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ABSTRACT

The purpose of this thesis is to assess the potential for the educational use of cable television, note representative experiments with the medium, and project future trends. A single cable television system in Marin County, California was chosen as a focus for these observations. Literature review and personal interview are the primary techniques of this analysis. The national regulatory background to and educational experience with the cable television medium are documented. A history of cable television in Marin County is constructed; and the experience of Marin educators with television generally and cable television specifically are recorded. The major findings indicate that there will not be much use of cable television by Marin educators in the near future. The level of interest in the subject among educators is not great, even though Marin County would appear to be hospitable to the educational use of cable. (Author)

# THE POTENTIAL FOR EDUCATIONAL ACCESS TO CABLE TELEVISION IN MARIN COUNTY

A thesis submitted to the faculty of
San Francisco State University
in partial fulfillment of the
requirements for the
degree
Master of Arts



by

MICHAEL J. SALES

San Francisco, California

July, 1976

CERTIFICATION OF APPROVAL

I certify that I have read THE POTENTIAL FOR EDUCATIONAL ACCESS TO CABLE TELEVISION IN MARIN COUNTY by Michael J. Sales, and that in my opinion this work meets the criteria for approving a thesis submitted in partial fulfillment of requirements for the Master of Arts degree at San Francisco State University.

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# THE POTENTIAL FOR EDUCATIONAL ACCESS TO CABLE TELEVISION IN MARIN COUNTY

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1976

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The major findings indicate that there will not be much use of cable television by Marin educators in the near future. The level of interest in the subject among educators is not great, even though Marin County would appear to be hospitable to the educational use of cable. The local cable operator is disinterested in the subject. Only a marginally funded community video access group and a single high school teacher have actively sought access for education.

## ACKNOWLEDGEMENTS

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## INTRODUCTION

### The Need for this Study

The cable television industry has undergone a dramatic change during the last decade. Infused with large amounts of new capital from major corporate sources, an impressive urban enterprise with important social implications has sprung from some humble beginnings in the rural sections of Pennsylvania and Oregon.[1]

Teleprompter Corporation, for example, the nation's largest cable operator with approximately 1,070,000 subscribers in thirty-nine states, is a major investment holding of the Howard Hughes financial empire. Hughes Aircraft acquired a forty-nine percent interest in the stock of Teleprompter Manhattan CATV Corporation in June, 1966 and in February, 1972 Teleprompter and Hughes announced that they had obtained a $30,000,000 Euro-dollar financing of their jointly owned cable systems in New York and Los Angeles.[2]

Viacom International, another of the country's top ten cable operators with systems in Northern California, Long Island, and

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[1] For documentation of CATV's evolution see Mary Alice Mayer Phillips, CATV: A History of Community Antenna Television (Evanston: Northwestern University Press, 1972).

[2] Moody's Industrial Manual, Volume II (New York: Moody's Investment Service, 1974), p. 3361.

elsewhere, was originally incorporated by the Columbia Broadcasting System in August, 1970. In June, 1971, pursuant to a Federal Communications Commission Order, CBS "spun-off" Viacom on the basis of one share of Viacom for every seven shares of CBS.[3]

In the years since 1965, cable has become a lot more than big business; it has generated a great deal of interest among a number of socially concerned individuals and institutions who would like to see cable's great channel capacity and its potential for bi-directional telecommunications applied to public service objectives. Many early observers indicated how the medium of cable television could bring about enormous changes in local and national political institutions, in the access to media by the public at large, and in the level and quality of information available generally.[4]

Several ambitious and many small-scale experiments have been undertaken by communities seeking to tap this predicted capacity for constructive social change. New York City, Dayton, Ohio, Minneapolis-St. Paul, and Palo Alto, California, among others, have spent substantial sums of money and energy in studying the problems and opportunities presented by cable television.[5]

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[3] Moody's, p. 2397.

[4] Representative studies of this kind include: On the Cable: The Television of Abundance. Report of the Sloan Commission on Cable Communications (New York: McGraw-Hill, 1971); Ralph Lee Smith, The Wired Nation. Cable TV: The Electronic Communications Highway (New York: Harper and Row, 1972); Amitai Etzioni, MINERVA: A Study in Participatory Technology (New York: Center for Policy Research).

[5] See Cable Television in Detroit: A Study in Urban Communications (Detroit: Detroit Cable TV Study Committee, 1972); Leland

These studies either contributed to or resulted from the 1972 Federal Communications Commission's Cable Television Report and Order which seemed to formalize the ground rules governing the public service usage of, for the most part, privately owned cable television systems.[6]

Although these rules have undergone and are at this time experiencing substantial revision since their formulation in the Spring of 1972, they established the basis parameters delimiting the public service cable television debate.

Section 76.215 of the FCC 1972 Cable Television Service Rules and Regulations, detailing minimum channel capacity and the provision of access channels in the nation's "top 100 television markets," calls for:

1. The provision of at least 120 MHz of bandwidth (the equivalent of 20 television broadcast channels) by each cable system operating in the market;
2. The capacity for non-voice return communications;
3. A specially designated, non-commercial public access channel;
4. A specially designated channel for local government uses;
5. Specially designated channels for leased services;
6. A specially designated channel for use by local educational authorities.[7]

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Johnson and others, Cable Television in the Dayton-Miami Valley: Basic Report (Santa Monica: Rand, 1972); Gutenberg II: Volume I: A Cable Television System for Palo Alto (Stanford: Stanford University, 1972).

[6] Federal Communications Commission, Cable Television Service Rules and Regulations in The Cabinet Committee on Cable Communications, Cable: Report to the President (Washington: Government Printing Office, 1974), Appendix, pp. 73-122.

[7] Ibid., p. 107.

As we shall see, this last provision was the result of an intense lobbying effort by a variety of educational associations, such as the Joint Council on Educational Telecommunications, the National Education Association, and the Association for Educational Communications and Technology, to insure access to the cable by traditional educational institutions.

How well have educators responded to this opportunity? Given the experience of "educational access" (the use of community cable television systems by educational institutions) to date, what is the potential for future developments in this field? This is the dominant question this thesis addresses. It does so by focusing on the status of educational access to cable television in one particular section of the United States: Marin County, California.

The State of the Cable in Marin County

Marin County is an appropriate focus for this study. Located immediately north of the City of San Francisco, most of Marin falls into the thirty-five mile radius from the FCC-designated central San Francisco reference point which comprises the nation's seventh largest television market.[8] The hilly terrain that characterizes this suburban/rural county interferes with reception of television broadcast signals from San Francisco and Oakland. (Marin has no local broadcast television station.) Marinites were early supporters of cable television distribution systems. At present some sections of the county are over

[8] Ibid., p. 90.

sixty percent "penetrated," i.e., sixty percent of the homes passed by the cable system are actually attached to it.

The three cable companies operating in this county of 201,000 people serve approximately 49,100 subscribers.[9] Within the last year, the largest of the three, Tele-Vue of Marin with approximately 40,000 subscribers, has sought a system-wide increase in its rate structure and renegotiation of its franchise terms from a variety of county and municipal agencies. In return for these rate increases, Tele-Vue has agreed to offer a greatly augmented level of community service that includes an effort to work closely with and fund efforts by local educators to utilize its cable system.

This study will identify those public educational agencies in Marin who could potentially benefit from the opportunity presented by Tele-Vue's willingness to support a higher level of public service. The contribution to educational access by local video groups already active in producing and distributing informational and cultural programming will also be evaluated.

What knowledge do Marin educators have about cable television generally and their own Marin system in specific? How well can we expect local educational agencies to work together around cable technology issues? How extensive is Marin's educational television plant?

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[9] The three cable systems with their approximate number of subscribers are:

| | |
|---|---|
| Tele-Vue of Marin | 40,000 |
| Liberty Cable of Novato | 8,500 |
| South Sausalito Cable | 600 |

Could Marin County's educational institutions create a substantial stream of programming for an educational access channel? What financial supports are given to local educators who want to create video productions for their curricula and/or cable distribution? How much interest has the local cable system shown in the implementation of educational access to its system? What has been the impact of local video groups upon education's plan to use the cable?

These specific questions will be answered for Marin County in the hope that they are relevant to other situations in the United States where similar conditions prevail.

## THE PROBLEM

The questions posed in the preceding section lend themselves to a problem statement composed of three interrelated steps:

1. Identify those educational objectives which can be uniquely served by cable technology.
2. Review these potentials in the specific Marin County situation.
3. Predict the future development of educational access to cable in Marin County.

## DELIMITATIONS

### Area Studied

The area comprising Marin County's largest cable television system, Tele-Vue of Marin, will be the sole focus of this study. This cable operator offers cable service to subscribers in San Rafael, Larkspur, Corte Madera, Mill Valley, Tiburon, Belvedere, Ross, Kentfield,

San Anselmo, Fairfax, Lagunitas, Marinwood, Forest Knolls, and some of the unincorporated sections of central and southern Marin. It does not provide service to western Marin, Novato, South Sausalito, and non-incorporated areas in northern Marin.

Types of Institutions

Only the potential uses of public, accredited educational institutions will be studied. Non-profit organizations and individuals with educational objectives, private educational institutions, and commercial trade schools are not included.

There is one exception to this limitation: the activities of Marin Community Video, a local, non-profit corporation dedicated to "public access" television will be closely reviewed.

## METHOD

The method used in this study comprises three steps:

1. Gather and review major research and other pertinent materials relating to the utilization of cable television systems for locally administered educational programming.
2. Interview educators and others who impinge upon cable developments in Marin County.
3. Organize this material to predict the present potential and future evolution of educational access to cable television in Marin County.

Content of Chapters

This introductory chapter has been devoted to a general discussion of the problem and the methods that will be used to analyze it.

Chapter 2 traces the regulatory background of educational

access from the emergence of the cable industry in the early 1950's to the publication of the Federal Communications Commission's 1972 rules. Chapter 3 surveys the educational potentials that have been associated with cable technology and the experiments that have been conducted throughout the United States in an attempt to actualize these possibilities.

Chapter 4 focuses on Marin County—its physical, economic, and cultural context, the evolution of cable television within its boundaries, and the uses of television by its educational institutions. Chapter 5 relates those present and planned educational uses of cable television to the categories of activities taking place nationally defined in Chapter 3. Chapter 6 summarizes the findings of this study and makes some specific predictions of the future of educational access in Marin County.

## Chapter 2

## REGULATORY BACKGROUND TO EDUCATIONAL ACCESS

### Introduction

The same forces which contributed to the evolution of educational television generally are also at work in the arguments for educational access to cable television. Martin Maloney notes that after the Second World War, "the American educational system found itself bracketed between the population explosion and the 'knowledge explosion . . . .'"[1] No longer able to meet the responsibilities imposed upon it by traditional means, education has increasingly been forced to turn to electronic media as "a way of extending education . . . spreading scarce teaching talent."[2]

The positive impact of the extension of education through television is well documented. The medium brings

> . . . new information and different ideas. It exposes audiences to other ways of doing things, to places and peoples previously unknown, to differing life styles, and to differing values . . . . The medium of television presents models in action, provides slices of life, brings gifted personalities as well as scarce equipment and rare artifacts directly to the learner. It breaks down the traditional isolation of the classroom.[3]

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[1] Martin Maloney, "A Philosophy of Educational Television," The Farther Vision: Educational Television Today, ed. Allen Koenig and Ruane Hill (Madison: The University of Wisconsin Press, 1969), p. 12.

