas Pilot Model data in Figures 2 and 3, those libraries in Zone I should be considered contributing libraries and thus reimbursed for services. Those libraries in Zone III are net users at a relatively low volume of the network and should probably help support the services by some financial means. The libraries in Zone IV are heavy users of the network at high volume and thus should probably provide even greater financial support.

Reviewing geographic sources for borrowing and lending by the participating libraries, the following data are interesting:

Percent Geographic Distribution for:

	Borrowing	Lending
Within Dallas County	52	36
Within Texas	28	61
Out of State	20	3

Figure 2

Node/Network Dynamics of Total Transactions Reported
By Individual Library and Type of Library

Node Identification Keyed
to Table I

Figure 3

Node/Network Dynamics for Refined Sample

Node Activity Coefficient $\frac{Bn + Ln}{Bt + Lt}$
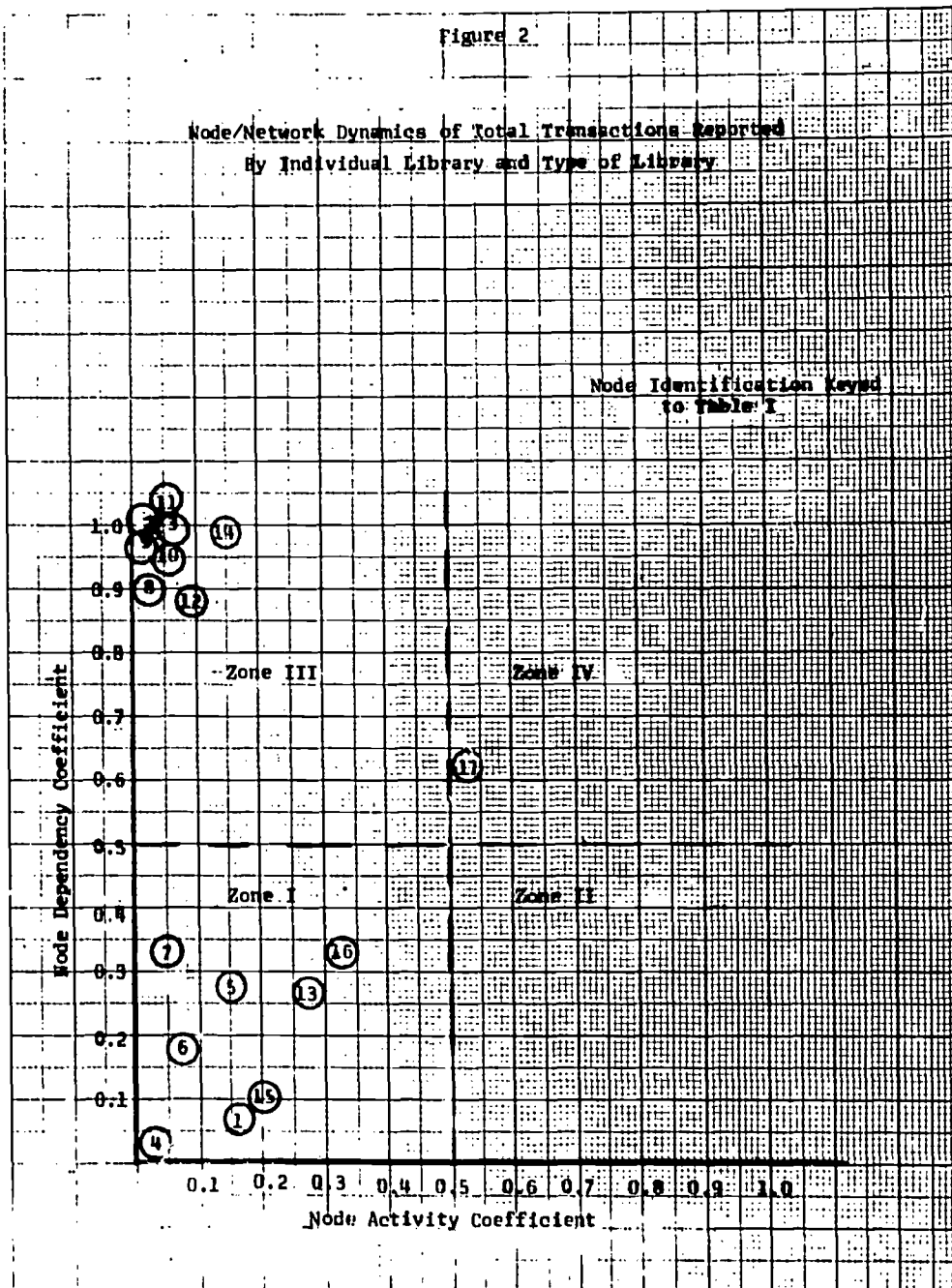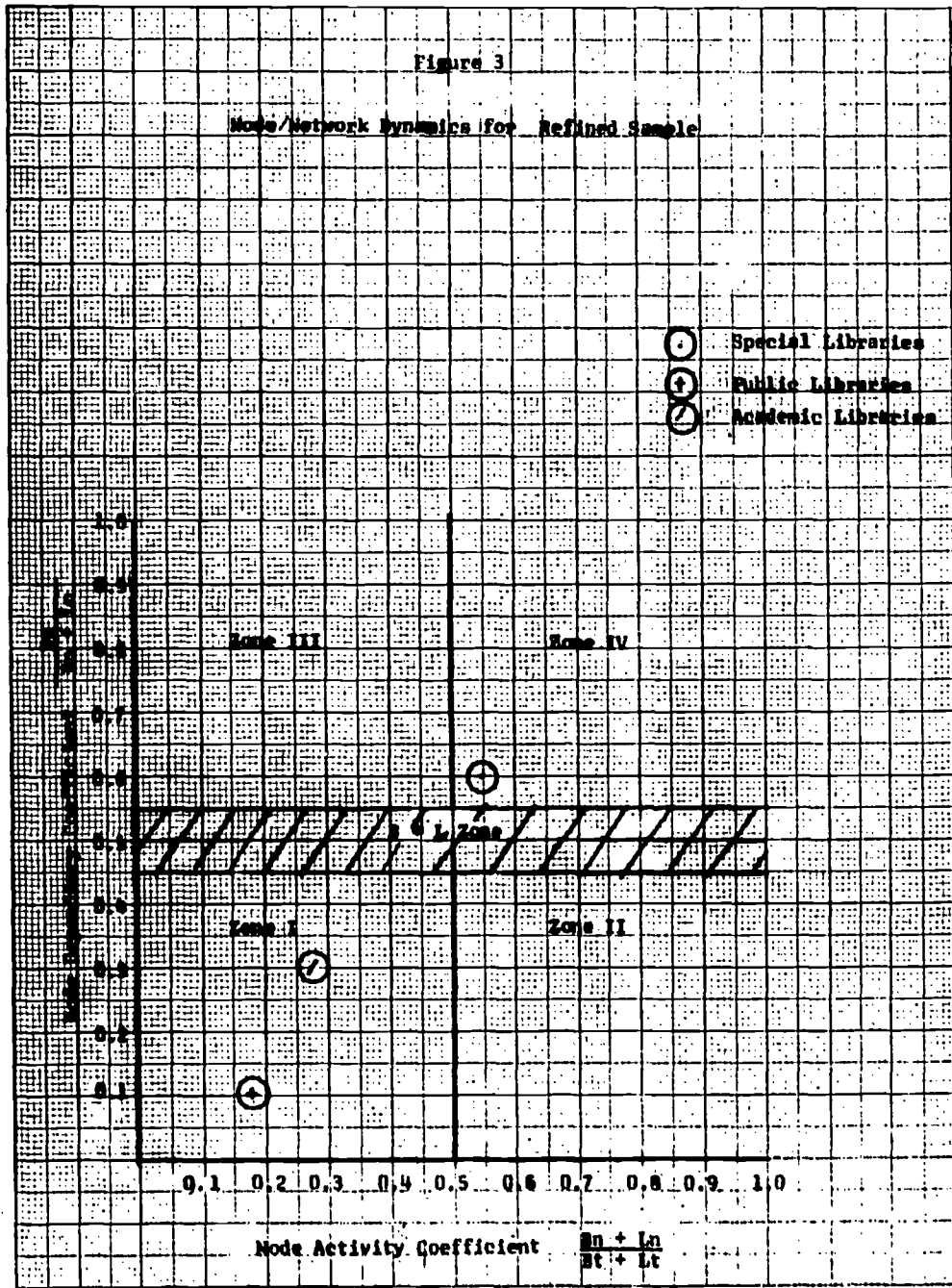
Reviewing comparative access channels for borrowing and
lending, the following data offer some insight into the use of various
routes:

