This is to certify that the

dissertation entitled

A HISTORY OF THE MIDWEST PROGRAM ON AIRBORNE TELEVISION INSTRUCTION 1959-1971

presented by

William L. Genshaw

has been accepted towards fulfillment of the requirements for

Ph.D. degree in Education

Major professor

Date 5-17-90

A HISTORY
OF THE
MIDWEST PROGRAM ON AIRBORNE TELEVISION INSTRUCTION
1959-1971

By

William L. Genshaw

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Educational Systems Development

1990

ABSTRACT

A HISTORY
OF THE
MIDWEST PROGRAM ON AIRBORNE TELEVISION INSTRUCTION

BY

William L. Genshaw

The purpose of this study is to produce an historical examination of the Midwest Program on Airborne Television Instruction in order to learn from past experiences how to improve the chances of successfully initiating, developing and administrating innovations in education. This study focuses on a unique instructional television project initiated by the Ford Foundation and the Westinghouse Corporation in 1959 and terminated in 1971. A DC-6AB aircraft was used as a flying transmitting platform from an altitude of 23,000 feet to deliver instructional television programs to a six state area of the United States.

This researcher used a combination of an historical narrative and an educational change model to evaluate the strategies and tactics used by the Ford Foundation executives, Midwest Council on Airborne Television Instruction and MPATI Inc., to plan, implement, and evaluate the program.

Both primary and secondary materials served as the basis for this study. Most of the primary materials examined in

this study were stored at Purdue University Special Library, and the Great Plains Instructional Television Library in Nebraska. This research also contains the views and opinions of a number of former MPATI administrators, individuals directly associated with the project, member school administrators and teachers, and leaders in the field of instructional television.

The most important major findings in this study are based on an analysis of MPATI's shortcomings and successes. The shortcomings included: (1) initial underfunding for the project, (2) insufficient staff development and training of teachers using the program, (3) the inability of MPATI to successfully become allied with the "power structure," (4) the inability of MPATI to control "pirating" of its materials, and (5) the FCC's denial of MPATI's request for six permanent UHF channels. The successes or significant contributions of MPATI to the development of early ITV included: (1) the promotion of a "team concept" in developing educational materials. (2) production of the first cost effective "quality" ITV lessons, (3) the reduction of resistance from school administrators and teachers to instructional television as an "enrichment tool," and (4) MPATI's contributions to the technical development of UHF television.

ACKNOWLEDGMENTS

This writer wishes to express his sincere appreciation to Dr. Erling Jorgenson, chairperson of his doctoral committee, for his excellent counseling and endless patience. Sincere appreciation is also extended to Dr. Ben A. Bohnhorst, Dr. Castel Gentry, and Dr. Robert Schlater for their counseling, advice, and support toward the development and execution of this dissertation. This writer also wishes to thank the administrative staff members of the Great Plains National Instructional Television Library and the Purdue Special Collections Library staff for their assistance in the collection of the data for this study. Finally, this writer extends his grateful appreciation and love to his family and friends for their unwavering support and assistance in the completion of this study.

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER 1 INTRODUCTION

TELEVISION AND INSTRUCTION

The monumental impact television programming has had on young people's minds in twentieth century America is a frequent topic in the popular press. The serious educational potential of television has also been evident to educators for a long time. However, of the multitude of hours of television programming produced in the United States each year, only a very small segment is produced for educational and instructional purposes. Educational and instructional television has been and remains the poor relation of powerful commercial broadcasting.

The terms educational and instructional television are not synonymous. The distinction between educational television (ETV) and instructional television (ITV) made by Paul Saettler in A History of Instructional Technology is widely accepted by educational technologists.

> Educational television usually has referred to any type of educational video program presented for any serious purpose, whether to teach something or someone or to develop a broad cultural understanding. Instructional television has referred to open or closed-circuit video programs primarily designed to teach a specific body of subject matter as a part of formal course of study to particular groups of students in school or at home. (Saettler 1968, 244)

THE FOCUS OF THIS STUDY

This study will focus on a particular historical segment of the instructional component of American television. These

pages contain a historical look at the Midwest Program on Airborne Television Instruction (MPATI). Two D-6AB aircraft were transformed into a television broadcast system that transmitted instructional television lessons on two ultra high frequency (UHF) channels from a library of videotaped instructional materials for six hours a day, four days a week during the school year for seven years. The instructional material broadcast was produced at various production centers in the United States for MPATI. Starting in 1961 these materials were broadcast by aircraft to an area of a circle with a radius of 225-miles encompassing parts of six midwest states. Schools in the region were invited to become members of the supporting organization, MPATI. The MPATI organization requested and was granted experimental status by the FCC to operate two channels in the UHF band. MPATI later requested a permanent allocation of channels 72 and 76 and an additional allocation of four more UHF channels. However, although the service appeared to operate successfully, ultimately the FCC decided not to grant any permanent UHF channels to MPATI. This decision by the FCC sounded the death knell of the MPATI organization. An effort was made to maintain the organization by continuing to produce new materials and distributing the existing library of videotapes on a mail-order basis. Such an operation could not sustain itself. Ultimately, the materials produced by MPATI were transferred to the Great Plains National Instructional Television Library in Lincoln, Nebraska, and in 1971 the

MPATI organization ceased to exist. The content of the following pages is an effort to examine what might be learned from the MPATI experience. A particular emphasis will be placed on MPATI's attempts to organize and implement a regional program that extended over a multiplicity of established political boundaries.

THE DEVELOPMENT OF INSTRUCTIONAL TELEVISION

Instructional television has been used in educational facilities since the 1930's. However, most writers and researchers believe that instructional television (ITV) only came of age in the late 1940's or early 1950's. Some writers propose that 1948 was the year that "...marked the awakening of educational broadcasters to the potentials of television in instruction" (Wood and Wylie 1977, 32). Others point to 1952 as the critical year in the development of ITV when the FCC set aside 242 channels for nonprofit purposes (Platte 1981, 1; Saettler 1968, 227). Still others believe May 25, 1953, marked the red letter day for ITV when the first noncommercial television station, KUHT in Houston, Texas, began broadcasting televised instruction (Cuban 1986, 27; Gagne 1987, 262; Scanlon 1961, 50).

Regardless of the specific date ITV was introduced as a potential force for educational change, the 1950's and the 1960's saw extraordinary growth and development of ITV as a method of delivering instruction to millions of American students.

> The rapid growth spurts of the late 50's and 60's and the availability of the National Defense Education Act of 1958 to finance many ITV facilities appeared to indicate that this innovation was well on its way to being adopted by nearly all institutions as an integral part of their educational system. (Koontz 1989, 47)

During this time period, a diverse group of concerned individuals supported the development of ITV. This group included:

> Veteran radio broadcasters concerned about the number of available television channels being allocated to commercial interests by the ... FCC,... impassioned educators who saw much promise offered by the new medium, ... foundation executives concerned about mounting pressures on the public schools from antiprogressive critics of the life-adjustment curricula in the 1940s, and from escalating student enrollments. (Cuban 1986, 27)

These pressures led to the rapid expansion of ITV use in American classrooms. However, the rapid expansion of ITV during the 1950's and 1960's was replaced with the decline and, in some instances, total abandonment of ITV in K-12 education during the 1970's and early 1980's.

A report of the Carnegie Commission on Educational Television published in 1967 states:

> The role played in formal education by instructional television has been on the whole, a small one, . . . nothing which approached the true potential of instructional television has been realized in practice. (Carnegie Commission 1967, 80)

According to Donald Wood and Donald Wylie in Educational Telecommunications, it is generally acknowledged that television, along with other methods of telecommunications used specifically for educational purposes has "consistently failed to reach [its] potential...Instructional

Telecommunications still have had little impact---compared to what they ultimately can do" (Wood & Wylie 1979, 3). Saettler stated "Educational television programing has not kept...pace with commercial television in gaining public acceptance" (Saettler 1968, 235).

Studies based on self-reports between 1970-1981, by teachers in three states reported they used

> ... programs between 2 and 4 percent of the instruction time available to them each week. Students spent more time going and coming from the bathroom than watching television lessons. (Dirr and Pedone 1978, 19)

Larry Cuban, in Teachers and Machines, states "most teachers seldom use the medium. When they do use television, they do so infrequently and only a tiny fraction of the instruction day" (Cuban 1986, 40). Cuban proposes that one possible reason for the reduction in the use of ITV was directly related to the easing teacher shortage during the 1960's. "The issue of television as an effective learning tool cooled" (Cuban 1986, 38).

Although there have been some encouraging studies reporting the increased use of ITV in higher education during the 1980's (see Luskin 1983 and The First Five Years the 1987 Adult Learning Services of PBS report), other reports on utilization on ITV in American Education are less enthusiastic.

> Only about twenty percent . . . of American schools use television on a regular basis (this includes elementary through higher education) and only 17 percent of the teachers have had any training in the purpose or utilization of ITV. When ITV courses are compared to conventionally taught courses at

> institutions that have adopted ITV, the percentage is exceptionally low. (Koontz 1989, 47)

Speaking at a seminar sponsored by the Columbia Broadcasting system and New York University in August 1984, Dr. John Brademas, President of NYU, said

> ...Television has the power to entertain and to elect, it can also inform and educate and at its best, enhance our lives. Indeed, in my judgement the single most underutilized resource for teaching and learning in the United States is television. (Brademas, 1984)

The conclusion reached by the Carnegie Commission on Educational Television in 1967 is as appropriate and perceptive now as it was over 20 years ago.

> . . . instructional television has never been truly integrated into the educational process. . . with minor exceptions, the total disappearance of instructional television would leave the educational system fundamentally unchanged. (Carnegie Commission 1967, 81)

What factors might account for the dramatic reduction in or failure to capitalize on the use of this potentially important educational innovation in the 1970's? Why is it that ITV has never reached its promised potential in the American educational system in the 1980's? Although these questions are much too broad and encompassing to be answered in a research project of this scope, several factors have contributed to the difficulty of assessing the effectiveness of ITV.

Vladimir Zworkin, widely recognized as the "father of television" for his invention of the iconoscope tube in 1923, pinpoints one reason for instructional televisions' shortcomings.

> These faults...are not inherent in television. Rather television's failure... in education... rests in good measure on those persons responsible for how instructional TV is used and programmed. (Ackerman and Lipsitz 1976, 3)

An additional reason for ITV's inability to reach its potential is the lack of useful research regarding the specific reasons for successes or failures of ITV projects. According to Wood and Wylie one of the biggest problems of conducting ITV research is that academicians

> force graduate students to conduct scholarly research ... which is often experimental research because it is less "messy" than case studies and loosely structured investigations that might be more useful to practitioners. (Wood and Wylie 1977, 333)

Another problem in conducting ITV research is the absence of "comprehensive historical studies ... on the growth and development of ITV in each state or on a national basis" (Platte 1981, 2).

It would appear to be advantageous if the foundational historical studies of the growth and development of ITV in a given state or region could be completed, followed by a comprehensive national examination of ITV. In the six-state region served by MPATI, only the history of Ohio ITV has been written (Platte 1981). Furthermore, of the three largest and most elaborate ITV projects initiated in the United States by the federal government and private foundations in the 1950's and early 1960's, only the history of MPATI has not been written. The Hagerstown, Maryland, closed-circuit project set up in 1956 by the Fund for the Advancement of Education (FAE), American Telephone and Telegraph (AT&T) , and the

Electronic Industries Association (EIA) and the American Samoa Project in 1961 are both well documented (Wood & Wylie 1977, 50-53). The data produced by these studies would help to contribute to a national study of ITV.

THE PURPOSE OF THE STUDY

The purpose of this study is to produce an initial historical examination of MPATI so that we may better learn from past experience how to successfully initiate, develop, and administer innovations in education. MPATI was initiated in 1959. It broadcast and distributed its video taped instructional programs to classrooms in parts of six midwestern states from 1961 to 1968. After 1968 video tapes produced for MPATI continued to be distributed by mail in the six-state area and in a number of other locations throughout the United States. In some cases these videotapes produced by MPATI circulated for over a decade after the MPATI program per se was terminated in 1971. The present study will give special attention to the historical roots, administrative structure, development of curriculum and courses, political and economic considerations, uniqueness of the delivery system, and the impact MPATI had on the establishment of instructional television. The airborne program originally served a reception area of 140,000 square miles in the midwest and over 2,000,000 students by airborne broadcasts and ETV ground-based station broadcasts within that area for seven years.

THE RESEARCH QUESTIONS

The research questions to be investigated include:

1. What was the historical sequence of events which led to the effort to establish MPATI as a regional public service in the midwest?
2. What strategy and tactics were used to design, implement and evaluate the MPATI program?
3. How were curriculum decisions made and implemented by the MPATI members and staff?
4. What influence, if any, did MPATI have on the improvement of ITV program development and production techniques in general?
5. What impact, positive or negative, did MPATI have on the development of other ITV broadcast services operating in the region which was also served by the project?
6. What do these questions indicate about the success or failure of the process of introducing innovative systems and/or services into an established educational environment?

THE SIGNIFICANCE OF THIS STUDY

> Historical [educational] research is the systematic collection and objective evaluation of data related to past occurrences in order to test hypotheses concerning causes, effects, or trends of those events which may help to explain present events and anticipate future events. (Gay 1976, 16)

Inherent in all historical research is the concept that it is possible to learn from the experience of the past.

Systematic historical research can yield a better understanding of many current educational practices, theories, and issues in light of past experiences. The historical knowledge of a particular area of educational technology can provide greater insight into the circumstances involved in the evolution of that technology as well as the practices and approaches which have been identified as effective or ineffective and feasible or unfeasible. Historical research can also help to identify approaches that show positive potential for future projects (Gay 1976, 9).

Alice Meil, Professor of Education at Teacher's College, Columbia University, is convinced that history does not move in a pendulum fashion, with violent or gradual swings from left to right and back again with the same practices appearing and disappearing with monotonous regularity.

> Even though attention seems to refocus on an old position, more careful investigation will show that the new version is different in many ways. Thus, the pendulum swing is too crude an analogy to describe actual patterns of movement. (Meil and Huebner 1964, 14)

Meil refers to this occurrence as a "spiral phenomenon with each ascending loop profiting from the former" (Meil and Huebner 1964, 9).

> This [historical] view allows for renewed attention to a problem and a line of solution which has been neglected for a time. The difference in the spiral view is that it accounts for the fact that proposals made at a later point in educational history usually are much more refined with wisdom distilled from experience at both sides of the spiral built into them. At each new point on the upward and outward spiral the concepts are clearer and the language of education more precise. (Meil and Huebner 1964, 14)

A critical factor in accepting this position requires the availability of systematically gathered and analyzed historical materials on particular educational innovations. The lack of historical and documentary analysis and evaluation in educational research is a major obstacle to improving the planning, implementation, and acceptance of future instructional technology projects into existing educational organizations. According to Ronald G. Havelock, evaluative documentation on educational innovations is indeed weak.

> ... experience gained in one place ... should be made available to someone contemplating a similar activity in another place ... We have no satisfactory way of codifying and banking such experiences so that they can be drawn upon by others. (Havelock 1974, 92)

J. Victor Baldridge from Stanford University is very specific about the type of research that is needed.

> With the immense volume of research on early phases of the innovation process, we now should refocus serious attention to the implementation phases and to structural support for innovations... We need more information and research on a variety of problems in the actual implementation phases: (1) What kinds of reward structures are necessary to support the innovation? (2) What kinds of political coalitions are needed to give the innovation viability? (3) What kind of authority structure will support the innovation rather than undermine it? (4) How should the new program be financed? (5) How can the innovation be evaluated as to its effectiveness? It is obvious that the very asking of these questions raises a series of problems that have received little attention in the literature. (Temkin and Brown 1974, 6-7)

An in-depth historical overview of a past innovation can partially serve the purpose to which Baldridge makes reference above. The primary significance of the present

study is that it may help provide information about the establishment, development, and termination of the MPATI regional program in order to explain what components of the project appeared to succeed, which failed and why, so that this experience, in Havelock's words, "can be drawn upon by others."

By closely examining the historical record of this program, ITV administrators, foundation funding agency executives, curriculum specialists, and other educational personnel may be alerted to the difficulties of trying to introduce a technologically innovative service or system into an existing educational environment.

Perhaps it will help to avoid repetition of miscalculations made by the MPATI organization and, at the same time, build on the many strengths and successes of MPATI. An in-depth case study of the successes and failures of the MPATI project will serve as a source of systematically gathered and analyzed information about lessons learned from an ITV regionally-based project. Finally, this writer hopes the amount of information concerning the historical record of ITV successes and failures can help reduce the failure rate of other educational innovations.

STRUCTURE OF INQUIRY AND ISSUES TO BE EXAMINED

History is a mode of qualitative inquiry. With other qualitative approaches in educational research, history shares a "concern for context, for undertaking research in

natural settings, for the wholeness of integrity of experience, and for the interpreting and explaining the significance of experience." (Sherman and Webb 1988, 47).

The common historical approach to research is based upon the premise that people, events, and ideas cannot be understood apart from their historical context.

In addition to being context specific, historical research is, along with other qualitative approaches, concerned with natural settings, the "real world."

Contrived settings and live laboratory experiments are generally designed to test abstract or theoretical models. Although they can help to classify evidence and challenge a researcher to see interrelations not visible in natural settings, they may deceive as well as illuminate. In seeking to document theoretical relationships, researchers who use this model exclusively may overlook other relationships and will run the danger of becoming reductionist by only selecting evidence that fits a particular thesis. This can also be true for historians. "The historian who puts his system first can hardly escape the heresy of preferring the facts which suit his system best" (Tuchman 1981, 23).

This study will be conducted in a flexible narrative chronological form. The emphasis of this study will be confined to examining a few specific areas of MPATI's history. An attempt will be made to focus on answering the research questions previously stated, while attempting to

reconstruct the wholeness of past experiences into a picture which helps determine the extent of the successes or failures of the MPATI program.

After conducting preliminary interviews and secondary research on the MPATI project, this researcher developed a structure of inquiry used to assess the extent of MPATI's successes and shortcomings during its twelve year existence. This structure of inquiry is a combination of a narrative history of the project and an educational change model developed by Michael L. Berger which is included in Leonard Golubchick and Barry Persky's Innovations in Education. (Golubchick and Persky, 1975) Using some of the most pertinent factors used in the three major components of this change model, this researcher has attempted to evaluate the strategies and tactics used by the Ford Foundation executives, Midwest Council on Airborne Television Instruction and MPATI Inc., to plan, implement, and evaluate the program. This evaluation is presented in chapter 7.

THE SCOPE AND LIMITATIONS OF THIS RESEARCH

Both primary and secondary materials served as the foundation for this historical study. Primary materials were used wherever possible. These primary sources included: (1) legal documents and records; (2) legislation; (3) minutes of meetings; (4) Ford Foundation, Federal Communication Commission, National Association of Educational Broadcasters (NAEB), and UNESCO reports; (5) correspondence; (6) memos;

(7) files; (8) transcripts of speeches; and (9) interviews. These sources made up the official/formal documentation used in this study. Personal letters, memos, notes, diaries, and other personal papers made up the informal documentation used in the study.

Archive research was conducted at Purdue University in Indiana and the Great Plains Instructional Television Library in Nebraska. These two institutions possess the major primary documentation of the MPATI program.

Secondary materials were used with caution. Secondary sources used in this study include journal articles, reports, dissertations, newspapers, and popular magazine articles.

Only historical materials directly related to the MPATI program were systematically examined. Historical sources written and published in the decade immediately preceding the establishment of the project (1950's), the decade of the program's operation (1960's), and the eighteen years after the program's termination were included in this study.

This research also contains the views and opinions of a number of former MPATI administrators, individuals directly associated with the project, member school administrators and teachers, and leaders in the field of instructional television. A number of these views and opinions were collected through face-to-face interviews and telephone interviews.

Some references will be made to other instructional television projects on points where comparisons might be

drawn between MPATI and other programs. However, no elaboration or detailed comparison between other ITV programs and MPATI is undertaken here. Furthermore, this study did not attempt to assess the effectiveness of MPATI televised instruction within individual school districts.

This is primarily an historical study. Intrinsic to historical studies are some limitations. Two such limitations are location and verification of primary documents. These limitations were partially overcome because of timeliness of the subject and the availability of some of the authors of documents related to this study. This researcher was also aided by the availability and cooperation of various people closely associated with the MPATI program.

THE ORGANIZATION OF THE STUDY

The research study is organized into seven chapters. Chapter 1 includes background information concerning ITV historical development, analysis of the scope and limitations of the study as well as a review of related research. Chapter 2 presents the historical background of the MPATI program. Chapter 3 looks at the structural development of the MPATI experiment. Chapter 4 deals with the evolution of MPATI curriculum, course development, and delivery system. Chapter 5 considers the transition period from MPATI as an experiment to MPATI as a not-for-profit regional service corporation and finally to MPATI incorporated as a corporation serving the nation. Chapter 6 focuses on the

termination of MPATI. Chapter 7 contains a summary, various conclusions, and recommendations.

SUMMARY

Educational and instructional television are a very small portion of television programming produced in the United States today. The terms educational and instructional television, are not synonymous. Educational television deals with any type of video program which is intended to teach or develop cultural understanding while instructional television delivers a specific body of subject matter as part of a formal course to students in the classroom or at home.

The focus of this study is the Midwest Program on Airborne Television Instruction (MPATI). MPATI was a method used to make instructional television available on a regional basis to schools via videotape lessons transmitted from an aircraft. Although the experimental phase of this project was successful, MPATI was denied a permanent allocation of six UHF channels by the FCC. In 1965 the project was even denied the extension beyond five years of the original two UHF channels used in the experimental stage.

Although the beginning might have been earlier, the necessary financial support for instructional television became a reality during the 1950's and 1960's. Many reasons for this interest and support were evident including pressure caused by promise of a new medium, concern about public school curriculum, and exploding enrollments. This

enthusiastic support of ITV declined in the 1970's and 1980's; many believe it never reached its potential. There were a number of important reasons for this decline, including the lack of useful research and historical studies upon which to build a systematic evaluation.

The purpose of this study is to produce an initial historical examination of MPATI with the hope that past experiences may reveal pertinent information about the initiation, development, and administration of innovations in education. The success or failure of the process of introducing educational innovations into an established educational system might then be clarified. A study of the past can be particularly helpful in planning for the future. History, as a process, does not move like a pendulum swinging back and forth between two opposing positions but rather it moves in a spiral fashion; each ascending spiral benefits from knowledge from the past. The planning, implementation, and acceptance of educational innovations cannot be improved without gathering and analyzing historical materials on particular educational innovations. The documentation on educational innovations in general, and especially on innovations attempting to operate regionally, is presently inadequate. This type of research is needed to better understand the implementation phase and the need for sufficient financial and political support for such innovations. This study of MPATI will investigate the factors which encourage as well as hamper successful

innovations.

A combination of a narrative history and an educational change model is used to attempt to evaluate MPATI's performance against the original objectives stated by the founders of the program. Although some of the most pertinent heuristics used in this model provide a basic outline structure for this study the model will not dictate the structure of this inquiry. The form this study will take will be a chronological narrative form.

Both primary and secondary materials were used in this study; secondary materials were used with caution. Only historical materials from the 1950's through the 1980's directly relating to MPATI were used. Included are interviews with instructional television individuals directly involved with the MPATI organization during the 1960's. No attempt to analyze the effectiveness within individual school districts was made. The next six chapters will attempt to provide an historical account of the MPATI experience and what the experience, shows about the success or lack of success of introducing regional educational innovations into an established educational system.

CHAPTER 2 EARLY BEGININGS

NOBLES' VISION

During a flight across Texas in December of 1944, it occurred to Charles E. ("Chili") Nobles, an engineer and radar specialist working on a plan to interconnect television stations in Texas, that the line-of-sight problem in television broadcasting could be partially overcome by transmitting from an airplane. He reasoned that a plane flying at 25,000 feet could "see" 225 miles in every direction covering an area 20 times as large as a powerful ground-transmitter. During the early days of World War II Nobles had

> built a powerful transmitter which rebroadcast tv signals beamed to it, and made it part of a high-flying B-29 Bomber. It proved its effectiveness as a decisive and successful 'secret weapon' during the dark days of WWII and is given credit for the mysterious and masterful 'jamming' of (Nazi) communications in at least one major attempt to invade Great Britain. (MPATI, An Experiment in Education 1960, 10)

AIRBORNE TELEVISION

Toward the end of the war Nobles realized that his "secret weapon" could have peaceful applications in the post war United States. Westinghouse had a long record of participation in various methods of interconnecting radio stations via telephone circuits and shortwave transmissions that dated back to the 1920's. Possibly this background in the area encouraged Westinghouse to make a long range commitment to Nobles' idea of using airborne transmission as

a distribution system. Nobles believed a number of "flying" transmitters could provide a television signal link between the east coast and the west coast of the United States. "The orgignal[sic] proposal called for four low power tv transmitters (1000 watts) and five FM transmitters to be installed in each plane"(Miles 1959, 1). Nobles calculated that eight aircraft, each orbiting at 30,000 feet in circles 400 miles apart, would link New York and San Francisco (Wylie 1964, 71).

There was no television communication linking system available at that time, and Westinghouse officials agreed with Nobles' assessment that American Telephone and Telegraph (AT&T) would not be able to make the coast-to-coast link with coaxial cable or microwave for a number of years after World War II. Nobles filed for a patent on the idea in August of 1945 and in 1953 received U.S. patent number 2,626,348 for a system originally designated as "Airborne Radio Relay and Broadcast System" and later referred to as "Stratovision."

THE FCC AND STRATOVISION

Westinghouse contacted the Glenn L. Martin Company with Nobles' airborne television idea in 1946. Martin in turn made an agreement with the Navy Bureau of Aeronautics to share all test data on antenna design and other technical measurements from the test in exchange for the loan of a Navy PV-2 twin engine bomber for the airborne television

experiments.

The FCC was happy to grant Westinghouse authorization to conduct both VHF and UHF broadcasts from the Navy bomber, "since it (FCC) was concerned with the lack of television networks similar to the radio networks which kept America entertained and informed during the war" (Wylie 1964, 72).

Aural tests were conducted from the Navy bomber between December 1945 and August 1946. Although it was decided the Navy PV-2 aircraft was unsuitable for carrying an airborne transmitter, the experiments were considered successful by Westinghouse and Martin. In 1947 Westinghouse and Martin launched a second series of flight tests "to study coverage and other effects of actual picture transmission on one of the standard television channels" (Results of Stratovision B-29 Flight Tests 1949, 473).

The FCC also provided technical support for the experiments by offering signal testing and technical evaluation. In the 1947 FCC Annual Report, the Stratovision experiment was briefly described in the chapter on "Technical Studies." The 1948 FCC Report described ways in which the FCC Laboratory section, which was set up to study "war-born developments," was cooperating with Westinghouse and Martin on the Stratovision experiment. This report concluded with the recommendation that "the commission investigate the possibilities of this method of transmission" (Wylie 1964, 72).

The Army Air Corps World War II B-29 Superfortress was

considered the most suitable aircraft available for the tests. The Air Corps loaned Westinghouse and Martin the aircraft in return for data and measurements acquired during the tests. Nobles and a number of other Westinghouse engineers designed telecast equipment adapted for flight. "They devised a gyroscopically controlled antenna, that projected 24 feet from the plane's belly, always pointing down regardless of the pitch of the aircraft" (Hill 1961, 34).

The FCC again cooperated with the venture by granting authorization to conduct the test and by providing important support through its laboratory section. The technical assistance given to Westinghouse and Martin by the FCC was reported in the 1947-48 FCC annual report:

> The laboratory division made observations and measurements of the television transmissions made from aircraft flying at 25,000 feet in experiments by the Westinghouse Electric Corp., in cooperation with the Glenn L. Martin Co. Few other tests of this nature were made due to the fact that the aircraft installation became available only during the latter part of the fiscal year. However, this activity is continuing in view of the impact that stratovision may have on the whole television broadcasting structure by offering a possible method whereby video could be received over wider areas than it is now possible to serve.(Report of the Federal Communications Commission 1948, 124)

Of a total of thirty-seven B-29 flights made during 1947 and 1948, two were considered especially significant. On June 23, 1948, a portion of the Republican National Convention was relayed from a Baltimore experimental television station to the B-29 (Westinghouse Public Relations

October 16, 1959, 2). "Only East Coast viewers could see the event on regular Network Television, but Stratovision sent it as far as Michigan" (Hill 1961, 37). Later that year on October 11, 1948, the final baseball game of the World Series was relayed by an aircraft to the midwestern United States despite the fact that the area was not yet connected to the eastern television network. In spite of some technical problems during both flights, residents of the Midwest were able to see, on their local stations, programs previously only available to east coast network viewers.

The successful sight-sound relay on a regular VHF channel from an aircraft in flight at an altitude of 25,000 feet proved that Nobles' idea of broadcasting and relaying television programs from an airplane was a possible solution to the lack of an Eastern and a Midwest United States coaxial connection. However, Westinghouse's hopes for making Stratovision a nationwide means for broadcasting directly from an aircraft and/or relaying television programs from ground transmitters was given a serious setback when the FCC declared a "freeze" on processing applications for new television stations in September of 1948. In January 1949 the eastern and midwest United States coaxial networks were connected, and this expansion was followed by a coast to coast television terrestrial connection in 1951. At this point "the Stratovision concept, no longer needed for commercial television, lay dormant in the Westinghouse files" (Felsenthal 1971, 37).

Paradoxically, the same FCC document that served as part of the foundation for building an educational television structure in the United States, sealed the fate of using aircraft to relay commercial broadcasts across the country. The Sixth Report and Order quoting the previous "Third Notice" in FCC proceedings 1951, denied the Westinghouse Stratovision proposal.

> The Commission's proposed table of July 11, 1949, did not provide channels for stations operating in accordance with stratovision method of television broadcasting utilizing airborne transmitters... The commission appreciates that stratovision, if feasible, would be a most useful instrument in providing service to sparsely settled areas of the country. Indeed, many areas of the country can undoubtedly receive service from wide area coverage stations, such as stratovision would provide. The Commission, however, does not believe that the channels should be assigned to stratovision at this time. ...It is not possible to assign television channels to many important communities and other communities have an inadequate number of assignments. This situation occurs when relatively close separations are utilized based upon ground-located transmitters. With the much wider separations that air-borne transmitters would require, the problem of providing a fair, efficient, and equitable allocation of television facilities to the various communities would be aggravated. The demands for television service require all available channels be assigned for proven ground-station operations, particularly when no substantial demand was shown for air-borne transmitters. (Federal Register 1952, 3930)

The Sixth Report and Order further states:

> No specific comments directed to the subject of...stratovision were received in response to the Third Notice. Accordingly, the Commission's proposal not to make an allocation or assignment for stratovision... is now made final. (Federal Register 1952, 3930)

INSTRUCTIONAL AIRBORNE TELEVISION

Stratovision as a method for extending television over a wide area from a single transmitter was resurrected in 1958 by another Westinghouse engineer named Reuben Lee. Lee, who was particulary impressed by the Ford Foundation sponsored closed-circuit television project in Hagerstown, Maryland, approached Nobles with the idea of using Stratovision to distribute educational television to rural areas of the southeastern United States. Lee realized the problems facing educational television in the 1950's were very similar to those facing commercial television in the 1940's. However, this time the initial problems of the system had been worked out. Lee and Nobles collaborated in a proposal to J.A. Hutchenson, a Westinghouse vice president in charge of engineering, to revive the Stratovision concept early in 1958 (Hill 1961,38).