[2] Ibid.

[3] I. Keith Tyler, "Opportunity and Responsibility in Educational Broadcasting," Educational Broadcasting Review, 7:87, April, 1973.

Cable television seems to do all that traditional broadcast television can do, and more. There are several specific benefits of cable television which are of particular interest in education settings:

1. It is more flexible than broadcast television;
2. It allows for a local focus which is not currently available to broadcasters;
3. It is substantially less expensive than broadcast television;
4. It can accommodate interactive services.

This chapter will detail the specifics of these potential benefits by reviewing the theoretical and experiential data that has been developed on this subject over the period of the last twenty years. This information will be placed within the historical context of education's continuing interest in cable television.

The Medium's Message: Access

Cable television was a rural response to the urban phenomenon of early television. Unable to receive the television signals that would make people want to buy television sets, local television receiver retailers set up antennae on local hilltops to intercept and amplify distant television signals. This information was then distributed via cables to local residents who subscribed to the merchants' service.[4]

Technological innovation led to the development of the coaxial

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[4] Mary A. Phillips, CATV: A History of Community Antenna Television (Evanston: Northwestern University Press, 1972), pp. 3-4.

cable for the distribution of these signals. This cable is capable of accommodating all frequencies between forty million and three hundred million cycles per second.[5] Since a television signal requires only six MHz of bandwidth, conservative estimates, which consider technical limitations, indicate that around forty is the upper limit on video channel capacity for coaxial cable.[6]

Technical strictures confine the number of broadcast channels that can transmit within any geographic area. The FCC has developed technical standards which are meant to keep any television broadcasting facility from transmitting a signal that interferes with another designated channel.[7, 8] These rules, in conjunction with FCC rules that define "program exclusivity" rights of local and regional broadcast stations,[9, 10] have created a condition of excess channel capacity on most cable systems.

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[5] On the Cable: The Television of Abundance, Report of the Sloan Commission on Cable Communications (New York: McGraw-Hill, 1971) p. 12.

[6] Richard Veith, A Survey of Two-Way Cable Television Systems: Field Experiments and Pilot Programs (unpublished Master's Thesis, San Francisco State University, 1973), p. 10.

[7] Walter Emery, Broadcasting and Government: Responsibilities and Regulations (rev. ed.; East Lansing: Michigan State University Press, 1971), pp. 154-55.

[8] "CPB revives idea of low-power V's," Broadcasting, January 19, 1976, pp. 25-26.

[9] U.S., Federal Communications Commission, Rules and Regulations, Part 76: Cable Television Service in Cable: Report to the President (Washington: Government Printing Office, 1974), p. 99.

[10] Phillips, pp. 66-91.

Excess capacity arises in two ways. Either the cable system has more channel space than broadcast stations available for transmission, as in the case of San Francisco's Cablevision where we find allocation for twenty-seven channels with only seventeen stations actually carried. Or a cable system's channel capacity will be filled, but much of the material carried will be duplicated; i.e., two or more stations will be affiliated with the same network and carry its programming at the same time. This is the situation in Tele-Vue's Marin system with three ABC affiliates, two NBC affiliates, and two CBS affiliates on a twelve channel system.

In the first instance, channels are going unused; in the second much of the same information is repeated. In either case, there is an opportunity to use some of the bandwidth for non-broadcast purposes.

These non-broadcast uses of cable television systems began to spring up early in the history of CATV. An interview panel show with local dignitaries in Pottsville, Pennsylvania, in 1951, appears to be the first "local origination" program transmitted closed-circuit by a cable system.[11] This kind of cable use was an organic outgrowth of the ownership model that characterized the early cable industry. Most of these rural operations were owned by local citizens who were predisposed to accommodate their long-time friends and neighbors.

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[11] Ibid., p. 43.

## Federal Regulations and Local Origination

Local origination, or rather the lack of it, became one of the several complex issues which led to a growth of federal regulatory concern with the emerging cable industry.

The original Allocation Program developed by the Federal Communications Commission in 1948 envisioned at least one VHF Television channel in each of 340 cities.[12] This division of the airwaves was intended to lead to full television service throughout the United States and to avoid the kind of anarchical frequency interference which had plagued the early days of radio.

Unfortunately these standards were based on engineering computations that wrongly prediced that television signals would be limited to a thirty-five mile radius from their point of origination. Subsequent experience demonstrated that these estimates were inaccurate and that the original allocation plan had placed the stations too closely together. As a result of these miscalculations, the Commission was forced to declare a "freeze" on all new television applications until a new allocation table could be developed.[13]

There was no equivalent freeze on the demand for television sets, however. By 1952, the year the application freeze was lifted, almost fifty percent of the homes in the United States were equipped

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[12] U.S., FCC, Allocation of Television Channels: Notice of Rule Making, Docket nos. 8736, 8795, 13 Fed. Reg. 2629 (May 5, 1948).

[13] U.S., FCC, Order, Docket nos. 8975, 8736, 13 Fed. Reg. 5860 (September 30, 1948).

with sets.[14] Many of these sets were distributed outside of metropolitan areas into rural locales that had few or no television stations of their own.

It was in this environment that cable television first developed, and first caught the attention of federal regulatory bodies. Cable systems imported the distant metropolitan station signals into what was largely a television vacuum. In so doing, however, it was felt that cable was imposing a heavy negative impact upon the rural broadcast entrepreneur and upon the federal government's national television policy.

This policy, as enunciated by the United States Senate Committee on Interstate and Foreign Commerce and codified by the Commission's Sixth Report and Order (1952),[15, 16] endorsed the idea of at least one local broadcast station to each community.

Many of the smaller stations felt that the emerging CATV industry represented a threat to their economic security. Cable systems, they argued, imported distant signals at no additional cost to the advertisers on those stations, thereby reducing the potential revenue base available to the local broadcaster.[17]

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[14] The New York Times Encyclopedic Almanac, 1970, ed. Seymour Kurtz (New York: New York Times, 1970), p. 425.

[15] U.S., FCC, Sixth Report and Order, Docket no. 8736, 17 Fed. Reg. 3905-4100 (May 2, 1952).

[16] The Communications Act of 1934, sec. 307 (b), 47 U.S.C. (1934).

[17] Phillips, p. 51.

A complaint was filed with the FCC on the basis of this "economic impact" argument in 1958. The complainants requested that:

> the Commission exercise jurisdiction over CATV systems as communications common carriers and that it formulate policies to be used as guides in determining under what circumstances . . . CATV systems should be authorized to operate as communications common carriers . . . .[18]

Although the Commission did not agree with the broadcaster's "common carrier" line of reasoning, this case, nevertheless, set the stage for further evolution of the cable debate.

In December of that same year, 1958, a blistering attack on the new industry was prepared by Kenneth A. Cox, later to become an FCC Commissioner, for the Senate's inquiry into television service for smaller communities. The Cox Report, as this study came to be known, is of special interest to our focus on the educational uses of cable, because Cox condemned CATV for <u>not</u> engaging in local production. He reasoned that, since most cable systems did not house production facilities while local broadcasters were required to meet local needs:

> a CATV system cannot cater to local preferences in programming, cannot serve local merchants, cannot provide a local news and weather service, cannot promote local civic and charitable enterprises, and cannot furnish a forum for discussion of local problems. Instead, it repeats the local programming designed for another community, the advertising of businessmen in that community and the news, public service announcements and political and other discussions aimed at the residents in that other community . . . resulting in a parody of local

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[18] Ibid.

service.[19]

These issues raised in 1958 culminated in a series of FCC decisions which were affirmed by the courts that gave the Commission an important degree of regulatory control over cable television. The first of these came in 1962 with the Carter Mountain Transmission case. It established that the FCC could

> lawfully deny microwave relay applications to serve CATV systems if existing TV stations—and thus the public interest—would be injured by increased competition from such additional facilities.[20]

This decision was followed by a First and Second Report and Order which formalized the Commission's regulatory authority over CATV's using non-microwave transmission facilities as well as program exclusivity provisions which were expected to protect the local broadcaster from adverse economic impact.[21]

In a June, 1968, decision, Midwest Television, Inc. v. Mission Cable TV, Inc., Southwestern Cable Co., et al, the Commission endorsed local origination as

> a nonharmful diversification of sources of local viewpoints . . . consistent with its prior determination that the public interest is served by encouraging CATV systems to act as

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[19] U.S., FCC, The Television Inquiry: The Problem of Television Service for Smaller Communities, prepared for the Senate Committee on Interstate and Foreign Commerce by Kenneth A. Cox (Washington: Government Printing Office, 1959) in Phillips, pp. 53-54.

[20] Frank Kahn, ed., Documents of American Broadcasting (2d. ed.; New York: Appleton-Century-Crofts, 1973), pp. 564-5.

[21] Phillips, pp. 57-9, 66-92.

additional outlets for community self-expression.[22]

In its December 13, 1968 Notice of Proposed Rule Making and Notice of Inquiry, the Commission proposed that an inquiry be held that would specifically deal with the issue of CATV program origination. The Commission proposed that cable systems be required to originate programming in exchange for the right to import distant signals.[23] These proposals were reaffirmed by the Commission in its 1969 First Report and Order which required all systems with 3,500 or more subscribers to originate local programming "to a significant extent." To accomplish this objective, the Commission asked all affected cable companies to purchase some kind of video cablecasting system for the production of local live and videotaped programming.[24]

The provisions of this Report and Order were successfully challenged by Midwest Video in the Court of Appeals for the Eighth Circuit at St. Louis in 1971.[25] The decision of the Circuit Court was overturned by the United States Supreme Court on appeal by the FCC. In this June 7, 1972 decision, the court concluded that the origination requirement "is within the FCC's statutory authority

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[22] Midwest Television, Inc. v. Mission Cable TV, Inc., Southwestern Cable Co., et al., 13 Federal Communications Commission Reports, 2d Series, 478.

[23] U.S., FCC, Notice of Proposed Rule Making and Notice of Inquiry, 33 Fed. Reg. 19028 (December 13, 1968).

[24] Phillips, pp. 123-26.

[25] Ibid., pp. 128-29.

to regulate CATV."[26]

Educational institutions played a very important role in bringing about the federal regulation of cable program origination and the related access provisions pronounced in the Commission's 1972 Report and Order. The evolution of educational access to cable television as a federal mandate is the subject of our next section.

The Emergence of Educational Access

Although we can assume that local educational institutions made use of those cablecasting facilities which were irregularly made available to them in the early days of CATV, the first documented evidence of such use is in the 1967 Senate Subcommittee on Communications Hearings on the Public Television Act of 1967. The National Cable Television Association submitted the results of a survey it had conducted on "CATV as an Investor of Education" to the subcommittee. Moab, Utah is mentioned as the first cable system to initiate educational access on a regular basis to the local high school in 1960.[27]

Initial attitudes toward cable television by educators were mixed. For example, Phillips reports that educational television

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[26]Steven Rivkin, Cable Television: A Guide to Federal Regulations, Rand Cable Television Series (New York: Crane-Russak, 1974), p. 239.