Percent Communication Channel Distribution for:

	Borrowing	Lending
Telex	1	24
TWX	20	28
Ill Form	26	21
Telephone	51	27
Letter	1	1
Other	1	-

It should be emphasized that no effort has been made at this
stage of the project to compare the findings of the pilot model (Appendix D)
with the findings of the behavioral model (Appendix C.6-b). Such a com-
parison should be made to test the validity of the two methods. The con-
clusions from the two methods seem to indicate similar network configurations,
switching levels, and interdependency of participants, however. Theoreti-
cally, each transaction in the pilot model could be reviewed for level of
switching, intermixing of library types and success of the transaction.

TABLE VII

CALCULATION OF NODE-NETWORK DYNAMICS COEFFICIENT
ON REFINED SAMPLE

Type of Library	Bn	Ln	Bn + Ln	$\frac{Bn}{Bn + Ln}$	$\frac{Bn + Ln}{Bt + Lt}$
Special	489	325	814	0.60	0.55
Public	26	243	269	0.10	0.18
College & Univ.	115	272	387	0.30	0.27
School	0	0	0	-	-
Government	0	0	0	-	-
Other	0	0	0	-	-
Total Sample	630	840	1470	0:44	

Bt + Lt = 1470

APPENDIX E

QUANTITATIVE TECHNIQUES AND LIBRARIES - WHY?*
by Richard E. Nance

By way of introduction, I am not a librarian and therefore
probably ill-qualified to answer the question posed by the title of
this paper. Yet, I feel that many librarians are either consciously
or subconsciously asking this question, and no answers seem to be
forthcoming. The purpose of this paper is to offer an answer, or an
opinion, in the hope that further discussion will produce the answer.
Existence of the answer is neither a necessary condition for the
advancement of library science nor a precursor of increased applica-
tion of quantitative techniques. Perhaps, from an optimistic view-
point, it will contribute to the former and facilitate the latter.

The Question

- Why are quantitative techniques necessary for the design,
  evaluation, and/or operation of libraries?
- Why have operations researchers, systems engineers, mathe-
  maticians, and statisticians become increasingly interested
  in libraries?
- Why should librarians concern themselves with the quantita-
  tive approaches and those who propound them?

Each of these questions, and several others, is part of the
question "Quantitative techniques and libraries - why?" and an answer
to the general question must reply necessarily to the more specific
ones. I propose an answer which meets this criterion, but recognize
that it may fail other equally valid criteria. For this reason, the
distinction is made between an answer and the answer.

The Background

Rather than answering the question and following with its sub-
stantiation, I offer some background thoughts which lead to the answer.
These thoughts are categorized into three topical areas: (1) the information

explosion, (2) the advent of computers and computer technology, and
(3) the emergence of the library network concept. Discussion of these
topics is marked by few references and is abbreviated. The purpose
here is to stimulate the reader to document his own agreement or dis-
agreement with the points made.