In October 1958, the concept of conducting experimental telecasts from an aircraft to large numbers of schools in an area of a circle with a radius of two hundred miles was presented by Hutchenson to Philip H. Coombs, Hutchenson's personal friend and then director of the Ford Foundation's educational program division. Coombs realized the tremendous potential of broadcasting ITV materials from an aircraft both in this country and in a number of underdeveloped nations.

CRISIS IN EDUCATION 1950'S AND 1960'S

This potential experimentation with a regional airborne instructional television facility was launched at the start of a decade when American educators were faced with grave misgivings about public schools' ability to provide adequate services to an exploding population. During the 10 year period between 1960-1970 public school enrollments were projected to climb by 8,500,000 students, college enrollments would double, over 2,000,000 new teachers would be needed and public school expenditures would jump from $12,000,000 to $20,000,000 a year. According to many prominent American educators the central question was whether the quality of instruction would erode, stand still or, against overwhelming odds, improve significantly. The challenge, as they saw it, was how to increase the quality of instruction to an increasingly greater number of students at relatively lesser increases in per-pupil cost (Ivey, Perry, and Bohnhorst 1967, 177). To many educators it was obvious that this crisis would extend well beyond the 1960's and would not be solved by traditional practices. A new approach on a much broader basis appeared to be necessary.

Instructional television had already demonstrated its potential for dealing with some these problems. However, limited signal range [approximately 100 miles in diameter], single-channel operation and lack of financial resources were restricting instructional television to relatively few communities. Even in these communities local resources were

severely curbed by the range and quality of instructional materials available.

THE PLAN

The plan envisioned by the Westinghouse-Ford Foundation executives was to loft a number of relay transmitters almost five miles above the earth where their signal would extend over 200 miles in all directions. This proposed regional experiment would require the pooling of resources that could facilitate the production of the highest possible quality of instructional material to be used in the experiment. If the FCC could be persuaded to authorize the use of six UHF channels, a broad variety of instructional material could be offered by one transmitting airplane simultaneously to students in a large geographical area at a "modestly low" cost per school. The National Bureau of Standards estimated that a very expensive alternative to the plan to deliver ITV to a particular U.S. student population would involve building "no fewer than 119 individual ground-based stations ... to provide a six channel service to a 400-mile circle" (Ivey, Perry, and Bohnhorst 1967, 178).

> On paper, the economics of airborne television appeared astonishingly practical- an annual cost of $1 or $2 per pupil, less than the cost of a single textbook, would be enough apparently to operate a six-channel airborne television service on a permanent self-sufficient basis, and to include production costs of top quality materials for a population of 9 million students. (Ivey, Perry, and Bohnhorst 1967, 178)

Such a system would provide 72 separate half-hour units of

televised instruction during a six hour school day. As the Westinghouse-Ford Foundation project took shape, it was realized that the midwest United States offered the best combination of terrain and population features for conducting an ITV airborne experiment.

> In an attempt to provide reception to the greatest number of pupils, a decision was made to locate an airborne television instruction experiment in education in the nation's midwest. Here in an area covering roughly 125,000 miles and the state of Indiana and parts of Ohio, Kentucky, Illinois, Michigan, and Wisconsin (plus bits of Canada and West Virginia), there is concentrated the greatest number of school children in any area of comparable size on earth. There are a number of smaller areas that are much more densely populated where overcrowding has reduced the available natural resources and resulted in lower living conditions. The states of Illinois, Michigan, Wisconsin, Ohio, Indiana, and Kentucky form an area whose predominant economies are a blending of agriculture and stock raising and manufacturing and commerce. Conducting the experiment in this region would involve millions of families with widely diversified interests, whose varied reactions to the experiment would make possible an interesting and comprehensive evaluation of the impact of airborne television instruction as one way of meeting some of our nation's educational needs. (MPATI, An Experiment in Education 1960, 10-11)

ORGANIZATION CONFERENCE

The Ford Foundation called together twenty leading educators from the midwest in May 1959 to attend a meeting at Purdue University in Indiana. The conference was hosted by Dr. Frederick Hovde, then president of Purdue University and also a member of the Ford Foundation board(Felsenthal 1971, 38).

The primary purpose of the conference at Purdue was to

consider the Westinghouse-Ford Foundation proposal. Among those who attended the conference in addition to Hovde, Coombs, and Nobles were: Novice G. Fawcett, President of Ohio State University, Herman Wells, President of Indiana University; Benjamin Willis, Superintendent of Chicago Public Schools; Alexander Stoddard, Ford Foundation consultant and former school superintendent in Denver and Los Angeles; and Peter Goldmark, scientist-inventor from CBS laboratories. (Felsenthal 1971, 38) The conferees gave their support to a proposal that would be financed by a Ford Foundation grant for a three year period.

Peter Goldmark was later put in charge of conducting the "full-scale field trial" of a new technique for transmitting and receiving "narrow-band" television signals developed by CBS Laboratories in Stamford, Connecticut. It was hoped that "narrow-band" television would double the number of channels which could be made available for educational broadcasts within a given portion of the UHF spectrum without significantly compromising picture quality. Narrow band experiments were carried out until June 1962. Over $400,000 was spent on these experiments which were finally discontinued "until other sources of funds are available." (Minutes of MPATI Executive Committee Meeting 1962, 8). The experiments were never resumed.

THE MIDWEST COUNCIL ON AIRBORNE TELEVISION INSTRUCTION PLAN

It was in this setting that, in 1959, the Midwest Council on Airborne Television Instruction was formed. The council of midwestern educators and businessmen, was assisted financially by the Ford Foundation. They proposed to build upon the existing basic technology of television a regional organization which would broaden the range of educational curriculum offerings available in many schools, increase the quality of curricula where resources were inadequate or totally unavailable, and attempt to achieve these aims at a low cost per pupil. If the technology for reaching these goals could be developed and tried out experimentally on a regional basis, perhaps a partial solution could be found to some of these pressing national educational problems. The technology envisioned by the Midwest Council to tackle this problem was the Stratovision concept which had been successfully tested by Nobles ten years earlier. The technology, therefore, for mounting a regional system was, in effect, already at hand. The more elusive and crucial question was how best to organize an administrative agency which could effectively operate as a regional instructional television service for the midwest.

THE FORD FOUNDATION'S INTEREST AND FINANCIAL SUPPORT FOR ITV

The Ford Foundation had played a key role in funding national educational television projects since 1951. According to Paul Saettler:

> More than any single organization, the Fund for Adult Education of the Ford Foundation provided the unifying impetus in the national educational television movement. (Saettler 1968, 238)

The Fund for Adult Education provided financial support to a number of pioneering efforts during the early 1950's. The Ford Foundation itself became actively involved in educational television in 1955 - 1956. With the aid of Ford Foundation funds, two pioneering closed-circuit instructional television experiments were initiated in 1954 and 1956. In 1954 some Pennsylvania State University courses were offered by television only and "extensive experimentation was done with talk-back systems" (Saettler 1968, 239). "In 1956 ... one of the most elaborate closed-circuit facilities in the United States was built as a result of the Ford Foundation in [Hagerstown] Washington County, Maryland" (Saettler 1968, 238). During the next decade--1955-1965--the Ford Foundation invested about $70 million in educational television (Saettler 1968, 237). About $15 million or over one-fifth of the Ford Foundation's financial support for educational television and instructional television in the United States went to MPATI from 1959 to 1966. The first of three grants, amounting to $4.5 million, was made available by the Ford Foundation to the Midwest Council on Airborne Television Instruction during the first three year experimental period. The Midwest Council on Airborne Television, however, was the only one of these pioneering efforts supported by the Ford Foundation to attempt to create a truly ITV regional service.

OTHER CONTRIBUTORS

Other major contributors to the airborne instructional television experiment included the United States Steel Foundation, the Esso Educational Foundation, the Ampex Foundation, the Minnesota Mining and Manufacturing Company, the Corning Glass Company, the Alfred P. Sloane Foundation, General Electric Foundation, Westinghouse Electric Foundation, and others. By June 30, 1962, more than $8.2 million had been contributed by corporations and the private sector to the airborne experiment (Petition for Rule Making Submitted by Midwest Program on Airborne Television Instruction, Inc. 1963, 39). According to Sidney G. Tickton in his book To Improve Learning: An Evaluation of Instructional Technology, Volume I, the contributions were $8,500,000 (Tickton 1970, 410).

Purdue University President Hovde offered the Council the university's facilities as a base from which to conduct the regional airborne experiment. The Purdue Research Foundation, a non-profit corporation founded in 1930 to act as a financial trustee for Purdue University, became the legal and fiscal agent for the Midwest Council on Airborne Television Instruction. The Purdue Research Foundation received and dispersed funds, and entered into contracts with other organizations on behalf of the project. John E. Ivey, who became the executive director of the airborne project and later President of MPATI, served as a vice-president of the Purdue Foundation, which enable him to act for the foundation

on MPATI matters involving contracts, funds, and property.

On September 25, 1959, the Midwest Council on Airborne Television Instruction received final approval from the Ford Foundation trustees. On December 23, 1959, the FCC licensed the council to operate two channels in the UHF band on an experimental basis. This status was reviewed yearly. The FCC statement made it very clear that this was not a permanent assignment.

> This commission authorization is not to be construed as approval or an indication of future approval of operation of the facilities beyond the experimental period, or as a finding by the commission that any portion of the TV bands shall be allocated for a regular educational TV service of this nature. . . and it does not preclude the commission from granting regular broadcast applications which might conflict with the experimental operation. (Federal Communications Commission "Broadcast Action" 1959, 4)

SUMMARY

In 1945, Charles E. Nobles envisioned airborne television relay transmitters being used to increase the range of broadcasts and interconnect television stations in Texas. He had previously built a powerful airborne transmitter during World War II to block enemy communications.

Nobles could see a peaceful application for this tranmitter in airborne television. Westinghouse had a long record of working with interconnecting radio via telephone land lines. Because no linking system existed to connect television across the United States, Nobles believed that airborne television could provide such a service. Tests were

carried out between 1945 and 1948 with the help of the Army Air Corps and the FCC. In 1948 two flight tests, one relaying part of the Republican National convention and the other the final baseball game of the World Series, were particularly significant. Although tests were successful, the Stratovision concept was soon no longer needed for commercial television. Coaxial cable networks provided the connection between the east coast and the west coast in 1949. Consequently, the FCC denied Westinghouse's Stratovision proposal.

The Stratovision concept was resurrected in 1958 for educational television. Many of the basic problems of transmitting this way had already been worked out. It was launched at a time when the American public was questioning the ability of the educational system to provide adequate services to an exploding population. The challenge was to improve the quality of education to an increasingly larger population at a low per-pupil cost. Instructional television had already been tried; it had potential but ground transmission could not cover a large enough area to make it economically practical.

The Ford Foundation provided financial assistance to the Midwest Council on Airborne Television Instruction, a council comprised of midwestern educators and businessman. Their goal was to broaden educational curricula and resources without incurring a prohibitively high cost per-pupil through the use of new technology. The plan which involved both

Westinghouse and Ford Foundation executives was to loft a number of transmitters in airplanes where their signals would extend over 200 miles in all directions. At some point they would request six UHF channels from the FCC. Theoretically, at a $1 to $2 per-pupil cost, they would provide a six channel ITV service to a 400-mile diameter circle, thus defining the region to be served. The midwest seemed to be the best region for the airborne experiments because of a combination of terrain and population features.

The Ford Foundation called together twenty leading educators from the midwest to consider the Westinghouse-Ford Foundation proposal. They gave support to the project which Ford would finance for three years. Ford had been involved in closed circuit educational television since 1951; over 15 million dollars of the Ford Foundation's educational television financial support went to MPATI during the next seven years.

Several other foundations and companies gave financial suppport to MPATI as well. Purdue University offered its facilities as a base from which to conduct the regional airborne experiment and the Purdue Research Foundation, a non-profit corporation became legal and fiscal agents for the project. John E. Ivey, who eventually became president of MPATI, also served as a vice-president of the Purdue Foundation which enabled him to act for the Foundation on MPATI matters.

On December 23, 1959, the FCC licensed the council to

operate two non-commercial TV channels on the UHF band. The FCC made it very clear this was only for experimental purposes and not to be construed as a permanent assignment.

CHAPTER 3 CREATING THE INITIAL ORGANIZATION

JOHN IVEY AND ITV

Although the Midwest Council on Airborne Television Instruction was officially set up at the October 1959 conference, the philosophical, conceptual and even the practical engineering groundwork for the consideration of a regional instructional television project had been under investigation for more than ten years. Dr. John E. Ivey, Jr. played a crucial role in the development of the MPATI organization. Ivey, the original director of the Southern Regional Education Board (SREB), wrote in the January 1959 issue of the Educational Record :

> ...There is pending before the Federal Communications Commission a proposal developed by the SREB to establish a sixteen-state educational television network... The educational thinking which led to such programs as the proposed television network began to take shape in 1948. (Ivey 1959, 53)

However, Ivey's formal interest in using television as a tool to advance the cause of U.S. public education started in 1946, when he directed communication research studies for the office of Naval Research at the University of North Carolina. He worked closely with Earl Wynn, the Dean of Radio and Television studies, at the University of North Carolina, developing Naval ROTC instructional films and television programs until 1948 (Ivey 1988).

Once he began to see the need and potential for instructional television, Ivey became interested in

developing a program which would absorb the high costs of quality production with the ability to provide such programs on a widespread regional basis, thus reducing per-capita costs to affordable levels. According to Ivey:

> The economics of television and regional and national development of education fit each other like a glove. The larger the number of students viewing a program, over and beyond the minimum required to meet the basic expense of the program, the lower the per-student cost of education. By the same token, the larger the number of students, the higher the quality of programming can be in terms of break-even costs. (Ivey 1959, 53)

This whole idea of regional cooperation and development was not something new to Ivey. He had been born, raised, educated, and employed in an area of the United States that was the home of the Tennessee Valley Authority (TVA). Ivey studied community organization and southern regional sociology at Alabama Polytechnic Institute and received a B.S. degree in 1940. He taught sociology at the University of North Carolina from 1941-43 and received his Ph.D. in 1944. He then served as a specialist in evaluation of education with the Tennessee Valley Authority from 1944 to 1945. During the late 1940's and early 1950's, Ivey served as executive secretary of the committee on southern regional studies and education of the American Council of Education, secretary and executive committee member of the American Council of Education, director of the Regional Council on Education, and founder and director of the Board of Control for Southern Regional Education from 1948 until 1957.

According to E. Hill, author of an article "Education Out of the Blue,"

> The soft-spoken, unobtrusive, forty-two-year-old North Carolinian---was a natural to pull MPATI together. He was a former university professor, a city planner and a nationally known educational consultant. In addition, as a founder and then director of the Southern Regional Education Board, he had nine years of experience in coordinating the common goals of higher education in sixteen states. (Hill 1961, 34)

Ivey was the primary champion and spokesman for the SREB Sixteen State ITV proposal. The proposal even included an elaborate plan to develop a "regional network for airborne education" (Ivey 1959,54). However, this reference to airborne referred not to broadcasts or relays from an airplane but rather to the use of a series of terrestrial microwave relay stations to distribute ITV programming.

In order to develop the concrete specifications needed to perfect this plan, the SREB retained A. Earl Cullum, Jr. Associates, a Texas consulting engineering firm (Ivey 1959,54). The same company was later to serve as the consulting engineering firm for MPATI from the early experimental stage in 1959 until the airplanes stopped flying in 1968.

The Cullum engineering firm not only reported on the potential use of a network of microwave relay systems to distribute ITV signals, they also investigated the possibility of using a television signal off a microwave relay system to rebroadcast ITV programs with either

ultra-high frequency (UHF) or very-high frequency (VHF) transmitters.

> Either the UHF or VHF telecast in local areas would allow students to receive programs in their dormitories or any other place where there are television sets. In the case of ultra-high-frequency telecast, most receiving sets would have to have so-called "converters", a simple attachment costing about $20.00.(Ivey 1959, 55)

Such preliminary engineering studies would later provide the MPATI organization valuable data to develop specifications for the hardware used in the experiment.

Ivey and the other planners involved with the SREB proposal had also given serious thought to the systematic development of television course materials.

> Each course to be telecast would be planned and developed by teams of the region's top scholars. A special syllabus would be prepared with suggestions to teachers and students about how to use the telecast. ...Each subject-matter field would have to be studied to determine those concepts and subject matter which can be best presented over the television. ...The scholars and production personnel will then develop the tentative format of the course program and develop recommendations for teaching personnel. ...Along with the development of each course and programs related to it, there would be evolved a system of program evaluation. This would be a necessary part of the testing the effectiveness of the premises upon which the telecast education had been designed. Such evaluation would cast the whole mold of educational telecasting into a experimental scientific study of learning.... In all courses using telecasts, emphasis would be placed on the development of an instructional team made up of the television professor and the classroom instructor, with the testing specialists, television production specialists, and others as needed. ...The professor working directly with the students would use the telecasts to free himself from drudgery of lecture preparation and transmission of information. He could devote himself more to special interpretation and group discussion with the students. ...He should have more free time for investigation and scholarly productivity on his own part. ...His pay

> check should reflect his greater teaching productivity. The professor and his associates doing the telecasting should be paid substantially greater salaries than they now earn. Again, the reason being increased productivity. (Ivey 1959, 55-56)

IVEY'S "UNOFFICIAL" ROLE IN DEVELOPING THE FORD-WESTINGHOUSE PROJECT

All of the previously quoted material was printed in Ivey's article, "Television, Educational Quality, and Dollars" in the January 1959 issue of The Educational Record. This article, published five months prior to the Ford Foundation sponsored meeting in May 1959 held at Purdue University, indicates much of the developmental groundwork for the MPATI organization seemed already to have been sketched by Ivey in the SREB proposal. The union between the Westinghouse sponsored broadcasting/relaying airplane system and the organizational plan for the systematic development of a regional ITV project, the Southern Regional Education Board microwave relay instructional television Project, at this time, seemed to be a natural and logical development.

Although the historical record is unclear as to when Ivey actually became involved with the MPATI project per se, on July 23, 1959, a reference made in the executive council meeting at Purdue University seemed to indicate that the decision to enlist Ivey as the project executive director had at that time, not been made, at least not officially. The minutes of the July 23 meeting, stated "One of our biggest decisions is finding a cracker-jack-full-time person to take

the reins in his hands... on a full-time basis" (Executive Council Meeting Minutes, 1959, 47). Also in a later memorandum sent by Coombs to the members and advisors of the Governing Council for the Airborne Instructional Television Experiment, a list of "next steps" was mentioned in the July 23 meeting which included "finding [an] executive director" for the project (Coombs Memorandum, 1959, 12). However, an unpublished paper called "A Possible Next Step in Educational Television," sponsored by the Ford Foundation's Fund for the Advancement of Education and dated April 1959 included in the Special Collections historical archives at Purdue University is marked and notated by John Ivey. This paper outlines the basic proposal made during the May 1959 Purdue conference by Coombs. The similarities between this paper and Ivey's article which appeared in the January 1959 issue of The Educational Record are suggestive. They seem to indicate a very close "unofficial" role played by John Ivey in the development of the project in 1959 until his subsequent election as executive director of the experiment on September 10, 1959.

ORGANIZATIONAL MEETINGS

The most important development to come out of a conference held at Purdue in May 1959 was the establishment of the Governing Council for Airborne Instructional Television. Dr. Samuel Miller Brownell, later elected chairman of the council, was not present at the May conference. Coombs

realized a big name in the midwest educational community was essential to the experiment's success. Dr. Brownell was Superintendent of Schools in Detroit, Michigan, one of the largest school districts in the midwest. He also had impressive credentials on a national level. Brownell was a former United States Commissioner of Education, a former President of the Higher Education Association of the National Education Association, a former President of New Haven State Teachers' College, and a former professor of Yale University Graduate School. He was a leader with the stature which the project needed. Coombs persuaded Brownell to serve as Chairman of the council. Novice Fawcett and Fredrick Hovde, both of whom had attended earlier instructional television exploratory meetings in Chicago and at Purdue University in 1959, also sat on the council. The other members of the council included: John G. Fowlkes from the University of Wisconsin; Lyman V. Ginger of the University of Kentucky; E.E. Holt, Director of Education and Superintendent of Public Instruction in Ohio; John W. Taylor, Executive Director of the Chicago Educational Television Association; Herman B Wells, President of Indiana University; and Benjamin Willis, General Superintendent of Schools in Chicago.

In a later undated confidential memorandum written after a series of meetings called by Brownell and the Governing Council in July 1959, Coombs wrote:

> It gives me very great pleasure to advise you that, at the request of Chairman Brownell and the other members of the Council, I approached Dr. John E. Ivey, Jr., former Director of the Southern Regional Education Board and more recently Executive Vice President of New York University, and have succeeded in obtaining his agreement to serve as acting director of the experiment, pending official action of the Council at the next meeting. [September 10 and 11, 1959] We are fortunate, indeed, to have a person of such rich background and unusual ability in this capacity. (Coombs Memorandum, 1959)

Although Ivey did not attend the July 22-23 meetings, notes and minutes of the meetings indicate further refinement of some of the May proposal and the first stages of organizing an operational plan for the experiment.

Three major tasks had to be performed simultaneously.

> First, there was the problem of developing the educational design for the experimental project. Second, the technical system for airborne television transmission and reception had to be perfected. Finally, the potential owners and users of the airborne system had to be joined into a co-operative regional organization. (Ivey, Perry and Bohnhorst 1967, 179)

Some of the most important areas discussed and agreements reached at the July 1959 meetings included: producing a clear statement of educational purpose and need for the program, raising the quality of curriculum choices, offering to share decision making about curriculum with the schools involved in the experiment, setting up a small governing council that would help organize a more permanent and broader based organization, determining the number of schools involved, finding an executive director to direct the experiment, determining how many hours of educational programing to provide on a daily basis, preparing and conducting the

"narrow-band" broadcast experiment, deciding when to start broadcasting, determining how to finance the initial experiment until June 1961, exploring how to finance the experiment after June 1961, estimating the costs of the program, deciding how to coordinate airborne ETV with ground based ETV, determining how to proceed with publicity and contact strategy with public and professional groups, assigning responsibilities for developing a technical plan, and outlining a plan for investigating a number of "next steps" in the development process (Executive Council Meeting 1959).

During the same two days in July, a technical report was prepared outlining the hardware requirements, programing facilities, estimated hardware costs, and time schedules.

FOUR PHASES TOWARD A PERMANENT ORGANIZATION

During August and September 1959 a timeline was created by the Council and Ivey for developing a four phase outline for the project. Phase I was to commence October 1, 1959 and terminate December 31, 1959. During this phase the planning and staffing would take place. Phase II of the project was to start on January 1, 1960 and conclude on August 31, 1960. This phase would be primarily devoted to developing programs and equipment. Phase III was to begin September 1, 1960, and conclude August 31, 1961. This phase included the first experimental broadcast year, the second year of program development, completing plans for a permanent regional

organization, and completing the financial arrangements for the experiment. Phase IV was to be initiated on September 1, 1961, and completed by August 31, 1962. During this period the second year of the experiment would be carried out and the permanent regional organization would be completed.

Each of these phases included a list of tasks to be performed within the set timeline delimitations. In Phase I the major work to be carried out during a three month period included: developing office space at Purdue University; completing major staffing; making contracts with teachers and producers; beginning negotiations with production centers; "freezing" the technical plan and executing contracts with CBS, Westinghouse, Purdue and General Dynamics; completing petitions to the FCC and FAA; completing financing plans with industrial donors; completing educational plans and transferring program funds from the Ford Foundation to the Council; filing papers for incorporation of the Council and tax exemption; selecting participating schools; and developing major public relation programs and plans.

During the second phase of the project, the Council and staff were to be responsible for accomplishing the following tasks: assembling the major full time staff; developing the work of the television teachers and producers; executing contracts with ITV production facilities; beginning production of telecasts and developing supplemental materials; completing the equipping and trial testing of the transmission facilities and aircraft; completing the

equipping of the schools; holding educational workshops for teachers; getting supplemental materials prepared and circulated; and completing evaluation plans and instruments.

The third phase of the project starting in September 1960 focused on: operating and maintaining the plane; beginning the transmission of telecast courses; starting an in-service educational program for teachers and administrators; continuing and completing the production of telecasts; developing plans and arrangements for producing new courses in 1960-1961; conducting evaluations, completing development of the permanent organization structure; and completing the financing of the project.

The final phase of the project, which was to commence on September 1, 1961, was to be devoted to operating the second year of the experiment; completing course production for 1961-62; completing evaluations of the first year; completing the permanent MPATI organization; developing a five year operational program, 1962-1967 and beginning the preparation of the new materials for the 1962-63 school year.

The execution of this extremely ambitious plan, in the sense of projecting very close deadlines for accomplishing a large number of difficult goals, was assigned to John E. Ivey who had been responsible for the equally ambitious SREB proposal for the systematic development of a regional ITV project in the South.

STAFFING THE PROJECT

On September 10, 1959, John E. Ivey was officially elected executive director by the Midwest Council and given the job of coordinating the enormous array of tasks aimed at bringing this ambitious experimental project to fruition. Ivey immediately named Bryght D. Godbold--a retired Marine general and Ivey's coordinator of academic budgets and general assistant at New York University--as acting vice president.

Godbold had served over 21 years as a Marine Corps officer and retired in January 1958 with rank of brigadier general. He spent most of the last eight years of his military career as a successful planner and administrator of budgetary and fiscal systems. Upon his retirement from the Marine Corps he took a job as a general assistant to Ivey at New York University (Biographical Data on Bryghte D. Godbold 1959). At New York University:

> He was responsible for general coordination of the executive vice president's staff, work relating to the educational program, academic personnel, contract research, space utilization, institutional research, registration and admissions. (Learning Resources Institute n.d., 2)

Godbold served as vice president of MPATI until 1963. During that time he was responsible for coordinating the day-to-day administrative duties that made the organization a viable operation during the experimental phase.

Both Ivey and Godbold left New York University in September 1959 to join the MPATI organization. At the same time, both men were also involved in the establishment of the

Learning Resources Institute (LRI) located in New York City. This not-for-profit corporation's primary mission was to become a "national facility for developing and extending the use of new learning media, including televisable courses of instruction and related textual materials" (Robinson 1959, 1).

The LRI had already secured an agreement with the National Educational Television and Radio Center (NETRC) to serve as a major production center for instructional television courses for credit. It also acquired responsibility for taking over the production of "Continental Classroom," an instructional television series for college credit that appeared on NBC-TV commercial television in the 1950's and 1960's.

The first generation of instructional television courses developed for the airborne experiment were produced jointly by MPATI and the LRI. Thomas P. Robinson, formerly a dean at New York University and Vice President for Academic Affairs at the LRI, pointed out mutual benefits for MPATI and the LRI in the joint venture.

> First, Midwest can use LRI as its telecast production facility to develop courses in accordance with policies and specifications of the Midwest Council. The second area of mutual benefit involves the cooperative efforts of Midwest and LRI to facilitate the use of the televised courses outside the Midwest regional area. This can be done by the designation of LRI as the agency to facilitate and coordinate the national and international use of the televised courses developed for Midwest Airborne. (Robinson 1959, 2)

It is clear that the LRI had visions of extending the Midwest Airborne project influence far beyond the 400 mile

diameter circle envisioned in the original experiment.

Originally Ivey contracted with MPATI on a half-time basis. However, he later resigned from the presidency of the LRI. In a letter dated June 30, 1960 to the constituent agency representatives and the board of directors of the LRI, Ivey explained the reason for his resignation.

> The Learning Resources Institute and the Midwest Program on Airborne Television Instruction were launched by the directors of the two organizations on the theory that a single president could divide his time between the two operations and that each organization's activities would reinforce the other. The latter assumption is still valid, but it has developed that Learning Resources Institute will require more full-time management activity by the executive officer and more fund raising effort by the administration and the Board of Directors than was originally contemplated. In addition, the Midwest Airborne project has increased in magnitude so rapidly that it has itself become an operation requiring more than the president's half time originally allocated for this purpose. (Ivey 1960a)

In a letter to members of the Midwest Council on Airborne Instruction dated July 21, 1960, Ivey announced that he had accepted a position as consultant to the president at Michigan State University (Ivey 1960b).
Godbold, who was on a leave of absence from his position as Vice President of LRI to devote full time to his duties as Acting Vice President of the Midwest Council, also later severed his relationship with the LRI.

A number of other members of the Midwest Council were both members of MPATI and LRI Board of Directors. Brownell, Wells and Willis sat on both boards (News Release 1959, 3). Ivey recommended that John Taylor, Executive Director of the

Chicago Educational Television Association and member of the council, take over as president of LRI. Taylor succeeded Ivey in September 1960 as the president of the LRI. MPATI's first series of courses were co-produced with the LRI. However, MPATI later produced most of its own courses, and the original close association with the LRI diminished. Ivey and Godbold developed a general plan of administration and operation for the airborne experimental Phase I which was to be accomplished between October and December of 1959. The plan included a general six point policy statement which read in part:

> ...wide consultation with educational, civic leaders and public officials in the region regarding all major aspects of the project. A relatively small full-time staff will be required, since extensive use will be made of consultants and sub-contractors. Operations of the experiment will be divided into a number of projects ... which will be classified as divisions. Each project will be the responsibility of a Project Manager, who may be responsible for more than one project. Each division, consisting of a group of projects, will be headed by a Director.... Directors and Associate Directors also may serve as Project Managers. Division Directors will report to the Vice President, who will be responsible to the President for the conduct of the projects in accord with the policies established by the President and Midwest Council. (General Plan of Administration and Operation of Midwest Airborne Experiment n.d., 1)

The staffing pattern for the experimental stage was as follows: The President, John Ivey, was responsible for maintaining liaison with the Midwest Council, foundations and industrial sponsors, federal regulatory agencies, officials, institutions, and agencies in the midwest region. He was also responsible for approving staff plans and procedures.

The Acting Vice President, B.D. Godbold, was assigned primary tasks as general manager of the project on a day-to day basis, including carrying out plans and policies, supervising the division coordinators, providing general supervision for the administrative officers and staff, and providing for supervision of MPATI offices at Purdue, Chicago and New York.

John L. Perry, on leave from the LRI, served as assistant secretary to the Purdue Research Foundation for the Committee on Airborne Television Instruction. The treasurer of the airborne experiment was R.B. Stewart, Vice President of Purdue University and Secretary-Treasurer of the Purdue Research Foundation. Stewart's main responsibilities included budget control, custody and disbursement of funds, accounting, financial reports, and preparing contracts between the Purdue Research Foundation and firms and agencies doing business with the Midwest Council.

John H. Worthington, manager of public information for the University of Illinois, was named Director of Public Information. He served as manager of the Chicago office, planned and conducted the public relations program, and conducted activities leading toward the formation of a permanent agency to continue supporting and operating the Airborne project after the experimental period.

Three divisions were set up under the heading of "Operations". The Educational Service Division was responsible for inservice training, evaluation, and

preparation of teachers in the classroom. The Material Production Division's major responsibilities included course production, on-camera teachers, and the telecasts. The third division, Aircraft Operations, was responsible for aircraft related purchases, equipment, scheduling, and transmission from the airplane. The Educational Services Division was under the supervision of Herman L. Shibler, former Superintendent of schools in Indianapolis, Indiana, and his associate director Wayne P. Watson, former Superintendent of Schools in Terre Haute, Indiana. The Material Production Division did not have a director in 1959; however, John W. Taylor and T.P. Robinson were named as project managers. In January 1960 Ben A. Bohnhorst, former head of the Education Department, Oglethorpe University, Atlanta, Geogia, would assume the directorship of this division. The final division, Aircraft Operations, was directed by A. Earl Cullum, with Grove Webster, Vice President and General Manager of the Purdue Aeronautics Corporation, and James Miles of Purdue, named as project managers. (see Figure 1) A permanent staff of twenty people were housed at the Memorial Building on the campus of Purdue University.