[27]U.S. Congress, Senate, Subcommittee on Communications, Committee on Commerce, The Public Television Act of 1967, Hearing, 90th Congress, 2d Sess. (Washington: Government Printing Office, 1967) pp. 678-81.

associations,

> vigorously insisted that local ETV stations . . . have an even greater need for nonduplication and interim protection (from signal importation) because the entry of distant ETV programs through the medium of CATV undermines local interest and local financial support which are essential to the existence of non-commercial ETV. The ETV groups also pointed out, as a fact of business life, that if CATV imports outside educational programs, local businesses and local residents will lack incentive to support the local ETV station, because obviously they will feel that payment is being duplicated: once by subscription for CATV, and again by contribution to the local ETV station.[28]

This argument was accepted by the Federal Communications Commission which in its 1966 Second Report and Order on cable

> . . . determined that a CATV system proposing to bring in an ETV signal from outside the area must give notice of its intent to do so to the local superintendent of schools and to the state and local ETV agencies . . . . Where local ETV is a reasonable prospect, the Commission, on objection from the local school authorities, normally would disapprove importation of the outside ETV signal in the absence of a showing that this would not be detrimental to the initial establishment or subsequent maintenance of a local ETV station.[29]

Oddly enough, an article appeared two years earlier in the official organ of the country's most important education television association, the National Association of Educational Broadcasters, extolling the virtues of the ETV-CATV connection. This article pointed out that the National Cable Television Association and local cable operators had largely taken the initiative in assuring the distribution of educational broadcasting signals over their systems. The National Cable Television Association's Educational Television Policy Committee published a pamphlet entitled "Guidelines Concerning the

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[28] Phillips, pp. 83-84. [29] Ibid., p. 84.

Responsibilities of the Community Antenna Television Industry in Education" that expressed the desire of the CATV industry "to serve the educational needs of the communities in which CATV systems are located and urges the member systems to provide coverage to the schools in their service areas."[30]

The article mentions that while the 1200 cable systems in operation at that time served only two percent of the nation's TV homes, many of these systems were located in areas where television reception is most difficult, implying that even this small amount of distribution provided a significant service to educators.

The article further states that it was inevitable that "most of the existing educational television stations, as well as just about all of those that will come into being, will be operated by or largely financed by public school systems."

> The schools cannot afford to fail to make use of the economies inherent in the use of television facilities nor deprive their students of the improvements in teaching which can be made by using television to multiply the effectiveness of really outstanding teachers.[31]

The article concludes that the schools will turn more and more to the closed-circuit uses of television for district-wide interconnection through cable television.[32]

Certainly there seems to have been some confusion on the issue of ETV signal importation. This controversy took a new direction in

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[30] Loren Stone, "Community Antenna Television: Its Role in ETV," The NAEB Journal, March-April, 1964, p. 47.

[31] Ibid., p. 48.

[32] Ibid., p. 49.

the FCC's 1972 Report and Order on cable television service which saw the Commission endorsing

> the widest possible dissemination of educational and public television programming . . . . The rules require cable systems to carry, on request, all educational stations within 35 miles and those placing a Grade B contour over the cable community . . . . We do not anticipate precluding carriage of State-operated educational stations in the same State as the cable community.[33]

While educators seem to have had misgivings about the impact of CATV systems on existing educational broadcasting facilities, their attitude toward local origination of educational programming appears to have been wholeheartedly enthusiastic.

The historical background of these developments is very sketchy, but it appears that prior to 1967 much of the impetus to develop the educational uses of cable was coming from the cable industry itself working in conjunction with local school systems and colleges. The NCTA Survey as mentioned above indicated that out of the country's, then, 1800 cable systems approximately ten percent either provided channel space, originated educational programming, or provided educational institutions with an origination channel. The total number of hours per week of educational programming originated over those 416 systems responding to the survey questionnaire was 422. Users at that time included Pennsylvania State University, St. Joseph's University, Stout State University, Mankato State, Polk Junior College, Geneva College, East Texas State, Northern Michigan University, Vincennes

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[33] U.S., FCC, Cable Television Report and Order, 37 Fed. Reg. 3265-66 (1972).

University, and Montana State.[34]

Beginning in 1967, educational access began to become less of a service provided by and more of a requirement imposed upon cable operators. The first mandatory educational access channel designation appears to have been obtained by Smithtown, New York, under the guidance of Mr. Roger Hill, Jr., Director of Educational Communications for the Suffolk County Organization for the Promotion of Education (SCOPE).[35]

This franchise, which required free cable drops to every school, an educational access channel, and interconnection with adjacent CATV systems, as well as interconnection among schools within the system, became a model for all new franchises in that area of Long Island.[36]

The City of New York also built a requirement of educational access into its 1968 cable recommendations to Mayor John Lindsay. The report suggested that,

> . . . although the Task Force cannot say in what specific ways the non-broadcast channels should be employed . . . , the City Government may wish to use its channels for education in the schools or for the conduct of vocational training programs. It may wish to provide channel space to private educational and cultural institutions and to nonprofit organizations serving an economically deprived community or particular ethnic

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[34] U.S. Congress, Senate, Subcommittee on Communications, Committee on Commerce, The Public Television Act of 1967, Hearing, pp. 678-81.

[35] "Association for Educational Communications and Technology Position Paper on Community Antenna Television," Audiovisual Instruction, 18:58-59, November, 1971.

[36] Roger Hill, "ITV and CATV: Natural Marriage," Audiovisual Instruction, 15:1062-63, 1968.

group within the city.[37]

In a July, 1970 Second Further Notice of Proposed Rule Making and Inquiry, the Federal Communications Commission suggested that CATV systems might furnish the four access channels—public, educational, municipal, and leased—which became part of its 1972 Cable Television Report and Order.[38] Educational institutions and associations were quick to endorse and comment upon this proposal.

Leading the way was the powerful Joint Council on Educational Telecommunications (JCET). The JCET is an organization's organization. Founded in 1951, with the support of Rockefeller Foundation funds,[39] the JCET represents the American Council on Education, the Association for Educational Communications and Technology, the Association of Land Grant Colleges and Universities, the National Education Association, the National Association of Educational Broadcasters, the National Association of State Universities and other similar groups in their efforts to "safeguard education's rights to frequency assignments in the television spectrum." The JCET was intimately involved in the FCC's decision of 1952 to reserve 242 broadcast television channels for non-commercial broadcast use.[40]

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[37] A Report on Cable Television and Cable Communications in New York City (New York: Mayor's Advisory Task Force on CATV and Telecommunications, 1968), pp. 57-58.

[38] Phillips, pp. 132-33.

[39] The Fourth Network (New York: The Network Project, 1971), pp. 6-8.

[40] Comments of the Joint Council on Educational Telecommunications in the Matter of Amendment of Part 74, sub part K of

In its comments to the FCC on the issue of educational access, the JCET called for uniform application of the requirement independent of local authorities. The Council urged that twenty percent of the potential channel space on all cable systems be reserved for educational access.[41] Dr. Frank Norwood, Executive Secretary of the Council, stated in a letter dated January 18, 1971, that we chose the figure 20% partly on historical precedent from the FM and TV allocations and partly because it was consistent with the recommendations of the New York Task Force whose work was then unique in the field of CATV."[42]

Suffolk County's SCOPE circulated a call for support of its position filed with the FCC requesting the establishment of a "public dividend" plan that would set aside two and one-half percent of all cable subscriber revenues to

> support cable-distributed instructional television programming and would be distributed through the U.S. Office of Education to State education departments. School districts, institutions of higher learning, or nonpublic schools would then apply for the funds to produce, procure, and transmit educational, instructional, or school-type programming.[43]

Organizations represented by JCET took independent supportive positions. The Association for Educational Communications and Tech-

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the Federal Communications Commission's Rules and Regulations Relative to Community Antenna Television Systems, Docket no. 18397, May 12, 1969, pp. 1-2.

[41] "Association for Educational Communications and Technology Position Paper," p. 58.

[42] Ibid.

[43] U.S., FCC, Cable Television Report and Order, 37 Fed. Reg. 3256 (1972).

nology, for example, proposed that:

1. CATV systems set aside fifty percent of their channel capacity for non-commercial use in 20+ channel systems;

2. A minimum of twenty percent of all channels be set aside for non-commercial educational and public services; and

3. The FCC require local operators to deal with a single consortium of all public/educational interests resident in the service area of the system.[44]

The National Education Association recommendations to its one million members went beyond the minimum rules required by the FCC because it felt that its criteria were "essential to protect a community's educational interest in the emerging technology of cable communications." Among the criteria that it urged were:

1. Minimal production facility for all cable systems.

2. Studio and production facilities to be shared wherever possible between the schools and the cable operator.

3. Free cable connections to the cable systems for all schools and libraries within one hundred yards of the trunk line.

4. At cost installation of in-school, multiple classroom distribution systems.

5. Eventual two-way video capability.

6. Interconnection from school originational points to the cable systems' master headend.

7. Interconnection of the cable system with its neighboring cable systems.

8. Establishment of an educational advisory board in every community consisting of representatives of the educational community, including one educational association, public

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[44] "Association for Educational Communications and Technology Position Paper," pp. 57-64.

and private universities, libraries, and museums.

9. Connection at the franchisee's expense with the master control of any ITFS system in the franchise area, as requested, or with the studios of the ETV station designated by local schools as their production agency.

10. Carriage of all local FM educational radio stations on the cable.

11. Rapid system-wide wiring.

12. Limitation on franchises to ten years with five year renewal period.

13. A two percent franchise fee to be set aside for use by the schools and the public for educational and public access programming.[45]

George Hall, Associate Director for Professional Services of the NAEB endorsed the concept of keeping twenty percent of cable channel space available for non-commercial applications. Edwin Cohen, Executive Director of the National Instructional Television Center echoed this position. In a letter to the American Council on Educational Technology written on February 23, 1971. Cohen also supported the twenty percent allocation of cable channel space to educational use.[46]

Cable operators responded positively to these demands. At least they did not offer much resistance to the idea of access. In April, 1969, the National Cable Television Association (NCTA) stated that it

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[45] Cable Television Franchise Provisions for Schools (Washington: National Education Association, 1973), pp. 4-16.

[46] "Association for Educational Communications and Technology Position Paper," p. 59.

> endorsed a policy of supporting the efforts of the NEA, the JCET, and other organizations concerned with planning of the nation's school system . . . to allocate one or more channels to local educational authorities.[47]

In 1972, the NCTA further advised its members that, although they were not required to provide production facilities for the new access channels they should

> be attuned to the need for funds and production and work with educators, community groups, and others in tapping potential sources of funding and in promoting the channel for both user and viewer.[48]

In 1972, the hard work of the educational agencies discussed above paid off in the designation of an educational access channel in FCC's Cable Television Second Report and Order.

In its comments on the issue, the Commission noted that the

> use of the educational channel will be without charge from the time subscriber service is inaugurated until five years after the completion of the cable system's basic trunk link. After this developmental period—designed to encourage innovation in the educational uses of television—we will . . . determine in consultation with State and local authorities whether to expand or curtail the free use of channels for such purposes or to continue the developmental period.[49]

Obviously, the Commission, educational associations, individual educators, and the cable television industry expected a great deal of educational experimentation with cable television when these rules

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[47]Harold Wigren, "The NEA's Position on Cable TV," Schools and Cable Television (Washington: National Education Association, 1971), p. 5.