The information explosion has been deemed an inappropriate
metaphor[12] for the exponential rate of published information in the
last two decades. The critic of the term prefers the substitution of
"deluge" for "explosion" since the phenomenon did not originate in-
stantaneously, but rather is one of developed momentum. Regardless
of the terminology, the problem is apparently, especially to the re-
search librarian. The increase in published scientific journals from
10,000 in 1900 to approximately 100,000 at present attests to this fact[2].
This continued surge in published material affects the librarian no less
than the researcher. Questions of storage and accessibility become "can
it be done?" rather than "how can it best be done?" The former question
is one of existence, the latter of optimality. At some point, which may
not lie too far into the future for some libraries, the answer to the
existence question is "no" without some attention to the optimality
question.

Computers and computer technology have influenced the total
society in the past decade. Providing additional information media as
well as new and revolutionary methods for use of old media, the "machine"
has become a spectre looming over the library profession. Leimkuhler's
(4, p. 1) observation that "librarians are now in the midst of a revolution
that threatens the very foundations of their profession" is an apt one.
Fomenting much of this at the primary level is the advent of the computer.
One need only look at the research projects of the Institute of Library
Research at Berkeley to arrive at this conclusion. Shoffner's[14]
description of the efforts of the Institute in 1966 includes explicit
references to computers or computer technology in seven of the 12 projects.
Leimkuhler and Neville[3] conclude that the future of libraries will

reveal the use of mass storage/rapid transfer devices. Licklider[5] foresees the information seeker of the future interacting with the information service in a conversational mode. While some may claim the opinions cited are visionary, each year brings the implausible closer to the realistic. Project INTREX[11], the work of Rubinoff, et.al.[13], among others, reinforce this opinion.

Emergence of the library network concept is the final background factor. In 1963 the Science Advisory Committee recommended the establishment of a network of specialized information centers to alleviate the chaotic conditions in the control of scientific and technical information. The development of highly specialized information centers was a key point in this proposal. This proposal served as a definitive statement of a concept that had evolved in national information services-- the topical centralization and geographical decentralization of information. The idea of cooperative sharing is not new to the library profession. Interlibrary loan services have existed for some time, but the network concept demands a more intimate and coordinated relationship among libraries. Conceivably, acquisition, location, processing, and reference policies may require decisions on a total network basis. No longer are decisions of individual libraries or librarians removed from their effects on others. The decision problem is moved into a larger, more variable environment with greater potential for progress or failure.

The Effect

In summary, the background factors cited: (1) the information explosion, (2) the advent of computers and computer technology, and (3) the emergence of the library network concept have produced disturbing consequences. These consequences extend to both the design of library systems and the capabilities demanded of the librarians who administer and use them. Succinctly, the consequences are a many-fold increase in the complexity of library systems and the cost of these systems. Complexity stemming from the exponential growth of published material stimulates the application of computers or the creation of

networks. Regardless of which follows first, the computers or the network, the other soon appears since computers are expensive and require a broad base of financial support and networks introduce more complexity, thus increasing the need for judicious computer application.

An Answer

A result of the circular causality relationship among information growth, computer technology, and network structure is the search for the means by which systems of this complexity can be designed, operated, and evaluated. Critical in the design phase, however, is that it requires minimum investment for a fixed utility level or that it derive maximum benefit from a fixed investment level. For this reason the quantitative techniques of operations research or management science have become a useful, if not necessary, tool for library systems design. These techniques and those who practice them have been directed toward problems of acquisition, shelving, circulation, and inventory[2][6]. Recently, the technique of large scale system simulation has been utilized for investigating the effect of library policies and the interaction between policies and the needs of library users[8],[9],[10].

Operations research techniques do not obsolete the librarian nor do they usurp any of his responsibility or authority. The librarian need not become an OR practitioner either. What the techniques do is to enable the librarian to become a more informed decision-maker and to allocate his talents toward areas where quantitative techniques are inappropriate. For example, the accounting and control process of circulation should not demand the continued attention of a professional librarian. Intellectual weeding of the collection must require the attention of a professional. The former task--circulation--can be analyzed quantitatively and even automated. The latter task--intellectual weeding--is beyond the scope of any technique other than the skilled professional librarian.

If librarians are not to become practitioners of OR as I have stated, then why should they be interested in OR? In my opinion today's modern librarian should grasp a basic understanding of what OR can do and what it cannot do. In this regard, the book by Morse[14] takes a long

first step. Correspondingly, the OR practitioners need to become more
knowledgeable of the many complicated functions involved in the admin-
istration of a modern library. Progress rests on the degree to which
the library professionals and the OR practitioners communicate and exchange
understanding. I, for one, am optimistic.

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APPENDIX F

LIBRARY NETWORK ANALYSIS AND PLANNING (LIB-NAT)

Maryann DUGGAN: Director, Industrial Information Services Program,
Southern Methodist University, Dallas, Texas

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LIBRARY NETWORK ANALYSIS AND PLANNING (LIB-NAT)

Maryann DUGGAN: Director, Industrial Information Services Program, Southern Methodist University, Dallas, Texas

A preliminary report on planning for network design undertaken by the Reference Round Table of the Texas Library Association and the State Advisory Council to Library Services and Construction Act Title III Texas Program. Necessary components of a network are discussed. and network transactions of eighteen Dallas area libraries analyzed using a methodology and quantitative measures developed for this project.

To be a librarian in 1969 is to stand at the crossroads of change, with a real opportunity to put libraries and professional experience to work on immediate problems of today's world. In mobilizing total library resources for effective service to a variety of patron groups in a variety of ways, the librarian has at hand an exciting new tool of great potential and equally great challenge: the library network.

LIBRARY NETWORKS AND REFERENCE SERVICES

Networks and all that they imply are simply an extension of good reference services as they have been practiced for years, but their existence and potential capability require redefinition of the reference function, which, being no longer limited to one collection, has been given new dimensions of time, depth and breadth.