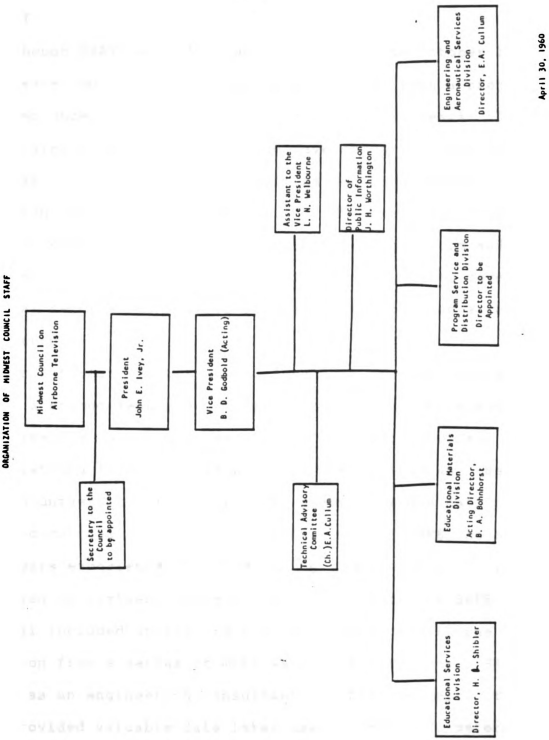


Figure 1. ORGANIZATION OF THE MIDWEST COUNCIL STAFF 1959-60

SUMMARY

Although MPATI was officially set up at the October 1959 conference, much of the initial planning for such a project had been under investigation for more than ten years. John Ivey played a crucial role in the development of this plan. Ivey was the original director of the Southern Region Education Board, but his interest in ITV dated back to 1946, when he helped develop Naval ROTC instructional film and TV programs. He was interested in using technology to develop a regional service which would provide instruction at a low cost per-pupil.

This interest was not new to Ivey. He grew up during the era of a strong Tennessee Valley Authority influence and had been directly involved in developing regional service organizations from his work with the TVA in 1944-45. He was also an university professor, city planner, and a nationally known educational consultant. As director of SREB, he had nine years experience in coordinating common goals of higher education in sixteen southern states. Part of the SREB proposal included an elaborate plan to develop airborne education from a series of microwave relay stations. SREB served as an engineering consultant to MPATI as well. The firm provided valuable data later used by MPATI to determine specifications for hardware to be used. Since much of the ground work had already been systematically developed, the union between the SREB proposal and Westinghouse sponsored airplane system seemed natural. While the record is not

precisely clear when Ivey became officially involved in MPATI, he undoubtedly played an important role in the organization from early in 1959.

At the May 1959 Purdue conference, the governing council for airborne ITV, comprised of several prominent persons in the midwest educational community, was established. Dr. Samuel Miller Brownell, former United State Commissioner of Education, served as Chairman to the council. During the July meetings, there was refinement of some of the May proposals, and many other areas were agreed upon. Three major tasks needed to be done simultaneously: develop an educational design, perfect a technical system, and organize potential owners and users of the system into a regional organization. Between August and September 1959, a timeline was created for developing a four phase outline for the project. These phases would run between 1959 and 1962 at which time the goal was to have established the permanent organization.

CHAPTER 4 CURRICULUM, COURSE DEVELOPMENT AND DELIVERY SYSTEM

By the end of 1959 grants and funds from the Ford Foundation and other industrial sources had been secured. With this money the basic organizational plan was developed. During the next two years, 1960 and 1961, Ford Foundation executives and the MPATI executives undertook the Herculean task of constructing a curriculum, selecting teachers, developing courses, enlisting organizational support, outfitting two aircraft to perform as flying transmitters, equipping schools for television reception, conducting teacher training workshops, and providing demonstration telecasts. According to John J. Scanlon:

> Educational preparations for the launching of the experiment rivalled the intricacies of the electronic research necessary to get the MPATI program on the air. (Scanlon 1961, 68)

BUILDING A CURRICULUM FOR THE EXPERIMENT

Ford Foundation executive Philip Coombs stated,

> It is essential from the very start of the experiment such as this to see to it that the control is lodged in the hands of responsible and respected educational leaders, so that there will never be any questions of an outside group public or private, making curriculum decisions for the area receiving the curriculum. (Executive Council Meeting 1959,17)

How did the MPATI organization decide on the curriculum? What effect did the then current debate between the so called "life-adjustment" versus "academic learning" forces in American education during the 1940's and 1950's have on the development of a curriculum for MPATI telecourses?

The American K-12 school curricula underwent a tremendous change after World War II. Post World War II events, the advent of the Cold War, and Russia's technological triumphs, such as the acquisition of the atomic bomb and the launching of the satellite Sputnik I, provided a political climate and an air of urgency about the future of U.S. national security.

> New resources both money and personnel, started flowing toward the schools. Funds came from foundations, from the federal government, from the states, and from the local communities. In greatly increasing numbers sociologists, economists, social psychologists, and political scientists, among others, turned their attention to the schools. . . (Mackenzie 1970, 6)

The American public was, during this period, more willing to be influenced by contemporary critics of American education. Criticism was initiated not by public primary and secondary educators but by others making demands public school educators of that day were purportedly unable to fulfill (Powell 1985, 281).

> . . . the outsiders consisted of college professors, people engaged in maintaining America's world hegemony during the cold war, and middle- and upper-middle class parents interested in college preparatory schooling for their children. They demanded a return to academic emphasis that supposedly characterized schools before the advent of modernism, or progressivism, early in the century. (Church and Sedlak 1976, 401)

This reaction was directed toward the life-adjustment curriculum, which was based on the philosophy that schools should focus on teaching personal relations and strategies of everyday life rather than acquiring academic skills.

An examination of the MPATI proposed curriculum, the funding organizations involved, and personnel chosen to

administer the program made the decision concerning which curriculum to initially adopt for the airborne experiment a foregone conclusion. The "academic learning" curriculum was adopted.

During the 1950's impassioned critics of American schooling wrote volumes of material bemoaning the state of the educational system during the 1950's. Albert Lynd's Quackery in the Public Schools (1953), Arthur Bestor's Educational Wastelands (1953), Robert Hutchin's The Conflict in Education (1953) and Mortimer Smith's The Diminished Mind (1954) set the stage for the most influential critical analysis of all, James Bryant Conant's American High School Today which appeared in 1959. Although Conant's book chided the educational profession, his "proposed reforms did not require the kind of basic reorientation called for by some rougher critics." (Church and Sedlak 1976, 405)

CONANT'S INFLUENCE ON AMERICAN EDUCATION

Conant developed a large following among professional educators. His combination of both measured criticism and thoughtful support made educators more likely to support his proposals than the "antiprofessional, conspiratorial, accusatory phrases of men like Bestor and Rickover." (Church and Sedlak 1976, 412)

Most critics called for a return to "the basics." They proposed more grammar, more mathematics and more reading of classical literature, more work in languages, more history,

and less civics. The Council for Basic Education, established in 1956, advocated the philosophy that

> schools existed to provide the essential skills of language, numbers, and orderly thought, and to transmit in a reasoned pattern the intellectual, moral and aesthetic heritage of civilized man.(Cremin 1961, 346)

Conant, as well as a number of other contemporary critics of American education, were concerned with the purported lack of trained minds for the country's scientific and defense establishments. Although these critics professed a value in the liberal arts and an appreciation of art and literature, many of them believed that it was far more important to have American youth trained to understand the complexities of scientific concepts and higher math. It was imperative that America develop the best minds possible to fill the desperate needs of a highly advanced technological society in the post war years (Powell 1985, 285). Conant's close association with the military establishment and with captains of United States industry dated back to the early 1940's when, during his tenure as President of Harvard University, he was

> . . . instrumental in organizing scientific and engineering talent in support of the war effort; he played an important role in facilitating work on the atomic bomb; he helped establish the National Science Foundation; and he advised the government on instituting the military draft and establishing national manpower objectives through it. (Church and Sedlak 1976, 408)

Conant's work with the Educational Policies Commission in the 1940's and later his service as Chairman of the American Council of Education provided him with an opportunity to receive several substantial grants from the Carnegie

Foundation to study the American high school.

Conant's deep belief in a Jeffersonian intellectual meritocracy prompted him to advocate that U.S. schools should hold out a chance to every high school student to become a member of an American meritocracy system through a good public education. Dr. Conant, as organizer of manpower for the war effort during World War II, found that highly trained, competent people were in short supply during the war and expected they would continue to be in short supply after the war.

In American High School Today he argued that it was "the social duty of every child with intellectual potential to enroll only in challenging courses which would prepare him for leadership, and to shun courses which were soft or irrelevant to that preparation" (Church and Sedlak 1976, 410). In 1958 Conant reported that many capable students could not even get four years of math, science or language in their high school. He called for all high schools to offer a curriculum which would provide, at minimum for their better students, full coverage in the basic areas. He proposed that

> a more challenging high school program in math and in the sciences would recruit more youngsters to pursue those fields in college, that one cause of America's dearth of scientific manpower was that schools held potentially valuable people back until it was too late for them to prepare for such careers. (Church and Sedlak 1976, 411)

Conant's prescription for American schools focused largely on the "pursuit of academic excellence, through the traditional subject curriculum, to meet our nationalistic

needs in an era of the Cold War and space race" (Tanner and Tanner 1975, 406). Conant told educators that schools which adopted his proposals would become responsible for maintaining the equality of opportunity basic to democracy and for channeling young people into future roles in a way that would allow the United States to remain strong and free.

Ford Foundation officials and MPATI executives were familiar with Conant's recommendations. "Conant's report attracted great attention and exerted considerable influence on educational policy and practice" (Tanner and Tanner 1975, 404). Conant's recommendations appear both in Coomb's writings and in MPATI materials. Conant's research on American schools is quoted extensively in MPATI informational materials. In the case of a newspaper release dated Friday, October 16, 1959, MPATI uses Conant's criticisms to support the idea of airborne transmissions to smaller schools.

> About one-third of these [students] are in school systems of less than 2,000 pupils which, according to Dr. James Conant's recent study of the American high school, are too small to provide a satisfactory education under present conditions. All of these schools and children could be served by a single aircraft, except where terrain and similar obstacles cause reception "blind spots", especially on the outeredges of the circle. (The Midwest Program on Airborne Television Instruction Experiment: Background and Purpose 1959, 3)

Jerome Bruner's curriculum philosophy is the only philosophy other than Conant's mentioned in MPATI curriculum materials. Bruner also was an extremely influential voice of the times urging intensification of quality curricula in math and science.

Given the orientation of the educational consultants from the Ford Foundation and the administrators of the MPATI experiment, since Dr. Conant was president of Harvard and was very influential with business leaders, it is not at all difficult to understand why Dr. Ben A. Bohnhorst, a graduate of Harvard's Graduate School of Education, would be acceptable to both Ford Foundation and the MPATI organization to become head of the Educational Materials Division for the project.

E. Hill wrote

> Deliberately MPATI avoided involvement in the current American debate about academic learning versus life-adjustment education. It did not want to become controversial; it wanted no connection with reform or crusade; it wanted simply to get those planes aloft and broadcasting to the schools. (Hill 1961, 35)

Dr. Bohnhorst stated that although as much input as possible was sought from curriculum experts and local educational leaders much of the early MPATI curriculum was decided upon by Dr. Ivey and Dr. Taylor. Bohnhorst sat in a meeting in April 1960 with Ivey and Taylor and outlined a number of different options which were offered by a group of curriculum experts. Upon being informed that a consensus could not be reached by the experts as to what should be included in the curriculum, Ivey and Taylor settled the issue by jotting down the curriculum on a note pad and asking if there would likely be any objections by the curriculum experts. According to Bohnhorst, although Ivey and Taylor did not have the credentials to write the curriculum, both

men brought with them an expertise. Ivey's many years in education gave him a good insight into what would be acceptable to Midwest educators, and Taylor had the knowledge of what educational materials could be done quickly and well on television. Bohnhorst seems to confirm the point made by Hill that philosophical curriculum issues were secondary to getting MPATI on the air (Bohnhorst 1988).

However, Schramm, Coombs, Kahnert, and Lyle's book Media: Memo to Educational Planners describes a different process for determining the curriculum used during the experimental stage of the project.

> At the beginning, a tentative curriculum was devised by school officials and consultants in the coverage area. This included a variety of courses which were considered to be among the priority needs of primary, secondary and higher education in the area. (Schramm and others 1967, 36)

J. Scanlon supports this version in his article "Classroom TV Enters a New Era". "A special advisory committee selected the courses to be offered, after consulting with school officials throughout the region" (Scanlon 1961, 36).

Actually, the "official" MPATI version of how the curriculum was determined comes closer to Bohnhorst's recollection.

> Selection of courses for MPATI has been based on advice of representatives from midwest schools for whom the materials are intended. With the advice of six chief state school officers in the region, a curriculum policy and planning committee was appointed in 1960 to advise on the selection of courses for the experimental period through the spring of 1962 (MPATI's Educational Program 1963, 1).

A number of other factors were also responsible for

shaping the MPATI curriculum. In August of 1959 Philip Coombs wrote a letter to Dr. Alexander J. Stoddard who was associated with the Ford Fund for the Advancement of Education and had attended the early exploratory meetings on the airborne television in the early months of 1959. Coombs asked Stoddard to respond to a number of questions concerning the establishment of a curriculum and course development program. Dr. Stoddard responded with a thirteen page memorandum which outlined recommendations concerning grade levels to be taught, courses best adapted for ITV, a list of "outstanding" television teachers, criteria for determining excellence in a studio teacher, and a tactic for explaining the whole experiment to Midwest educators and involving them in the selection of courses to be taught during the experimental period (Stoddard 1959). A comparison of the recommendations made by Stoddard and the first year MPATI course offerings indicates how influential Stoddard's considered recommendations appear to have been. On this point Stoddard and the MPATI officials seem to agree. However, there did seem to be a difference in the course development philosophy between The Ford Foundation and MPATI.

Two years before, in 1957, Stoddard had proclaimed that televised instruction could solve many of the problems that existed in the schools of that day. Stoddard believed a growing cultural deficiency in education was caused primarily by the lack of enrichment materials in educational programs. He also predicted a critical teacher shortage which would be

difficult to overcome. Stoddard was a strong proponent of large group television instruction. He stated that

> The use of television in the educational program, not only to supplement and enrich, but also to perform certain functions heretofore performed by teachers... offers great hope for meeting teacher ... shortages, but more important, for raising the level of teaching. There is already no doubt about the effectiveness of television as a teaching medium. (Stoddard 1959)

This concept of producing course material that could "stand alone" or was "teacher proof" was a different philosophy than practiced by MPATI. In fact, in November 1959, at a meeting with state superintendents, Ivey made it very clear that the "enrichment" philosophy would be MPATI's approach to curriculum and course development. Coombs probably supported Stoddard's "stand alone" position on developing classroom television materials. Coombs was also interested in extending the concept of developing instructional television systems in underdeveloped countries where the instructional television materials were unlikely to be reinforced by trained classroom teachers.

Coomb's foundation replacement on the airborne project, when he became Undersecretary of State in the Kennedy administration in 1961, was James Armsey. Bohnhorst recalls Armsey was less than enthusiastic about the course development philosophy practiced by MPATI. Dr. Bohnhorst stated, "What we were in fact trying to do was to supply classroom teachers with supplements that would have the power of television. Not replace them... empower them!" (Bohnhorst 1988)

MPATI's official position on this issue very definitely reflected Ivey and Bohnhorst's view.

> MPATI conceives of the classroom and television teachers as a team. The classroom teacher may use television to the extent she deems best for her particular circumstances. In some cases this is what is called "total teaching", with the classroom teacher merely turning on the set and letting the studio teacher take over, although this is frowned upon. Most ITV is "supplemental"... a built-in adjunct to regular classroom work. Or, it may be purely "enrichment".. the fill up added to the classroom study that lifts the course a cut above the ordinary. (Midwest Program on Airborne Television Instruction 1964, 6)

Ivey reiterates this position:

> The "enrichment" approach would be consistent with the purposes of the project, since the typical school would like to enrich if only it could, and the smaller schools would be enabled to "enrich" with basic courses they cannot now teach. (Ivey n.d. 4)

Bohnhorst's position on this issue is supported by research.

> . . . The attitudes of students and teachers often tended to be negative to the new technology- especially when it was employed as a dominant form of instruction rather than as a means of instructional enrichment. (Tanner and Tanner 1975, 432)

THE FORD FOUNDATIONS WANING INTEREST IN MPATI

The first direct federal support for ETV started with the passage of the Educational Television Facilities Act of 1962. In 1964, the National Association of Educational Broadcasters (NAEB) recommended that a study be done on educational television. A study was authorized by President Lyndon B. Johnson in 1965. The Carnegie Commission on ETV; a new governmental agency, was created. Members on this commission included James B. Conant and Terry Sanford, former governor

of North Carolina and personal friend of John Ivey. McGeorge Bundy, then president of the Ford Foundation, at the Second National Conference on Long-Range Financing of Educational Television Stations in 1967, pledged "to move toward greater emphasis upon the needs and upon the understanding of instructional television" (Bundy 1967, 7). However, by the early 1960's the Foundation had already concluded that neither it nor any other private funding source could provide the financial resources necessary to maintain an adequate level of support for any single ITV project. The Foundation began to turn its attention to the ETV stations which offered telecourses during the day (ITV) and cultural programming at night (ETV). The trustees believed that development and support for local ETV stations would insure the future of ITV, and they started to search for a plan to establish an ETV-ITV network (Ford Foundation Activities 1976, 1-25).

The report of the Carnegie Commission on Educational Television in 1967 "found its view reinforced" by the Ford Foundation.

> . . .The views adopted by the commission in relation to Public Television are clearly such that they maximize the role of the local station and lead to steps that will strengthen the local television, implementation of the recommendations of the commission would tend toward general improvement of instructional television as well. (Carnegie Commission 1967, 81)

The Foundation's support of MPATI began to decrease after the initial experimental phase (1959-62) and was totally withdrawn after 1966.

TEACHER SELECTION

"There was solid agreement at all times that the educational quality of the proposed television courses must be of the highest possible level of excellence" (Ivey, Perry, and Bohnhorst 1967, 179). To that end an intensive teacher talent search was launched throughout the United States in December 1959 by John W. Taylor, executive director of the Chicago Educational Television Association and member of the council. An MPATI letter was sent to all state superintendents of public instruction, to large city superintendents, and to directors of educational television systems asking for kinescopes of their most effective teachers. "Almost all of the responses came from television teachers, but MPATI paid the cost of kinescopes for classroom teachers without television experience" (Hill 1961, 35). A two-step process was used to select first 88 and then fifteen finalists out of 350 candidates.

> The process by which the participants were selected included: (a) screening of sample kinescopes submitted for evidence of teaching ability and ability to communicate through the medium of television, (b) review of their professional and academic qualifications with respect to their background of experience and their competence in their subject matter fields, and (c) a personal interview with each teacher with respect to their abilities to relate to other persons and their interest in the Midwest Program on Airborne Television Instruction as it relates to the improvement of education. (Workshop Report 1960, 1)

The fifteen finalists were paid 10 to 20 percent more than their regular teacher's salary and signed a one year contract with MPATI after the curriculum was established.

In the summer of 1960 these teachers attended a special summer, ten-week workshop at Purdue University. Many of them were "authors of textbooks, research studies, curriculum guides, audio-visual aids, and articles and reviews contributed to professional journals." (Workshop Report 1960, 1) Most held advanced degrees and one of them held a Ph.D. from the Sorbonne. Many of them had teaching experience at both the public school and college level. All of teachers had extensive and successful experience with educational television programs throughout the country. (see Appendix A)

DEVELOPMENT OF MATERIALS

Judith Waller, former Director of Public Affairs for NBC and former Director of Radio and Television Workshops at Northwestern University, was Director of the Summer Workshop for Television Teachers for MPATI. Ray Wolf was Director of the Purdue University Television Program and Associate Director of the Summer Workshop. Ben Bohnhorst, who at that time was Director of the MPATI Educational Materials Division, was the executive who was in charge of the entire undertaking. Under Bohnhorst's general supervision, Leon Hibbs, Associate Director of the Educational Materials Division, worked directly with the television teachers as curriculum coordinator assisting them with any problems they encountered as they planned their series.

The teachers were also assisted by "Subject-matter specialists [who] helped outline their courses using

textbooks gathered from all over the world." (Hill 1961,35) Television experts aided them in script-writing, and other teachers watched them perform in front of the cameras, "correcting, guiding, directing, suggesting a tone or gesture or more effective pause." (Hill 1961, 35) Each teacher made sample tapes, evaluated them, and retaped the telelessons again. The teachers started to write the lesson guides for the classroom teachers who would use the telecast lessons. They also studied film brought in from the British Broadcasting Corporation, from NBC, and from other ETV systems. In October, 1960, the first generation courses were being produced and the lesson guides for classroom teachers were being completed for publication.

BUILDING MPATI'S VIDEO TAPE LIBRARY

All the course lessons were videotaped. After extensive technical investigation the MPATI engineers decided it would be not financially feasible to use ground transmitters to transmit programs from the ground to the aircraft. It was determined in the late summer of 1959 that videotape recorders could be successfully installed in each airplane.

After the summer workshop teachers were sent to a number of production centers across the nation to produce their lesson series on videotape according to MPATI production standards and procedures. The first series of airborne video tape courses were produced by "New York University, television station WCET in Cincinnati and WTTW in Chicago,

the University of Detroit, Purdue University, television station WHYY in Philadelphia, the University of Michigan, Michigan State University, and the University of Wisconsin at Madison" (Ivey, Perry, and Bohnhorst 1967, 180). MPATI headquarters at Purdue University received all videotapes produced for it at its tape-processing center. Critical evaluations of each tape were made by four person teams. These teams consisted of a subject-matter expert, a teaching level expert, a television production technique expert, and an engineering specialist. Each team served as an evaluation panel to insure the videotape lessons being produced met MPATI's high standards. They also offered suggestions on how the tapes could be improved. After the first five tapes of each series were reviewed, production was temporarily suspended. At one-or-two-day clinic sessions at Purdue University, television teachers, the production team and academic consultants engaged in an indepth analysis of ways to improve content, teaching procedures, production techniques, and engineering arrangements for the remaining lessons in the series. According to MPATI staff members:

> Initially, these sessions were painful. Professional egos were not accustomed to such deep, public assessment. Soon, however, the clinic sessions began to be viewed as an important means for providing positive suggestions out of which real professional growth might be achieved by all concerned. (Ivey, Perry, and Bohnhorst 1967, 180).

These clinics were held periodically during the production of each series. Below-standard lessons were redone and resubmitted for review. "In the first year as many as 30

percent of the taped lessons initially submitted were redone one or more times" (Schramm and others 1967, 36). From the clues and criteria developed during the clinic sessions new specifications and models were developed for a second generation of course production.

All of the critical evaluation and careful analysis performed by MPATI evaluation teams had three basic objectives in mind:

> . . .how to make the television medium an addition to class-room resources rather than merely a moving picture of another teacher performing for students; how to devise new and imaginative approaches to curriculum materials without being too excessively innovative at the outset; how to set the stage for independent learning by student and bigger innovative steps in curriculum materials in future 'generations' of course production. (Ivey, Perry, and Bohnhorst 1967, 181)

It is no wonder that MPATI's impressive work in this area did not go unnoticed. According to Schramm one of the most interesting things to note about the MPATI project was

> . . .the great care which MPATI leaders found it desirable to take in making and producing programmes [sic] which are to be used by so many schools and pupils. Perhaps all educational television programmes [sic] should be made with as much care, but they seldom are. (Schramm and others 1967, 36)

By May 1961 most of the production work on the first generation of MPATI telecourses was finished.

At eight A.M. on Monday, May 15, 1961, MPATI began demonstration transmissions on television channels 72 and 76 to an area which covered over 125,000 square miles. During the eleven-day demonstration period teachers were able to sample the eleven different instructional television courses

produced by the MPATI organization. The first generation of eleven MPATI telecourses included a total of 672 lessons of 268 hours of instruction. All of these were completed in less than eleven months! (see Appendix B)

THE DELIVERY SYSTEM

The complex job of getting MPATI's video taped telecourses to a potential five million students in some 13,000 schools located in six states from 1961 until 1968 was still another arduous assignment.

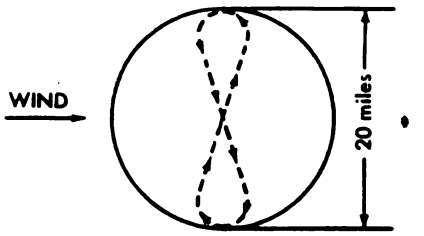
The first broadcast demonstration over UHF channels 72 and 76 from an aircraft flying tight, lazy-8 patterns at 23,000 to 25,000 feet over Montpelier, Indiana, commenced on May 15, 1961. What seemed to be easy to the curious onlookers on that Monday morning at 8:00 A.M. was in fact a formidable task. (see Figure 2, 76)

According to Hutcheson, Westinghouse vice president of engineering, although the system was tested successfully in a series of telecasts from 1945 to 1948 by Westinghouse, "... this experiment will afford an excellent opportunity to test the reliability of the electronic equipment and aircraft on a day-to-day as well as a year-to-year basis" (TV Educational Experiment to Use Stratovision 1959, 1).

The aircraft used by MPATI during the life of the program were two DC-6AB four-engine propeller driven cargo planes. (see Figure 3, 76) Originally, the Douglas DC-7 aircraft was indicated as the aircraft to be used in the experiment.

OPERATIONS

Personnel: Flight Crew—captain, co-pilot, flight engineer; Television Crew—flight electronics engineer, two flight electronics technicians.



. . . MPATI Flight Pattern

Departure: 8:15 a.m., EST, from Purdue University Airport.

Station: 23,000 feet over Montpelier*, Ind.

Flight pattern: Figure eights within a 10-mile radius.

Broadcast day: 9:30 a.m. to 3:00 p.m., EST.

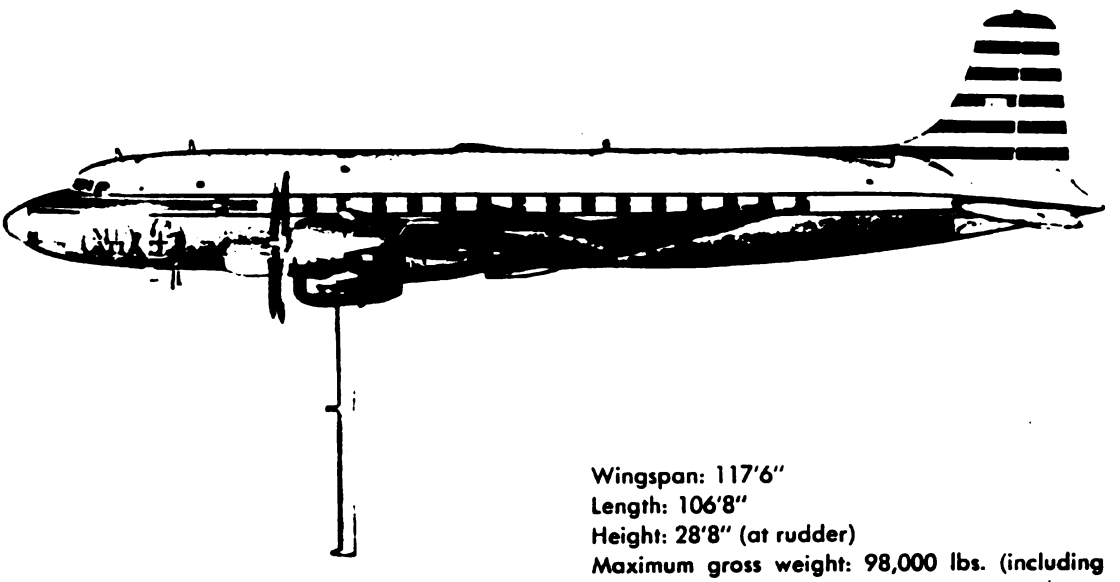
Return: Purdue University Airport, about 3:20 p.m.

Telecast material: Each aircraft carries two days' supply of 15, 20 and 30 minute video-taped lessons for each channel. Twelve tapes are used on each channel daily.

Weather: Adverse weather conditions may make it impracticable to land at Purdue airport. With an extra day's supply of tapes, the aircraft, if necessary, can go to alternate airports as far away as Atlanta, Georgia, and return to station for telecasting the following day.

Figure 2. OPERATIONS

Aircraft: Douglas DC-6A (cargo).



Wingspan: 117'6"
Length: 106'8"
Height: 28'8" (at rudder)
Maximum gross weight: 98,000 lbs. (including fuel)

Landing weight: 88,200 lbs.
Average cruising speed (level flight): 310 MPH
Average cruising speed (on station): 207 MPH
Capital cost per aircraft: Approximately $900,000.

Figure 3. MPATI AIRCRAFT

> Nobles . . . suggested that the airplanes should be DC-6A's, the cargo version of the DC-6. These airplanes are cheaper to operate than the DC-7, have cargo doors and their flooring is capable of withstanding heavier loads than the DC-7's and will not have to be reinforced. (Tickton Notes 1959, 3)

The DC-6s were finally settled upon in part because the assignment also called "...for a ship that can fly as high as possible and virtually hover. The DC-6AB was and continues to be the best production model of reasonable cost for the job" (Midwest Program on Airborne Television Instruction: Background Information n.d., 1). MPATI considered but rejected more advanced types of aircraft "because of their higher initial and operating costs. Their principle advanced feature--greater speed--is of no particular advantage to MPATI. Once the aircraft gets on station no one is interested in going anywhere" (The MPATI Story n.d. ,7). Arrangements were made to purchase two DC-6AB aircraft from Slick Airways Inc. for approximately $800,000 each rather than lease them from General Dynamics Corporation (Ivey, Perry, and Bohnhorst 1967, 181).

Although in the original proposal a ground-to-air-link was to be used to transmit the videotaped programs to the flying aircraft for rebroadcast to schools, at a November 12, 1959 technical meeting attended by Ivey, Goldmark, Nobles, and Coombs it was decided the

> . . . ground-to-air-link will be eliminated, and the video tape machine and standard converters will be installed in both planes. This change in plans will require that all programs be taped, and that the planes carry as much as a week's supply of tape in the event they have to land at places other than the home base

airport. (Tickton Notes 1959, 2)

While one airplane was flying the other was on standby. Each aircraft had a flight crew of three and a transmission crew of three. Each of the DC-6AB's were loaded with 6 1/2 tons of specially designed transmitting equipment. (see Figure 4, 79) Monday through Thursday one of the aircraft would take off at 8:30 A.M. from Purdue airport's specially built mile-long runway, fly a climbing course south then northeast some 80 miles to Montpelier, Indiana, and fly 20 mile long lazy-8s at 23,000 feet on a line 1.5 miles south of Montpelier for six hours a day. The aircraft covered approximately 2000 miles during the broadcasting day within that 20 mile long pattern.

Telecasts were initiated from two video tape recorders, one for each channel. A video camera was also installed onboard each plane to read opaque cards during station breaks when video tapes were changed.

The Ampex videotape recorder's signals were fed into two parallel 6-kw power transmitters. Power for operating the broadcasting equipment onboard was supplied by an auxiliary jet turbine-powered generating unit mounted in the rear of the plane's cargo section.