[48]Guidelines for Access: A Report by NCTA (Washington: National Cable Television Association, 1972), p. 10

[49]U.S., FCC, Report and Order, Docket nos. 18397, 18397-A, 18373, 18416, 18892, 18894, 37 Fed. Reg. 3270 (February 12, 1972).

were written. Why did they have this expectation; what were their "cablevisions?" To answer these questions we must turn to the literature of educational access theory and experience. This study constitutes the content of our next section.

Chapter 3

## EDUCATIONAL POTENTIAL OF CABLE TELEVISION

Simple survival and intellectual development have become an increasingly complex task for most Americans. We are required to learn new skills and relearn old ones on an almost daily basis. Cable television may provide us with the broad communications channel that we need to stay abreast of new developments in an ever more complex individual and social environment.

The volume of information produced by this culture is enormous. Statistics for 1969 indicated that we have 1,758 daily newspapers with a net circulation of over 62,000,000 copies.[1] The 83,600 books and 80,700 periodicals copyrighted for 1969 grossed over $3.6 billion.[2] Our nation's 24,666 libraries house approximately 180,000,000 volumes.[3]

At the same time the number of people holding the skills necessary to collect and assimilate these data is not as large as it should be. Of the total labor force of 75.1 million in 1968, almost thirty-eight percent had less than a high school education. Only 12.4% had been awarded college degrees. For non-white populations, these deficiencies in educational attainment are even more striking. For the 8.3 million non-whites surveyed by the U.S. Department of Labor

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[1] The American Almanac, 1971 ed. (New York: Grosset & Dunlop, 1971), p. 499.

[2] Ibid., pp. 500-501. [3] Ibid., p. 132.

in March, 1968, only 6.7 percent had completed four or more years of college, while 57.3 percent had not received even a high school diploma.[4]

Educational institutions act as the vital links between those who have information and those who need it. On one level education is directly correlated with economic well-being. Department of Commerce and Bureau of Census figures for 1968 indicate that lifetime earnings of college graduates better those of high school graduates by more than $230,000 while mean income for the two groups differs by almost $4,500 yearly.[5] While it can be argued that earnings are not the best gauge of individual happiness and security, it must be admitted that the exchange of information is the best way we have of dealing with those gnawing problems of individual anxiety and social malaise that confront us.

Jungian psychologist M. Ester Harding has commented that

> the outer props onto which man has pinned his faith seem to be crumbling . . . . No longer can we reassure ourselves with the thought of a bank balance . . . . Outer security seems to be undermined. . . . The otherworldliness of religion no longer suffices the modern man who desires a more complete and satisfying life here and now.[6]

The old formulas of economic success and personal security

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[4] The New York Times Encyclopedic Almanac, 1970 ed., ed. Seymour Kurtz (New York: The New York Times, 1970), p. 544.

[5] The American Almanac, p. 111.

[6] M. Ester Harding, The Way of All Women (New York: Harper Colophon Books, 1970), p. xii.

no longer work in our new era. Education has taken a major role in displacing old ideas with the new ones and it must now take responsibility for seeing that these new ideas and information be disseminated broadly to a people that must have them to survive and grow in a changing world. Cable TV can be the communications "hot line" that educational institutions need to bring knowledge and skills to the people who want them.

In this section we will look at some of the roles that have been proposed for the educational use of cable to meet the people's needs. We begin with Continuing Education.

Continuing Education

Statistics indicate that specialized education for adult audiences is a dramatically growing field. A study conducted by Stanley Moses entitled The Learning Force: A More Comprehensive Framework for Educational Policy concludes that an estimated 60 million Americans engaged in some formal educational program in 1970. This represents a 348 percent increase in adult education participation since 1940.[7] Americans are enrolling in record numbers in on-the-job training classes, continuing education classes offered by high schools and universities, correspondence courses, community organization, and private instruction.

A workshop conducted by the Aspen Program on Communications

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[7] Richard Adler and Walter Baer, eds., Aspen Notebook: Cable and Continuing Education (New York: Praeger, 1973), p. 8.

and Society ascribed the rise of continuing education to four factors:

1. A rapidly changing technology which requires constant upgrading of employment skills of preparation for new careers;

2. a shift from the older ethic of sticking to a single career or job to an acceptance and even an expectation of changes in one's occupation;

3. a technology and social climate which allow increased leisure time for all occupations, including homemakers;

4. an increasingly higher educational level in the population, which in turn promotes further education.[8]

Traditional educational institutions as they are presently constituted are incapable of meeting the needs of this adult market. But they are recognizing their own inadequacies and many voices are calling for dramatic restructuring in the nature and scope of American education. Stanford's Newman Commission report on Higher Education issued in 1971 argues for an educational system which recognizes that

> people mature at different ages and arrive at the point of wanting to learn by different routes. Some 18-year-olds are simply not ready for any further education, and some for whom a conventional college education would be suitable are more ready at age 30. Others with job experience, either before or during or after undergraduate training, are ready for education that may be broader ranging or may be more specific and technical than the conventional.[9]

A recently published long range planning report at San Francisco State University has arrived at similar conclusions:

> Student surveys and enrollments here and elsewhere demonstrate that more and more students are making post-secondary education a "part-time business."
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> . . . . . .
>
> In the past we have viewed admissions as first-time freshmen,

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[8] Ibid., p. 9. [9] Ibid.

> graduates and transfers, etc. Now the University will have to add to these the adult learner . . . and "new" student. The entire thrust . . . toward "lifelong or recurrent" learning will focus admissions policies and curriculum on those students older than 25 . . . .[10]

This university's study of student enrollment patterns indicates that education's growing concern for the non-traditional student has a materialist as well as humanist foundation. The report notes that during the 1960's universities were very concerned about unbridled growth of their student bodies, while in the latter quarter of this century the rate of growth of the college age portion of the population is expected to slow very significantly.[11] Without this steady flow of students moving from high school to college, higher education faces no other choice but the development of new curricula to meet the needs of non-traditional students.

The educational interests of this adult population are enormously varied. The Commission on Non-Traditional Study conducted a national survey of "adults not engaged in full-time study who say they would like to learn more about the subjects. The results are summarized in Table 1.

It is exactly this diversity of instructional and informational needs that cable television is uniquely capable of serving. General interest programs such as first aid, nutrition, or American

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[10] "San Francisco State University Presidential Commission on Long-Range Planning Report," ed. Kai-yu Hsu (San Francisco: San Francisco State University, 1976), pp. SE-12, 19 (duplicated).

[11] Ibid., pp. SE-1-5.

Table 1

What Adults Would Like to Study

| Subject Area | Total Choices | First Choices |
|---|---|---|
| Vocational subjects (e.g.: architecture, business skills, commercial art, industrial trades, law, nursing, etc.) | 78.2% | 43.0% |
| Hobbies and recreation (e.g.: crafts, sports, travel and living in foreign countries) | 62.8% | 13.4% |
| Home and family life (e.g.: child development, flower arranging, cooking) | 56.0% | 12.0% |
| Personal development (e.g.: occult, psychology, physical fitness, etc.) | 54.3% | 6.8% |
| General Education | 47.9% | 12.6% |
| Public Affairs | 36.3% | 4.5% |
| Religious studies | 15.4% | 3.0% |
| Agriculture and farming | 10.9% | 2.9% |

Source:

Reprinted from Diversity by Design, (New York: Jossey-Buss, 197[illegible] in Aspen Notebook [illegible]able and Continuing Education (New York: Praeger, 1973), p. 12[illegible]

history lend themselves to broadcast presentation because they have wide audience appeal. However, most general subject areas are a composite of specializations with small group followings. Even the programming best suited for broadcast delivery may well be better served by the scheduling flexibility provided by the availability of cable channel space.

Vocational training is the first choice of those millions who want to continue their educational experience after leaving traditional degree-oriented situations. Many jobs require a high school diploma as a condition of employment. Yet we find that in 1969 a full forty-five percent of the American people over twenty-five had not finished high school.[12] This would seem to be an educational need that cable could go a long way toward filling.

The Kentucky Educational Television Network has embarked on the GED (General Educational Development) project, a "technology-based open learning system" to prepare students to qualify for and pass a high school equivalency exam. This series which combines televised lessons with printed materials is slated for cable distribution nationally this year.[13]

A similar program has been developed with the help of federal funds by the instructors of State Fair Community College in Sedalia, Missouri who created sixty half-hour lessons on high school

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[12] The American Almanac, p. 110.

[13] Peg Kay, Educational Uses of Cable Television, Draft 4 (Washington: Cable Television Information Center, 1974), p. 26.

core subjects. Written material to accompany the lessons cost seven dollars. Community viewing rooms were established in public libraries, churches, and public housing units to accommodate those without cable. The Manpower Educational Institute and the New York State Department of Labor also cooperated to produce a GED series which was cablecast during prime-time over a New York City cable system.[14]

There are indications that cable may be an effective delivery system for career guidance materials. One example comes from Allegany County, New York. Here a series of programs were developed for cable transmission to provide local residents with what was considered too "crucial" information that had previously prevented entrance to or mobility within the local labor market.

The series was cablecast over a twenty week period to 3,300 subscriber homes in the southern portion of rural Allegany County. Each program had several people in a variety of occupations, including nursing, retailing, trade apprenticeships, drafting, and food service, discussing what they did, what they liked and disliked about their jobs, their salaries, etc.[15]

Non-traditional educational programs also encompass non-credential courses intended to provide valuable information to local communities. One example of such a series is Clarksdale, Mississippi's

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[14] Cable Television and Education (Washington: National Cable Television Association, 1973), p. 38.

[15] James Bliss et al. "Cable T.V.: Boon to Vocational Guidance in Rural Areas" (paper presented at the American Personnel and Guidance Association Convention, March 27-31, 1972, Chicago, Illinois), pp. 1-4.

"Health Corner" which is a half-hour weekly show for parents and older children produced by the local schools. The guests are nurses who discuss topics which may be health problems for low-income families including dietary habits, dental care, and the availability of community health services.[16]

Colleges and universities, whose use of the cable we will discuss in more detail in the next section, are the obvious centers for this kind of informational programming. Central Missouri State University, for example, has produced a considerable amount of non-credit material, including courses in home economics, golf, and history. Southwestern State College at Weatherford, Oklahoma completed a major series for senior citizens that dealt with photography and various arts and crafts. The University of Oregon, which controls an entire channel on the Eugene, Oregon cable system, has cablecast programs ranging from flytying lessons through discussions of the social and political problems of Indonesia.[17]

Cable television is a flexible medium that can be designed to meet its users' needs. Working people normally conform to a fairly structured time schedule. Broadcast television, and commercial television in particular, has only a limited ability to respond to these schedules and satisfy their own priorities at the same time. To reach large working audiences, non-traditional education may require access to an information technology that will allow for the repetition

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[16] Cable Television and Education, p. 13 [17] Kay, pp. 29-30.

of messages at various times during the working day. Cable television is such a medium. Further, cable programming can be produced around local needs either by a local agency or by a national or regional center that deals with structural problems common to many localities, such as health care, bi-lingual education, or income tax services.

It is to be expected that institutions of higher learning will be actively involved in the creation and use of cable programming. In the next section we shall review how colleges and universities are using cable for credit classes and general information for the entire community.