Networks, and the inter-library cooperation they require, offer an opportunity to combine materials, services and expertise in order to achieve more than any one library can do alone. In this case, the whole is greater than the sum of its parts, for each library can offer its particular patron group the total capability of the network, including outside resources not previously available.

With the new tool of library networks, it is possible to provide respon-
sive, personalized, in-depth reference service, and to provide it so rapidly
that a patron can receive a pertinent bibliography covering his desired
topic within an hour of his original inquiry. The reference librarian be-
comes an expert in resources and resource availability at the national level.
His reference desk becomes a switching center, at which he receives and
analyzes inquiries, decides the level of service required, identifies available
sources or resources that match an inquiry, transmits the latter (restruc-
tured to be compatible with the network language), conducts a dialog
with the source, receives the response and interprets it to the patron. This
procedure is not markedly different from what has been done for years
in any reference library, but with greater potential the process must be
more formalized and structured.

Networks do require new expertise and crystallizing the reference phi-
losophy. Clarification is needed as to 1) types or levels of reference serv-
ices, and unit operations in reference services; 2) the role of in-depth
subject analysis of reference queries; 3) decisions on alternate choices of
sources and of communications links; 4) structuring of large blocks of
resources to permit fast access; and 5) the role of each library in the
network and its responsibility to the network.

APPROACH TO NETWORK DESIGN

The Reference Round Table of the Texas Library Association and the
State Advisory Council to Library Services and Construction Act Title III
Texas Program have been struggling with the challenge of inter-library
network design for the past two years. This paper is written to share with
reference librarians some of their preliminary findings and to urge the
involvement of reference librarians in planning and developing networks
and network parameters. For identification the project herein described
is referred to as Lib-NAT, for Library Network Analysis Theory.

Although only the author can be blamed for any faults of this "theory,"
many persons have contributed to the development of it. The Reference
Round Table of the Texas Library Association has provided the forum for
exploring and developing ideas on inter-library cooperation. Title III of
the Library Services and Construction Act has provided the legal and
financial impetus enabling the field testing of some of those ideas. Texas
Chapter, Special Libraries Association, has sparked and catalyzed ideas
and clarified needs. The State Technical Services Act provided the vehicle
for experimental development of new approaches to reference services.
Southern Methodist University provided the haven and ivory tower from
which these new approaches could be tried under the cloak of academic
respectability. But, of greatest importance of all, individual librarians, with
vision and desire to be of service and willingness to try new things, have
been the driving force in helping to develop new concepts of library use
and purpose in the Texas area.

The basic philosophy back of Lib-NAT is simply that any person anywhere in the State of Texas should have access to any material in any library anywhere in the State through a planned, orderly, effective system that will preserve the autonomy of each library while serving the needs of all the citizens of the State. Particular needs of special user groups (such as the blind or the accelerated student or the industrial researcher) should also be identified and provided for in a cooperative mode through local libraries throughout the State.

NETWORK COMPONENTS

In the process of developing Lib-NAT, twelve critical components were identified that are essential to orderly, planned development of the objectives stated above. As a minimum, such a network must have the following:

1) Organizational structure that provides for fiscal and legal responsibility, planning, and policy formulation. It must require commitment, operational agreement and common purpose.

2) Collaborative development of resources, including provision for cooperative acquisition of rare and research material and for strengthening local resources for recurrently used material. The development of multi-media resources is essential.

3) Identification of nodes that provide for designation of role specialization as well as for geographic configuration.

4) Identification of primary patron groups and provision for assignment of responsibility for library service to all citizens within the network.

5) Identification of levels of service that provide for basic needs of patron groups as well as special needs, and distribution of each service type among the nodes. There must be provision for "referral" as well as "relay" and for "document" as well as "information" transfer.

6) Establishment of a bi-directional communication system that provides "conversational mode" format and is designed to carry the desired message/document load at each level of operation.

7) Common standard message codes that provide for understanding among the nodes on the network.

8) A central bibliographic record that provides for location of needed items within the network.

9) Switching capability that provides for interfacing with other networks and determines the optimum communication path within the network.

10) Selective criteria of network function, i. e., guidelines of what is to be placed on the network.

11) Evaluation criteria and procedures to provide feedback from users and operators and means for network evaluation and modification to meet specified operational utility.

12) Training programs to provide instruction to users and operators of
the system, including instruction in policy and procedures.

The foregoing components of the ideal inter-library network (one so
designed that any citizen anywhere in the state can have access to the
total library and information resources of the state through his local li-
brary) may be considered the conceptual model, or the floor plan from
which the network of the program can be constructed. Although these
twelve components might be labeled "ideal," they are achievable and
they are within reach of the present capability of all libraries today. They
have also weathered the unrelenting critique of 238 reference librarians
in the March 27, 1969, TLA Reference Round Table ("The 1969 Reference
Round Table Pre-Conference Institute: An Overview," *Texas Library
Journal*, Vol. 45 (Summer 1969), No. 2.). During that Reference Round
Table the twelve components were tested in a simulated network, using
42 cases. In this behavioral model actual, current inter-library practices
were observed during game-playing in the simulated network. The expe-
rience verified that the components outlined above are essential to the
development of planned, cooperative, inter-library systems.

ANALYSIS OF NETWORK TRANSACTIONS

As part of the LSCA Title III project, and to test the twelve compo-
nents, exploration was instituted into the existing inter-library relations
among eighteen libraries of all types in the Dallas area to see how cur-
rent practices compared with the ideal conceptual model. The essential
minimum requirement of a library is document transfer, i. e., the ability
to supply a known item on request; and on-going inter-library loan trans-
actions are a valid indicator of emerging network patterns in the current
environment.