The antenna assembly consisted of an 11 foot slotted-cylinder coaxial antenna mounted on a 21-foot mast. The 32 foot antenna assembly was stored under the plane's body for take off and landing and would pivot to a vertical position

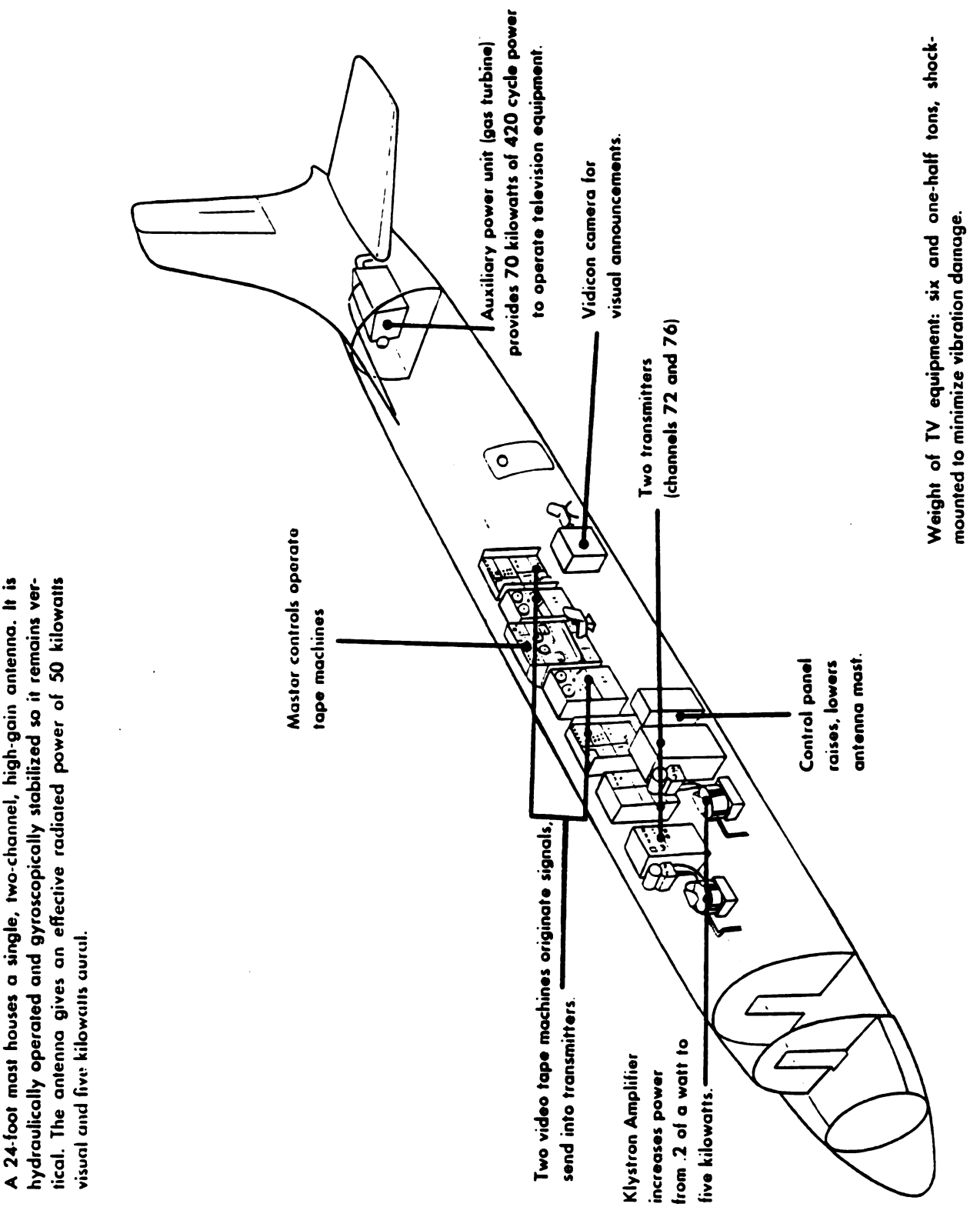


Figure 4. BROADCAST EQUIPMENT ABOARD THE MPATI AIRCRAFT

special problem. The antenna was also gyroscopically stabilized so that the antenna remained oriented at 90 degrees to the earth regardless of the roll and pitch of the aircraft.

THE NARROWBAND BROADCAST EXPERIMENT

It was initially planned that two of the Ampex video recorders aboard one of the airplanes could be converted to handle special video tapes using experimental narrowband television standards. The narrow band technique was developed by CBS Laboratories and demonstrated by CBS engineers in June 1959 to MPATI council members. This technique would have permitted broadcasting a video image within a three-megacycle band width instead of the conventional six-megacycle band. The original time schedule set up by the MPATI administration anticipated having both aircraft equipped and delivered to Purdue by mid-December 1960, so that testing could be conducted in anticipation of starting the demonstration period during the second semester of the 1960-1961 school year. Had this technology been successful, MPATI could have doubled the number of programs telecast on its FCC alloted channels. Undoubtedly this would have helped MPATI's case with the FCC. Although $400,000 was spent on the experiments, the narrowband experiments were never concluded by the joint CBS-Westinghouse engineers and narrowband broadcasting was never used by MPATI.

CRITICAL DELAYS

The runway and hanger facilities at Purdue University Airport were not equipped to handle DC-6s. Therefore, a special hanger was constructed and the runway was lengthened to over one mile long to facilitate the MPATI aircraft. Both of these projects were completed on time. A contract was entered into with Purdue Aeronautics Corporation to operate and maintain the aircraft from 1961 until 1968.

MPATI's consulting engineers, A. Earl Cullum and Associates of Dallas, Texas, were assigned to supervise a Westinghouse Electric contract to modify planes to carry the transmitting equipment. Modifications on the aircraft done in Baltimore by Westinghouse engineers were delayed because of antenna installation problems, late delivery of critical transmitter parts from the supplier, and unusually severe weather conditions in the Baltimore area. The first aircraft was finally delivered to Purdue late in April of 1961, nearly five months behind schedule. In 1962, it was estimated by Robert N. Woerner, Treasurer of MPATI, that the "project had suffered over $300,000 in damage due to the delay of the aircraft" and that the overrun on the contact with Westinghouse was over $682,000! This million dollar debt would be critical to MPATI's continued existence in the late 1960's (Minutes of Executive Committee 1962, 8). Due to the delay in delivery of the airplanes, plans for signal test flights and demonstration telecasts were revised. It had been planned to allow several weeks for signal testing in

December 1960 and January 1961 to provide a signal so that school equipment installers could test the receiving installations. This time would have also permitted more time to evaluate the aircraft readiness and check out the transmission equipment onboard.

It was hoped that the demonstration period would start on January 30, 1961. However, the delay in the delivery of the planes until late in April shortened the test period and demonstration period.

MPATI'S CONTRIBUTION TO UHF TECHNOLOGY

Signal testing finally started on Monday May 15, 1961, nine days after the second aircraft was delivered to Purdue's airport.

The tests and demonstrations validated estimates of coverage areas and signal strength. During 1961 and 1962 the broadcast schedules were maintained more than 97 percent of the time.

Schools were equipped with special receiving antenna, line amplifiers and a converter which transformed the UHF signal from the aircraft to a very high frequency (VHF) signal compatable with the normal VHF TV receiving used in the classroom. Reception of MPATI UHF signals by schools hundreds of miles away from the flying aircraft was in itself an outstanding achievement. UHF reception in 1961 was a "novelty." Most television receivers were not equipped with UHF tuners in the early 1960s. Therefore, a whole new

technology was pioneered by the MPATI organization.

For schools to receive channels 72 and 76 required a special UHF antenna with suitable directional pattern and proper location in respect to the school building, surrounding structures and terrain. A UHF amplifier, to boost signal strength, and a converter, to change the UHF signals to VHF signals was also necessary. If more than one classroom in a school was served by MPATI a distribution system and multiple receivers were required. The cost for a typical school installation was below $500 per room.

Engineers working with MPATI found it necessary to instruct dealers and servicemen how to install and maintain a UHF system. Over 160 dealers and installers attended a clinic held by MPATI in March 1962 (Minutes of Executive Committee Meeting 1962, 2). For the most part, reports from schools during the demonstration period indicated good reception. However, a small number of schools encountered difficulties. As technicians gained experience, they were able to correct signal strength fluctuations caused by the combination of ground reflection and aircraft movement. Usually the amount of fluctuation could be handled by adjustment of the antenna or the automatic gain control (AGC) on the receiver. Under a combination of adverse circumstances the amount of fluctuation could be more than the AGC could handle. When this occurred, there could be fading or total loss of the picture. MPATI developed a switching device which was used with a type of dual antenna

system that produced a usable signal at all times. This device was successfully tested in Chicago, Indianapolis, and Lafayette with complete success (The MPATI Story n.d., 9).

In some urban areas like Chicago, Cleveland, and Detroit the airborne signals couldn't be received because of obstructions. MPATI invested in translator relay towers which would receive the airplane UHF signal, convert it to VHF, and convey it by hard wire to city schools. The translator relay towers in Chicago never worked really well and few schools actually used them. Therefore, the MPATI translators in Chicago were "retired and dismantled during the summer of 1965" (Minutes Executive Committee Meeting 1965a, 4).

TECHNICAL AND PROFESSIONAL SUPPORT ORGANIZATIONS

Arrangements were made by another MPATI staff team with twenty leading universities to provide staff co-ordinators to work with the area councils in the given reception areas. Each council encouraged schools in its region to become equipped to use MPATI transmissions. Almost a hundred workshops were held at resource universities for teachers who planned to use MPATI materials in the 1961-62 school year. Among the co-operating universities were Ball State University, Indiana State University, Indiana University, Miami University, Michigan State University, Northern Illinois University, Northwestern University, Notre Dame University, Ohio State University, Purdue University,

University of Illinois, University of Kentucky, University of Louisville, University of Michigan, Wayne State University, Western Michigan University, and University of Wisconsin, in Milwaukee. (see Appendix C) As many teachers as possible were provided with orientation workshops on how to use instructional television effectively. Teachers who participated in these workshops, which were offered jointly by co-operating universities, local school districts, and MPATI staff, were provided with a teacher's guide which included "objectives, concepts to be developed, suggested reading, and hints for follow-up work with students" (Ivey, Perry, and Bohnhorst 1967, 185).

According to John Ivey:

> We started on the premise that there would not be any purpose in producing courses by television unless the teachers in the classroom were adequately prepared, both in terms of skills and motivation, to use the television instructional material adequately. Through our work we had to establish at the outset, the concept that the television teacher was an assistant to the classroom teacher, using her own course outlines, her own materials, and her own objectives, which we hoped the television materials would support. This required an extensive operation in providing workshops for teachers and in the production of lesson syllabi for teachers. (Ivey and Godbolt 1961, 72)

Ivey's vision of providing extensive workshops to promote these objectives fell far short of the goal in the years after 1961.

SUMMARY

By the end of 1959 grants and funds from the Ford Foundation and other industrial sources had been secured, and it was time to determine a curriculum for the telecourses to be developed. During this period there were two educational philosophies debated; one was the life-adjustment philosophy and the other was the academic learning philosophy. After World War II, there was a demand to return to academic emphasis rather than modernism or progressivism. It would seem the MPATI organization favored the academic emphasis because of two major forces. First, the cold war and Russia's technological triumphs provided the political climate for major change and secondly, the American public was influenced by contemporary critics of American education.

Most of these critics called for a return to basics. James Bryant Conant, a leading critic, along with a number of others, believed in the importance of math and science for technological American advancement. Conant believed in Jeffersonian intellectual meritocracy and believed a good educational system would result in highly trained, competent people, whom he believed were in short supply. He called for a curriculum which would provide good coverage in the basic areas for every child. According to Conant, a traditional subject curriculum allows for equality of opportunity which is basic to democracy and for allowing young people to reach their potential. This, he argued, would be good for democracy. Conant's research is quoted extensively in MPATI

materials. Many other critics amd reformers also believed in the need to intensify the emphasis on math and science.

Although there seems to be some question about how involved MPATI actually was in this curriculum controversy, the actual curriculum apparently was ultimately decided upon by Dr. Ivey and Dr. Taylor, because the experts consulted could not reach a consensus on their own. The Ford Foundation and MPATI seemed to prefer different approaches to a course development strategy for the curriculum. MPATI staff believed in an enrichment approach to design materials while some members of the Ford Foundation staff appeared to favor a "stand alone" or "teacher proof" curriculum developed for areas where there may be no teacher (e.g. in third world countries) to reinforce educational materials. MPATI wanted to make the curriculum an addition to existing resources, to use new and imaginative approaches, and to serve as a model to improve existing faculty teaching skills in local schools. MPATI was clearly concerned, with good reason, about teacher acceptance. Teacher acceptance of MPATI televised materials would be a critical factor in MPATI's success or failure.

What was agreed upon was that airborne TV must be of the highest quality at all times and, therefore, needed excellent teachers. Fifteen teachers were selected, attended a special workshop, and were assisted by specialists within and outside of the MPATI organization. Everything was ready by the fall of 1960. Videotape recorders were installed in the airplanes because it was impractical to transmit from the ground to the

aircraft. Evaluation was done on all videotapes; MPATI set very high standards and as many as thirty percent of the tapes were redone one or more times. In May 1961, demonstration transmissions began.

Delivering the television signal to hundreds of schools was a formidable task. Two DC-6s were purchased for transmission; one flew six hours a day and the other one was on standby. Each airplane was loaded with six and a half tons of specially designed transmitting equipment which included two videotape recorders and transmitters, one for each channel. It was not possible to use the narrow band technique which could have allowed MPATI to double the number of programs telecast on its alloted channels. The original time schedule had to be revised because the delivery of the planes was late. Consequently, the demonstration period had to be shortened. These delays ultimately cost MPATI approximately one million dollars!

MPATI was pioneering a whole new technology. Not just aircraft-to-ground video transmissions but also UHF channel reception, and all of the hardware necessary for schools to receive UHF, was in the experimental stages in 1961. All of this required the MPATI engineers to develop training for dealers and servicemen to install and maintain UHF systems. Despite the enormity of this task, the reception by most schools during this period of time was generally very good.

MPATI worked with twenty leading universities to provide a staff co-ordinator in each university to work with area

councils in each area. Most of the teacher inservice on ITV as well as teachers' guides were offered through these universities. Workshops were offered to local school districts by a joint effort of the universities and MPATI staff.

CHAPTER 5 FROM EXPERIMENT TO MPATI, INC. : STRUGGLES TO DEVELOP A VIABLE REGIONAL SERVICE ORGANIZATION

In 1959 one of the original objectives proposed by the Midwest Council was

> to conduct the initial program in a manner that will assist the development of a permanent facility for long-range management and financing of the airborne instructional program by local and state education. (Midwest Council on Airborne Television Instruction 1959, 1)

Although the experimental period of the project was formally directed and managed by the Midwest Council and staff, advice and assistance came from literally thousands of school principals, superintendents, teachers, members of school boards, college and university professors, administrators, technical specialists, prominent businessmen, and professional people. MPATI used the best resource people locally, regionally, and nationally on committees and advisory groups. This deliberate massive involvement of thousands of people was a tactic proposed and implemented by the MPATI organization early on and over the life of the experiment. This was MPATI's attempt to build a grassroots organization from the "top-down" in three years. The Midwest Council projected that the Ford Foundation would probably not continue to pick up the full cost of a multimillion dollar program beyond the initial three-year time period. Therefore, it was crucial that the ground work be laid for the formation of a permanent regional organization in the first few months of the experiment.

INTERSTATE COMPACT VERSUS NON-PROFIT EDUCATIONAL ORGANIZATION

Because of Dr. Ivey's professional background and success in the South, he was very much interested in creating an interstate compact similar to the one he had successfully forged with the Southern Regional Educational Board in the 1940's. This was undoubtedly one of the most important goals of the entire program to John Ivey. In a multitude of MPATI documents Ivey never missed the chance to promote and encourage the interstate concept. In an August, 1960 meeting of Area Coordinators Ivey:

> . . . indicated that the Midwest Council on Airborne Television Instruction will give full support and assistance to the development of an inter-state compact or other regional plan to continue the program after the spring of 1962. (MPATI Meeting of Area Coordinators 1960, 3)

However, some influential members of the Midwest Council were in favor of forming a non-profit educational association of participating schools and colleges that would assume the ownership and management of the project. After concluding the experimental phase, Council Chairman Brownell, Dr. Hovde, and Dr. Willis all favored the creation of such an organization (Ivey Interview 1988). One stated reason that Brownell, Hovde, and Willis opposed the idea of an interstate compact, as favored by Ivey, was the lack of historical precedence in the midwest for such a cooperative, regional venture. In addition, as educational leaders of large metropolitan areas such as Detroit and Chicago, these councilmen were reluctant to relinquish control of the

project to state educational and political leaders. Therefore, the power would stay in the hands of the original MPATI creators.

> In the era of the 1950's and 1960's following World War II the schools superintendents of major cities like Chicago and Detroit, along with the presidents of the Big Ten Universities, may have thought of themselves as the major educational "makers and shakers" in the region, rather than the state superintendent or the state legislatures. (Bohnhorst 1990)

On the other hand, Ivey believed that, although establishing such an organization would be difficult, the financial support from an interstate compact would be more secure than from an educational association of totally separate school districts, which were under constant financial pressure and subject to their local school boards' vagaries and ever-changing financial priorities. Ivey also believed that the interstate compact would offer the politically important power of a state government's official sanction. Ultimately, however, the decision was to form a non-profit educational association. According to Ivey, this crucial decision as to how to finance the permanent organization was a key factor in MPATI's ultimate fate (Ivey 1988).

The philosophical concept behind the corporate structure created by MPATI Inc. attempted to preserve local educational autonomy but also to allow localities to derive the benefits of cooperatively pooling their financial resources to operate a high quality educational service

unattainable by a single community or by single states operating on their own.

THE NON-PROFIT EDUCATIONAL ASSOCIATION APPROACH

One of the first tasks undertaken by the Midwest Council in planning for the non-profit educational association was developing a "Prospectus" outlining a suggested plan for future ownership, operation, and financing of the airborne system beyond the experimental stage.

Some of the most important features of this plan included:

1. The creation of a non-profit educational association of participating schools and colleges to assume the ownership and operation of the project.
2. Make provisions for state government official representation on the board of directors.
3. Initially financing the system from (a) participating schools and colleges, and (b) grants and gifts from foundations, industry and individuals.
4. The establishment of advisory commissions and committees on elementary, higher, and adult education to serve as points of review and initiate the planning, development and operation of the program. (A Prospectus 1961)

Meetings involving over 1,300 school superintendents, principals, and school board members from the six-state telecast region were held to review the basic plan and provide recommendations.

COOPERATION WITH ETV STATIONS

Another set of meetings was held with six educational station managers and educational television state network administrators at Purdue to explore ways that MPATI and the ETV stations already in operation and the proposed state networks could cooperate with each other during the next few years.

In a letter to ETV station managers, dated April 4, 1960, John Ivey made reference to a committee of ETV station managers in the midwest area that had been set up in the fall of 1959. Ivey commented that "through this committee we expect to cooperate fully with ETV stations in the region in all phases of the Airborne Program." In the same letter, Ivey also issued an invitation to any ETV stations in the area to "request more information about our requirements and production standards" (Ivey 1960c).

In April 1962, the Executive Committee of MPATI approved a resolution:

> That the president be authorized to furnish duplicate tapes to ground-based ETV stations at [the] cost of reproduction and shipping, plus an increment of [the] cost of production. (Minutes of MPATI Executive Committee 1962, 7)

MPATI attempted to cooperate and not compete with ETV stations to provide its programs to a larger audience. During the experimental stage of the project the Midwest Council had provided a total of 21 taped courses to six ETV stations. However, subsequently the inability to come to

agreements with these stations concerning the expanded use of subsequent airborne telecourse materials further strained relations with many ETV ground stations in the MPATI reception area.

ATTEMPTS TO COOPERATED WITH CHICAGO'S WTTW

The Tri-County ITV Council of Chicago and Station WTTW wanted to use MPATI tapes to provide 26 schools in Chicago with ITV programming instead of using proposed translator installations (proposed relay stations for MPATI's signals to schools located in Chicago proper who could not receive the signals because of technical reception problems).

The MPATI Executive Committee had, by prior action, made a decision that only after 15% of the schools in Chicago had become members would

> . . . MPATI provide WTTW with tapes to broadcast to Chicago area schools. With the possibility of the translator installations in Chicago, reception should be much improved and an increased number of schools should be interested in joining MPATI, if WTTW is not telecasting the MPATI material. In this case, three channels broadcasting materials would be available to the schools. Since dealing with Tri-County Council in the manner proposed by the Council would be contrary to MPATI Articles of Incorporation and since the Executive Committee had previously established as policy on the provision of tapes for rebroadcast by members of the telecast area, the Committee voted negatively on the Tri-County Council's proposal. (Minutes of Executive and Financial Committee Meetings Midwest Program on Airborne Television Instruction Inc., 1962, 9-10)

Apparently, Superintendent Willis had not been able to deliver the minimum 15 percent membership on the part of the Chicago schools. The Executive Committee's decision not to

provide the tapes could not have helped MPATI gain supporters in the ranks of other ground based ETV station managers or the NAEB organization. This problem was later compounded because of a disagreement between MPATI and the ETV stations over MPATI's petition to the FCC to increase its UHF channel allocation.

MPATI INCORPORATED

The incorporation of MPATI by prominent educators and civil leaders was the culmination of months of planning for a permanent organization at Purdue University. On January 12, 1962, the incorporators met to review articles of incorporation and by-laws for the new organization and to elect officers and members of the executive and finance committees. A series of special meetings were scheduled to inform parents, teachers, boards of education, and civic leaders about the "new" MPATI. Programs for these meetings were telecast at night over channels 72 and 76 to groups assembled in equipped schools. A full scale promotional print campaign was launched to increase membership in the new organization. New member schools, colleges, and universities could become members of MPATI for one dollar a year for each student enrolled in the educational institution.

Before the first meeting of MPATI, Inc., Purdue University filed an application with the FCC to renew for another year the two experimental licenses of the transmitters aboard the MPATI aircraft. These licenses were

again approved by the FCC for 1962 and later transferred to MPATI, Inc.

On November 12, 1962, some 222 voting representatives from approximately 500 registered member schools in the region met in Lafayette, Indiana, to elect their board of directors and formally receive transfer of control of the airborne project from the interim incorporators.

At the first organizational meeting of MPATI, Inc. on December 14, 1962, plans for the expansion of the present two channel transmission to a six channel operation were authorized. A formal petition to the FCC for allocation of the additional required channels was made.

With the transformation of the project to a member-school corporation, financing this period of the organization was accomplished by membership fees paid by schools, colleges and universities, and grants and gifts from foundations and industry.

MPATI 1961-1965: THE STRUGGLE FOR VIABILITY

The Ford Foundation announced a second grant to MPATI in April 1962. The second grant amounted to $7,500,000. At this point the Ford Foundation had committed $15,220,000 to the airborne project. The grant was made to supplement the income expected from the membership and enrollment fees collected by MPATI for the next four years and to retire some of the outstanding debts from the experimental period. The grant was allocated in decreasing amounts annually. It was

planned that as member schools increased, MPATI's reliance on grants would decrease until the project was entirely self-sufficient. This second grant was the last financial support extended by the Ford Foundation to MPATI.

The corporation was chartered in Indiana and given a tax exemption by the United States Internal Revenue Service. Members of the corporation, school and colleges in the six state region, caucused annually at the corporation membership meetings and elected state representatives to a board of directors. Each state had one director for each one hundred member schools and one director for each 100,000 pupils in member schools. In addition, there was a provisions for electing twelve at-large members of the board, giving the board an opportunity to include in the corporation some "distinguished figures in public affairs who might not otherwise be involved in the MPATI evolution" (Ivey 1965, 12). In 1965, the board of directors consisted of thirty-four members. (See Appendix D for a list of all the members of the Board of Directors from 1961-1971.)

After the establishment of MPATI Inc., the assets and staff of MPATI were transferred from the Purdue Research Foundation to the new policy making body. At the same time licenses for operating the television transmitters were transferred to the new corporation by the FCC.

FINANCIAL AND FCC PROBLEMS

MPATI had 1,300 member schools and colleges in 1963-64. Each school paid one dollar per year per pupil enrolled in the school up to a maximum of $850.00. In 1964-65, school membership rose to about 1,850. It was hoped that by the 1965-66 school term MPATI would be operationally self-sufficient with its two channel service. However, FCC denial of MPATI's request for six channels as well as the denial of license renewals for the two MPATI UHF channels on a permanent basis was devastating to the continued membership growth of the organization.

The long drawn out processes of rule making involving comments, reply comments, filing delays, requests for additional information, and oral arguments, consumed nearly two and one-half years from January 1963 to June 1965. The role of the National Association of Educational Broadcasters (NAEB) and other organizations who were responsible in part for MPATIs failure to secure a six UHF channel expanded service and maintain its two channel service will be discussed in chapter 6. The membership did not expand at the pace necessary to attain a firm financial foundation. A common reason given by prospective members for not joining the organization was the uncertainty of the project's continuation pending a decision by the FCC.

The FCC report and order was finally issued on July 2, 1965. It denied MPATI's petition for licenses on six UHF channels but urged the airborne system to apply instead for

channels in the as yet undeveloped ITFS band (2500-2690 MHZ). In June 1963 Brownell and Ivey were both aware of "the FCC's desire to move the MPATI channels to the 2,000 [sic] megacycle band." However, Ivey pointed out that neither "adequate equipment to transmit and receive signals with reliability" existed to use the 2,000 [sic] megacycle band (Minutes of Executive Committee Meeting Midwest Program on Airborne Television Instruction, Inc. 1963, 5).

MPATI continued to explore alternatives to the ITFS in the late 1960's. In 1965 a six channel satellite service was being discussed with RCA. It was estimated that if one satellite was launched it would cost about $250,000 a year to operate such a system. However, problems such as sufficient satellite transmitting power, the need to develop new receivers, and antennas "to boost input power from 5 to 10 kilowatts" made such a system technically not feasible at that time. (Minutes Executive Committe Meeting Midwest Program on Airborne Television Instruction, Inc. 1965a, 6)

For MPATI the enormous technical and financial problems associated with shifting from a UHF service to an ITFS service would have been monumental. In the end technical problems related to the redesign of the total transmission and distribution system, the attendant membership, and ultimate financial problems would be fatal to the organization's continued existence.

MPATI called a special membership meeting on July 26, 1965, and requested an increase in fees to provide additional

funds for continuing telecast operations. The membership voted to increase fees. The goal sought to maintain self-sufficiency was 5,600 member schools by 1966-67 at a membership fee of $1.25 per pupil and a total pupil enrollment of 1,680,000. Actually membership rose from 1,200 schools in 1963 to 1,608 by January 1966, and the fees were increased by the membership from $1.00 to $2.00 per pupil per year.

> There were 14,665 teachers using one or more MPATI programs to instruct 443,428 pupils. Of this number of member schools, 84% were public schools; 15.8% were non-public; and .2% penal institutions. In spite of the increase in fees and enrollment, MPATI ended the 1965-66 school year with a deficit of $400,000. (Cromwell 1971, 5)

Even though the membership increased to 1,776 school during the 1966-67 school year, the $2.00 fee was insufficient, and MPATI directors reluctantly raised the new fee to $2.50 for the 1967-68 school year. This action was clearly counter productive; 426 schools dropped out of the program, and income declined to less than in the 1966-67 school year. With little hope of achieving financial self-sufficiency, the FCC's denial of MPATI's petition to expand their broadcasting operations to six channels in the UHF band, and the prohibitive cost of switching broadcasting operations to the 2500-2690 megahertz band, the directors elected to terminate the airborne broadcasts in May 1968.

In a meeting held December 18, 1967, the MPATI member schools authorized the Board of Directors to complete the 1967-68 broadcast year but also to liquidate the

corporation's debts through the sale of both aircraft and broadcasting equipment. The decision was made to form a new organization to produce and lease telecourses on video tape. During the life of the airborne phase of MPATI the corporation had leased telecourses to schools outside the six-state transmission coverage area. Now the tapes became available to schools within the area.

FROM AIRBORNE BROADCASTING TO TELECOURSE LIBRARY

A new not-for-profit corporation reflected the change from MPATI the broadcasting service to MPATI the instructional ITV production center and videotape library. The new corporation, MPATI, Inc., retained as its name the acronym of its predecessor. However, the letters in the acronym MPATI had lost their original meaning.

Dr. Ivey's interest in an interstate compact was resurrected as a means to finance a new MPATI instructional video tape production center and library. An attempt was made to develop contracts with states, cities, and corporations to provide financing for new telecourse production. According to Howard Cromwell in A Report to the Ford Foundation on MPATI, INC. :

> A concentrated effort was made to secure more state members . . . to no avail. The main reason state membership in MPATI was unattractive was the age of the material. Unless a state could use nine or ten MPATI courses state-wide, it was more economical to lease the few courses they wanted. Some states had few ETV stations and did not come close to providing an ETV signal for each school district and therefore did not subsidize instructional television with state funds.

> State membership would not have been feasible for this group of states even if our library material had been brand new. (Cromwell 1971, 11)

Ivey's vision of a developing inter-state compact was once again foiled, this time by a videotape course library of outdated materials.

Even though the materials were dated, during the succeeding three years (1968 to 1970) MPATI Inc., as a video tape library, leased these telecourses to over 100 different educational agencies in thirty-four states. The revenue collected by leasing aging MPATI telecourses helped to keep MPATI operating for a few more years.

One of the principal goals of the new MPATI Inc. was to up-date the corporation's large collection of telecourses. Financial support was solicited from corporations and foundations for this purpose. A few new series were developed during the short three year life of the new corporation. The most significant telecourse series produced during this time was titled "Our World of Economics." This particular course was funded by two grants totaling $126,000 from the Eli Lily Foundation and from smaller corporation grants totaling $56,000.

However, despite the success of this series and of other series produced during this period, it became increasingly difficult to raise money necessary to develop and produce an extensive number of new productions needed to replace a large part of the forty series in the MPATI library that were now more than six years old. Many of the original courses

developed for the first broadcast year of 1961 were now ten years old.

THE DISSOLUTION OF MPATI, INC.

At this point, in April 1970, MPATI officials decided to investigate the possibility of selling the corporation's assets to a large profit-making organization that had sufficient capital to revise the library. It was decided that money derived from such a sale would be donated to another non-profit corporation. MPATI enlisted the aid of a New York bank to act as a broker and conduct exploratory discussions with several publishing companies. The general consensus of the publishers contacted was that the investment return on instructional television materials would be poor for the next five years because the existing market was too small. If in the future video recorders and playback units would become more commonly used in schools, then the publishers would be interested in securing such a library. However, until that time they preferred to invest their resources in film production (MPATI, Inc. President's Report 1970, 3). The publishers also were apprehensive about the ease with which copyrighted video tape materials could be illegally copied. Howard Cromwell, former Superintendent of Schools in Middletown, Ohio, long-time member of the MPATI Board, and full-time president of MPATI during its last two years of operation, was directed to investigate the feasibility of giving MPATI assets to another non-profit

corporation with similar objectives. MPATI's Board of Directors had decided that MPATI, Inc., should be dissolved while it was fiscally sound and possibly attractive to other organizations.

Contracts were made with nine non-profit organizations in the fall of 1970. Seven of the nine submitted a formal request for the MPATI assets to the Board of Directors. (See Appendix F) On December 17, 1970, the MPATI Executive Committee narrowed the seven to three. The organizations under consideration included: Great Plains National Instructional Television Library, the National Instructional Television Library, and the Southern Education Communication Association. Each corporation was asked to submit additional information regarding their operations, policies, and philosophy to the MPATI Board.