Cable Television and Higher Education

Cable television can serve the needs of colleges and universities in a variety of ways. Cable affords both out-reach to new constituencies which were previously unconnected to educational institutions and 'in-reach' to individual students and classes seeking intensive, self-paced learning experiences. Cable offers at least a partial solution to parking problems on campus, the over-burdening of teachers, and the logistical and ecological problems arising around the dissemination of campus information.

Donald Mullally of the University of Illinois at Urbana-Champaign has proposed fourteen uses for cable television on his campus which we will discuss in this and other sections:

1. Closed circuit television distribution
2. Hookup with the campus Computer Assisted Instruction system.
3. Computer data transmission.

4. Administrative data processing
5. Broadcasting off-air pick up and transmission to any point on campus.
6. Radio and television curriculum expansion.
7. Short wave distribution for foreign language and political science students.
8. Extended, continuing, and non-traditional education
9. Monitoring of the physical plant
10. Building and equipment security
11. Medical uses
12. Courtroom transmissions to law classes
13. Library services
14. General student information services.[18]

Available data seem to indicate that cable television most effectively serves those institutions of higher education that draw most of their students from an adult and/or commuting population and those that are located in medium sized communities in which the college or university play a very important part.

The most substantial use of university-level cable to date comes from the college town of Corvallis, Oregon—home of Oregon State University. 8,600 students are currently enrolled in televised courses that they receive over the cable. Recent estimates indicate that seventy percent of those enrolled viewed the in-

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[18]Donald Mullally, Possible Uses of CATV at the University of Illinois, Urbana-Champaign, in the Period 1973-1980 (Urbana: University of Illinois, College of Communications, 1973), pp. 1-3.

structional programming at off-campus locations.[19] A list of the courses offered for credit to the student body and available for general viewing over the cable system for the Spring, 1975 term can be found on Table 2.

Oregon State originally used the facilities of the University-based Public Broadcasting System affiliate, KOAC-TV for its instructional programming. However, beginning in 1964, the local ITV operation began to take up so much of the broadcast day that the station management felt that such a specialized use of their facilities was inappropriate. So beginning in 1966, the instructional service housed in Kidder Hall shifted over to the local Corvallis cable system which is able to accommodate both the ITV and PBS signals.[20]

Oregon State has been active in educational television since 1954. The forty to forty-five hours a week of instructional television cablecasted over the Corvallis Liberty system is almost entirely the result of local Kidder Hall production. Videotaping is done in a studio classroom at the Television Center which is connected by coaxial cable to the cable headend in Corvallis. Course work is prepared by volunteer professors who are not paid for their work in televised instruction, but who are granted release time from

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[19] Harold Livingston, "The Classroom TV Center in Kidder Hall" (Corvallis, Oregon: Oregon State University, 1975), p. 1. (mimeographed.)

[20] Leland Johnson, Cable Television and Higher Education: Two Contrasting Experiences (Santa Monica: Rand Corporation, 1971), p. 9.

Table 2

SPRING TERM, 1975 TV LESSON SCHEDULE
(ALSO CARRIED OVER CHANNEL 5 - CORVALLIS CABLE)

| | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY |
|---|---|---|---|---|---|
| 7:30 | Psy 200 | | Psy 200 | | |
| 8:30 | GS 103 | Span 61-62 | GS 103 | Span 61-62 | |
| 9:30 | Math 95 | GS 103 | Math 95 | GS 103 | |
| 10:30 | Econ 115 | | Econ 115 | | Econ 115 |
| 11:30 | AtS 101 | | AtS 101 | | |
| 12:30 | Psy 200 | Span 61-62 | Psy 200 | Span 61-62 | |
| 13:30 | | GS 103 | | GS 103 | |
| 14:30 | Econ 115 | AtS 101 | Econ 115 | AtS 101 | Econ 115 |
| 16:00 | Span 61-62 | Span 61-62 | Span 61-62 | Span 61-62 | Span 61-62 |
| 16:30 | Math 95 | | Math 95 | | |
| 18:30 | | AtS 101 | | AtS 101 | |
| 19:00 | GS 103 | Psy 200 | GS 103 | Psy 200 | |
| 20:00 | Econ 115 | Econ 115 | Econ 115 | Span 61-62 | |
| 21:00 | Math 95 | GS 103 | Math 95 | GS 103 | |

FOR FURTHER INFORMATION CALL 754-1905 CLASSROOM TV CENTER, KIDDER HALL

Source: Harold Livingston, "The Classroom TV Center in Kidder Hall," Corvallis, Oregon: Oregon State University, 1975). (Mimeographed.)

their ordinary course loads to participate in ITV production.[21] Equipment, as of the Summer of 1975, included several black and white cameras, high-band color quad video tape recorders, and film chains.[22]

Dr. Harold Livingston is the director of the Kidder Hall Television Center. With a staff of 4.5 positions, he is responsible for the eighty to one hundred hours of weekly production. Courses are selected on the basis of class size. Only those course offerings which normally enroll more than 150 students qualify for consideration by the ITV staff for video production. Proposals are then cleared with the individual departments and the OSU Faculty Senate. Televised lectures are supplemented with classroom recitations conducted by graduate assistants or course instructors.[23]

The University also operates a full-time, student-run television station over Corvallis cable system's channel 11. It presents fifteen to twenty hours a week of regular programs and frequent special programs for subscribers. Programming includes a half-hour nightly news show, sports telecasting, and old films. This channel is the community's only source of televised information about itself.[24]

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[21] Ibid., pp. 9-15.

[22] Dr. Harold Livingston, interview held at Kidder Classroom Television Center, Oregon State University, Corvallis, Oregon, August, 1975.

[23] Ibid.

[24] Irv Letofsky, "The Cable Campus—Oregon State," Audiovisual Instruction, 20:22, 23, May, 1975.

OSU credits its success in this effort to several factors:

1. The supportive attitude of the top administration of the University;
2. Support of departmental chairmen to encourage staff innovations;
3. Felt needs for improvement of specific curricular problems in the teaching staff;
4. Encouragement for change generated by influential student leaders;
5. Easy availability of multi-media facilities for exploration of new teaching-learning approaches;
6. Respect for the academic credentials and the academic freedom of teaching faculty to pursue THEIR teaching goals without pressure from other sources;
7. Feedback climate compatible with the individual personalities of the teachers and the desires of the students.[25]

Although Oregon State is the most prominent success story of educational access to cable in higher education, observers feel that community colleges are ultimately best suited to take the lead in cable-based extended education.

> Designed to serve the needs of entire communities, their facilities are experienced in dealing with a wide range of student abilities and interests and both the administration and teachers are less burdened with tradition and more willing to use courses produced elsewhere.[26]

One model for a successful television based extended curriculum comes from the Southern California Regional Consortium for Community College Television. Established in 1967, the consortium now

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[25] "The Classroom Television Center in Kidder Hall," p. 4.

[26] Adler and Baer, p. 76.

enrolls an average of 5,000 students each term through its broadcast offerings.[27]

Courses to be produced and offered are selected by an inter-institutional committee representing the participating institutions. This committee also selects the producing instructors after reviewing proposals. The subjects offered have been broad interest topics primarily outside the list of courses required for the AA degree.[28]

Course programs have been offered by a commercial station during the low-audience early morning hours and over the local public broadcast station in the evening. To receive three units of credit, the student must view forty-five half-hour broadcasts, complete reading assignments, and pass a mid-term and final exam given at one of the consortium member colleges. Each student has the option of attending voluntary seminars and/or consulting via telephone or in person with an instructor at the "campus of registry" during designated hours.[29]

Although the course offerings were originally designed for broadcast presentation, evidence indicates that such a programming consortium lends itself to cable delivery. The Consortium's programming has been cablecast over two Bakersfield cable systems and those systems alone have produced four hundred new enrollees.[30]

One primary element leading to the Consortium's success can be generalized in its application to all community colleges contem-

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[27] Ibid., p. 112.

[28] Ibid.

[29] Ibid., p. 113.

[30] Kay, p. 23.

plating cable delivery of extended education: the member schools are similar institutions which serve similar student bodies; agreement on courses and content was, therefore, easier to manage.[31]

Cable television literature abounds with examples of higher educational institutions using cable distribution systems.

The University of Kansas, for example, found that it could remedy a problem posed by the paucity of the engineering curriculum available at Kansas' junior colleges by offering tapes of the University's engineering lectures via local cable systems. Results of initial tests indicated that enough students transferring from junior colleges to the University improved in their understanding of engineering basics to extend the program to other junior colleges.[32]

Amarillo College in Texas found cable television to be very useful in solving some of the problems faced by the public schools when they introduced a "new math curriculum." Enrollment in the cable course dealing with this topic was over seven hundred.[33]

Four cable systems in the area served by the State University of New York at New Paltz have presented a three-credit introductory course, called "Psychology Today," produced and directed by the university. Enrollees who wanted credit paid a tuition fee and were required to go to the campus for enrollment and for examinations. Each program in the twelve week series was shown twice over the participating cable systems.[34]

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[31] Ibid.

[32] Cable Television and Education, p. 30.

[33] Kay, p. 22.

[34] Cable Television and Education, p. 39.

Albright College in Reading, Pennsylvania offered a series of consumer education "commercials" to local consumers to encourage informed buying habits.[35] Tyler Junior College in Tyler, Texas has been broadcasting courses in Spanish, Texas History, and American History for several years.[36]

Broadcast journalism students at California State University, San Diego, write and direct a weekly news show distributed over the local cable system. A local bank sponsors the program. One-half of the advertising revenue goes to the cable system to cover production expenses. The other half pays for the film and videotape the students use to cover local news.[37]

The University of Oregon at Eugene has a channel available to it on the local Teleprompter cable system that carries materials specifically requested by faculty to supplement or enrich their own class offerings. Some channel time is devoted to direct instructional programming in the forty-three elementary schools of Eugene serving nearly eleven thousand students. The rest of the day is spent televising a message service. During the evening the channel is used for a variety of educational and community programming as well as sporting events.[38]

San Diego State University plans to develop a Network for

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[35] "Communications by New Communicators," ncta pr memo, February 13, 1973.

[36] Kay, p. 20.

[37] Cable Television and Education, p. 31.

[38] Johnson, p. 20.

Knowledge" project similar to the British Open University. The project, which has been in operation since October, 1972 hopes to make higher education available to all members of the community. Math, business, English, literature and art history courses have been shown for credit over cable TV. If response to the concept is encouraging, San Diego State educators will go on to offer courses on different levels and consider developing degree programs using combinations of cable television, public television, telephone tutoring and mail correspondence.[39]

The California Instructional Television Consortium, housed at Sonoma State College, the television arm of the California State University and College System, has been actively programming on cable systems in California for several years. In the Fall of 1974, the Consortium offered an ethnic minority series entitled "Mosaic" over the Bakersfield Warner cable system. During the same period, a course on Environmental Impact Reporting was offered on San Diego's Mission cable system. This series was a retransmission of programming originally offered by a broadcast station during low viewing hours. Currently a dentistry course is available by cable for credit to dentists in the San Jose area who, like all other licensed dentists in the State of California, are required to complete fifty hours of continuing education credit courses every two years.[40]

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[39] Cable Television and Education, p. 39.

[40] Audrey Petersen, coordinator, California Instructional Television Consortium, telephone interview, March 2, 1976.