This microscopic study of 1967 individual library loans among eighteen
libraries of different types has provided a wealth of insight into network
developments. As a pilot model it has offered a means of observing and
studying existing practices, identifying problems, and experimentally eval-
uating the effect of changes in the system or environment. More must be
known about on-going inter-library transactions for the design of improved
networks. In the attempt to find out who was attempting to borrow what
from whom and how successfully requests were filled, the following vari-
ables were considered:

1) Type of library, both borrowing and lending, such as academic,
public, special, or public school.
2) Type of message format, i. e., telephone, TWX, TELEX, letter, or
interlibrary loan.
3) Type of item requested in the transaction, such as monograph,
serial, map, document.
4) Geographic location of borrowing and lending library, i. e., local,
area, state, regional, national or international.

The complexity of even a small pilot model required the formulation of some rigor in the analysis and the development of analytical tools and symbolic models. Figure 1, for example, is a symbolic model that permits comparison of two variables simultaneously, e. g., the type of library participating in the transactions and the geographic level of the participants. For modeling purposes, it was assumed all libraries fall into one of four
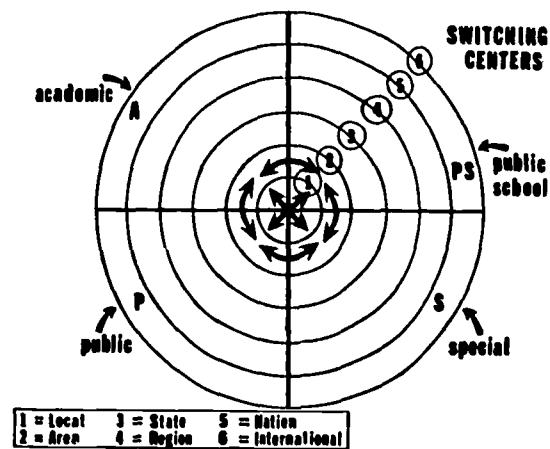

Fig. 1. *Symbolic Model of Inter-Library Networks.*

classes represented by the quadrants in Figure 1. Also it was assumed that each library can be identified as to a specific geographic level, as indicated by the numbers 1 through 6. In the analysis of the pilot model data it was observed that transactions occur among libraries of the same type and at the same geographic level, and between libraries of different types at different geographic levels. Figure 1 provides a symbolic model for conceptualizing these various types of transactions. Switching centers, represented on Figure 1 by the circles around the geographic numbers, participate in transactions at varying geographic levels, as well as between and among various types of library sectors. The role and the location of switching centers is an important aspect of Lib-NAT.

Within the framework of the symbolic model, the simple form of inter-library loan may be represented as a two-body transaction between the borrowing library and the lending library, as shown in Figure 2. Applying these transactions on the symbolic model of Figure 1 and considering both
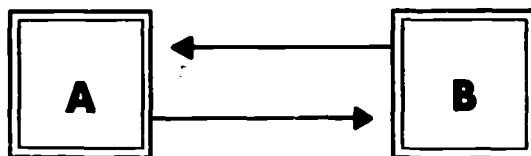
Fig. 2. Two-Body Transaction.

type of library and geographic level, four general classes of two-body transactions can be identified:

1) Homogeneous vertical, i. e., between two libraries of the same type but at different geographic levels ($P_1 \longrightarrow P_4$; $S_1 \longrightarrow S_3$);

2) Heterogeneous horizontal, i. e., between two different types of libraries at different levels ($P_1 \longrightarrow A_1$; $S_1 \longrightarrow P_1$);

3) Heterogeneous vertical, i. e., between two different types of libaries at different levels ($P_1 \longrightarrow A_4$; $S_1 \longrightarrow P_4$);

4) Homogeneous horizontal, i.e., between two libraries of the same type and the same geographic level ($P_1 \longrightarrow P_1$; $S_2 \longrightarrow S_2$).

The formulas serve as a shorthand symbolic representations of some typi-cal transactions of these four classes. The final report on Lib-NAT will contain statistical data on distribution of pilot model transactions by type and by geographic level, showing type interdependency and geographic dependency or self-sufficiency.

Further analysis of the pilot model data revealed another type of trans-action, the three-body transaction, in which a third agent becomes in-volved. The third agent may act as a referral center, as illustrated in Figure 3, or as a relay center, as illustrated in Figure 4 (SW indicates switching center). Part of the Lib-NAT theory specifies that there is a dis-tinction between referral and relay, and that the latter is a valid function of a true switching center. Figure 5 illustrates the various types of possible three-body transactions with different geographic levels of switching among the different types of libraries. Which of these transactions is the most efficient or has the greatest utility is one of the basic design param-eters needing further analysis. It should be noted that the variable of message format, that is, the channel of communication or type of com-munication link, has not yet been investigated in the symbolic modeling of these transactions.
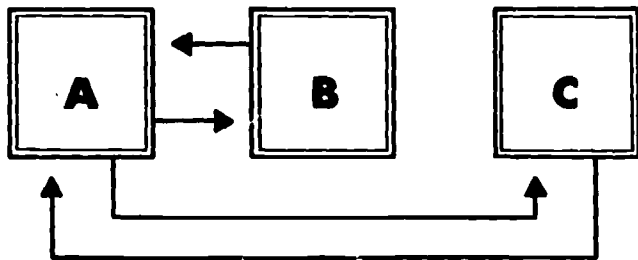
Fig. 3. Three-Body Transaction: Referral.
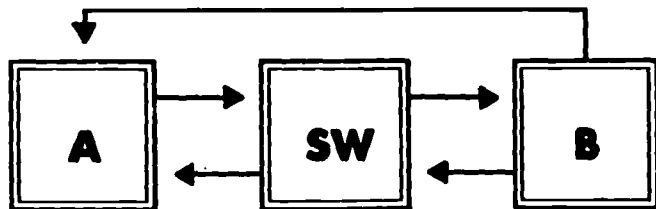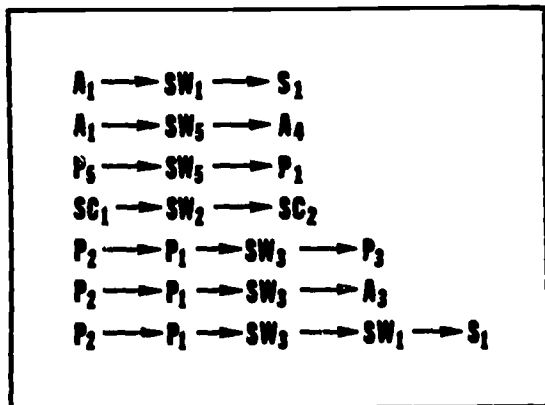

Fig. 4. Three-Body Transaction: Relay.