At a special meeting on March 6, 1971, representatives from the three organizations were given time to make oral presentations and answer questions. Upon completion of the presentations and considerable discussion, a majority of the Board members voted to accept the Great Plains proposal. The action was ratified by the MPATI membership on May 15. MPATI, Inc. was legally dissolved on June 30, 1971, and it's assets, valued at approximately one quarter of a million dollars, were given to the Great Plains National Instructional Library at the University of Nebraska in Lincoln, Nebraska.

SUMMARY

MPATI tried to build a grassroots organization from the "top-down" in three years. There was disagreement among Council members of how best to develop a non-profit educational organization to be the permanent MPATI organization. Ivey favored an interstate compact, feeling it was more secure because it was not under constant financial pressure from local school boards and would have the direct financial and political backing of state officials. On the other hand, Brownell, Hovde, and Willis favored a non-profit corporation of individual member schools because the midwest had never attempted an interstate compact type of agreement, there were time constraints imposed by the Ford Foundation, and they were reluctant to give control of MPATI to state educational and political leaders. The member school corporation operation approach was adopted. This approach, however, proved not able to survive the extended political struggle involved in obtaining a favorable FCC ruling in the face of a Washington-based lobbying effort orchestrated by a disaffected NAEB.

The philosophy of the non-profit education association approach was that localities would reap educational benefits which a single area could not afford. A "Prospectus" suggesting a plan for future ownership, operation, and financing of the association was developed. Meetings were held to develop the association and to inform educators and the public about the "new" MPATI. Applications were made to

the FCC to continue using two UHF channels for another year and expand to a six channel service. The Ford Foundation supplied another $7,500,000 in decreasing yearly amounts in the hope that MPATI would become self-sufficient when the number of member schools increased. Chartered in Indiana, the organization was given exemption by the Internal Revenue Service, directors were elected, and members at large did include some distinguished public figures. After MPATI Inc. was established, the assets, staff, and licenses were transferred to the new corporation.

But MPATI Inc. ran into financial problems as well as problems with the NAEB and FCC. The goal was to make MPATI, Inc. self-sufficient by 1965-66, but the FCC's denials of a six channel service made this impossible. The long rule-making process of over two and a half years hampered membership growth. The FCC suggested changing from the UHF band to ITFS band, which would have been financially impossible to accomplish. Membership fees were increased in an attempt to make MPATI self-sufficient, but because it was never able to realize the goal of financial independence, the directors directed MPATI to terminate broadcasts in May 1968. With the termination of the broadcasts, once again MPATI was reorganized, and a telecourse production center and library was organized in 1968.

Although the telecourse production center and library name retained the acronym "MPATI", the original meaning was lost. The library functioned for three years and produced a few new

successful telecourse materials, such as "Our World of Economics," but had difficulty raising funds, much of which was done through corporations and foundations. Finally, it became obvious that MPATI would have to be dissolved. It did not seem feasible that MPATI could be sold because the market for video educational programs that existed in 1970 was too small to make a profit. The MPATI Board finally chose to give its one quarter of a million dollar assets to the Great Plains National Instructional Library in 1971.

CHAPTER 6 REASONS FOR THE TERMINATION OF MPATI

STRIVING FOR FINANCIAL SELF-SUFFICIENCY

There appear to be a number of reasons why the MPATI project was not able to achieve financial self-sufficiency during its twelve year existence. At base, the failure of MPATI to survive was financial. However, financial self-sufficiency was in turn based on several other factors. This chapter includes some of the major factors given by various individuals involved with program.

As early as the experimental period, after the Ford Foundation had made the initial $4.5 million grant, it was clear that the project was in financial trouble. In an April 1960 Executive Committee meeting, Coombs stated:

> . . .that the Project still needed over two-million dollars and recommended requesting smaller sums from more sources. (Minutes of Executive Committee Meeting 1960, 8)

At the same meeting B.D. Godbold mentioned sizeable reductions had been made in the $8,815,000 budget submitted to the Council in January 1960. However, he pointed out that the budget could not be reduced any further because of "unexpected costs which had been encoutered [sic]; e.g., increased requirements for services of the consulting engineers,. . .and the cost of duplicating tapes" (Minutes of Executive Committee Meeting 1960, 9).

A number of important flawed financial assumptions were made in October of 1961 concerning the growth and annual income projections for the MPATI organization from

1962 to 1967.

> By May 1962 there will be 2500 elementary and secondary schools with a total enrollment of 1,500,000 students participating in MPATI. . .Between 1963-67 the number of schools participating in MPATI will increase by 25% or 625 schools per year. This will change the total enrollment figures by 375,000 a year. . ..The maximum MPATI annual operating budget will run $3,750,000 during the period 1962-67. . ..A minimum of $4,000,000 will be needed. . .from foundations and industry [and] will be required for. . .four years. . .to supplement the income from member schools. (A Prospectus 1961, 2)

In December 1962, the cost overrun on the aircraft equipping contract with Westinghouse Electric Corporation of $650,000 had to be paid off by borrowing from banks as necessary and was amortized in future budgets. A deficit of $237,000 was projected for the next year, 1962-63. However, it was anticipated by Robert Woerner, Treasurer of MPATI, Inc. from 1963 until 1971, that

> This deficit can be met from the 1963-64 grant of the Ford Foundation to be received prior to June 1, 1963 and from bank borrowing to be made against the assets of the corporation. (Midwest Program on Airborne Television Instruction Board of Directors Meeting 1963, 2)

Although MPATI continued to "tighten its belt" financially, Mr. Woerner projected a reduction of 14 per cent in the budget of all areas of the project except aircraft costs. Increased charges by the Purdue Aeronautics Corporation for "rental of the hanger; management fees and handling cost for gasoline" put a further strain on already bleak financial future projections for the corporation. It was hoped that by the 1966-67 school year the deficit could be erased by the income derived from projected school

membership.

Howard Cromwell, President of MPATI Inc., stated that by 1965:

> The membership goal sought to maintain self-sufficiency was 5,600 member schools by 1966-67 at a membership fee of $1.25 per pupil and a total pupil enrollment of 1,680,000. (Cromwell 1971, 5)

MPATI never achieved this membership goal of 5,600 schools at $1.25 per pupil. However, membership did increase from 1,200 in 1963 to 1,850 in 1964 and back down to 1,608 in 1965 after a increase from $1.00 to $2.00 per pupil. Actually, after the increase to $2.00 per pupil MPATI's school membership peaked at 1,776 in June 1967 but declined to 1,350 member schools in December 1967 when fees were increased to $2.50 per student in the beginning of the 1967-68 school year. MPATI's failure to become financially independent from the Ford Foundation's grants was in part due to its inability to obtain memberships from large metropolitan school systems.

> . . .with the exception of Detroit, MPATI never succeeded in getting larger metropolitan school systems in the six-state area to support it through membership dues. School officials in Cincinnati, Columbus, Toledo, Cleveland, and Chicago were committed to supporting local ETV stations and felt they did not have sufficient funds to support both MPATI and the local stations. (Cromwell 1971,7-8)

William Fall, former MPATI Assistant Director and General Manager, recounted in an interview in 1968 that:

> Chicago Area School Television (CAST), serving about 70 school systems and 120 parochial schools in the area and which had been buying MPATI programs, began transmitting its own programs over WTTW and WXXW, Chicago's ETV stations. Detroit public schools. . .

> dropped out of MPATI. So did some Ohio schools: they were banking on a legislative appropriation for ITV costs but the appropriation was less than expected. (Oldest Established Permanent Flying Classroom 1968, 9)

It is apparent from studying MPATI financial documents that the experiment, the school membership owned corporation, and the later "new" MPATI Inc. were not built on substantial financial bases. The $16,000,000 in grants made by the Ford Foundation and other contributors could not keep the MPATI airplanes flying after 1968. The Ford Foundation, Westinghouse, and the Midwest Council had underestimated the financial resources needed to implement and "institutionalize" this educational innovation.

A number of other factors further complicated MPATI's attempts to survive in a risky, financially underfunded venture.

SCHEDULING PROBLEMS

Undoubtedly, one factor was the problems associated with the scheduling of MPATI televised courses. The MPATI transmission receiving area was spread across the Eastern and Central time zones. The shift by some areas from eastern-standard time to daylight-savings time during part of the year further complicated developing a broadcast schedule that would satisfy the needs of all member schools in the program. Although program scheduling was at times inconvenient for elementary schools, the problems encountered by secondary schools with multi-period days and the

multiplicity of bell schedules was much more acute. During the experimental phase, MPATI acknowledged the scheduling problem and its ability only partially to meet this problem within the schedule limits of only two channels. (See Appendix G for broadcast schedules for 1961 to 1964)

> Synchronizing school schedules with the airborne telecast schedules has been mentioned repeatedly by member schools - - particularly those at the secondary level - - as probably their greatest obstacle to full use of the telecasts. . . . While some partial solutions to the scheduling problem can be found in reshuffling school schedules or combining classrooms, MPATI will not be able to relieve these difficulties to any great extent until it has additional facilities. (Petition for Rule Making 1963, 13)

This difficulty with scheduling was probably the chief explanation of why more than 90% of the students using MPATI telecourses were enrolled in grades K through 8.

> The self-contained classroom . . . made time schedule of programs less a problem. Elementary teachers also teach a wider range of subjects. In some subject areas, they feel a lack of complete competency. (Cromwell 1971, 4)

It must be remembered that inexpensive video tape recorders were not available to public schools in the 1960s. Today, this technology allows teachers a wide latitude of discretion in utilizing videotaped programs at the most convenient and appropriate times during the school day.

MPATI AND THE FCC

MPATI was well aware of the scheduling problem from the beginning of the experiment but postponed petitioning the FCC for additional channels until the permanent organization was

developed and in place by late 1962. In January 1963, MPATI petitioned the FCC for four more UHF channels. Had the allocation been awarded, MPATI would have been able to "increase its programming time from 40 to 160 hours per week, thereby being able to repeat many of its telecourses for greater scheduling convenience" (Felsenthal 1971, 41). Over two and one-half years later, this request for additional channels was denied.

Originally, MPATI had been given the authority to broadcast experimentally on UHF channels 72 and 76 for a ten year period in December 1959. On January 15, 1963, the corporation filed a petition with the FCC requesting that channels 72, 74, 76, 78, 80 and 82 be reserved for the use by the airborne system in the midwest. The FCC hearings on the petition continued until June 30, 1965. During this period, serious disagreement existed among educational broadcasters concerning the need to reserve the upper UHF channels for future allocation to commercial and non-commercial stations. MPATI also encountered serious opposition and competition from existing and proposed ground based ETV stations and associated educational organizations for permanent channel allocations in the UHF band.

SUPPORT FOR MPATI

Those who supported the MPATI petition maintained that the upper portion of the UHF spectrum was not being used nor was there a strong likelihood it would be used in the future. It

was argued that MPATI was providing an important, successfully tried and tested service to schools who very probably would not otherwise receive instructional television from ground based stations. Support for the MPATI petition came primarily from member schools. The FCC received over 500 letters from children and another 1,300 letters from teachers, school officials, parents and other interested parties including members of Congress, expressing their confidence and satisfaction with the current two channel service and supporting the expansion for the program to six full time UHF channels.

Those who opposed MPATI maintained that the channels would be needed for "expected" future expansion of ground-based non-commercial network stations and that MPATI should use the 2500 megahertz designated specifically by the FCC for instructional television. MPATI countered this opposing position with the argument that Instructional Television Fixed Service (ITFS) was untested, of dubious value for long range broadcast transmissions, and the hardware conversion necessary to go from the UHF band to ITFS band would be financially prohibitive for both the corporation and its member schools. MPATI also submitted strong arguments that the economics of UHF television would not allow in the foreseeable future any conventional commercial broadcast uses in MPATI's region of the channels MPATI was requesting. The FCC received 1,200 strong endorsements from the midwest supporting MPATI and only 36 opposing MPATI's petition.

OPPOSITION TO MPATI'S PETITION TO THE FCC

Principal opposition to MPATI came from the National Association of Educational Broadcasters (NAEB). The NAEB was a powerful member association of non-commercial educational broadcasting radio and television stations, and individual persons associated with educational/instructional television and radio from the late 1920's until the late 1970's. In November 1963, the NAEB filed a proposed table of assignments which contended that at least 1,197 channels would be required for educational use in the next ten to fifteen years. NAEB engineering reports indicated that MPATI's proposal would remove 83 UHF channel assignments from a very large and populated area. According to MPATI engineering studies only 46 UHF channel assignments needed to be deleted from the FCC's proposed channel assignment plan (Bronson 1964, 50).

As early as November 1959, the MPATI engineers A. Earl Cullum Jr. and Thomas A. Wright, who had prepared the Purdue Application for UHF Channels 72 and 76, stated that

> The broadcast of 6 programs on separate standard 6 mc TV channels would require the use of a total of 36 mc of spectrum space by each facility and might preclude the use of additional spectrum space in nearby areas because of the various problems of interference. Complete coverage of the country could be achieved with 3 groups of 6 channels each, or a total of 108 mc of frequency spectrum. (Stratovision-ETV Specifics 1959, 24)

This was not good news to many educational broadcasters and members of the NAEB who wished to see a proliferation of local ETV stations throughout the country.

According to Steve Dick author of an unpublished paper, "Midwest Program for(sic) Airborne Television Instruction: The Flying Classroom in an Age of Competing Technologies" one rationale for MPATI's request for an increase in channel allocation to six channels in the UHF band was to make more efficient use of the UHF band which was not being utilized because of a lack of funds to set up local ETV stations. Dick states that if the FCC had seen MPATI as a single service in the midwest, the channel allocations might have been approved. However, there was a national plan proposed by the Westinghouse Corporation in the early 1960's to cover the entire United States with broadcasting and relaying airplanes. It was predicted that this national service would need over one-fifth of the UHF spectrum. This plan would have severely restricted the allocation of UHF channels to local ETV stations throughout the country. The FCC's Sixth Report and Order of 1952 put forth the FCC's channel allocation plan which was the embodiment of the FCC philosophy favoring local service. According to Dick:

> The combination of strong opposition from potential UHF broadcasters and the appearance of a movement away from longstanding policy was too much for the FCC. MPATI, as a permanent service, would have distracted from the effort to foster UHF television and could have threatened the entire channel allocation plan. (Dick 1989,14)

Dick's position is supported by Howard Cromwell's remarks in a 1971 Report to the Ford Foundation.

> . . .MPATI encountered stiff opposition from the National Association of Educational Broadcasters in its hearing before the FCC because it was felt one airborne

> system approved could lead to a number of others, blanketing the nation and threating the very existence of most ETV stations. (Cromwell 1971, 7)

In an NAEB sponsored study on the proposed expansion of MPATI, the NAEB posed the question of how the FCC would deal with a possible proposed national system of Airborne Television Instruction.

> The Midwest Program of Airborne Television Instruction has requested only that six channels be allocated for the midwest area. The implication of this request, however, is that if the system is desirable for the midwest, it certainly should have application elsewhere . . . will one application be made on a state-by-state basis? On a regional basis . . . or on a nationwide grid basis, such as purposed by Westinghouse? . . . No matter which system might be used, the impact upon local educational control and the use of 15-18 channels across the country for a limited portion of the day for a small percentage of schools, prophesize problems of enormous proportions. (Bronson 1964, 55-56)

The NAEB also argued that MPATI was not being used by nearly 90% of the schools in the area and of the "5,400 schools throughout the nation" using MPATI courses "about 4,200 of these schools are in 15 major cities which lease videotapes of MPATI courses for use on local ETV stations". (MPATI News 1963,1)

Opposition was also very strong from area ground-based ETV stations to MPATI's expansion because of the competion for limited funds provided by area school districts.

The NAEB and two other national education organizations, the Association for Supervision and Curriculum Development (ASCD) and the Department of Audiovisual Instruction of the National Education Association (DAVI-NEA) also took the

position that MPATI's attempt to centralize the educational television programming within a large regional television transmission area would "endanger local control of the educational process and would discourage development of local educational television outlets" (FCC. 2d; 506). The NAEB pointed out in its study on the proposed expansion of MPATI that:

> As an advantage of the airborne system, the MPATI has argued that it would take over 100 channels to provide six-channel coverage over the area theoretically covered by the airplane. What this means in terms of program control is that one organization, the MPATI, will be controlling what might otherwise be over 100 channels that could be operated on a local basis, with opportunity for local expression and service. (Bronson 1964, 13)

The NAEB believed local proposed and existing ETV stations faced the bleak prospect of competing with MPATI for scarce funding. According to Howard Cromwell,

> The animosity generated over this issue continued to haunt MPATI in later years when it elected to operate a leasing library and lease instructional materials to ETV stations. Their fears were not without foundation since surveys show that over half of the budget of most ETV stations is dependent on funds from schools sources--either locally and/or from the state level. (Cromwell 1971, 7)

William Fall, concurs with Cromwell's assessment. According to Fall:

> MPATI appeared as a direct competitor for scarce funds. They [ETV stations] thought that the $15 million granted by the Ford Foundation to MPATI could have gone into ground-based ETV development, but there is no evidence that this would actually have taken place if MPATI had not existed. (Ohlman 1971, 20)

Another organization called the Joint Council of Educational Broadcasting (JCEB) also opposed MPATI's request

for six channels. The JCEB was successor to the earlier Joint Council of Educational Television (JCET). According to Erling Jorgensen "the JCET had been an influential lobbying force in the campaign to reserve channels for education in the 1950's and had considerable political 'clout'"(Jorgensen 1990). The JCEB emphasized that it did not oppose the corporation as such but did oppose the regularization of any channels for airborne television.

During the FCC proceedings, MPATI presented an alternative proposal. This compromise proposal by MPATI included the continued allocation by the FCC of the two channels being currently used by the corporation (channels 72 and 76) on a full time basis and the allocation of four other channels that would be shared with other broadcasters during nonschool hours (Russell 1964, 46). MPATI also commissioned a study by two economic consultants that provided extensive data "proving" the FCC and NAEB's hope of a UHF station occupying every UHF channel was not economically feasible (Steiner and Barnett 1964). In retrospect Ben Bohnhorst asserted "The FCC appeared to give [more] weight to the NAEB's prognostication and to brush aside MPATI's predictions which had been developed by professional economists" (Bohnhorst 1990).

In its decision the FCC praised MPATI for its work and commended MPATI for the concept of instructional cooperation on a regional basis which the airborne project had implemented. However, the overriding consideration, said the

commission, was the efficient utilization of the frequency spectrum. The FCC believed that one-fifth of the technically available UHF channel assignments would be lost to other educational broadcasters if MPATI were given channels in this band. This NAEB contention was a source of concern to the FCC which was recognized by MPATI's William Fall who acknowledged "That the FCC felt that MPATI's use of these channels would make it difficult, if not impossible, to permit the development of low-tower, low power ground based UHF television"(Ohlman 1971, 20). Consequently, both the primary and alternative petitions were denied. The FCC did allow MPATI to continue its operation on channels 72 and 76 for a five year amortization period and encouraged MPATI to apply for six channels in the ITFS band.

One FCC Commissioner, Kenneth Cox, issued a dissenting opinion which in part stated that the effect of MPATI's proposal on the over all allocation goals would have minimal impact. Cox chided his fellow commissioners for not, at the very least, considering the alternative petition proposed by MPATI.

> I think a lot of imagination and hard work has gone into conception and execution of MPATI's airborne service. I think the commission should have contributed a little imagination in aid of this venture even if it involves taking some risks. (FCC 2d, 517)

William Fagan, a former MPATI staff member, while reflecting on the FCC's decision in an interview in 1971 stated:

> "The FCC denied our petition, but to this day, to the best of my knowledge, not one of the channels that we would have used has ever been allocated. The FCC theory is sort of an abstract Hooverism. There's going to be a chicken in every pot, but whether you cook thechicken or not is your business. (Felsenthal 1971, 41-43)

Actually, Fagan was nearly correct; out of 193 FCC UHF channel allocations in the six state region served by MPATI only one channel in the 70 to 83 range has ever been allocated to a midwest station. That channel is channel 70 WBGU, Bowling Green, Ohio (Broadcasting Cable Yearbook 1989).

According to Steve Dick:

> . . . The fact that the FCC seriously considered MPATI's plan was a tribute to the credibility and success of the people in the MPATI organization. (Dick 1989, 14-15)

Although MPATI's failure to get the additional channels necessary to provide an expanded service was a major reason for the corporation's inability to achieve financial self-sufficiency, there were a number of other problems that also may have contributed to the demise of the airborne program.

PROBLEMS WITH AUXILIARY SERVICES AND PIRATING

Other problem areas mentioned in the historical materials relating to MPATI included inadequate auxiliary services and pirating. Robert Glazier, former executive director of WETC, a St. Louis UHF education television station, believes that a good part of MPATI's difficulties could be attributed to

> . . .their lack of control over the very large geographical area which they attempted to serve. Their back up services, particularly printed materials, were insufficient, and. . .most important. . .they couldn't

> collect needed revenue from many school which 'free-loaded' on the service. (Ohlman 1971, 21)

The pirating problem was confirmed by references made during executive council and membership meetings of MPATI. In an Executive Committee meeting on March 1, 1963

> Dr. Bohnhorst pointed out that out of the 14,776 schools and colleges in the telecast area, 1,174 are members of MPATI. This represents 8 percent of the schools in the area and leaves 13,602 as non-members. It was also pointed out that of the 1,842 equipped schools in the telecast region - 688 or 36.3 percent are not members of MPATI. Efforts are being concentrated on these equipped non-member schools to determine their membership plans for 1963-64. (Minutes of Executive Committee Meeting 1963a, 5-6)

In June 1963, 600 letters were mailed to "experimenting" schools inquiring as to their plans for MPATI membership.

> These schools have been identified from the list of equipped schools, newspaper clippings, and from information furnished by area coordinators as schools that at least at the time were utilizing MPATI but have not registered as members. (Board of Directors Meeting 1963, 4)

Because the MPATI telecourses were broadcast on channels 72 and 76 of the UHF band, they were available to anyone with a television receiver, UHF converter, and antenna. The opportunity for schools to "bootleg" MPATI's programs without paying was too easy. According to William Fagan,

> . . . few of the people who helped themselves to our programming did so in all innocence . . .. There was no way we could force them to pay for it. We only had two weapons. First, we wouldn't sell teacher's manuals to non-member schools. And second, we approached some with the old bromide,"If you don't pay for this service, we won't be able to continue and you'll be left with nothing!". (Felsenthal 1971, 4)

The exact number of schools involved in pirating MPATI broadcasts during this seven year period was never fully

documented. However, it was estimated in an informal survey conducted in Ohio during the last year of MPATI's airborne experiment that more than 300 schools were using MPATI telecourse materials without paying for them. "It was estimated by Mr. Falls[sic]. . . that this taking without paying action of the schools cost MPATI at least $230,000 per year"(Halley 1968, 19).

BROADCAST RECEPTION PROBLEMS

Although the official reports from MPATI documented the fact that MPATI aircraft were on station and broadcasting more than 98 percent of the time, apparently not all the member classrooms were getting a usable signal 98 percent of the time. The most frequent cause of poor reception seemed to be directly attributable to improper equipment installation and maintenance in the schools. John Ivey admitted at an international seminar on instructional television at Purdue University in 1961 that

> This had been a tough headache. The equipment manufacturers in this country have not had a great deal of experience with UHF installations. They tended to either give up too quickly when we could not get an adequate signal over the receivers or they failed to install adequate components that would have provided good reception. (International Seminar on Instructional Television 1961, 71)

In many cases, local TV dealers installed receiving equipment without consulting or following the specifications suggested by MPATI engineers. The result was that the schools tended to blame MPATI when the reception was

unsatisfactory. When B.D. Godbold and James Miles were questioned during an ITV seminar about the reception problems encountered by some schools during the experimental phase of the project Miles stated:

> We conducted special telecasts for installers, we printed brochures for installers, we appealed to the top management of receiver and antenna manufacturers. This is something we should have spent more time on from the onset. We overestimated the enthusiasm and the dedication of the manufacturers and of their installers and they have encountered real problems when installing and carefully adjusting the equipment. (International Seminar on Instructional Television 1961, 79)

MPATI also overestimated the areas which could be effectively covered by the airplane signal. Following a discussion on the problem of poor reception in the fringe areas in a April 1960 staff meeting, it was decided that "Despite poor signal it is recommended that we have a resource institution in Wisconsin for political reasons" (MPATI Staff Meeting 1960, 2).

According to MPATI officials, by May 1963 MPATI had helped make substantial improvements in school reception.

> The distribution of technical data, booklets of specifications, the conduct of clinics for installers at Purdue University, field trips and on-the-spot demonstrations, have been effective in reducing reception problems among the member schools from 20 per cent "unsatisfactory" to less than 10 per cent. (Report to Ford Foundation 1963, 2)

However, periodic poor reception, particularly in fringe areas, would plague MPATI until the last broadcast in 1968.

THE DIMINUTION OF MPATI WORKSHOPS AND INSERVICE PROGRAMS

A number of MPATI staff members and former member school administrators and teachers believed that more workshops for teachers should have been conducted at a local level to encourage teacher acceptance of MPATI and provide critical information concerning proper utilization of the medium. According to MPATI's estimates about 6,000 teachers and school administrators attended workshops conducted by 20 regional resource centers in major colleges and universities and another 3,000 viewed summer materials "in more than 100 equipped school `viewing centers'" during the summer of 1960 and 1961 (Petition for Rule Making 1963, 32-33). By 1971, according to MPATI administrator Howard Cromwell, "MPATI conducted annual region-wide series of summer workshops [which in total between 1960-1967] involved an estimated 15,000 teachers" (Cromwell 1971, 4). It appears that only a total of 9,000 teachers attended workshops offered by MPATI during the next five years between 1962 and 1967. The problem seemed to be that not enough workshops were offered to make a real impact on teacher resistance or apathy. An important implication is that teachers received little or no undergraduate teacher education training in the appropriate use of instructional media in the classroom and therefore were reluctant and, to a degree, resistant to the introduction of most innovative change. Such is still the case today.

MPATI'S INABILITY TO PENETRATE THE EXTERNAL POWER STRUCTURES

According to Richard Hooper:

> The newer media are not present in the other sanctuary of curriculum decision-making. . . .Until the educational technologist can figure his way into departmental meetings and curriculum committees, whatever he has to offer and however much sense it makes will, at best be seen as only a frill. In 1967, B. Bohnhorst, director of the Midwest Program on Airborne Televised [sic]Instruction stated in an interview one reason for MPATI's failure. "MPATI from the start was not lined up with the power structure."(Ohlman 1971, 21)

The term "power structure" is somewhat nebulous and was often used by various MPATI staff members to refer to leading state politicians, national and state educators, national educational organizations, and local superintendents.

Franklin Halley, author of an unpublished paper entitled "An Exploratory Study on the Termination of MPATI as an Airborne Television Transmission Service" written in 1968, interviewed six former MPATI executives and staff members in 1967-68. Halley reported that:

> Regardless of who is the true power structure, all of the interviewees felt that people or organizations who had the power to make or break MPATI had not been either involved or consulted enough in the total MPATI program from beginning to end. (Halley 1968, 11)

To John Ivey the "power structure" should have included the governors and the state legislature of the region. In his previous experience, they had been the major agents for the success of the Southern Regional Educational Board. (Bohnhorst 1990) The other power structures MPATI failed to win over included the National Association of Educational Broadcasters and the National Educational Association.

THE IMPACT OF LOCAL SCHOOL POLITICAL AND FINANCIAL PROBLEMS

Local school districts' financial and political problems compounded MPATI's difficulties. Because individual schools were asked to make a voluntary commitment to MPATI, most schools in the coverage area did not join. In many schools which joined, MPATI was perceived as an "extra." When school district budgets got tight the airborne program was one of the first programs to be cut. There was also a natural fear by school superintendents to add a controversial program at times when budgets were already tight. This may have been a major factor in MPATI's failure to make inroads into many school districts in the coverage area. Undoubtedly, among some superintendents there was a strong reluctance to test the correlation between administrative job security and the successful adoption of an educational innovation. In other words, to keep one's job "don't rock the boat."(Halley 1968, 15) With other superintendents it was just the conservative often heard approach to any problem. "Let us wait and see until someone else proves it works."

INADEQUATE RESEARCH, DEVELOPMENT AND EVALUATION PROGRAMS

Finally, the chronic lack of sufficient overall funding resulted in MPATI never being able to mount a sound research and development program. Ray Wolf, Assistant for Curriculum Instructional Services and Associate Professor of Communications at Purdue University, believes a major flaw, based on special evaluations, was the failure to update and

change telelessons. Wolf stated that this problem was so serious that "it may have alone eventually caused the demise of the service"(Danna 1984, 99). Wolf cites a fourth grade teacher who complained about having to use the same Spanish telelessons year after year. This discontent was also noted by project evaluators as well as by the educators themselves (Danna 1984, 99). This may be an overstatement of the problem. However, it undoubtedly did have long range detrimental effects on attempts to attract new members in the late 1960's.

Early expectations for future course development after the initial experimental period ran very high. By November 1961 sixteen courses were completed or nearly completed and five new ones were started. Dr. Ivey announced at the December 1962 meeting of the MPATI Board of Directors that the staff were reviewing the plans for the next series of courses to be produced. Ivey assured the Board that:

> These courses are geared to higher quality standards and teacher guides and supplementary materials will be expanded and improved. The courses will be regularly evaluated and improved with these objectives in mind while in the process of planning and production. (Board of Directors Meeting 1962, 7)

The 1963-64 course development budget was $475,613. In January 1964 a budget reduction was imposed. However, the only division affected was course development. All other divisions budgets were actually increased by approximately 5 percent. In the 1964-65 budget no funds were provided for course production! That year the Course Development Division

did receive $15,000 from the Detroit Edison Company to plan an economics course for the ninth and tenth grade. This was the first time MPATI attempted to develop a telecourse with outside private funding. In October 1964 the only course in production was "The Adventure of Science." The production was videotaped at Purdue University and was scheduled to be completed by April 1965. Dr. Erling Jorgensen, Director of Course Development, reported, in October 1964, to the MPATI Board of Directors ,that MPATI had "submitted a proposal to the U.S. Office of Education for the establishment of an Elementary School Science Materials Development Project. The proposal asked for $49,122 for the first phase of the project." Jorgensen also mentioned the submission of a second proposal to relocate a National Instructional Television Library Demonstration Project to Purdue University and support the continuation of its operation with a $1,300,000 two year grant (Board of Directors Meeting 1964, 4). Neither proposal was funded. Out of a proposed 1965-66 MPATI budget of $1,848,043 only $90,995, less than five percent of the budget, was allocated for course development. One new elementary course was produced that year.

As funds became increasingly scarce for telecourse productions, some of the last series developed by MPATI were produced with private funds. There was some concern by MPATI school member representatives that content control of courses might be influenced by the contributing private organizations. At the Third Annual Membership Meeting,

Bohnhorst noted that MPATI was cooperating with the University of Chicago and asked Jorgensen, director of MPATI's Course Development Division to elaborate on the question. Jorgensen stated:

> . . .it is planned that an advisory council will include teachers, economists, University of Chicago and MPATI staff, as well as members of the MPATI Curriculum Commission.

In answer to a question whether industrial contributors might wish specific types of materials to be included in the course, Jorgensen noted ". . .the president of Detroit Edison Company has stated that it is not the purpose of contributors to make determinations as to content"(Minutes of Third Annual Meeting of Members MPATI, Inc., 1965, 5).