Project REACH, whose extensive plan for the successful introduction of cable television distribution into the educational process is another example of post-secondary utilization of broadband technology, is administered by the Dayton-Miami Valley (Ohio) Consortium and funded by a grant from the Fund for the Improvement of Post-Secondary Education. REACH has produced programs for college credit on such widely ranging subjects as retirement, tennis, and transactional analysis.[41]

A group of institutions in Portland, Oregon and surrounding Multnomah County are considering a very ambitious plan to use cable television for educational and governmental purposes. Many of the proposals suggested by Telecommunications Management Corporation to the eight participants assume that the coaxial cable will be used "interactively," i.e., that users will be able to both receive and send information.

The interactive or bi-directional capacity of cable television opens up our discussion to a revolutionary new realm of educational potential created by this technology. The kinds of educational projects proposed for a two-way electronic information channel make up the content of our next section.

Cable: The Two-Way Dialogue

The Telecommunications Management report suggests that one

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[41] Cable Television, 1975: An Industry Report (Washington: National Cable Television Association. n.d. ), p. 19.

Portland area institution in particular will benefit from the introduction of a broadband communications system. Portland State University, an urban "commuter" institution serving older students who spend most of their daytime hours working, could be served by the cable in several ways.

On campus, an expanded cable system can provide

> input/output points, and distribution capability, for the computer data terminals that are anticipated. . . . This capability can be provided, of course, by providing a separate telephone line from the computer facility to each room. With a large number of terminals, such as the 100-200 forecast, the cost of individual circuits would be greater than the cable network. Furthermore, the ability of the same cable to carry both video and data signals is a further economic advantage. A third advantage is that the cable capacity can be split to provide "wide-band" data channels with a much greater data-carrying capacity than voice-grade telephone circuits. This would permit transmission of computer-stored graphics, for example, which would be most desirable for computer-assisted-instruction services . . . . Since a coaxial cable has multi-channel capability (and each channel can be divided into hundreds of data or voice subchannels), a very large distribution capacity will be available.[42]

Off-campus TMC suggests that Portland State may use the cable for a number of other uses:

1. Interactive video communications with other institutions for a variety of services. One example is connection to selected video classroom in the public schools, for monitoring student teacher performance . . . .

2. Computer-to-computer data communications at high speed, could be transmitted over the cable, either between different on-campus computers, or to other data processing facilities in the County;

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[42] "Cable Communications: Analysis of Institutional Services and Management Plan Prepared for The City of Portland et al." (Los Angeles: Telecommunications Management Corporation, 1975), n.p. (Duplicated draft).

> 3. . . . The cable network makes facsimile reproduction of documents more cost-effective. . . . If PSU and one other institution can foresee a need for exchange of an average of at least 250 pages per day in facsimile form, analysis indicates that the combination of cable and high-speed digital facsimile becomes very cost-effective.[43]

Figure 1 is a graphic representation of these proposed uses of cable and others that are mentioned in the report.

To clarify the issues raised by the preceding reference to the TMC Report it is necessary to review a little more broadband technology and define some of the terms used above.

When we think of two-way telecommunications our most common reference is that of the residential telephone. Since most conversations range between 300 and 3300 Hz, a voice signal over a telephone line needs only 3000 Hz of bandwidth. Telephone lines can, if adapted, carry up to twenty-four of these voice band signals and are capable of dividing the total bandwidth into subfrequencies to accommodate signals of smaller bandwidth. These lines cannot, of course, carry a television signal which, in the United States, is fixed at a bandwidth of 6 MHz. As noted earlier, modern coaxial cable technology accommodates somewhere between twenty-four and forty television channels.[44]

The telephone network is an example of a "fully switched" telecommunications system; i.e., any subscriber can be connected to

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[43] Ibid.

[44] Richard Veith, "A Survey of Two-Way Cable Television Systems" (unpublished Master's Thesis, San Francisco State University, January, 1973), pp. 9-10.

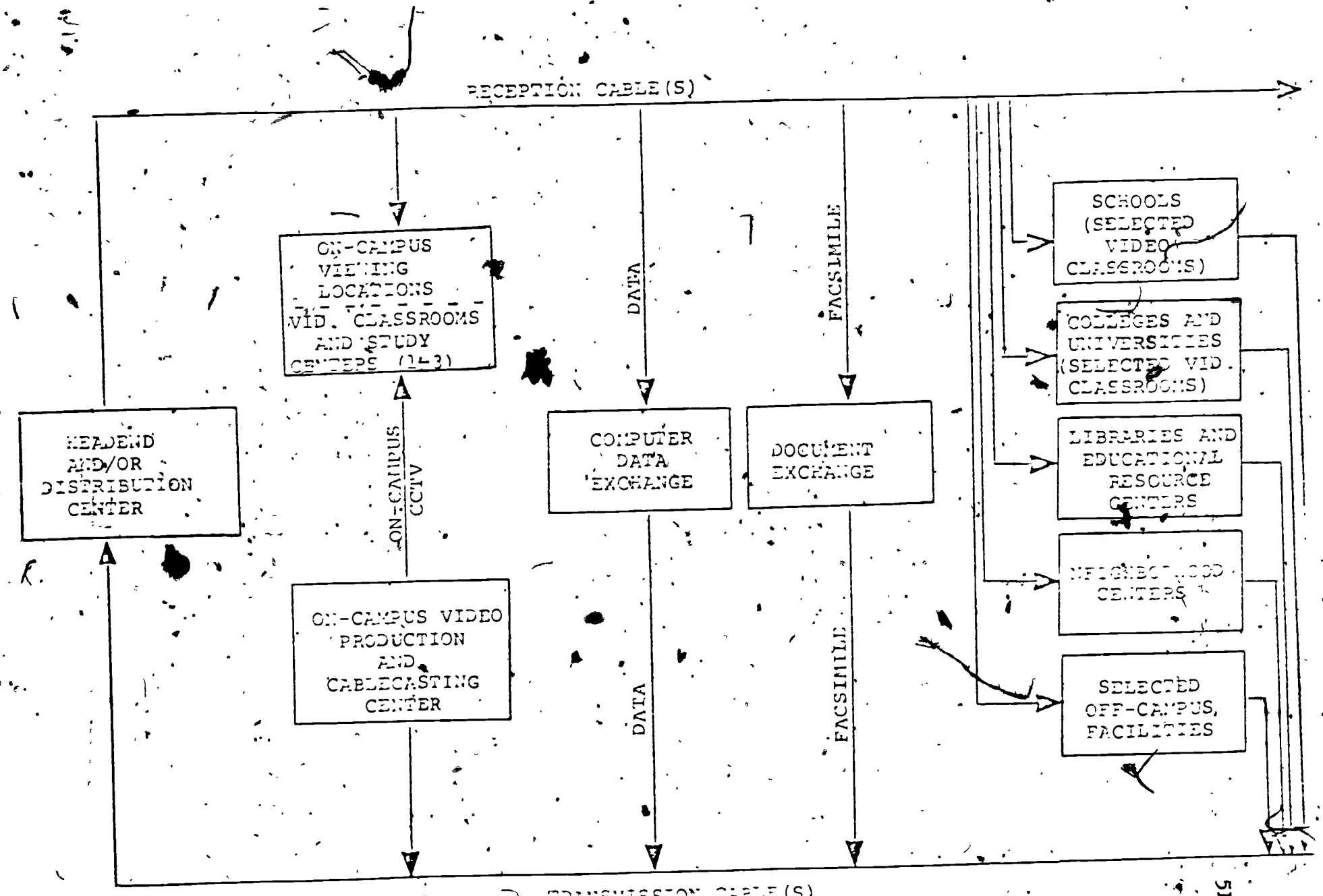


Figure 1

PORTLAND STATE UNIVERSITY — CABLE COMMUNICATIONS CONCEPT

Source: "Cable Communications: Analysis of Institutional Services and Management Plan Prepared for the City of Portland et al." (Los Angeles: Telecommunications Management Corporation, 1976). (Duplicated draft).

any other subscriber for private two-way transmission. In the switched system,

> each telephone is connected to a central office by means of a tree-like structure of trunk and feeder cable . . . . In a local call, to another telephone . . . the signal is more or less simply switched to the desired out-going cable . . . .
>
> Cable systems are, with few exceptions, completely non-switched configurations. All signals on the cable are sent out from one point . . . and are available to all subscribers at any time. The coaxial cable . . . has been likened to a huge party-line; any one who taps into the line is privy to all the information on it.[45]

Although cable television systems are non-switched, subscriber-to-head end, head end-to-subscriber and subscriber-to-subscriber communication are quite possible using private address codes and time division methods that allow a computer to be successively in contact with each subscriber in a matter of seconds.[46]

Information carried by a communications channel may be described in terms of the number of "bits" of information transmitted.

> A bit is the amount of information needed to make a yes-or-no decision. . . . When information is transmitted sequentially bit by bit, it is referred to as a timed bit stream.[47]

A telephone conversation converted to a bit stream requires a channel capable of transmitting 64,000 bits/second. A color television signal requires sufficient bandwidth to accommodate 92 million bits per second.[48]

Digitally encoded signals are almost always slower than the maximum possible rate of the transmission facility. The coaxial

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[45] Ibid., pp. 13-15.

[46] Ibid., p. 17.

[47] Ibid., pp. 19-20.

[48] Ibid., p. 20

cable, for example, is capable of handling bit streams well over three hundred megabits per second. Therefore, many bit streams can be "interleaved" to form a single high speed transmission. This process is known as time-division multiplexing. Specific time segments are allocated to incoming signals. Timing information incorporated into the data stream allows a device at the receiving end to separate the various signals.[49]

If one television channel, requiring six megabits of channel space available per second, were used for digital interaction, and six bits were used to send a single character, one million characters could be sent to subscribers every second. A hypothetical case developed by James Martin in his Future Developments in Telecommunications indicates that by conservative estimates each of 30,000 sets in one cable system could be addressed and responded to every four seconds. Average response time would be about a half second. Longer response times or responses to fewer sets would allow the transmission of still pictures, voice communication, or television signals.[50] This would allow for the transmission of graphics from a remote source for use in an academic paper or administrative report.

The first educational use of the interactive technology was mentioned in the abstract of the Telecommunications Management Report (see page 46) concerns "input/output to computer data terminals." This has also been called "computer assisted instruction" or CAI for short,

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[49] Ibid., p. 22.

[50] Ibid., pp. 23-24.

and represents a very important step forward in the movement toward self paced, individualized instruction. The National Science Foundation's Office of Computer Innovation in Education invested $10 million in 1971-72 in two major demonstrations of CAI.[51]

One CAI prototype experiment was conducted in Reston, Virginia by the Mitre Corporation, a non-profit federal contract research center. A computer located at the Mitre headquarters was connected by microwave with the headend of the local cable system. Signals from the touch-tone telephones of the test subscribers were routed to the computer over ordinary telephone lines.[52]

At first, two educational programs and a community information service were provided. One program was a computer controlled set of lessons designed to teach children two-digit addition: the other educational program was a five-day drill and practice course in primary school arithmetic.[53]

Mitre's two-way system, called TICCIT (time-shared, interactive, computer controlled, information television), utilizes a display of still pictures; information is sent once every ten seconds to each terminal, where it is recorded and replayed.

Besides the video tape recorder, each two-way terminal consisted of a coupler/decoder which contained the channel

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[51]Victor Bunderson, The TICCIT Project: Design Strategy for Educational Innovation. ICUE Technical Report No. 4 (Provo, Utah: Brigham Young University, Institute for Computer Uses in Education, 1973), p. 3.