$A_1 \longrightarrow SW_1 \longrightarrow S_1$

$A_1 \longrightarrow SW_5 \longrightarrow A_4$

$P_5 \longrightarrow SW_5 \longrightarrow P_1$

$SC_1 \longrightarrow SW_2 \longrightarrow SC_2$

$P_2 \longrightarrow P_1 \longrightarrow SW_3 \longrightarrow P_3$

$P_2 \longrightarrow P_1 \longrightarrow SW_3 \longrightarrow A_3$

$P_2 \longrightarrow P_1 \longrightarrow SW_3 \longrightarrow SW_1 \longrightarrow S_1$

Fig. 5. Three-Body Transactions at Various Geographic Levels.

NETWORK CONFIGURATION

Another very important design parameter is the network configuration or organizational hierarchy specifying the communication channels and message flow pattern. Figure 6 illustrates symbolically a non-directed configuration of communication. If each dot represents a node in the network (i. e., a participating library), and each line represents a communication link, it can be seen that each node can communicate directly with every other node, providing (or requiring) a total of fifteen links among the six nodes.
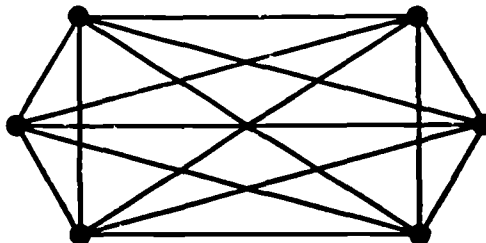
$$C = N\left(\frac{N-1}{2}\right) = 15$$

Fig. 6. *Non-Directed Network.*

By contrast, Figure 7 illustrates a directed configuration to which the six nodes are interconnected through a switching center and requiring only six channel links. In like manner, if a non-directed network desires to interface with a specialized center, such as the Library of Congress or a special bibliographic center or search center, a total of twenty-one channels is required (Figure 8), whereas a directed network can interface with a specialized center via only seven channels, as illustrated in Figure 9.
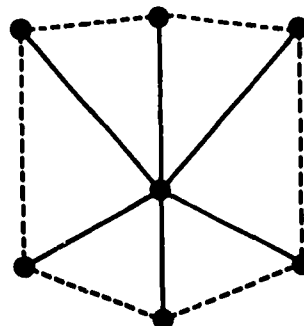
$$C = N - 1 = 6$$

Fig. 7. *Directed Network.*

$$C = N \left(\frac{N \cdot 1}{2}\right) = 21$$
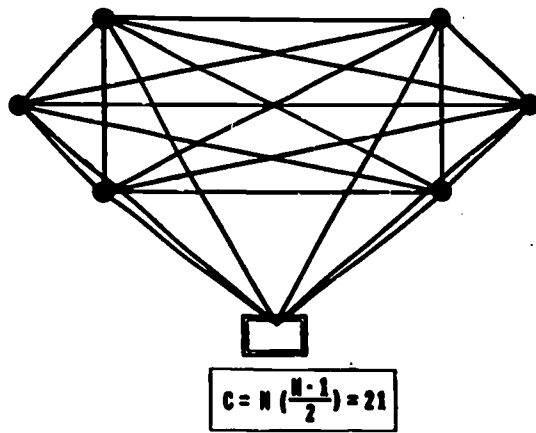
Fig. 8. *Non-Directed Network Including Specialized Center.*

$$C = N - 1 = 7$$
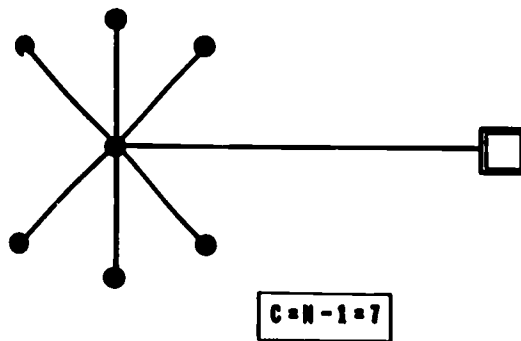
Fig. 9. *Directed Network Including Specialized Center.*

As local or area networks begin to develop, there will be a need for tying together two area networks to develop larger units of service. The interfacing of an original network of six libraries in one area with an adjoining area network of six libraries will result in the network configuration shown in Figure 10 in the case of a non-directed network, and sixty-six communication links among twelve nodes will be required. Whereas, if two directed networks of six libraries each desire to interface, a type of linkage requiring only thirteen channels may be envisioned (Figure 11).