During the March 27, 1966 MPATI Board of Directors Meeting Dr. Bohnhorst reported that MPATI had started a joint production with the E.C. Seale Company in Indianapolis to produce sixteen 15 minute lessons in remedial reading which would be ready for broadcast for the summer program of 1966. In 1967 a total of $11,000 was allocated to produce part of the basic economic course out of a total MPATI budget of $1,692,461 or about six-tenths of one percent of the budget!

In 1968 the MPATI Board of Directors set a goal for the "new" MPATI, Inc., production center and video tape library of five new courses or 150 new lessons. Work proceeded on only two series during the next two years.

In March 1968, Mr. Cromwell, the new MPATI president, noted during a MPATI Executive Committee meeting that "Ohio

is interested in seeing new production added to the MPATI Library since in a few years obsolescence will destroy its usefulness" (Minutes of Executive Committee Meeting 1968, 4).

Cromwell announced,in February 1970:

> A candid appraisal of MPATI's financial condition must include the observation that . . . the MPATI library of tapes contains a significant proportion of material that has passed its age of greatest appeal. (Board of Directors Meeting 1970, 3)

Cromwell also pointed out:

> It is apparent that the production of one new sixteen lesson course per year. . . will not indefinitely sustain MPATI's present format. A realistic estimate is that if MPATI can not achieve major growth or development by June 30, 1971, some major changes would be prudent rather than face a slow degrading of its operation with possible serious financial risks. (Board of Directors Meeting 1970, 3)

On the precise day of Cromwell's proposed deadline, June 30, 1971, MPATI Inc., was legally dissolved, and its assets including the videotape library were transferred to the Great Plains National Instructional Television Library in Lincoln, Nebraska.

The years of chronic financial crisis and severely reduced budgets available to revise and update critically needed new telecourses for the video library had left their mark on the fledgling organization. The task of providing an infusion of new videotape materials to make MPATI Inc., a viable videotape library for instructional materials was beyond the financial ability of the organization.

Ivey's attempt to turn again to the interstate compact idea to finance the "new" MPATI, Inc. (the regional

production center and videotape library) operations was also ultimately a failure. Although Ohio and Illinois did become members in 1969, the funds allocated to ITV in these states were inadequate to sustain MPATI the video tape library. MPATI personnel contacted and traveled to a number of other states in 1969 and 1970 trying to recruit new state members.

> However, these efforts met with no success in developing new members since many of the states cannot justify the expenditure . . . when they use few MPATI courses . . . Furthermore, many states do not have any ETV network, and some states do not have any educational television programs at all. (MPATI, Inc. Executive Committee Meeting 1970, 1)

During the projects early experimental period in April 1960, Ivey suggested that MPATI would need a

> . . . sophisticated approach in order to warrant a grant for research from NDEA (National Defense Education Act). In as much as our people are too busy now and that it would take resources of our staff even to get outsiders started, it was agreed that we "table" the problem of evaluation for several months. (MPATI Staff Meeting 1960, 5)

Five months later in September 1960 during a Midwest Council Meeting, the problem of program evaluation was again discussed. It was reported by a staff member that

> . . . One of the paradoxical problems with the MPATI project has been that, while called an experiment, no provision was made at the outset for a formal evaluation program. Nor were there any funds earmarked for developing an evaluation program in the initial appropriation made by the Ford Foundation to establish the project.
>
> The Council and its staff have been quite disturbed by this weakness in the early concept of the project. The executive officers of the Council, with the encouragement of the Council, have carefully worked to explore all ways possible to develop meaningful evaluation procedures and to husband the resources for the project so that they might be used to support evaluation activities. (Midwest Council Meeting 1960,

Some initial steps were taken to develop an overall evaluation plan covering four areas: (1) education, (2) economics, (3) technical, and (4) organizational and administration. A history of the project was being drafted for the first year but was discontinued when funds for evaluation were curtailed in 1961. This history was to serve as a "framework and valuable background material for the overall evaluation program that is being developed" (Midwest Council Meeting 1960, Program Evaluation).

With help of special consultants, the Midwest Council staff identified three types of projects they wished to initiate. The first project was a study of over 40,000 students to determine what increments in learning had occurred among students viewing MPATI telecasts as compared with those who had not viewed the materials. This project was to be continually planned. It was hoped that

> . . . from this project there should come the definitive information needed for the educational and lay leadership of the region to determine whether or not the learning potential of television is sufficient to warrant the long range investment in the facilities required to sustain MPATI with local and state funds. (Midwest Council Meeting 1960, Program Evaluation)

The second type of project was aimed at encouraging a broad scale "do it yourself" evaluation program by member schools wishing to measure how well their students responded to television instruction. A booklet was developed explaining the other activities of an evaluation venture they might develop. Arrangements were to be made to feed "the

headquarters for study in relationship to the experiment data in project one" (Midwest Council Meeting 1960, Program Evaluation). The third group of projects were to include cooperative activities between staff of resource institutions and the Council staff to "carry out some studies in the social sciences dealing with educational, economic, or public administration phases of the program" (Midwest Council Meeting 1960, Program Evaluation). The Council believed to develop and carry out this program, the Council would add two or three professional members to its staff. Basic support for the experimental project was supposed to come from Council funds; support for "the do it yourself program" was to involve National Defense Education Act (NDEA) funds from the U.S. Office of Education.

The Office of Research and Evaluation (R&E) was established in October 1960 with Dr. Warren F. Seibert, former TV program research consultant at Purdue University, as its coordinator of R&E. The office of R&E made its first contribution to the area of institutional research in January of 1961 by assisting MPATI staff in the development of a MPATI Equipment Survey.

Although some attempts were made to work with Ohio State University on evaluation of MPATI's course materials, research and evaluation activities were not generally included among the high priority activities in 1961. Dr. Siebert resigned as Coordinator of Research and Evaluation June 30, 1961.

Dr. Kalmar E. Stordahl was appointed Director of Research and Evaluation in 1963. Stordahl worked with the Series V development team providing feedback on 1963-64 resource guides. An effort was also made to obtain and compile the results of reports on "do it yourself" studies made by MPATI schools in 1963-64. This information was later summarized in a published report. The report included comments such as:

> A quick overview shows that MPATI is generally accepted favorably by students, teachers and administrators as being an exceptional source of new knowledge that would otherwise be unaccessible. (Owens 1965, 59)

The report also pointed out some of MPATI's greatest deficiencies:

> Mechanical difficulties, scheduling problems, inadequate manuals, and lack of correlation between classroom text and televised lessons must be given serious consideration in order to improve the quality of the telecast in the future. (Owens 1965, 59)

Blanche E. Owens, coordinator of Educational Television at Northern Illinois in 1965, pointed out in her article "ETV Airborne TV: Five Year Appraisal" that "the weakest spot in the program has been. . .evaluation" (Owens 1965, 58). However, despite all the problems experienced by the Research and Evaluation component, MPATI's course developers came up with a major contribution in evaluation.

> One of the most comprehensive lesson evaluation processes, which became a model program evaluation for other projects, was the process developed by MPATI to evaluate telelessons before distribution. (Wood and Wylie 1977, 315)

The primary purpose of lesson evaluation at this stage was to uncover any major problems with the materials before they

are used with students. Each lesson was screened for subject matter errors, teaching effectiveness, production, and technical qualities. If major problems were discovered, the lessons could be redone before distribution and utilization. A four-part evaluation scheme was used to evaluate MPATI lessons. The four aspects evaluated included: (1) teaching methodology, (2) subject matter, (3) production, and (4) engineering. Three or four different reviewers completed the forms.

It is unfortunate that the care, effort, and resources that went into the telelesson production did not carry over into evaluation of the entire project.

Evaluation of the entire program was an early casualty for lack of an adequate budget. According to Ivey the:

> Lack of time and funds has mitigated against needed development of a sophisticated academic development and evaluation system. Initiation of such a continuous evaluation program has high priority as funding becomes available. For the time being, the best evidence on the quality of MPATI product is its growing number of users within and outside the Midwest. (Ivey n.d., 14)

The common threads that run through the fabric of MPATI's trials and tribulations are the lack of sufficient financial resources and the inability to develop on the basis of a school membership corporation the political backing necessary to undertake and sustain the program.

SUMMARY

During the twelve year existence of MPATI, it strove to become financially self-sufficient. In order to achieve solvency, MPATI would have had to enroll 5,600 schools. This goal was never attained. MPATI school membership peaked at 1,850 in 1964 declined to 1,608 in 1965 and grew again to 1,776 and dropped again to 1,350 in 1968. Several reasons contributed to this shortfall.

One of the problems revolved around scheduling problems. MPATI transmitted in both the Eastern and Central time zones, creating problems because of the one hour time shift. The transmission schedule of six hours a day was due to FAA flight limitations because of safety regulations and the five hour combination of Eastern and Central time zones during school hours. To further complicate this problem, some areas shifted back and forth between daylight savings time and standard time twice during the school year. Elementary teachers were sometimes inconvenienced because they had to schedule around a particular time slot for a lesson. However,this lack of flexibility was nearly impossible for secondary school students in most schools because of the movement from classroom to classroom during the day. Thus, it is not surprising that 90% of the students enrolled in MPATI were elementary students. This inability to serve secondary students efficiently and effectively would appear to have contributed to MPATI's falling short of reaching its potential.

A second problem arose because of MPATI's inability to obtain adequate financial support from metropolitan school systems. To a large degree, this occurred because these systems believed they could not afford to commit substantial financial support for an "enrichment" or what was perceived by many to be a "soft" part of the curriculum. In cases where school districts had to choose between MPATI or local ETV, most chose to support the latter.

One of the primary reasons for not being able to achieve financial self-sufficiency was the denial by the FCC of MPATI's proposal to increase MPATI's allocated channels from two to six in order to increase the number of offerings and the FCC's eventual denial of MPATI's request to continue to broadcast on the originally allocated two channels after 1970. Increasing the number of UHF channels and MPATI broadcasts with a six channel system would at least have alleviated some of the scheduling problems which plagued MPATI. The support for MPATI in their petition to the FCC on this issue came primarily from the schools, administrators, teachers, and students they served. MPATI argued that the upper end of the UHF spectrum would not likely be used in the immediate future and that they were reaching schools in areas which could not receive ITV any other way. The upper end of the UHF spectrum, with one exception, still remains unused as of 1990.

On the other hand, MPATI's arguments were met with strong resistance. Opposition came mainly from the National

Association of Educational Broadcasters who maintained the channels would be needed for local ITV educational use. They believed that MPATI would compete with local ETV stations for foundation and government financial aid and discourage their development. The Joint Council of Educational Broadcasting did not oppose MPATI per se. Rather, they opposed the regularization of any channels for airborne television. Because the FCC apparently became convinced that these channels would be needed for future expansion for ground-based non-commercial and commercial stations, they recommended that MPATI apply for six channels in the 2500 megahertz ITFS band.

MPATI suggested sharing the four extra channels with other broadcasters during the nonschool hours, but both the primary proposal and the compromise were denied. The FCC allowed MPATI to continue using the originally alloted two UHF channels for five more years. The FCC continued to maintain that the additional channels would be needed and used in the UHF band. This prophesy has not proven to be correct. MPATI realized it would not be financially feasible to convert to the 2500 megahertz band.

As devastating as the FCC's denials were, MPATI was continually plagued with additional problems. Perhaps among the most difficult to control were problems with auxiliary services and "pirating." Because MPATI served such a large area, its support system, particularly in terms of providing print material, was not sufficient. But a worse problem was

lack of control over schools who chose to "pirate" MPATI telecasts. All that was needed to access the two channels MPATI used was a UHF television receiver, and an antenna. It was estimated this pirating cost MPATI about $230,000 a year.

Reception also continued to be a problem. MPATI was broadcasting more than 98% of the time, but classroom reception was not always adequate, particularly on the fringes of the region. Often this was because of improper school installations and maintenance, which was generally done locally. Although MPATI had no control over this local workmanship, they were still blamed for poor reception. Another problem which rightfully belongs to MPATI seems to be that not enough workshops and inservice was done to counteract teacher apathy and resistance. The number of teachers being trained to use ITV in the classroom steadily decreased between 1960 and 1967. This suggests a strong positive correlation between the successful introduction of innovations and the need for extensive teacher professional development. There existed an external educational power structure which MPATI was never able to tap for support. While there is some confusion about who actually controlled this power structure, it seems clear, according to former MPATI administrators and staff, that the members of this nebulous power structure were not consulted or involved enough in the various stages of planning and implementing MPATI. In addition, there was the problem of local school policies. MPATI was considered an extra. When money was

tight, superintendents were reluctant to push for enrichment programs.

Finally, more adequate research, development and evaluation of programs would have helped contribute to MPATI's progress. However, as Ivey himself noted, there never were sufficient funds to allow for such research and evaluation to be done. This chronic lack of funding also resulted in an inability to update existing series or to develop appropriate quantities of telelessons to replace outdated original MPATI productions.

In general, existing problems were compounded with newly generated problems and the constant lack of necessary resources progressively eroded MPATI's abilities to continue operations.

CHAPTER 7 EVALUATION, REFLECTIONS, AND CONCLUSIONS

EVALUATING MPATI

In an attempt to better measure the extent of MPATI's successes and shortcomings and to compare the program's original objectives with attained objectives, this researcher has used a combination of an educational change model and a narrative history. The educational change model used is Michael L. Berger's model as presented in Leonard Golubchick's and Barry Persky's book Innovations in Education. Berger's model divides the process of educational change into three components: planning, implementation, and evaluation. In each of the three components, Berger identifies a specific number of factors which are usually associated with the successful introduction of change in school districts.

Using a combination of Berger's factors associated with successful change and a summary of the proceeding six chapters of this study, this researcher believes a partial evaluation of MPATI's performance during its twelve years of existence can be revealed.

Berger identifies the first of a number of critical factors in the planning stage in his model.

> A direct correlation seems to exist between the extent of planning and the degree of success eventually achieved . As a first step in the planning process, an attempt ought to be made to include the various educational interest groups. (Golubchick and Persky 1975, 151)

The historical record clearly shows that the Ford

Foundation, the Midwest Council, and later MPATI Inc. did attempt to include a number of various educational groups during the planning stage. Actually, educational interest groups were invited to actively participate in the initial planning, implementation, and evaluation. Prominent educators from the six states included in the regional venture were represented on the Midwest Council, Executive Board of Directors of MPATI, and various regional advisory boards. Both Coombs and Ivey worked diligently in the early stages of the experiment to get the crucial political and financial support necessary to literally get the airborne project off the ground. Ivey and his staff continued to seek outside financial assistance during the experiment and after Ford Foundation financial support was withdrawn in 1966. MPATI's records and documents show doggedly persistent attempts by Ivey, Godbold, Bohnhorst, Jorgensen, Falls, Miles, Cromwell, and others to muster economic and political support for the underfunded project. If there was weakness in this stage of planning, it was probably the lack of input from local schools and administrators and the lack of state and regional political representation in the project. Ford Foundation executives and a group of regional educators, including university presidents, large city superintendents, and ITV station executives, attempted to impose an educational innovation on a very large, diverse geographical area in a relatively short period of time with limited success.

Berger points out a second factor which must be taken into consideration during the planning stage.

> Those worthwhile innovations that falter generally do so in the implementation stage because individuals or groups feel threatened by something they fear or do not understand. (Golubchick and Persky 1975, 151)

MPATI planners and executives did attempt to head off problems with two particularly resistant groups during the planning stage. The first group was local, state, and national teacher organizations in the region. In all the articles in professional journals and popular magazines, it was repeatedly emphasized that MPATI ITV lessons were "enrichment" materials used to supplement classroom instruction not a substitute for the teacher. The designations of "teacher proof" and "stand alone" materials were never used. Also a deliberate attempt was made by the MPATI organization to include classroom teachers and building administrators on numerous advisory committees. There was also a concerted attempt by the MPATI organization during the early stages of the program to work with ground based ETV stations to deliver televised instruction to regional schools. However, both of these efforts fell short of accomplishing their goals. In the case of the local teachers and administrators, not enough professional development ITV training was offered by the MPATI organization to break down substantial teacher apathy and resistance. Although MPATI made a substantial effort to cooperate with ETV stations in the region, the chronic, precarious financial plight of early

ETV stations caused these stations to see MPATI as a direct threat to what little financial support was available. Therefore, there was a powerful concerted effort on the part of the stations, the NAEB, and other educational groups who feared MPATI competition for the limited financial resources available and control over local curriculum, to oppose MPATI's expansion.

During the implementation stage Berger points out five factors which he believes are important keys to the successful implementation of any innovation. The first involves maximizing

> . . . the number of people who have a vested interest in the idea. . . . This will create a solid core of support for the program or project, capable of withstanding the inevitable attacks, both politically and intellectually motivated from opponents. (Golubchick and Persky 1975, 152)

MPATI executives and staff both realized the importance of local teacher and administration professional development ITV training to successful implementation. However, although MPATI allotted both finances and time to conduct initial ITV training sessions for a large numbers of teachers (6,000 in the first year), only 9,000 were trained in the use of ITV in the next ten years. This was hardly sufficient in light of MPATI projected membership of 5,000 schools and 11,000,000 students by the 1969-70 school year.

A second important factor which must be considered in the implementation phase is the "realization that training and feedback continues until the change is incorporated, or

institutionalized, into the system" (Golubchick and Persky 1975, 152). MPATI's inability to sustain the initial level of teacher ITV professional development workshops and the financial restraints imposed on the MPATI staff to launch a credible research and development program in order to update the course tapes and improve the quality of supplemental materials did not allow a more systematic development of the project. Undoubtedly, inadequate professional development of ITV workshops and the lack of a well financed research and evaluation program also added to the problems of attaining larger school memberships.

According to Berger, "a definite hierarchy of control must be created for administrating the total program or project, with clear lines of accountability established" (Golubchick and Persky 1975, 152).

Ivey's very competent vice president B.D. Godbold was in charge, from 1959 until 1963, of developing a small very efficient staff organization to carry out the objectives of the organization. Godbold welded together a very competent, efficient, hard working, and selfless staff with a general administrative plan which allowed field administrators to handle the day-to-day operation; this allowed Ivey to concentrate on the formidable task of further clarifying and communicating MPATI program objectives to member schools and the general public.

Berger further points out that while implementing a program it is important "that the opinions of the program or

project's personnel are clearly and powerfully stated" (Golubchick and Persky 1975, 152).

Godbold's staff administration plan, which was clearly stated in the policy handbook developed by Godbold and the staff during the early stages of the project, provided a blueprint for the clear lines of accountability resulting in an executive leadership which spoke with one voice.

Berger makes a final important point that during the implementation phase "attention to the media is also good politics. It enhances the chances of gaining public support . . ." (Golubchick and Persky 1975, 153). Ivey and many MPATI staff members contributed articles, reports, and speeches, particularly in the early stages of the project, which publicized the experiment, explained the program's objectives, and stimulated interest in MPATI both nationally and internationally. Ivey and Bohnhorst continued to produce substantial amounts of written materials on MPATI until its demise; however, the overall number of articles decreased the longer the project continued.

Ivey, Bohnhorst, and Jorgensen, all of whom held faculty positions at Michigan State University after the end of the MPATI program, attempted to resurrect the MPATI ITV regional concept again in 1973. However, this time they were interested in using airborne ITV in third world countries to extend educational opportunities to entire national populations. Although nothing came of these attempts, the airborne concept was used by the U.S. military during the

Vietnam Conflict to provide broadcast services to U.S. military personnel in South Vietnam. (Bayless, 1969)

In the final component, evaluation, of this educational change model Berger maintains that

> Until recently formal, or summative, evaluation of new programs was unknown in. . . education. Schools would implement change with little prior planning and either incorporate or drop the innovation without thorough evaluations. However, government and foundation spending for school reform in the 1960s was made contingent on the fact that systematic evaluation would be undertaken at the end. Quite simply, these institutions wanted to know exactly how effective their expenditures had been. (Golubchick and Persky 1975, 153)

This is only a partially correct assessment. Many school districts still follow the pattern of implementing changes with little prior planning and continue to incorporate or drop an innovation without thorough evaluation. In addition, government and foundation grants in the 1960's did not always require a summative evaluation component. The Ford Foundation made no attempt to build an evaluation component into either the original or subsequent grants to MPATI. Ivey and other staff members struggled with the problem of formative evaluation throughout the life of the program. An attempt was made to set up an unsuccessful formative evaluation component in 1961 and again later from 1963 to 1965. However, the funding level was never adequate to do a credible job. Funding for some form of systematic formative and summative evaluation was repeatedly requested by Ivey during the life of the program. Mr. Paul Schupbach, Director of the Great Plains National Instructional Television Library

(GPNITL) in Lincoln, Nebraska, wrote a letter in 1971 to the Ford Foundation asking if the foundation planned to do a final evaluation on MPATI before GPNITL acquired MPATI's assets. The response to his inquiry was answered by Claire List an Assistant Program Officer for the Ford Foundation. List stated:

> Several of us have now had the opportunity to discuss the possibility of a final evaluation of MPATI which you mentioned in your letter. We have reached the conclusion that an extensive report is not necessary at this time. A simple, several page narrative summary of MPATI, including a brief description of its recent years and the final disposition of resources, to use your words would be more than sufficient. (List 1971)

With the exception of two reports, one consisting of ten mimeographed pages which was done in 1963, and the other consisting of sixteen mimeographed pages written in 1971 to the Ford Foundation on MPATI, no other systematic evaluation was attempted.

Twenty-two years have past since the MPATI DC-6 stopped their airborne broadcasts, and nineteen years have elapsed since MPATI Inc. turned over its one quarter a million dollar assets to the Great Plains National Instructional Television Library. Yet little research and few journal and popular articles have been written about the project in the last two decades.

REFLECTIONS

What can be learned from the MPATI experience? How do the events which took place over two decades ago have any value

or relationship to the problems confronting educational technologists today? This researcher believes there are important lessons to be learned. If Dr. Alice Meil is correct and the spiral phenomena is an important component in the evolution of the development of instruction, then each project aimed at upgrading the quality of education by introducing innovations into an existing educational environment must be studied to gain insight into what has succeeded and what has not. The study of MPATI and other projects and proposals helps illuminate an otherwise very dimly lit, obstacle-filled path to the successful incorporation of innovations into existing educational environments. To paraphrase a well-known maxim, those who are ignorant of past experiences undoubtedly will be condemned to repeat the same mistakes in the future.

As with most educational innovations, MPATI did not revolutionize the existing educational system of the Midwest United States as some proposed nor did it fail miserably as others might have hoped. MPATI made serious mistakes, but it also had its triumphs. Some proponents of MPATI saw the project as an attempt to use a "high tech quick fix" to solve some very complex educational problems. A group of educators and foundation executives made a decision to try a very expensive, risky venture to address a myriad of problems, some which were prophesied but never materialized, such as the teacher shortage.

The technology introduced here, as with most high tech

innovations, was too expensive for most private and public schools to support after the initial Ford Foundation grants were exhausted. There was a genuine commitment by a number of selfless, hardworking groups and individuals to make this innovation a success. However, their overly optimistic expectations of the amount of developmental time and funding necessary to make sufficient inroads into the existing educational structure did not permit the project sufficient time to take root and grow in, at best, a neutral and, at worse, a hostile environment.

Underfunding for the nonbroadcast part of the project seemed to play a particularly important part in the discontinuation of MPATI. Dr. John E. Ivey said in 1988 that the project was held "hostage" by Philip Coombs and the Ford Foundation. Ivey, although seriously ill and unable to express himself clearly during parts of the interview, indicated that too much emphasis was placed on getting the airplane and transmitters into the sky and not enough time, resources, or funding was allocated to adequately developing support for the organization or producing the teaching materials to be broadcast. (Ivey 1988) Support for the airborne division continued to be a tremendous drain on the organization even after it had been decided by the MPATI Executive Committee in 1966 that the airborne division of the program would be discontinued in order to stop the drain of financial resources that would be needed to finance the proposed "new" MPATI production center and video tape

library.

The financial plan to support the project envisioned and strongly supported by John Ivey was an interstate compact similar to the one he had successfully forged to fund the SREB in the late 1940's. This plan was rejected by influential members of the Midwest Council in favor of a corporation owned by the member schools. The reason for the rejection was probably two fold: (1)Some of the most important Midwest Council members believed it was impossible to form an interstate compact with the state governments because of the time factor involved in securing such an arrangement, (2)The reluctance of the Midwest Council to turn over to state officials the power to control MPATI. This situation conceivably resulted in MPATI passing up an opportunity to build a more solid financial base from which to operate.

In the long run, the method chosen for financing the project may have proved the fatal flaw when combined with the FCC delay and finally the denial of six UHF channels. School membership in MPATI did not grow as proposed in part because of the schools reluctance to join until they were assured that MPATI would be continued and would be able to improve the service it provided to member schools. However, one wonders if the outcome would have been any different if the interstate compact idea had been adopted. How would the state governments have reacted to the FCC decision not to allow a six channel UHF service? Could the FCC have denied

six midwestern state agencies and their respective political leaders? Probably not. Would they have played a critical role in changing the FCC decision or would they have continued to provide support to a "crippled" MPATI? According to Erling Jorgensen the FCC would have found it "hardly possible" to deny a six state request. State government officials and state legislators would have had more influence on the FCC's decision than 1,200 endorsements from local educators in the midwest. This may have been MPATI's greatest strategic failure.

Later in 1968, John Ivey did try to build an interstate compact to finance MPATI Inc. the videotape production center and library. That attempt failed. By this time funding at the state level for ITV, or any project for that matter, was cut back because of a down turn in state economies.

The impact of the sharp increase in fees and combination of the dwindling support from the Ford Foundation created a critical negative impact upon member schools which could have been avoided if MPATI had charged more for its services from the very beginning. According to Erling Jorgensen the typical $1.00 per student per year charge for ITV services by virtually everyone in educational broadcasting was not based on any rational criteria of which he is aware. Although a $2.00 fee at the start of MPATI in 1962 may have been met initially with some resistance it probably would have been less traumatic to member school districts than the three increases in fees from $1.00 to $2.00 and finally to $2.50

requested in the 1966-1967 school year. MPATI's inability to penetrate the "power structure," often referred to in interviews and printed materials, evidently referred to state political systems, national educational organizations, leading educators on the state level, and local school superintendents. Whether this perception by former MPATI officials is correct or not, it is clear that some staff members in the MPATI organization believed this to be an important contributing factor to the MPATI's ultimate demise. There must have been a very high frustration level attached to their many attempts to keep MPATI alive. They were consistently turned down for federal grants, put off by the FCC for two and one-half years, denied six UHF channel allocations and ignored by the Ford Foundation after 1966 in their attempts to secure additional funding to keep the organization operating.

Possibly the most conclusive example of MPATI's problems with the "power structure" was the corporation's inability to persuade their fellow educators and a group of potential allies that MPATI could be part of the answer to a multitude of important problems facing public education between the 1950's and the 1970's. The strong opposition of national organizations such as the National Association of Education Broadcasters (NAEB), Joint Council of Educational Broadcasting (JCEB), the Association for Supervision and Curriculum Development
(ASCD), and the Department of Audiovisual Instruction of the

National Education Association (DAVI-NEA) were major obstacles for MPATI.

These organizations successfully fought MPATI's petition to the FCC to secure six permanent UHF channels. MPATI was directly competing with these organizations for funding at the local level. They believed MPATI was a threat to their very existence. They saw over $16,000,000 spent on MPATI that "might have" gone into developing ground based ETV stations. They also survived on funds provided by schools for ITV in the early part of the day. MPATI was a competitor for these meager funds. Cromwell pointed out the fact that over half of the small budgets of most ETV stations was dependent on funds from school sources. It was also pointed out by Erling Jorgensen that MPATI's early "wealth" and a "high living image", which was projected by the large amount of money spent on unique "state of the art" hardware and project conferences, was a glaring contrast to the meager, obsolete equipment and tight budget of most ETV operations. This image certainly did not help MPATI in their attempts to enlist allies in an envious educational television community.

By the early 1960's a number of historically significant developments in the national ETV movement further complicated MPATI's attempts to secure four more UHF channels. The federal government's involvement with ETV was minimal until the early 1960's. The National Defense Educational Act of 1958 did little to help ETV stations; most of the funds went directly into school facilities. At the same time Ford

Foundation "start up funds" were becoming increasingly difficult to obtain. In the early 1960's a number of events renewed ETV proponent's hopes of accomplishing their goals when the national government started to become more involved in funding fledgling ETV stations. "This act---and its subsequent renewals---poured millions of dollars into building and improving physical facilities for educational telecommunications operation across the nation" (Wood and Wylie 1977, 55). There was a substantial increase in UHF station activation immediately following the passage of the Educational Facilities Act.

> . . . the large increase in the number of stations on the air from the end if 1963 to late 1965 can be attributed, in no small measure, to the impetus from federal grants. There was about a 40 percent increase in the number of stations during this program period. (Wood and Wylie 1971, 55)

Another major incentive for the surge in ETV station activation was the 1962 all-channel legislation. The amendment to the FCC Communications Act of 1934 authorized the FCC to require all TV receivers be equipped with all VHF and UHF channels by mid-1964. A combination of the NAEB's hope that the federal government would provide a new source of funding to help create a multitude of local ETV stations across the nation, which in turn, would provide a foundation for a "fourth network of alternative programming" and the FCC's directive to equip all television receivers with UHF tuners by 1964, thus making the UHF band a more attractive alternative for local ETV stations, made MPATI's request for

six UHF channels and the Westinghouse backed national airborne television project a very real threat to the ground base ETV proponent's dreams. According to Erling Jorgensen,

> The great jealousies over who would get the limited foundation and governmental support dollars led to fighting and mutual defeats. No one rose "above the fray;" as a result all of the "successes" were limited. (Jorgensen 1990)

Jorgensen also believes that MPATI made a "strategic error" by choosing direct confrontation with the ETV movement rather than joining it and being seen as an ally (Jorgensen 1990). MPATI's main objective from its inception was instructional television for the school classrooms. The grander vision of the nation-wide alternative educational programming network was not part of MPATI's vision of the future.

These organizations also felt they could do a better job through local ground based ETV stations which used locally produced programming thus preserving the autonomy of curriculum developers in local school districts.

The local school boards' superintendents, principals, and teachers were also not convinced that MPATI, or instructional television in general, was an important component of a sound educational "basic program" and not just a "frill" which was expendable during financial hard times.

The question of "the basics" verses "enrichment" in education has always been a problem encountered by educational technologists and instructional innovators. When extra financial support is available to school systems, some board of education members, administrators, and teachers will

be willing to try and to incorporate innovations which seem to show promise. However, when the budget gets tight, as it does periodically in most school districts, the first things to go are the "enrichment programs." For any innovation to survive such periodic amputations the innovation must make sufficient inroads into the educational organization and become "institutionalized" and be considered a part of "the basics" when it becomes necessary to realign the budget. MPATI should have concentrated more of its funds and human resources on the classroom teachers' needs. It needed to gain extensive support and acceptance at the "grass root" or local level. Perhaps if MPATI had spent more time and sufficient resources to develop strong, lasting relationships with local schools, some of the most important barriers to the introduction of ITV with the classroom could have been avoided.

More time and project funds should have been devoted to providing public demonstrations and teacher workshops. According to the documentation available to this researcher, the early workshops were well attended and enthusiastically supported by school administrators and teachers. The major problem was that there were not sufficient workshops to provide a real impact on local school administrators and teacher resistance to the introduction of this innovation.

The implication is that the training and professional development activities that teachers have received in the past, as well as the present, is woefully inadequate. To

support fragile innovations, in many instances, such training and professional development is "too little and too late." College courses for teachers in instructional media utilization are insufficient or nonexistent, and inservice training is often ineffective when attitudes toward media supported instruction have been formed in a traditional non-media supported environment.