[52]Veith, p. 70. [53]Ibid.

selector, a public/private switch, the "sub-channel" selector, and controls for the video tape recorder. The "sub-channels" are made possible by the fact that hundreds of different frames can be sent during the ten second cycle of the TICCIT computer, using time-division multiplexing. In the "public" mode, subscribers could select one of hundreds of "broadcast" information files continually transmitted to all sets; in the "private" mode, subscribers could select, from a directory, one of hundreds of other information files.[54]

A large scale TICCIT demonstration project is underway at Brigham Young University in Provo, Utah. One hundred and twenty-eight color CRT (cathode ray tube) student terminals are connected by cable to two computers. It is believed that the CAI program will result in five positive consequences for educational institutions:

1. At least thirty-five percent of the students who take the TICCIT courses will achieve a standard of "mastery."
2. Students who use the terminals will reduce the amount of time they spend on course work.
3. Students will "learn how to learn" with the terminals.
4. Students will voluntarily work on optional materials.
5. The personal responsibility of students toward learning will increase.[55]

The consequences of CAI programs appear particularly important for community colleges, which we have already noted are likely to become the heaviest post-secondary users of cable television systems for educational delivery. Within community colleges, instruction in freshman and developmental math and English usually account for at least twenty-five percent of the total "contact hours,"

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[54] Ibid., p. 72.

[55] Bunderson, p. 10.

i.e. contact between students and teachers, of an institution. About eighty percent of this could be served by CAI lessons in math and English covering twelve to twenty-five credit hours of instruction. "Educational costs in community colleges average $3.26 per student hour, $1.50 in direct instructional costs. Much of this cost could be defrayed by CAI."[56]

Cable delivered CAI services cover a wide spectrum of applications ranging from a minimum system in which a computer would be used to determine the student's daily assignment and to provide a progress report at the end of the day, to interactive, video-color display with voice input and output for precision individualized instruction.

> A computer would coach the pupil in a chosen subject. The computer tutor would be organized in the form of an electronic programmed-learning text. The program would loop backward if the student appeared to be guessing at wrong answers or forward if the student were answering all questions correctly. Key features of such a computer-tutor in the home would be the great variety of courses offered.[57]

The CAI-CATV connection is making notable inroads into the learning process at several institutions, including the University of Illinois at Urbana-Champaign, with a thousand terminals connected by cable to a central computer,[58] and at the University of Akron in Ohio. Table 3 indicates the potential role that CAI delivered by coaxial cable can play in supporting educational programs.

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[56] Ibid., p. 3.

[57] Paul Baran, "30 Services that Two-Way Television Can Provide," The Futurist, 7:203, October, 1973.

[58] Bunderson, p. 3.

Table 3

Students Served by CAI at the University of Akron

| Subject Matter | Number of students using CAI |
|---|---|
| Basic English Grammar | 700 |
| Basic Math Skills | 400 |
| Introductory Chemistry | 900 |
| Tests & Measurements | 600 |
| Research Techniques | 300 |
| Introductory Statistics | 650 |
| Introduction to COBOL | 100 |
| Mathematics Education | 200 |
| Computer Games | 1,000 |
| Steel Design Modules | 150 |
| Reading | 200 |

Source:

John J. Hirschbuhl, The Computer and the Camera, CAI and CATV—The Missing Link? Paper presented at the Annual Conference of EDUCOM, Toronto, Canada, October, 1974 (Akron, OH: Akron University, 1974), p. 3.

Interactive uses of cable technology are at this time only experimental and most of the applications are closed-circuit only. One of these that seems to hold substantial promise to educational systems is the "dial access" or "on-demand" access of films and video tapes from a central library. In these systems, the user can choose programs from a catalog and order them by some standard procedure.

An early example comes from Ottawa, Canada. Here a twelve channel cable system was dedicated to serving 130 learning areas in two primary schools, one junior high school, and one high school. The central library contained approximately 2,600 videotapes and films. Typically, each terminal had a television receiver and a telephone with a direct link to the library. The users called the library and gave their request to the librarian who allocated the channel on which the program would be shown and assigned a time for transmission. Transmission normally began within sixty seconds of the receipt of a request.[59] A similar, but less complex system has been installed by the Danville, Illinois Public School System.[60]

Another example of interactive instructional television comes from the Association for Continuing Education (ACE) in Palo Alto, California. The ACE program utilizes a four channel Instructional

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[59] Polly Carpenter-Huffman, et al., Cable Television: Developing Community Services, Rand Cable Television Series (New York: Praeger, Russack & Company, 1974), p. 135.

[60] Steve Autor, "Videocassettes + Cable = Quality ITV, on Demand," Educational and Instructional Television, May, 1974, p. 16.

Television Fixed Service (ITFS) system to microwave its instructional materials to post-graduate students working with San Francisco Bay Area institutions. The remote classrooms are equipped with "a return audio capacity which enables all students to participate fully in all class discussions."[61] ACE has just become active in offering courses via cable. Its first attempt was a course in Money Management intended primarily for Standard Oil of California employees in the Concord, California area. This curriculum does not include an interactive capability and none is planned for this use of cable.[62]

An ambitious use of cable two way capacity for education comes from Overland Park, Kansas where a successful experiment was conducted with two home-bound students. One seventeen year old student was suffering from a brain tumor and had been unable to attend regular classes for the three years preceding the 1971 installation of the interactive technology. Lessons were conducted from the local cable company's studio. The student could respond by pressing buttons on an alphanumeric keyboard, by having an audio channel open for voice communication, or by having a video channel opened for visual transmissions.[63] Although the local school district sought grant support of this kind of innovative use of technology and an additional six such terminal installed and activated for home-bound

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[61] Kay, p. 82.

[62] Linda Stern, Association for Continuing Education Staff Associate, telephone interview, February 13, 1976.

[63] Veith, pp. 64-66.

students, the Cable Television Information Center reports that the experiment has been terminated after the death of one student and the successful recovery of the other.[64]

The most grandiose plans for an experiment with cable's interactive capabilities comes out of Mitre Corporation headquarters in McLean, Virginia. Three years ago, Mitre selected Stockton, California as an interactive testbed. The Stockton system, owned by Continental Cable Company, utilizes "fully active bi-directional" two-way technology, i.e., the trunk line has been successfully tested for the distribution of bi-directional signal, to serve a demographically varied community. (Thirty-eight percent of Stockton's residents are non-white.) Mitre successfully applied for and received a $500,000 grant from the National Science Foundation to do a needs analysis of Stockton's subscribers to determine what kinds of educational programming they would like to see offered via the cable.

After the preliminary investigation was completed, Mitre returned to the National Science Foundation with a $5+ million proposal to install 1,000 two-way terminals in Stockton on a first-come, first-served basis with rotation of the terminals every eight months. Unfortunately, budgetary constraints have affected NSF's ability to respond to this proposal and Mitre has been asked to rewrite its application several times. At present, all of Mitre's visionary plans

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[64] Survey of Two-Way Cable Television Test-beds (Washington: Cable Television Information Center, 1974), p. 4.

remain on the drawing boards pending an unlikely funding approval.[65]

Libraries are prime user candidates of cable's interactive capability. In the next section, we will look at what kinds of advanced "information retrieval" options are available to libraries through the cable as well as noting simpler usage models that are already in operation.

Cable Libraries

Information retrieval services are another example of the kinds of innovative linking of telecommunications technologies that can greatly expand the range and depth of information available to our citizenry. Here's how they work: some body of data is accumulated and indexed on magnetic tape or some other computerized information storage device. Once collected, the information, or data bank, can be accessed from a terminal connected to the central computer through, usually, some form of cable technology. The information, once retrieved, is presented either on a cathode ray tube attached to the terminal or printed by high-speed alphanumeric printer. Initial responses can be expanded upon through the selective use of key words which allow the user to search the data bank's files at a very rapid rate. A truly interactive information retrieval system should enable the user to:

1. Discover everything that's being published on a given topic.

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[65] Ray Joshin, executive vice-president, Big Valley Cablevision, telephone interview, March 5, 1976.

2. Discover everything that's been published in the past on a given topic.

3. What new concepts are being investigated.

4. Who's following up on previous research.

5. What new work is being done by leading research individuals and organizations.

6. Whether research work is being duplicated.[66]

Table 4 is a description of a data bank accumulated by Systems Development Corporation of Santa Monica, California. The data base contained over 15,000 citations as of September, 1974 and is updated on a monthly basis with over 1,000 additional citations. Connection from the terminal to the central computer by telephone lines cost $120/hour and an off-line printing citation charge of twenty-five cents is incurred by the user. "On-line" computer searches can be conducted very rapidly and offer the user a convenient way around the tedium of library research.[67]

Libraries, as the store houses of the nation's knowledge, are the logical users and providers of these search services, and cable, with its bandwidth efficiency, in conjunction with satellities and microwave transmitters, is the preferred technology currently available for delivery of the data developed.

However, before we become too dazed by the "blue sky"

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[66] Institute for Scientific Information, Philadelphia, Pennsylvania, promotional literature, 1975.

[67] System Development Corporation Search Service Description, promotional material, 1975.

Table 4

SDC'S On-Line Bibliographic Search Service on Communications, Environment, and Urban Affairs

## The Data Base

MATRIX, produced by ORBA Information Limited, of Montreal, is a highly selective data base covering world developments in communications, environment, and urban affairs. Its sources are leading world newspapers, newsletters, trade publications, and general publications—approximately 250 in all. The majority of the material contained in this data base (60-65%) comes from the United States, with the remainder from Canada, the Uk, Europe, Japan, the Soviet Union, South America, South Africa, Australia, China, and the Mideast. The emphasis in the MATRIX File is on material that has implications for policy and planning. Representative topics in the communications area of MATRIX include:

- Global Communications
- Wired-World Phenomena
- Cable TV
- Pay TV
- Closed Circuit Video
- Videocassettes
- Computers and Telecommunications
- Networks
- Satellites
- Data Banks and Privacy
- Security
- Broadcasting
- Educational Technology
- Educational Media
- Advertising & Marketing Innovations
- Electronic Industry Trends
- Electronics in Publishing
- Medical Electronics
- Recorded Music Industry
- Film Distribution Trends
- Obscenity and Censorship

## The Unit Record

The records in the SDC/MATRIX file contain five different categories of bibliographic information. All five of these categories are indexed for rapid and direct searching. All information in a citation can be requested by the user through various "Print" commands.

| | | |
|---|---|---|
| Title | Source | Publication Date |
| Abstract | Update Code | |

Source: System Development Corporation, Santa Monica, California, 1974

possibilities of cable information retrieval, we should note several hard facts:

1. Less than twenty-five percent of the existing cable systems utilize the type of coaxial cable which is capable of carrying simultaneous upstream and down stream communications.

2. Furthermore, the incorporation of two-way services on a large scale regardless of the kind of cable used is seriously impeded by the problem of noise . . . . Each amplifier needed to deliver the transmission adds noise to the signal. This problem at present limits a cable transmission to twenty-eight amplifications before the signal has deteriorated to an unacceptable level.

3. In addition to "clean" amplifiers and wideband coaxial cables which are able to carry the entire electromagnetic spectrum, each terminal on the two-way system would require a sophisticated (and expensive) decoder/coupler.[68]

Therefore, the immediate future of information retrieval via cable seems greatly limited, unless conventional voice and data return channels such as the telephone are widely utilized for this purpose.