Which is the best type of network configuration? What are the decision parameters that should be considered in designing or planning network configuration? How can alternate configurations be evaluated? Alternate channel requirements? And alternate geographic levels of switching? In the pilot model study, a mathematical model has been devised which can be used for simulating various configurations and channel capacities,

$$C = 12 \left(\frac{12 \cdot 1}{2}\right) = 66$$
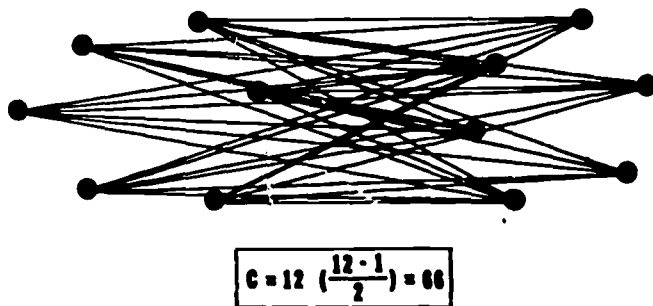
Fig. 10. *Interface of Two Non-Directed Networks.*

$$C = 13$$
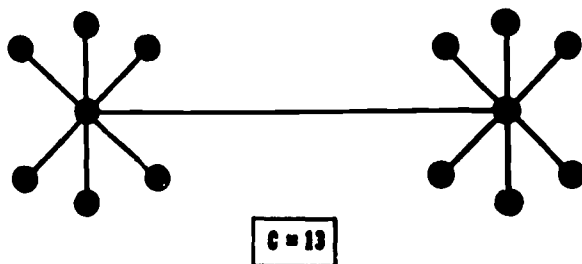
Fig. 11. *Interface of Two Directed Networks.*

thereby permitting some desired criteria function of network performance
to be maximized or optimized. The details of the mathematical model
will be published as part of the final report on Lib-NAT; in the meantime
it can be said that this is a fascinating area of network analysis which
will be useful to any group of libraries planning network configurations.
The mathematical model—a multi-commodity, multi-channel, capacitated
network model, developed by Dr. Richard Nance at Southern Methodist
University as part of the Title III project—promises to have a high poten-
tial application in network design and performance evaluation. It does
require that the librarian make some hard-nosed decisions on operational
and performance parameters of the inter-library systems discussed in the
preceding article, but this is part of the challenge of Lib-NAT.

MEASURES OF PARTICIPATION

It is obvious that types of libraries, geographic level, types of transac-
tions, various network configurations, alternate communication links and
switching levels are all important in planning inter-library systems. Next
it is necessary to take an in-depth look at the relationship between the
individual participating library and the total network. In the pilot model
study of eighteen libraries a noticeable difference appeared in the magni-
tude and type of participation. In surveying only the two-body transac-
tions, it was observed that some libraries were primarily borrowers and
others primarily lenders, and some were heavy and some light. In pursuit
of a quantitative method of representing these relationships some formulae
were evolved which are helpful in understanding node/network dynamics.

Starting with the individual library or node, let B_o equal the number
of borrowing transactions originating at that node and L_o equal the num-
ber of lending transactions; then L_o plus B_o will equal the total number
of all transactions at that particular node.

In like manner, looking at the total network (in this case all eighteen
participating libraries), let B_t equal the total number of borrowing trans-
actions originating in the network and L_t the total number of lending
transactions; then B_t plus L_t will equal the total number of both types
of transactions in the network.

In the analysis of node/network dynamics, it was felt there should be
some way of quantitatively expressing the individual node's dependency
on the total network and also a way of expressing the relative degree of
activity of each node. In other words, a participating library that was a
net borrower (compared to its lending) was obviously more dependent
on the network than would be a library that borrowed very little compared
to its lending. The extent of dependency can be expressed as a node
dependency coefficient calculated as follows:

$$\frac{B_o}{B_o + L_o} = \text{Relative amount of borrowing compared to total node transactions}$$

Among its other uses, the dependency coefficient of a node may give some insight into the extent to which it should share in network expenses, but the dependency coefficient alone should not be a final criterion, since magnitude of activity is of equal importance. For developing a method of quantitatively expressing activity of a node compared to total activity of the network a factor called the node activity coefficient may be calculated as follows:

$$\frac{B_a + L_a}{B_t + L_t} \quad = \quad \begin{array}{l}\text{Relative activity of both types at}\\ \text{one node compared to total activity}\\ \text{in total network}\end{array}$$

Then, to quantitatively express the dependency of a given node on the network, one can calculate the node/network dependency coefficient as follows:

$$\frac{B_a}{B_t + L_t}$$
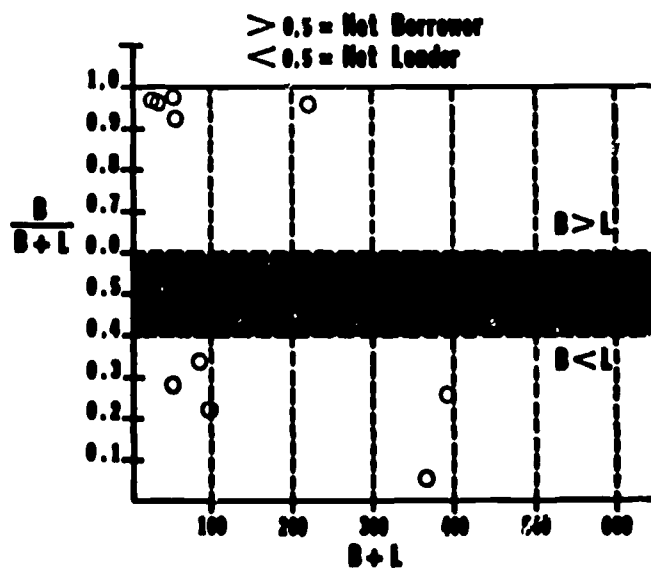
Fig. 12. Node Dependency Coefficient.

Figure 1? illustrates one use of the data points expressed above. Plotting the node dependency coefficient versus the total transactions at the nodes readily reveals the differences in the relationships between them and the network. What the relationship should be is a value judgment that is open to conjecture, but if it is assumed that theoretically each node should be in some sort of balance between borrowing and lending, it is possible to construct a balance zone based on ten percent leeway from perfect balance. By zoning various levels of activity vertically, one can develop a quantitative grid for comparing network participants' activity, both give and take, and can possibly arrive at a funding structure for network financing. The dots in Figure 12 illustrate data points from the pilot model.