Ralph W. Tyler states in Jon Schaffarzick's and Gary Sykes' book Value Conflicts and Curriculum Issues:

> The extent of resources required for the training of teachers to implement an educational innovation is commonly underestimated. For each of the new courses developed with the support of the National Science Foundation, eight to ten times the funds used in constructing the curriculum have been spent on teachers' consultants and conferences and other means to help teachers implement the new courses. During the forty-seven years I have been involved in educational innovations as a participant or consultant, I have not known an improvement project that required less than 20 percent of the operating budget of the program for three to five years in order to carry through the innovation.
>
> Underestimates, both in the number of years required to provide for fairly full implementation and the amount of teacher time necessary, are common. . . Significant educational improvements are costly and should not be initiated without considering the availability of resources ultimately required. (Schaffarzick and Sykes 1979, 240)

According to Tyler's recommendations MPATI would have had to allocate approximately $1.6 million of an $8 million budget for the first three to five years of the program exclusively for the inservice training of teachers. The best estimate this researcher could make, based on incomplete financial records, is that MPATI spent less than $240,000 during the first five years (1960-1964) for teacher professional

development training and related support activities. MPATI spent less than 15 percent of Tyler's recommended percentage of the operating budget on professional development and training of teachers!

The chronic lack of funds to mount a credible research and development program, replace aging telecourse materials, provide more complete supplementary materials for the telecourses, and support an extensive evaluation of the total program undoubtedly had an impact on MPATI's ability to attract new members. With a more extensive, constantly refreshed, up-to-date videotape library and a credible educational research program that supported the value of ITV MPATI would presumably have had a much better chance to survive.

Problems with reception of the airborne signal experienced by some school districts undoubtedly deterred some schools from seeking membership in MPATI. Although the official reports from MPATI show the airplanes were on station and transmitting more than 98 percent of the time, school reception apparently did not achieve a similar outstanding record.

The primary reason for poor reception by schools seemed to be attributed to the use of improper equipment and inferior installations. In many cases, local TV dealers installed the receiving equipment based on little or no knowledge of UHF antenna specifications.

The natural tendency of the affected schools was to blame

MPATI's broadcasting system when reception was poor. To MPATI's credit, they offered free technical literature on antenna installation, inservice workshops for local dealers and installers, and even a field crew of MPATI technical engineers to help school districts who experienced problems. Ironically, the information supplied by these services also made it much easier for non-member schools to install equipment to "pirate" the MPATI telecourses. MPATI's experience with schools "pirating" the service did provide an opportunity for others interested in providing similar services to schools to learn how effective an "honor based" user fee system can be. Some recommendations made by Herbert Ohlman concerning proposed satellite services in the 1970s would still be valid in the 1990's.

> The failure of MPATI went beyond the technical and political into the economic--they did not have any means of insuring support from those who used the service. This experience suggests that if a communication satellite is launched solely for educational use, or even if it only provides channels for such use in a satellite launched for other applications, the ground set-up deserves the most intensive attention. In the initial stages, ground facilities may have to be subsidized by federal, state, or local funds, but it seems essential to involve schools from the beginning in a direct way--by having them pay a reasonable fee on a per-pupil or per-capita basis for services received.
>
> In view of MPATI's experience, non-paying users shouldn't be able to receive these services at all. If anyone can tune in satellite-borne programs without paying for them, there is little inducement on the part of those who do pay to continue their support. Technologically, this problem might be solved by scrambling the signal, using techniques worked out for subscription (pay) TV. (Ohlman 1971, 23)

Some recommendations mentioned above, such as subsidies

and direct involvement of schools in financing the program, are currently being explored in initiating direct broadcast satellite services.

MPATI CONTRIBUTIONS TO ITV

There can be no doubt that MPATI made a number of significant contributions to the development of Instructional Television in the 1960's.

In the majority of available evaluative literature on the MPATI project, six major contributions are frequently noted. These contributions include:

(1) The success in promoting the "team concept" in developing educational materials.

(2) The production of the first cost effective "quality" ITV lessons.

(3) The reduction of resistance of midwest school officials and teachers to television as a tool to "enrich" K-12 school curriculum.

(4) The pioneering effort made by MPATI in the development of UHF band television transmissions.

(5) The stimulation of interest in ITV within the six state region.

(6) The improved level of educational instruction provided to thousands of students in both urban and rural communities in the midwest that would have been otherwise unavailable in many K-12 institutions.

Each of the following historical evaluations include one

or more of the six contributions made by MPATI to ITV.

Robert Blakely, in his book Educational Broadcasting in the United States, identifies three major contributions made by MPATI to field on ITV.

> . . . One is that its daring assaults upon the limits of ITV aided the passage of both the ETV Facilities Act of 1962 and the Public Broadcasting Act of 1967. A second is a precedent for successful cooperation of education institutions. Finally, it demonstrated that mediocre programs are not good enough. (Blakely 1979, 163)

Mary Kay Platte, author of a dissertation titled An Historical Study of Instructional Television in Ohio stated:

> Robert Wood who was an Ohio MPATI administrator believed that MPATI was a positive catalyst leading to the development of technological improvements in UHF equipment as well as Ohio's grass roots approach to ITV curriculum and membership. (Platte 1981, 57)

In Judith Murphy and Ronald Gross's book Learning by TV they wrote

> . . . perhaps . . . [MPATI's] most lasting contribution is its demonstration of the feasibility of school collaboration over a wide region. (Murphy and Gross 1966, 38)

Richard Hull, former President of NAEB, the organization which vehemently opposed MPATI's expansion to six channels, Director of Broadcasting at Ohio State University, and one of MPATI's harshest critics, even admitted that MPATI "provided the motivation for the development of the Ohio terrestrial-based service since many educators missed the broadcasts and wanted the in-school telecasts to continue" (Platte 1981, 56).

In an interview in 1981, Ohio Senator Oliver Ocaseu who

was involved with Ohio ITV in the early 1950's, observed that MPATI had made some headway in dispelling a major concern of many educators.

> . . . The fear was often expressed that television would replace the teacher in the classroom. Then teachers found that the MPATI materials were enriching. Once that fear was dispelled, the value of instructional television was appreciated. . . In fact, during the hearings before the passage of the bill to establish the Ohio Network Commission, we had educators, including superintendents, coming in to extol the virtues of ITV as a enrichment tool to assist the teacher--not replace him. (Platte 1981,57)

According to Wood and Wylie:

> . . . the ITV materials - though sadly dated today-were an example of the high quality that can be produced when several agencies combine resources to put on a mutual product. (Wood and Wylie 1977,209)

Lem Winslow wrote in Sidney Tickton's To Improve Learning: An Evaluation on Instructional Technology, Vol. 1 that MPATI efforts produced ". . . the best example of an agreed upon body of inter-institutional curriculum materials for use at the public school level" (Tickton 1970, 409).

According to Dr. Sammy R. Danna, professor in the Department of Communications at Loyola University of Chicago, MPATI

> . . . did reveal the over-emphasis on the potential of ITV and the over-reliance on broadcast programming for classroom instruction which were characteristic of the age, yet it undoubtedly provided many students, particularly those in schools with minimal academic resources, enriched educational opportunities that increased their potential to learn. (Danna 1984, 99)

One of the most glowing testimonials to MPATI was made in a document which served as the focal point for some of the most damaging criticism of the program. In the Report of the

NAEB Study on the Proposed Expansion of the Midwest Program on Airborne Television, a document aimed at dissuading the FCC from granting MPATI the six channel system it needed to survive and grow, the NAEB concluded by stating:

> The experiment which has been conducted by the Midwest Program on Airborne Television Instruction has contributed important information about both technical and educational matters, particularly by discovering what can and cannot be done through educational cooperation and by developing a significant educational program production complex. These efforts are the strength of MPATI, and the airplane is its weakness. By investing its resources in additional educational cooperation and distribution of specialized instructional material through other means, it is likely that the major contribution of this effort will have been its use of the airplane to lift the sights of educators beyond the school districts lines. This is not a small contribution, and there is every reason to hope that it will be possible for an inter-state educational organization to continue its contribution without inhibiting the growth on a broader, more comprehensive and more flexible land-based television system. (Bronson 1964, 61-62)

Paradoxically, this statement by the harshest critics of the MPATI project seems to best sum up MPATI's most significant accomplishments.

Based upon an evaluation done by this researcher of MPATI's successes and failures there are a number of factors which should be taken into consideration by instructional developers when undertaking the implementation of a change in an established educational institution.

A majority of the following factors are reaffirmations of well established rules which have been repeatedly reported in instructional development and technology literature.

1. Careful planning, systematic implementation, and

formative evaluation of the inservice (professional development) component must be given high priority in the development of any program to institute educational change.

2. Appropriate funding levels must be formulated and secured by planners for a substantial period of time if there is to be any hope of "institutionalization" of a major innovation into an existing educational institutions.

3. Educational innovations, if technical in nature, must be accompanied by providing appropriate funding levels which allow for adequate support personnel (e.g. technicians and back up systems).

4. The "power structure" of possible allies and potential opposition to a given innovation must be carefully identified and initial plans must include possible strategies for dealing with each group.

5. Educational innovations planned for infusion into existing traditional educational institutions must be introduced as "support" methods to increase individual teacher efficiency and effectiveness in providing instruction.

6. Media (e.g. television, radio, newspapers, popular magazine articles, and professional journal articles) must be used effectively to continually promote and publicize the innovation during the planning and implementation stage.

7. Major attention must be directed toward the design, production, distribution, and evaluation of appropriate software materials which will be necessary to systematically implement and sustain the program.

8. Major changes in the basic system which are generated by the introduction of the educational innovation must be anticipated and adapted in to the system.

9. Formative evaluation plans must be formulated and adequately funded prior to the implementation phase to assess the effectiveness of the innovation as it is implemented in order to make necessary revisions in the program as quickly and efficiently as possible. Periodic evaluations must also be conducted during the life of the innovation to assess its effectiveness over a prolonged period of time.

10. Summative evaluation of large scale projects must be built into the plan with appropriate levels of funding earmarked specifically for this function.

11. Historian and evaluation specialists should be included in the planning, implementation, and evaluation of the entire program from inception to conclusion in order to systematically collect, record, and evaluate program documentation.

At this point in this study the researcher has come full circle. This study of MPATI started with the researcher attempting to generate a list of relevant questions that

needed to be addressed in order to better understand the successes and failures of the Midwest Program on Airborne Television Instruction, a particular instructional innovation that was introduced into a number of existing educational institutions. The research revealed, by close examination of available historical documentation, a mixture of successes and failures on the part of the planners and those who attempted to implement the plans. The primary purpose of this study was three fold: (1) to provide a chronological narrative history of MPATI, (2) to provide analysis directed toward filling the void left by the absence of an overall evaluation component in the system, (3) and to use the historical record and analysis of the MPATI experience to better understand how to successfully initiate, develop and administer future innovations in education. The process of evaluation and assessment must always lead back to a modification of the system using newly acquired information to revise the questions to be asked and the procedures to be followed in an attempt to reexamine the process once again in order to make appropriate adjustments that help generate a greater success rate for the infusion of worthwhile innovations in instructional institutions.

As we continue to struggle with a multitude of seemingly overwhelming problems which face education in the 1990's and into the twenty-first century, it is appropriate to take a long, hard look backward to periods in our educational history when similar complicated issues frustrated earlier

educators. We must examine and learn from past mistakes and triumphs. Understanding the circumstances and historical consequences of the MPATI experience can assist current and future educational developers to make a contributions based upon a historical view which "allows for renewed attention to a problem and a line of solution which has been neglected for a time." (Meil 1964, 14). The "spiral phenomenon", supported by systematic historical research, can account for the fact that

> . . . proposals made later in educational history are usually much more refined and therefore each ascending loop in the spiral profits from the wisdom distilled from experience at both sides of the spiral . . . At each new point on the upward and outward spiral the concepts are clearer. . . the language of education more precise. (Meil 1964, 14)

Thus the probability of future successes in introducing innovations into education becomes significantly greater. It is this researcher's hope that this study of MPATI has made some small contribution to this end.

RECOMMENDATIONS FOR FUTURE RESEARCH

This study of MPATI leaves many important questions about this unique instructional program unanswered. Some directions for further research might include:

(1) An in depth study of the allocation and expenditure of financial resources provided to MPATI by the Ford Foundation during the "start up" phase of the program.

(2) An examination of the existing political and economic "power structure" of educational organizations in the

1960's and their impact on other innovative educational programs.

(3) An examination of opinions of school administrators and teachers concerning the contribution made by MPATI telecasts to classroom instruction.

(4) A study of procedures, rules, and events that guided the Ford Foundation in making its decision on how to fund MPATI and other innovative projects in the 1960's.

(5) A comprehensive examination of the impact of MPATI on the establishment of state ITV networks in the six state coverage area.

(6) Applying ad hoc learning design criteria to assess the effectiveness and relevancy of the instructional materials produced by MPATI.

SUMMARY

Michael L. Berger's educational change model was used by this researcher to evaluate MPATI. Planning, implementation, and evaluation are the three components of his model.

During the planning stage, two factors need to be considered. First of all various educational groups need to be included. MPATI did include many influential educational leaders, many of whom, it was hoped, had the political clout to aid MPATI. Unfortunately, not enough input from individual schools was included. Also, it is important to recognize when planning that people will often feel threatened by something they do not understand. MPATI was

sensitive to this and tried to provide information to school administrators, train teachers, and work with ground based ETV stations to extend ITV coverage, but their efforts fell short.

During the implementation stage, five factors need to be considered. It is important to increase the number of individuals who have a vested interest in a project. Although MPATI trained 6,000 teachers, it was not enough for the number of schools and students it hoped to involve. The training also must continue until the innovation is solidly incorporated into existing educational institution. MPATI was unable to sustain teacher training and research and development programs to improve the tape library for a long enough period. A third factor that needs to be established is a definite hierarchy which MPATI successfully developed. Many members of that hierarchy did all they could to clearly and powerfully state their opinions and communicated through the media, particularly the printed media, early in the program. However, chronic financial concerns undercut MPATI's ability to focus its continued attention on developing and implementing programs to further its original goals.

Finally, the evaluation stage is particularly important, and, unfortunately, one which MPATI had little success in carrying out for a variety of reasons. The major reason was financial; so much money went to supporting the aircraft division hardware that officials were forced to drastically

curtail evaluation. Although at the time most foundation spending required evaluation, the Ford Foundation never requested an evaluation and indeed did not want one even at the end of their financial support of the program.

Although MPATI neither completely failed nor triumphed, many important lessons can be learned from the MPATI experience. If Dr. Alice Meil's spiral phenomena is correct, then MPATI as well as other educational innovations must be studied to gain and upgrade the quality of education. The technology was too expensive for private and public schools to support alone. Federal and state governments have an obligation to fund and evaluate such programs in order to assure quality educational opportunities for the students of today and workers of tomorrow on which their future ultimately depends.

As a "high tech quick fix," the organization tried to solve too many educational problems. Too much emphasis was placed on hardware; not enough on developing materials and providing support. The organization was riddled with a myriad of financial problems: the FCC's denial of six UHF channels coupled with the rejection of John Ivey's proposed interstate compact discouraged educators from getting involved with MPATI when the future was uncertain. Increasing the fees instead of starting with the higher fee only added to the problems. The inability to penetrate the "power structure" or even to get support from fellow educators and potential allies further eroded their chances

for success. Many of those allies resented MPATI because they saw it as competitor for scarce funds and were envious of its early appearance of "wealth and high living." Finally, "pirating" became a problem which simply created more financial deficiencies.

MPATI made significant contributions to the development of instructional television in the 1960's. Among these were its success in promoting the "team concept," its production of the first "quality" ITV lessons, its encouragement of educators to use television as an enrichment tool, its efforts toward developing a viable UHF band, its stimulation of ITV in a six state region, and its provision of quality educational instruction to thousands of students who would not have received it. These contributions were stated repeatedly by not only supporters of MPATI but by critics as well.

A list of the factors which address the primary problems of planning, funding, working within a "power structure," support, publicity, and evaluation helped to bring this study full circle. The examination of MPATI historically helped provide the missing evaluation component.

Recommendations for further research which have been raised include questions about how financial resources were used, the impact of "power structure" on innovations, an examination of opinions of the educators involved in MPATI, a study of Ford Foundation's decision-making policies on how to fund innovative projects in the schools, a comprehensive

study of MPATI's impact on the establishment of state ITV networks, and assessing effectiveness and relevancy of MPATI's instructional materials.

Despite the demise of MPATI, the effort expended by the many individuals who worked with the MPATI organization serves as a beacon not just for instructional television but for education itself. It is only through experimentation and exploring new horizons that education can be inched forward, away from static complacency toward positive growth. It is only through systematic planning and evaluation that innovations become significant components of improved educational systems. It is only through understanding past experiences that confident strides toward future improvements can be made. The MPATI experience was a positive step toward creating a better educational future.

APPENDICES

APPENDIX A

APPENDIX A

MPATI TEACHERS

In the summer of 1960, fifteen television teachers attended a workshop at Purdue University. These teachers developed and prepared the first series of MPATI telecasts.

MARLENE BEIGEL

Academic Background

A.B. -- University of Cincinnati, magna cum laude, Phi Beta Kappa,
B.E. and M.Ed. - University of Cincinnati, attended N.S.F. Institute for Teachers of Math at University of Cincinnati, summer, 1959.

Teaching Experience

Taught math for two years at junior high schools in Cincinnati.

TV Experience

Taught grade 7 arithmetic course on TV for Cincinnati schools for two years.

JOHN W. BURNS

Academic Background

A.B. - Wayne State University
M.A. - Wayne State University
45 semester hours in field of education, 50 semester hours in fields of science.
Thesis topic: "Films and Filmstrips Contribute to the Development of Science Understandings at the Elementary Level."
Attended University of Michigan Biological Station during summer.

Teaching Experience

4 years teaching science grades 2-5.
4 years teaching science and social studies grades 6-8.
Taught summer schools and adult education courses (English to foreign born adults).

TV Experience

Telecast teacher in science (grade 5) for two years with Detroit project.
Attended TV workshops, including national workshop at Chapel Hill, presenting live telecast lessons at these workshops.
Consultant to Central Michigan project and member of visiting committee to Milwaukee project.

RITA CRISTE

Academic Background

A.B. from Chatham College, majoring in mathematics.
M.A. from Northwestern School of Speech, majoring in French and Speech.

Teaching Experience

10 years of high school teaching Latin, French, mathematics, and English. 20 years of teaching as special teacher of creative drama in Evanston Public Schools. For the last ten years, she held 3 positions: (1) Teaching at Northwestern in the areas of children's literature, creative drama, and children's theatre; (2) Director of children's theatre in Evanston for 10 years, and (3) Supervisor of drama instruction in the Evanston schools with a staff of 11 teachers.

TV Experience

In 1948, produced with Judith Waller a series of TV programs on children's drama. Her work in teaching Shakespeare to junior high school students in Evanston was featured in Dave Garroway's "Wide, Wide World" show. In 1959, presented a series of 20 programs on the "What's New?" series for WTTW.

ELIZABETH DABBS

Academic Background

3 years at John Herron Art School in Indianapolis. B.A. degree from Sioux Falls College. M.S. degree from Indiana University. Studied speech and TV two summers at Michigan State University.

Teaching Experience

Supervisor and teacher of art for a number of years in the following cities: Franklin, Indiana; Sioux Falls, South Dakota; Rochester, Indiana. Served as critic teacher at the laboratory school for Indiana University. Worked with Binney & Smith, Indiana, conducting in-service education art workshops of 15 hours length for teachers. Had conducted these workshops for over 18,000 teachers in Indiana, Ohio, Michigan, and West Virginia and in colleges during the past 13 years.

TV Experience

Was on WANE-TV, Ft. Wayne, twice a month. Conducted a series for the Hamilton County schools called Creative Art which was televised to the grades 4, 5 and 6 children in the greater Cincinnati area of WCET-TV.

JOHN E. DICKEY

Academic Background

A.B. and M.A. degrees with a major in history and minor in economics from the University of Kentucky. 1 1/2 years graduate study toward Ph.D. in history with political science as a minor field.

Teaching Experience

4 years as an elementary teacher. 11 years as a high school social studies teacher. 8 years as an administrator and social studies teacher in high school. 2 years as an instructor in American and World history at the college level.

TV Experience

Currently engaged in his second year as studio teacher of American history for the Kentuckiana Council for Educational Television.

LORETTA R. DOYLE

Academic Background

Graduate of National College of Education
B.A. and M.S. from Northwestern University in Evanston, Illinois. Took course in Children's Reading Problems at University of Chicago, 1959.

Took course in Contemporary Arts under sponsorship of National College of Education. This included eight weeks in Europe under the guidance of instructor Lloyd Cousins.

Teaching Experience

Taught for many years in the Evanston Public Schools.

Was a Supervisor of Social Studies in the elementary schools, Evanston.

Ten summers teaching in the Summer Demonstration School of Northwestern University.

Taught course in Elementary School Curriculum, 437, at National College of Education, 1959, (summer).

DOLORES DUDLEY

Academic Background

A.B. River College, Nashua, New Hampshire. Majored in voice and piano. Bachelor of Music Education from Lowell State TEachers College, Lowell, Massachusetts.
Westminster Choir College. Fred Waring Music Workshops.

Teaching Experience

Elementary music supervisor, grades 1-6 for 2 years at Tewksbury Public Schools, in Tewksbury, Massachusetts.

TV Experience

Taught since 1957 with TV project in Washington County, music for grades 1-3.

THAIS LINDSTROM

Academic Background

Comes from St. Petersburg, born of a Swedish father and Russian mother. Attended Lycee in France. Came to U.S. in 1927. Graduated from Hunter College, major in English. M.A. from U.C.L.A. in French. Ph.D. from Univeristy of Paris -- dissertation on relationships between French and Russian literature. Published book in France on the influence of Tolstoi on French literature.

Teaching Experience

Taught Russian while studying at U.C.L.A. 1952-1954. Taught Russian at Manhattan College 1954-55. Taught French at Queens College 1955-57. Organized Russian program at Montana State University (last state univeristy to be without Russian until she went there). Since 1957 - teaching Russian at Western Reserve.

TV Experience

Taught beginning Russian on TV for Western Reserve for past two years.

BENITO LUERAS

Academic Background

Elementary schools in Albuquerque, New Mexico. Served in Navy after one year of high school. Took high school correspondence courss in Navy. Finished high school at Oxford, Ohio. A.B. from Miami Univeristy, Oxford, Ohio. Majored in Spanish. M.A. from University of Michigan in Spanish. Has taken additional work in the field of education at the Univeristy of Miami.

Teaching Experience

Taught 5 years in elementary schools in Miami. Teacher of self-contained classroom. Taught one year at the high school. Teacher of English and Spanish. During same period prepared lessons in beginning Spanish for grades 4,5,and 6 for broadcast on FM radio to Dade County schools.

TV Experience

Taught 2 times a week on evening adult education TV

program for two years teaching beginning Spanish to adults. Taught for three years on daytime TV program presenting beginning Spanish to elementary schools in Dade County's national program. First year taught 4 lessons a day, 4 times a week.

MYLES PLATT

Academic Background

Ph.D. from University of Detroit, majors in political science and philosophy. Minors in English and Spanish. M.A. from Wayne State Univeristy. Major in Government. Completed all courses for Ph.D. at the University of Michigan in political science, dissertation to be finished and degree granted summer of 1960.

Teaching Experience

9 years of elementary and secondary school teaching in social studies. Part-time college teaching for 9 years at Wayne State University. 5 years of summer school teaching. Teacher of special abilities clases.

TV Experience

3 semesters of on-camera teaching giving daily lessons in World History.
2 semesters as a classroom viewing teacher in World History.

HELEN RAPP

Academic Background

B.A. - Indiana University - magna cum lauda - Phi Beta Kappa
M.A. - University of Mexico (19 months)

72 hours beyond her B.A.
42 at Mexico
14 in Education (including Guidance at Mexico City College)
6 at University of Wisconsin in Spanish (1958)
10 additional hours (1959) at University of Mexico

Teaching Experience

Practice teaching English in Mexico
Assisted in teaching English to foreign students during last semester at Indiana Univeristy
Taught at Drake University (1957-1959)
Beginning 2nd year - advanced grammar and Spanish literature
Purdue University (1959-?)
First and second year students

TV Experience

Been presenting Spanish lessons on Purdue closed circuit television since January, 1960, together with Mr. Ballou.

STEPHAN B. SMALLEY

Academic Background

Attended the University of Cincinnati and the Lane Theological Seminary, graduating with the degree of B.R.E. Graduate work at the University of Cincinnati to prepare for public school teaching.

Teaching Experience

Several years' work with young people n Cincinnati churches. 25 years' teaching in the Cincinnati Public School System.

TV Experience

Taught two years as TV teacher of biology for grade 9 for the Cincinnati Public Schools.

GERALDINE WORKMAN

Academic Background

B.S. in Education from Central Missouri State College. Has done 31 semester hours of graduate studies at the University of Colorado and at Kansas City University.

Teaching Experience

Seven years as Warrensburg, Missouri, High School. Eight

years with Kansas City, Missouri, schools.

TV Experience

Taught daily 30-minute lessons on World History to high school sophomores 1958-1959. Taught American History to high school juniors and seniors on TV 1959-60.

BARBARA YANOWSKI

Academic Background

B.A. - Fordham University, major in education, minor in radio. M.A. from University of Michigan, in radio and TV.

Teaching Experience

3 years as permanent teacher in New York City -- has taught grades 2, 5, and 6.

TV Experience

Has taught elementary science for four years.

ZELIK ZEFF

Academic Background

A.B. from Wayne State University, 1959. Major in French. Minor in English and Spanish. Native Frenchman, has traveled to Europe.

Teaching Experience

1959-60 school year is first year of teaching experience. Began his teaching career on television.

TV Experience

Teacher of Conversational French, a daily course for elementary school children at Detroit. Has been teaching since September, 1959. 90 half-hour lessons per semester. Third-grade level.

ADDITIONAL TEACHERS IN LATER SERIES

MARVIN BAKER

ARTHUR EASTMAN

SYLVIA HERRERA

OTTO F. MCCLINTICK

ADAH MINER

HELEN NEFKENS

BILL NIXON

JEROME M. SACHS

GERALDINE WELBOURNE (WORKMAN)

APPENDIX B

APPENDIX B

MPATI PRODUCED TELECOURSES

The eleven instructional television courses produced by the MPATI organization in 1960 included:

1. **THE WONDERFUL WORLD OF NUMBERS**
   Arithmetic for Grade Six (64 Lessons)
   Instructor: Marlene Beigel

2. **ADVENTURES IN ART**
   Art for Upper Elementary Grades 4-6 (32 Lessons)
   Instructor: Elizabeth Dabbs

3. **BONJOUR LES ENFANTS**
   Conversational French for Elementary Grades (64 Lessons)
   Instructor: Zelik Zeff

4. **SINGING, LISTENING, DOING**
   Music for Lower Elementary Grades 1-3 (64 Lessons)
   Instructor: Dolores Dudley

5. **MUSIC FOR YOU**
   Music for Upper Elementary Grades 4-6 (64 Lessons)
   Instructor: Dolores Dudley

6. **THE SCIENCE CORNER**
   Elementary Science for Grades 3 and 4 (64 Lessons)
   Instructor: Barbara Yanowski

7. **EXPLORING WITH SCIENCE**
   Elementary Science for Grades 5 and 6 (64 Lessons)
   Instructor: John Burns

8. **OUR NATION INDIVISIBLE**
   American Government and Civics (64 Lessons)
   Instructor: Myles M. Platt

9. **OUR ADVENTURE IN FREEDOM**
   American History for Senior High School (64 Lessons)
   Instructor: John E. Dickey

10. **OUR CHANGING WORLD**
    World History and Geography (64 Lessons)
    Instructor: Geraldine Workman

11. **INVESTIGATING THE WORLD OF SCIENCE**
    Junior High School Science (64 Lessons)
    Instructor: Stephan B. Smalley

ADDITIONAL MPATI PRODUCED COURSES IN LATER SERIES

1. **FREEDOM TO READ**
   Remedial Reading for Elementary and Junior High (16 Lessons)
   Instructor: Marvin Baker

2. **FROM FRANKLIN TO FROST**
   American Literature (64 Lessons)
   Instructor: Arthur Eastman

3. **HABLEMOS ESPANOL**
   Advanced Conversational Spanish for Grades 5 and 6 (64 Lessons)
   Instructor: Sylvia Herrera

4. **INITIAL TEACHING ALPHABET**
   Learning to Read for Kindergarten and Primary 1 (48 Lessons)
   Instructor: Otto F. McClintick

5. **LISTEN AND SAY**
   English Language Arts for the Primary Grades (32 Lessons)
   Instructor: Adah Miner

6. **ADELANTE AMIGOS**
   Spanish for Junior High School (128 Lessons)
   Instructor: Helen Nefkens

7. **SPACE AGE SCIENCE**
   Enrichment Program (32 Lessons)
   Instructor: Bill Nixon

8. **EXPLORING MATHEMATICS**
   Mathematics for Gifted Children (64 Lessons)
   Instructor Jerome M. Sachs

9. **OUR CHANGING WORLD**
   World History and Geography (128 Lessons)
   Instructor: Geraldine Welbourne

10. **OUR WORLD OF ECONOMICS**
    Consummer Economics for Junior High and High School (32 Lessons)
    Instructor: John L. Brooks

APPENDIX C

APPENDIX C

MPATI AREA COORDINATORS in the twenty universities who worked with area councils in given reception areas in the midwest.

Dr. Donald Barnes
BALL STATE TEACHERS COLLEGE

Mr. Fred Williams
BOWLING GREEN STATE UNIVERSITY

Dr. William R. Davenport
BUTLER UNIVERSITY

Dr. Urban H. Fleege
DEPAUL UNIVERSITY

Dr. Jane E. Grills
INDIANA STATE TEACHERS COLLEGE

Dr. Mendel Sherman
INDIANA UNIVERSITY

Dr. Jack Neil
MIAMI UNIVERSITY

Mr. O. E. Bissmeyer
UNIVERSITY OF KENTUCKY

Dr. J. J. Oppenheimer
UNIVERSITY OF LOUISVILLE

Dr. Edward Stasheff
UNIVERSITY OF MICHIGAN

Dr. James L. Page
MICHIGAN STATE UNIVERISTY

Mrs. Blanche E. Owens
NORTHERN ILLINOIS UNIVERSITY

Dr. Charles F. Hunter
NORTHWESTERN UNIVERSITY

Mr. Edward L. Doyle
NOTRE DAME UNIVERSITY

Dr. William H. Ewing
OHIO STATE UNIVERSITY

Dr. Daniel Tanner
PURDUE UNIVERSITY

Dr. Charles J. Mcintyre
UNIVERSITY OF ILLINOIS

Dr. Rolland L. Callaway
UNIVERSITY OF WISCONSIN-MILWAUKEE

Mr. John Barson
WAYNE STATE UNIVERSITY

Dr. Martin Cohen
WESTERN MICHIGAN UNIVERSITY

APPENDIX D

APPENDIX D

MPATI BOARD OF DIRECTORS 1959-1971

The following is a list of the members of the MPATI Board of Directors Inc. from 1962-1971.

Dr. John E.Ivey Chairman 1967-71

Dr. Arthur Amt	1965-66	Mr. Harold Armstrong	1966-67
Mr. Albert Avery	1966-67	Dr. Lester Ball	1964
Mr. Loren Briggs	1968-71	Dr. Samuel Brownell	1962-64
Dr. Carl Byerly	1967-68	Dr. Wayne Carle	1967-71
Mr. James Cherry	1962-63	Mr. Walker Cisler	1963-66
Mr. Brooks Courtright	1966-71	Mr. Howard Cromwell	1962-68
Mr. Fred Dale	1966-67	Mr. Robert Dalton	1967
Mr. Harry Davidson	1964-71	Dr. George W. Denmark	1962-63
Dr. Novice G. Fawcett	1962-64	Mr. Frank Fortelka	1962-66
Mr. Dallas Gardner	1969-71	Mr. Paul Garrison	1962-64
Dr. F. R. Geigle	1962-63	Mr. F.H. Gillespie	1962-66
Rev. William O. Goedert	1962-66	Mrs. Elaine Hawker	1966-67
Mr. William Hayt	1968-71	Mr. Lamar Hetrick	1964-66
Dr. Edward E. Holt	1963-64	Dr. Frederick Hovde	1963-66
Mr. Frank Hunter	1964	Mr. Paul Hydell	1966
Mr. Joshua Johnson	1969-71	Mr. Karl Kalp	1962-64
Dr. Alexander Kloster	1966	Mon William Lester	1966-71
Mr. Richard Lohman	1966-67	Mr. Wilbur Mater	1964
Mr. J. J. Maehling	1962-64	Mr. Harold Maurer	1966
Mr. Donald McAlvey	1967	Mr. Charles McCormick	1962-66
Dr. Charles McIntyre	1962-66	Dr. Daniel Moore	1966
Mr. John O'Neill	1968-71	Mr. Ray Page	1964-66
Mr. John Prasch	1962-71	Mr. Carl Riddle	1964
Dr. Dan Schafer	1962-66	Mr. David Shelby	1962-66
Mr. Robert Shultz	1968-71	Dr. George Smittle	1966
Dr. Harry Sparks	1964-66	Mr. Alton Stine	1962-71
Rev. Edward Taylor	1963-64	Mr. Jack Taylor	1963
Mr. Nathan Vance	1964-66	Mr. Richard Van Hoose	1962-71
Mr. Elmer Vruggink	1966	Dr. Benjamin Willis	1963-65
Dr. Franklin Walker	1969-70	Dr. Newman Walker	1968-71
Mr. Herschel West	1964-66	Mr. William Wilson	1963-66
Dr. Charles Wolfe	1964-66		

APPENDIX E

APPENDIX E

MPATI PERSONNEL
1959-1971

NAME	POSITION	YEAR
Sylvia Beaver-	Assistant Secretary of MPATI Inc.,	1965-68
Ben A. Bohnhorst-	Director of Educational Materials	1960-61
	Director of Professional Services	1961-62
	Acting Vice President	1963
	General Manager	1963-68
	Chairman of Membership Development Committee	1962-63
Howard Cromwell-	MPATI Board Member	1963
	President of MPATI Inc.	1969-71
	Vice Chairman of the MPATI Board of Directors	1968
Robert Crist-	Assistant Director of Professional Services	1960
Roger Doran-	Assistant Director of Public Information	1960
Fay Ebrite-	Assistant to the Treasurer	1966-71
William Fall-	Director of Operations and Maintence	1960-62
	Coordinator of Operations	1961-62
	Director of Broadcast Services	196?-64
	Deputy General Manager	1965-68
	General Manager	1968-69
	Vice President	1969-71
William Fagan-	Assistant Director of Technical Services	1960
	Assistant Director of Operations and Maintence	1961-71

John Glade-	Assistant Director of Course Development	1960-63
Jerry Glaub-	Asistant Director of Public Information	1960
Bryghte D. Godbolt-	Executive Vice President	1959-63
Leon Hibbs-	Director of Course Development	1960
	Associate Director of Educational Materials	1960
	Coordinator of Course Production	1961-62
John E. Ivey-	President of MPATI	1959-63
	Chairman of Board of MPATI	1963-71
	Chief Executive Officer	1965
Kay Jamison-	Assistant Director of Course Development	1962-65
Erling Jorgensen-	Director of Course Development	1962-65
Kalmar Stordahl-	Director of Research and Evaluation	1963-65
Robert Lucas-		1966
James Miles-	Director of Program Service	1960-61
	Director of Program Distribution	1961-62
Don L. Mahoney-	Director of Professional Service	1966-71
Jack R. Neil-	Director of Membership Service	1964-65
Paul Patton-	Director of Membership Service	1965
John Perry-	Washington Consultant	1962
DeWolf Schatzel-	Director of Engineering	1960-64
Warren Seibert-	Coordinator of Research and Evaluation	1961

Herman Shibler-	Consultant for Educational Programming	1960
	Director of Professional Services	1961-64
Robert Shultz-	Associate Director of the Educational Material Division	1960-61
	Assistant Director of Course Development	1962
Mary H. Smith-	Project Associate	1960
Michael Sovereign-	Asistant Director of Business Affairs	1960-62
	Assistant Treasurer	1960-65
Marie Stewart-	Office Manager	1960
R.B. Stewart-	MPATI Vice Chairman for Special Projects	1969
Charles Stamps-	Assistant Director of Course Development	1961-62
Lawrence Walz-	Secretary to the Council	1959-62
	Secretary to Council-Assistant to President	1960
	Secretary of MPATI Inc.	1969-63
Wayne Watson-	Consultant for Educational Programming, Indiana	
	Representative for MPATI	1960-65
	Assistant Director of Engineering	1960-62
	Associate Director of Program Services	1961
Lyndell Welbourne-	Assistant Director of Professional Services	1960-62
	Coordinator of Staff Services to Area Communities	1961
Robert Woerner-	Director of Business	1960-62
	Coordinator of Business Affairs	1961-62
	Secretary and Treasure of MPATI Inc.	1962-71

Raymond Wolf-	Assistant Director of Course Development	1960-62
	Assistant Director of Educational Materials	1961
Jack Worthington-	Director of Public Information	1960-61
	Assistant to Chairman and Secretary	1960-65
Donald Wylie-	Assistant Director of Course Development	1960-62
	Assistant Director of Educational Materials	

APPENDIX F

APPENDIX F

ADVISORY SERVICES TO MPATI

The Midwest Council for Airborne Television Instruction had the advisory services of numberous persons in 1959-1960, including:

Dr. A. D. Albright, School of Education, University of Kentucky, Lexington, Kentucky.

Cyril Braum, engineering consultant, Joint Council on Educational TV, Washington, D.C.

Dr. A. J. Brumbaugh, educational consultant, Clearwater, Florida.

Dr. Henry Chauncey, President, Educational Testing Service, Princeton, New Jersey.

Earl Cullum, Jr. consulting engineer, Dallas, Texas.

Peter Goldmark, President, CBS Laboratories, Stamford, Connecticut.

Richard B. Hull, Director of Radio-Television, Ohio State University, Columbus, Ohio.

James S. Miles, Director, WBAA, Purdue University, Lafayette, Indiana.

C. E. Nobles, Air-Arm Division, Westinghouse Electric Corporation, Baltimore, Maryland.

Robert Rippen, Producer, Continental Classroom, National Broadcasting Company, New York, New York.

Percy Russell, partner, Kirkland, Ellis, Hodson, Chaffetz and Masters, Washington, D.C.

Clarence Schoenfeld, Editor of extension services division, University of Wisconsin, Madison, Wisconsin.

Ralph Steetle, Executive Director, Joint Council on Educational Television, Washington, D.C.

R. B. Stewart, Vice President, Purdue University, Lafayette, Indiana.

Duane M. Weise, Chicago Educational Television Association, Chicago, Illinois.

John F. White, President, National Educational Television and Radio Center, New York, New York.

Dr. Kenneth Williams, President, Ocala Junior College, Ocala, Florida.

APPENDIX G

APPENDIX G

ORGANIZATIONS SUBMITTING REQUESTS FOR MPATI INC., ASSETS

The seven non-profit organizations who submitted requests for MPATI Inc., assets in December 1970 included:

Great Plains National Instructional Television Library

Jefferson County Schools (Kentucky)

Miami University (Oxford Ohio)

Milwaukee Area Technical College

National Instructional Television Library

Southern Educational Communication Association

University of Georgia

APPENDIX H

APPENDIX H

MPATI CHRONOLOGY

1944-1958

December 1944 --- Original conception of idea of airborne broadcasting.

August 1945 --- Airborne Television relay system patented. System called Stratovision by Westinghouse.

June 23, 1948 --- Republican National Convention in Philadelphia relayed to midwest.

October 11, 1948 --- Final game of World Series relayed to Midwest by system.

1948-1951 --- Coaxial interconnection coast to coast.

October 1958 --- Westinghouse engineers and Ford Foundation personnel resurrect idea for U.S education and underdeveloped countries.

1959

May 1, 1959--- Exploratory conference of 40 midwestern educators, financed by Fund for Advancement of Education, votes unanimious for approval; Purdue offers facilities.

August-September 1959 --- Timetable developed for Four Phase Outline for the Project.

October 15, 1959 --- Announcement of formation of Midwest Council on Airborne Television Instruction.

October 1959 --- Ford Foundation makes first grant, $4,500,000.

October 1959 --- Application made by Purdue Foundation for two UHF channel allocations.

November 24, 1959 --- First major Ford Foundation grant announced in the press.

December 23, 1959 --- Two UHF channels allocated by FCC to Purdue for MPATI experiment.(limit 10 years)

December 23, 1959 --- Teacher talent search initiated.

1960

January 1960 --- Curriculum Policy and Planning Committee appointed to advise MPATI

April 21, 1960 --- Area committee, Area Coordinators and resource institution system announced.

June 27, 1960 --- Start Summer Workshops for classroom teachers.

July 5, 1960 --- Airborne teachers assemble to plan production of courses.

September 16, 1960 --- Production Centers announced.

October 12, 1960 --- First videotaped lesson received and entered into MPATI library at Purdue.

1961

April 25, 1961 --- First aircraft delivered by Westinghouse. (five months late)

May 8, 1961 --- First telecasts made from MPATI aircraft.

May 15, 1961 --- Demonstration telecasts started in region.

June 19, 1961 --- Aircraft beams utilization materials to summer workshop for teachers.

September 11, 1961 --- First regularly scheduled school broadcasts.

1962

January 12, 1962 --- Not-for-profit corporation MPATI Inc. formed. MPATI gets second grant of $7.5 million from Ford to retire debts and provide operating expenses on a diminishing basis.

January 15, 1962 --- MPATI files petition with the FCC requesting additional channels.

March 29, 1962 --- Ford Foundation makes second grant. First installment of grant received.

May, 1962 --- End of "experimental period" (3 years).

July 1, 1962 --- Full control of Midwest Program on Airborne Television Instruction turned over to MPATI Inc. by the Purdue Research Foundation.

September 10, 1962 --- Start second year of regular telecasts. First year as membership corporation,(1100 members).

November 12, 1962 --- First annual meeting and election of MPATI, Inc. board of directors.

1963

January 15, 1963 --- MPATI files petition for six channels with FCC. (72, 74, 76, 78,80, and 82 in 850 megacycle range)

May, 1963 --- 1200 schools pay membership assessments ($1.00 per student)

July 1, 1963 --- Field associate system instituted.

September 9, 1963 --- Start of third year of regular telecast (1300 members)

October 24, 1963 --- FCC invites comments on six channel petition; Schools and colleges respond.

November 1963 --- NAEB files a proposed table assignment and reports the MPATI proposal would remove channels 66-83 from area.

1964

January 17, 1964 --- Special membership meeting in Chicago approves FCC petition plans.

March 23, 1964 --- Second annual meeting of members.

September 14, 1964 --- Start third year of telecasts (1850 members) 3/4 million students outside area 2-3 million in communicaties renting MPATI tapes for ground base use.

October 9, 1964 --- FCC hears oral arguments on petition.

1965

March 25, 1965 --- Third annual meeting of members.

June 30, 1965 --- FCC denies MPATI's request for channel allotment and offer six channels in the 2500 - 2690 megahertz band. UHF service continuation permitted through 1969-1970 school year.

July 23, 1965 --- MPATI files application with FCC for construction permits for six channels in ITFS.

July 26, 1965 --- Special MPATI membership meeting votes overwhelmingly (85%) to double the membership fees to $2.00 and continue building a six channel service.

September 13, 1965 --- Start of the fifth year of telecasts.

December 27, 1965 --- Kettering Foundation awards a $50,000 grant to be used for 2500 mhz feasibility study.

1966

January 1966 --- 1,608 schools enrolled 14,665 teachers 443,428 pupils using MPATI legally. Over 2000 lessons in MPATI Tape Library.

1967

December 18, 1967 --- Board of Directors and member schools authorize completion of 1967-68 broadcast year, liquidation of debts and sale of aircraft. Leasing and producing agency MPATI Inc. formed.

1968

May 1968 --- Airborne broadcasts terminated.

1969

1970

April 1970 --- MPATI INC. officials investigate the possibility of selling the corporations assets.

July 1970 --- MPATI president directed by MPATI Board of Directors to investigate giving assets to another non-profit corporation with similar objectives.

December 17, 1970 --- MPATI Executive Committee narrows field to three organizations to receive MPATI assets and video tapes.

1971

March 6, 1971 --- Presentation given by three organizations who want assets: Great Plains National Instructional Television Library (GPNITL), the National Instructional Television Center (NIT) and the Southern Educational Communications Association (SECA).

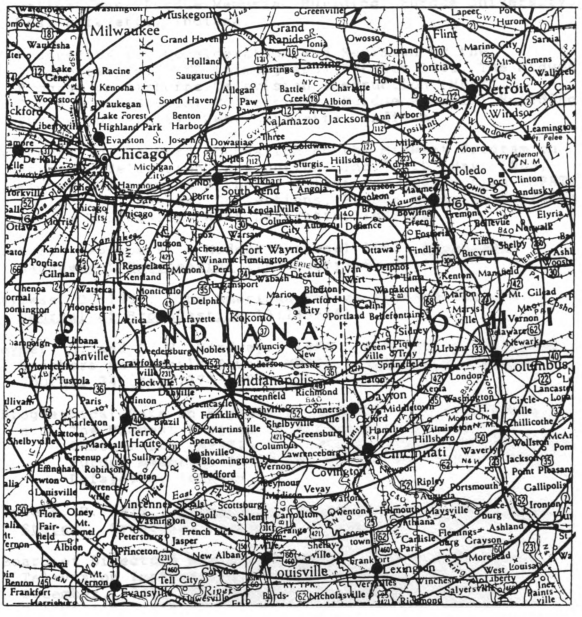
May 15, 1971 --- Membership ratifies choice of GPNITL getting assets and videotapes.

June 30, 1971 --- MPATI INC. dissolved and assets of $250,000 given to GPNITL.

APPENDIX I

APPENDIX I

The map below illustrates nineteen of the twenty resource centers set up by MPATI in 1961. Each concentric circle represents an increase of 25 miles in the radius of the broadcast area served by the MPATI aircraft flying lazy 8's 23,000 feet over Mt. Peller, Indiana.



LIST OF REFERENCES

"A Possible Next Step in Educational Television" TD (mimeograph) April 1959, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"A Prospectus for Consideration and Revision by the Incorporators." TD (mimeograph) October 1961, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"A Report to the Ford Foundation on the Midwest Program on Airborne Television Instruction, Inc." TD May, 1963, Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Airborne Repeaters: A Modest Proposal 1981. Broadcast Management Engineering 17(January):69-70.

Bayless, O. 1969. The American Forces Vietnam Network. Journal of Broadcasting 13:145-151.

Beymer, L. and C. W. Hardway. 1964. A Study of Attitudes of Teachers and Pupils Toward MPATI. Teacher's College Journal 34 (May):177-179.

"Biographical Data on Bryghte D. Godbold" TD (Photocopy) n.d. The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Blakely, R. 1979. Educational Broadcasting in the United States. Syracuse: Syracuse University Press.

"Board of Directors Meeting Midwest Program on Airborne Television Instruction, Inc." TD (mimeograph) 14 December, 1962, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Board of Directors Meeting Midwest Program on Airborne Television Instruction, Inc." TD (mimeograph) 3 June, 1963, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Board of Directors Meeting Midwest Program on Airborne Television Instruction, Inc." TD (mimeograph) 19 October, 1964, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Board of Directors Meeting Midwest Program on Airborne Television Instruction, Inc." TD (mimeograph) 10 February, 1970, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Bohnhorst, B. 1988. Interview by author. 17 May, East Lansing,Michigan. Tape recording.

Bohnhorst, B. 1990. Interview by author. 4 February, East Lansing, Michigan. Note on draft of dissertation.

Brademas, John. 1984. Reflections on Television: the Process,the Practices and the Problems. Paper presented at NYC/CBS Seminar. 14 August, at New York University, New York, New York.

Broadcasting Cable Yearbook '89. 1989. Washington D.C.: Broadcasting Publications Inc.

Bronson, V. 1964. Report of the NAEB Study on the Proposed Expansion of the Midwest Program on Airborne Television Instruction. Washington D.C.: National Association of Educational Broadcasters.

Bundy, M. 1967. Educational TV: A National Awakening. The Journal 26 (May-June):7.

Burke, R. C. 1971. Instructional Television Bold New Venture. Bloomington: Indiana University Press.

The Carnegie Commission. 1967 Public Television A Program for Action. New York: Bantam Books.

Chu, G. C., and W. Schramm. 1975. Learning From Television: What the Research Says. Washington D.C.: NAEB.

Church, R. L. and M. W. Sedlak. 1976. Education in the United States: An Interpretive History. New York: Teachers College Press.

Cohen, D. K. 1987. Educational Technology, Policy, and Practice. Educational Evaluation and Policy Analysis. 9 (Summer): 153-170.

"Comments for Quotations about Midwest Airborne Television Instruction Experiment." A news release for American papers TD (Photocopy) 16 October 1959, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Conant, J. B. 1959. The American High School Today. New York: McGraw-Hill Book Company, Inc.

Coombs, P.H. 1959. Memorandum from Coombs to Members and Advisors of the Governing Council for the Airborne Instructional Television Experiment. TMs (Photocopy) n.d. The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building,Purdue University, West Lafayette, Indiana.

Cremlin, L. 1961. The Transformation of the School. New York: Teachers College Press.

Cromwell, H. 1971. A Report to the Ford Foundation on MPATI, Inc. TM (Photocopy) The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Cuban, L. 1986. Teachers and Machines: The Classroom Use of Technology Since 1920. New York: Teachers College Press.

Danna, S. R. 1984. Remember MPATI? E-ITV, 96-99.

De Korte, D.A. 1967. Television in Education and Training. London: Philips Technical Library Cleaver-Hume Press LTD.

Dick, S. 1989. Midwest Program for Airborne Television Instruction: The Flying Classroom in an Age of Competing Technologies. TM (Photocopy) graduate student paper from private collection of Erling Jorgensen. Michigan State University. Lansing, Michigan.

Dirr, P. and R. Pedone 1978. A National Report on the Use of Instructional Television. AV Instruction (January): 19

"Executive Council Meeting Minutes." TD (Carbon Copy), 22-23 July 1959, The Midwest Program on Airborne Television

Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Federal Communications Commission, "Broadcast Action" Report No. 3463, Public Notice 82298. 1959. Washington, D.C.: GPO

Federal Register 1787 (FCC Sixth Report and Order) 1952. Washington, D.C.: GPO

Felsenthal, N. 1971. MPATI: A History (1959-1971). Educational Broadcast Review. 5, 6:36-44.

Ford Foundation Activities in Noncommercial Broadcasting. 1951-1976. 1976. New York: Ford Foundation.

Fritz, J. O. and B. G. Massialas. 1964. Instructional Television and the Classroom Teacher. AV Communication Review. 12:5-15.

Gagne, R. M. 1987. Instructional Technology: Foundations. New Jersey: Lawrence Erlbaum Associates, Publishers.

Garbarni, M. 1964. What MPATI Doesn't Have. Michigan Education Journal. 41:9-11.

Gay, L. R. 1976 Educational Research: Competencies for Analysis and Application. Columbus, Ohio: Charles E. Merril Publishing Co.

"General Plan of Administration and Operation of Midwest Airborne Experiment." TD (photocopy) n.d., Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Godbold, D. 1961. The Midwest Program On Airborne Television Instruction. Educational Screen and Audiovisual Guide. 40:15-17.

Golubchick, L. H. and B. Persky. 1975. Innovations in Education. Iowa: Kendall/Hunt Publishing Company

Gordon, N. 1970. Classroom Television: New Frontiers in ITV. New York: Hastings House Publishers.

Gordon, N. 1965. Educational Television. New York: The Center for Applied Research in Education, Inc.

Guba, G. 1961. The Proposed MPATI Research Study. Educational Research Bulletin. 40:189-191.

Halley, F. 1968. An Exploratory Study of the Termination of MPATI as an Airborne Television Transmission Service. TM (Photocopy) graduate student paper from the Private Collection of Erling Jorgensen, Michigan State University, Lansing, Michigan.

Havelock, R. G. 1973. The Change Agent's to Innovation in Education. New Jersey: Educational Technology Publications.

Hill, E. 1961. Education Out of the Blue. Saturday Evening Post (September):17-34

Hopkins, D. 1976. Educational Research: A Structure for Inquiry. Columbus: Bell and Howell Company.

International Seminar on Instructional Television. 1961. Purdue University: U.S. Department of Health, Education, and Welfare Office of Education.

Ivey, J. E. n.d. MPATI. Draft of Typed Manuscript. TM (Photocopy) The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Ivey, J.E. 1959. Television, Educational Quality, and Dollars. The Educational Record (January):53-61

Ivey, J.E. 1960a. Letter from J. Ivey to Constituent Agency Representatives and Board of Directors of Learning Resource Institute. TL (carbon copy) 30 June, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Ivey, J.E. 1960b. Letter to Members of the Midwest Council on Airborne Television Instruction." TL (Photocopy) 21 July, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Ivey, J.E. 1960c. Letter from J. Ivey to ETV Station Managers. TL (Photocopy) 4 April, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Ivey, J.E. 1960d. Matching Quantity with Quality in Education. Educational Research Bulletin. (September) 40:148-154.

Ivey, J.E. 1965. Educational Marriage of Airplane and Television. TMs (Photocopy) The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Ivey, J.E. 1988. Interview by author. 16 June, Chapel Hill, North Carolina. Tape Recording.

Ivey, J.E. and B.D. Godbold. 1961. MPATI: Breakthrough in Educational Television. Phi Delta Kappan. 42:192-196.

Ivey, J.E., J. Perry, and B. Bohnhorst. 1967. MPATI: Airborne Instructional Television in the United States. In New Educational Media in Action- Case Studies for Planners-III. New York: UNESCO.

Jorgensen, E. 1963. Midwest Project in Airborne Television Instruction. The NAEB Journal. 22:19-23.

Jorgensen, E. 1990. Telephone Interview with author. 1 March, East Lansing, Michigan.

Kilbourn, R. W. 1961. Airborne Television and the Technology of Education. AV Communication Review. 9:201-205.

Koenig, A.E. and R.B. Hill, eds. 1967. The Farther Vision: Educational Television Today. Madison: University of Wisconsin University Press.

Koontz, F.R. 1989. Critical Barriers to the Adoption of Instructional Television in Higher Education. Educational Technology 29 (April):45-48

"Learning Resources Institute" TD (Photocopy) n.d. The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Lipson, S. 1960. Airborne Television: an Educational Experiment. Educational Research Bulletin. 39:141-147.

List, C. 1971. Letter from C. List Assistant Program Officer to Paul Schupback, Director of the Great Plains National Instructional Television Library. TL (Photocopy) 12 May, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Great Plains National Instructional Television Library, University of Nebraska, Lincoln, Nebraska.

MacKenzie, G. 1970. Why a Strategy for Planned Curriculum Innovations? In Strategies for Planned Curriculum Innovation, ed. Marcella Lawler, 1-12. New York: Teachers College Press.

Meil, A. and D. Huebner. eds. 1964 Reassessment of the Curriculum. New York: Columbia University Press.

"Midwest Airborne Television Program Staff Meeting." TD (Photo-copy), 4 March 1960, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Midwest Program on Airborne Television Instruction." TD (Photocopy) 1964, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Midwest Council Meeting." TD (Photocopy) 16-17 September, 1960, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Midwest Program on Airborne Television Experiment: Background and Purpose." TD (Photocopy) 1959, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Midwest Program on Airborne Television Instruction." TD (Photocopy) 1964. The Midwest Program on Airborne Television (MPATI) Collection, Purdue Memorial Building, Purdue University, West Lafayette, Indiania.

"Midwest Program on Airborne Television Instruction: Background Information." TD (Photocopy) n.d., The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Midwest Program on Airborne Television Instruction Board of Directors Meeting." 25 January 1963, TD (Photocopy) The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Miles, J. 1959. Report on "Stratovision". TD (mimeograph) 28 April. The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Miller, J. P. and W. Seller. 1985. Curriculum Perspectives and Practice. New York: Longman.

"Minutes of Executive Committee and Financial Meetings Midwest West Program on Airborne Television Instruction, Inc." TD (mimeograph) 4 June 1962, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Minutes of Executive Committee Meetings Midwest West Program on Airborne Television Instruction, Inc." 30 April 1960, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Minutes of Executive Committee Meetings Midwest Program on Airborne Television Instruction, Inc." TD (mimeograph) 5 April 1962, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Minutes of Executive Committee Meeting Midwest Program on Airborne Television Instruction, Inc." TD (mimeograph) 1 March 1963a, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Minutes of Executive Committee Meeting Midwest Program on Airborne Television Instruction, Inc." TD (mimeograph) 17 July 1963b, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Minutes of Third Annual Meeting of Members Midwest Program on Airborne Television Instruction, Inc." TD (mimeograph) 26 March, 1965a, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Minutes of Executive Committee Meeting Midwest Program on Airborne Television Instruction, Inc." TD (mimeograph) 16 June 1965b, The Midwest Program on Airborne Television

Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Minutes of Executive Committee Meeting Midwest Program on Airborne Television Instruction, Inc." 30 November 1965c The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"Minutes of Executive Committee Meetings Midwest Program on Airborne Television Instruction, Inc." TD (mimeograph) 10 March 1968, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Morris, L.P. 1962. Ground-based vs. Air-based ETV. NAEB Journal. 21:34-43.

"MPATI, an Experiment in Education." TD (carbon copy) 1960 (?), The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"MPATI's Educational Program" TD May, 1963, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"MPATI, Inc. Executive Committee Meeting." TD (Photocopy) 11 October 1970, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Great Plains National Instructional Television Library, University of Nebraska, Lincoln, Nebraska.

"MPATI Meeting of Area Coordinators" TD (mimeograph) 6 August 1960, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"MPATI News." November-December 1963. The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"MPATI Inc.,President's Report" TD (mimeograph) November 1970, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"MPATI Staff Meeting." TD (mimeograph) 4 April, 1960, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"MPATI Staff Meeting." TD (Mimeograph) 8 April, 1960, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"The MPATI Story" TD (Photocopy) n.d. The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

"MPATI Workshop Report" TD (Photocopy) 1960. The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Mulford, H. B. 1964. Illinois in a Quandary Over ETV Network. American School Board Journal. 148:55.

Murphy, J. and R. Gross. 1966. Learning by TV. New York: Fund for the Advancement of Education.

Ohlman, H. 1971. Communication Media and Educational Technology: An Overview and Assessment with Reference to Communication Satellites. Washington D.C.: National Aeronautics and Space Administration.

The Oldest Established Permanent Flying School Television Station is Going Off the Air. 1968 Education Age, 4 (March-April), 8.

Owens, B. E. 1965. ETV Airborne TV: Five Year Appraisal. Nation's Schools. 76:58-59.

"Petition for Rule Making Submitted by the Midwest Program on Airborne Television Instruction, Inc." MPATI's Petition to the FCC. TD 15 January 1963. The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Platte, M. K. 1981. An Historical Study of Instructional Television in Ohio: MPATI to 1979. Ph.D. diss., Bowling Green State University, Ohio.

Powell, A. G. 1985. The Shopping Mall High School. Boston: Houghton Mifflin.

Results of Stratovision B-29 Flight Tests on Frequencies of I.M.C., 107.5 M.C. and 514 M.C. Westinghouse Electric Corporation (Air Arm Division). TD (Photocopy) 1947, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Report of the Federal Communications Commission: Fourteenth Annual Report. 1948 Washington, D.C.: GPO.

Robinson, T.P. 1959. Draft of a Letter from T. Robinson to Learning Resources Institute proposing an Agreement between Midwest Airborne Council and the Learning Resources Institute regarding production and distribution of taped courses, textbooks, and related material. TL (carbon copy) 28 December. The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Russell, P. 1964. Comments Submitted by the Midwest Program on Airborne Television Instruction, Inc. 3 April. The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Sachs, J. M. 1963. Airborne TV--Teaching and Evaluation. School Science and Math. 63:592-596.

Saettler, P. 1968. A History of Instructional Technology. New York: McGraw - Hill Book Company.

Scanlon, J.J. 1961. Classroom TV Enters a News Era. The Saturday Review 44 (May):50-53

Schaffarzick, J. and G. Sykes. 1979. Value Conflicts and Curriculum Issues. California: McCutchan Publishing Co.

Schramm, W., P. Coombs, H. Kahnert, and J. Lyle. 1967. Media: Memo to Educational Planners. UNESCO: Institute for Educational Planning.

Sherman, M. 1962. MPATI's Promise. A Summing Up. Phi Delta Kappan. 42:326-330.

Sherman, R. and R. Webb 1988. Qualitative Research in Education: Focus and Methods. New York: The Falmer Press.

Smith, M. H. 1961. Using Television in the Classroom. New York: McGraw - Hill Book Company, Inc.

Steiner, P. and H. Barnett 1964. Comments of Economic Consultants Peter O. Steiner and Harold J. Barnett on the MPATI Petition. The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Stratovision- ETV Specifies. 1959. Weekly Television Digest 15 (November), 24.

Stonesifer, R. J. 1960. The Seperation Needed Between ETV and ITV. AV Communication Review. 14:489-97.

Stoddard, A. 1959. Stoddard memorandum to P.H.Coombs. 17 August. The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Tanner, D. and L. Tanner. 1975. Curriculum Development: Theory into Practice. New York: Macmillan Publishing Company.

Tanner, D. and L. Tanner. 1987. Supervision in Education: Problems and Practices. New York: Macmillan Publishing Company.

Teaching by Television. 1961. New York: Ford Foundation.

Temkin, S. and M. Brown 1984. What Do Research Findings Say About Getting Innovations into Schools? Philadelphia: Research for Better Schools.

Tickton, S. G. ed. 1970. To Improve Learining, Vol. 1, An Evaluation Of Instructional Technology. New York: R. R. Bowker Company.

Tickton, S. G. 1959. "Notes on Meeting of the Equipment Task Force of Television Distribution Committee of Coordinating Committee." TD (Photocopy) 10 November, Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Tuchman, B. 1981. Practicing History. New York: Knopf Publishing Co."TV Educational Experiment to Use Stratovision." Westinghouse News Release. TD (Photocopy) 16 October 1959, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Vath, W. R. 1961. TV School in the Sky: A $7-Million Experiment. Today's Health. 39:36-39.

Walczak, R. C. 1965. A New Frontier for ETV. Ohio Schools. 43:26-27.

"Westinghouse News Release.: Westinghouse Public Relations." TD (Photocopy) 16 October 1959, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Wood, D. N., and D. G. Wylie. 1977. Educational Telecommunications. Belmont, California: Wadsworth Publishing Company.

"Workshop Report." TD (Mimeograph) August 1960, The Midwest Program on Airborne Television Instruction (MPATI) Collection, Special Collections, Purdue Memorial Building, Purdue University, West Lafayette, Indiana.

Wylie, D. G. 1964. Twenty Years of Airborne TV. NAEB Journal. 14:70-76.