Figure 13 shows another application of quantitative data on node/network relationships. By plotting the node dependency coefficient on the left and the node activity coefficient on the lower axis, one can see individual differences easily and readily compare relative participation. Certainly, a node with a 1-1 plot is more dependent on the network than a node with an 0.1-0.1 plot.
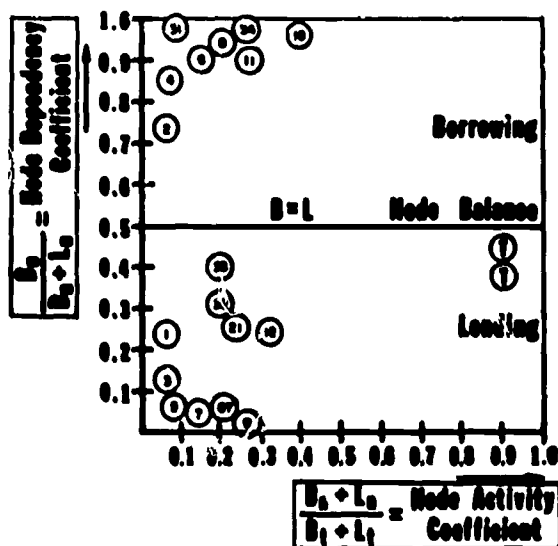
Fig. 13. *Network Dynamics.*

NETWORK PERFORMANCE

In evaluating the performance of a network there are three key factors to consider: 1) turn-around time, meaning the time required to complete a transaction or satisfy a request; 2) the cost of completing the transaction or satisfying the request, including fixed and variable cost; and 3) quality, the all-important criterion of how well the job is done, based on patron satisfaction or other standards. These three factors are interrelated but can be quantitatively identified, as illustrated schematically in Figure 14.
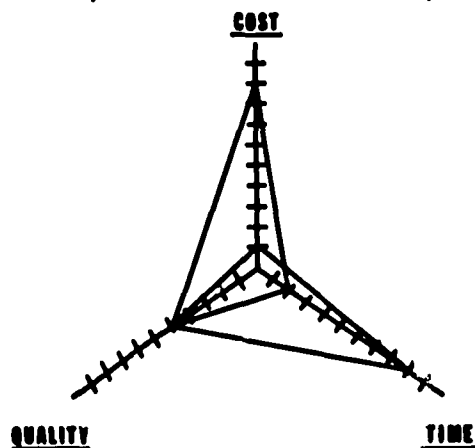
COST

QUALITY   **TIME**

Fig. 14. Network Utility Factors.

It may be seen here that one network might demonstrate average quality, high cost and fast time, whereas another network might demonstrate average quality, low cost and slow time. It is suggested that this technique of interrelating time, cost and quality is useful in evaluating and comparing network performance. Certainly it is necessary to consider all three factors in defining network utility and network operational parameters.

The several methodologies described above were used to analyze the performance of the eighteen libraries participating in the study. Preliminary results are disturbing. For example, the range of unfilled requests was from 76 percent in public libraries to 5.5 percent in medical libraries, for an average of 23 percent. Node dependency coefficient ranged from 1.0 in junior colleges and 0.97 in industrial libraries to a low of 0.27 in medical libraries. The range in activity coefficient was from zero in county libraries to 0.2 in medical libraries. It is to be hoped that further analysis

will provide insight into ways of improving services and evolving performance standards for networks.

SUMMARY

The Lib-NAT approach provides a methodology for looking at inter-library cooperation and network design. Some of the quantitative tools offered may not be applicable to every situation; some of the hypotheses may prove to be in error, but the ultimate goal of the exercise is to improve services to users. Thus the last point in Lib-NAT is probably of greatest significance to all.

In it one may recognize an old rule of thumb in book selection: the right book to the right person at the right time. Looking at the heart of network performance as illustrated in Figure 15, it can be seen that a system is performing "right" when there is a match of the patron group (a) with the library type (b) and the nature of the request (c). The combination of the three may be called a "hit" and is of utmost importance in determining what to put on the network and where to direct the request, and what to seek and for whom.
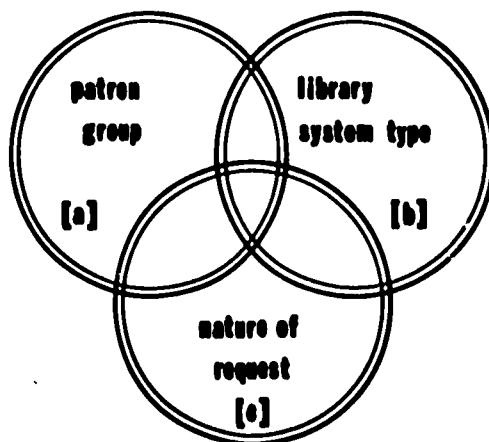
Fig. 15. Parameters of Network Selectivity Policy.

Librarians are just beginning to understand that inter-library networks offer not only a great potential to improve and expand services, but a whole new dimension in reference services as well. The purpose of Lib-NAT is to help formulate the rules of this new "ball game."

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NOTE

The final report on this project will include the full script of the Reference Round Table networking game; a glossary of networking terms; the computer programs for computing and graphing inter-library network coefficients; and the details of the operations research model of library network. A copy of the final report on Lib-NAT may be had after September 15, 1969, from Mrs. Marie Shultz, Texas State Library, Austin, Texas, or from the author.

ACKNOWLEDGMENTS

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APPENDIX G

ACTUAL COST OF THE PROJECT
AS OF JUNE 30, 1969

Salaries	$ 7,245.52
Fringe Benefits	700.00
Consultants	4,050.00
Committees, Workshops	4,783.10
Travel	1,415.78
Communications Cost	198.16
Supplies and Printing	3,963.25
Rent/Purchase Equipment	145.00
Indirect Costs	1,000.00
	$ 23,500.81

Since June 30, 1969, approximately $5,000 in costs have been contributed in labor to complete this final report.