Much more potential is being actualized by libraries that are using cable distribution systems for one-way communications and modified two-way applications. There is so much going on in this field that it is difficult to summarize all the activities. Let's review a few examples.

In Mobile, Alabama, the Public Library operates a video reference service over a local cable channel. Twelve hours daily, Monday through Friday, and nine hours daily on weekends, anyone with

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[68] Leon L. Drolet, Jr., "Metropolitan Library Service via 'the cable' in The United States of America: a thing of the future," Unesco Bulletin for Libraries, 29:77, March-April, 1975.

a cable hookup can call the library and request visual or written information for display on the channel. Schools can make arrangements for scheduling material for class presentations. Consumers can request product information displays.[69]

The original costs of establishing this modified retrieval service amounted to less than $500.

> The equipment used included an ordinary surveillance television monitor camera, a standard studio preamplifier, and a microphone, all mounted in a standard study carrel located near the reference desk.[70]

Like many other libraries, the Mobile library is active in producing cable programming. Examples range from an hour or more daily made available through the auspices of the Wyoming State Library Community Access Television system to the cable to various state and local governmental agencies to Joliet, Illinois' regular "The Hottest Spot in Town" program which showcases the library's services.[71]

The Natrona Public Library's cable experiment in Caspar, Wyoming has been called "the most advanced in the country." In 1970, the library began a limited call-in video reference service available thirty minutes daily. When the library moved into new quarters, video equipment was purchased and a small studio was leased. The local cable

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[69] Cable Television and Education, pp. 35-36.

[70] "What's Happening in Alabama Libraries," Cable Libraries, 1:8, May, 1973.

[71] "Joliet Public Library is 'The Hottest Spot in Town,'" Cable Libraries, 1:10, May, 1973.

operator provided a channel to the library at a nominal leased rate. In 1972, the library made its video reference service available during all library hours unless preempted by other library programming. This programming included a regular morning story hour for children; community forum tapes from the University of Wyoming; special holiday show; and drama by local high school students.

The library plans to expand its programming. It has received a grant from the National Humanities Foundation to produce a series of twenty-one community forum shows discussing local issues in a town meeting format. They are planning more dramas for cable. They are also producing a series of "how to do it" shows to teach basic crafts and skills.[72]

New York University's Alternate Media Center (AMC) has been called "a leading spokesman in the U.S. for community cable television."[73] George Stoney, director of the Center, has written a short article that describes AMC's role in cementing the CATV-Library link. One example comes from Bloomington, Indiana where the library channel was organized by Jeff Ullman who participated in the project after receiving a matching grant from the local cable system and the National Endowment for the Arts.

Mr. Ullman's work indicates the potential controversy libraries and other educational institutions may find themselves em-

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[72] Cable Television and Education, pp. 35-46.

[73] George Stoney, "Cable Television: Should Librarians Get into the Act," Film Library Quarterly, 7:3 & 4:85. (editor's note).

broiled in: one of the first tapes to be cablecast was an interview with a prominent Black minister who was to recount the history of his church. A seemingly harmless subject turned into a thorny issue when the minister started discussing recent Ku Klux Klan activity in Bloomington.[74]

California Libraries have been very active in the cable television field. In August, 1974 the San Francisco Public Library, the San Jose Public Library, and the Kern County Library, Bakersfield received a total of $250,000 in Library Services and Construction Act funds to promote library services via cable and video. The San Francisco grant of $156,000 was set aside to establish a California Video Resource Project to serve "not only the city but all of California's 188 public libraries, 211 college and university libraries, and 718 special libraries." The fifty-two libraries which expressed an interest in video in a pre-grant survey are the direct target audiences.

> The goal of the Video Resource Project is to ascertain the most effective use of video to extend library services to various target groups. The project will accomplish this goal through developing a collection of video materials and reviewing them regularly in a newsletter . . . . Individualized viewing centers will be established and their usefulness for informal learning evaluated . . . .
>
> Activities will be centered in the San Francisco Public Library's main building, which will house a fully-equipped television studio as well as project staff and information collection . . . . Phase II of the two-year project will include the establishment of video research centers in several participating libraries.[75]

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[74] Ibid., p. 88.

[75] "California Libraries Receive $250,000 for Video-Cable," Cable Libraries, 2:1, August, 1974.

This project is headed by Roberto Esteves who is also the author of the 1973 American Library Association resolution that brought formal recognition to the role cable can play in expanding library service. The ALA Council resolved that:

1. All libraries collect and disseminate information about video and cable technologies.

2. Libraries be urged to act as catalytic agents in the design and development of local cable systems by educating municipal officials, schools and colleges, and the public to the potential benefits of cable communications in the community.

3. The ALA undertake an immediate study of the possibilities for the use of video and cable technologies for extending current library services including special, public, and academic libraries.[76]

By the end of 1974 there were more than twenty active sub-committees of the ALA assigned to either study and/or encourage library involvement in cable television.[77]

The handicapped and others who have special educational problems are likely to be priority beneficiaries of interactive and library programming for cable television. The legal rights of place-bound populations and the special capabilities of cable transmission systems to serve their needs will comprise the content of the next section.

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[76] "ALA Council Passes Cable Resolution," Cable Libraries, 1:1, Mary, 1973.

[77] Drolet, p. 77.

## Cable Television and Special Education

The previous section on the interactive uses of cable noted an experiment that was conducted with two homebound students in Overland Park, Kansas. (See page 54.) This test utilized the same scheduling and audience size flexibility provided by cable's channel capacity that we have been stressing throughout this study. We'll discover that this "narrowcasting" capability has made cable the medium for several innovative special education projects. The needs of these special groups have received reinforcement and attention from court decisions.

The right of all young people to an education has been "deemed of paramount importance." Legal opinion generally endorses the view that it is the state's responsibility to "provide for the establishment and maintenance of a uniform system of public schools, which shall be open to all children of the state."[78] Yet, the number of handicapped children or those with other special problems is often greater than the present facilities of the public educational institutions are able to cope with. Consider the cases of Larry McMillan and Teddy Sola.

In 1970, an action was brought on behalf of three severely brain damaged children who were not being educated in the city of New York. The City had instituted 152 classes serving 745 brain-injured

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[78] Michael S. Sorgen et al., State, School, and Family: Cases and Materials on Law and Education (New York: Matthew Binder, 1973), pp. 12-5-6.

children, but another 309 such children were subject to the uncertainties of remaining on a long waiting list. State law provided that up to $2,000 per year be made available to place such students in private schools, if public facilities could not be made available to them. However, in these and other instances, the means of the parents were not great enough to meet the tuition payments required by the private institutions that could accept their children.[79] What then is the State's responsibility to educate? What role can telecommunications technology play in meeting this public obligation?

In a 1973 case the Supreme Court found that 1800 non-English-speaking Chinese students were representative of over five million American youths who were entitled to an education in a language they could comprehend. The Court stated that "the total exclusion of petitioners from any educational opportunity violates the Civil Rights Act of 1964." Pursuant to this statute, the United States Department of Health, Education, and Welfare issued guidelines in 1970 requiring that:

> Where inability to speak and understand the English language excludes national origin-minority group children from effective participation in the educational program offered by a school district, the district must take affirmative steps to rectify the language deficiency in order to open its instructional program to these students.[80]

How can the financially strapped schools meet this legal, ethical, and educationally idealistic goal? It would seem that new technologies, such as cable television, could make a significant

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[79] Ibid., pp. 12-14. [80] Ibid., pp. 12-17-28.

contribution toward progress in the humanly critical field of bilingual education.

In a 1969 case the City of New York was found at fault for expelling 670 students from a single high school simply because that school was overcrowded. The federal district judge found that the plaintiffs (seven students who had been expelled) were being discriminated against by "being denied the opportunity to obtain the free public education that is extended to other school age youths."

> Such discrimination, if it is proven—especially when no effective alternate educational opportunity is provided—must be considered invidious, and in violation of the requirements of the Equal Protection Clause of the Fourteenth Amendment.[81]

In a 1972 decision, the Superior Court of the City of San Francisco found that the local unified school district at fault for failing to provide an eighteen year old with a level of functional literacy; despite the fact that the petitioner had attended San Francisco's public schools for over twelve years and been issued a high school diploma at the end of his senior year.[82]

In both of these cases we again see the same pattern of institutional inadequacy that broadband telecommunications technologies may be able to at least in part rectify. In the first, we find that overcrowding led to the abrupt termination of the students' education. What if students were not always required to be in class to satisfy their academic requirements? What if they could access supplemental and instructional material through their household television

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[81] Ibid., pp. 12-31-34. [82] Ibid., pp. 12-37-40.

sets? In the second, we are told that a variety of conditions, including, one assumes, overcrowding and the consequent inadequacy of individual advising and evaluation, led to the graduation of an illiterate adult from the local public schools. What if instruction in reading and writing had been available on a daily basis for years to this student and the two or three thousand others like him on their ways to diplomas in the San Francisco school system through the "narrowcasting" medium of cable television? Would the school system have been better served investing its money into such a system, rather than paying damages to its illiterate graduates? On-site playback facilities could also meet these needs but not in the direct and efficient manner of cable distribution.

There are a number of tests of cable's usefulness in special education situations taking place around the country.

Gallaudet College for the Deaf in Washington, D.C., for example, utilizes a closed circuit cable channel for the transmission of "captioned" programming that allows the deaf to follow standard television shows. Developed by the National Bureau of Standards, the captioning system, called "TV Time," allows the sending and receiving of captions in electronic code.

> An electronic signal is added to the picture at the transmitter or headend. A decoder on the viewer's set unscrambles the code and flashes a typed translation of the plot or dialogue along the bottom of the screen . . . . The "piggy back" signals do not appear on TV sets without the decoding device.[83]

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[83] "Cable offers hope to deaf," NCTA Bulletin, February 23, 1972, p. 3.

Prior to instituting this system, Gallaudet had to video tape regular programming and then caption it by hand. This process takes several weeks to complete and severely limits the number of programs that can be made available. The price of the decoder is about fifty dollars while the sending units are a little more expensive.[84]

Another application of cable to the problems faced by hearing impaired students is taking place in Willingboro, New Jersey. The local school district has produced a series of preschool programs called "Toy Shop" for community-wide viewing over the school's cable channel. The Willingboro area suffered a severe epidemic of German measles in 1964 that left many children with a hearing problem. There were not enough qualified speech and hearing therapy personnel to deal with the problems faced by these children. The Toy Shop series was designed to prepare these children and their parents for learning language skills.

> Fifteen programs on such subjects as "ball," "car and bus," "home," "walk and run," were prepared along with five parent programs on child development, hearing aids, and other subjects. Parents had a guide to help them work along with their children and the children had an instructional materials kit containing the same toys used on the TV programs. Parents' meetings were held after each program to review progress. Junior and senior high school students acted as crew and talent for the productions.[85]

Several cable programs are designed especially for convict rehabilitation. The Chillicothe, Ohio, cable system does monthly "Meet the Convicts" programs produced entirely by prison inmates. The Rawlins, Wyoming cable system records rehabilitation courses at the

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[84] Ibid.

[85] Cable Television and Educati[illegible] p. 15.

State Penitentiary for later cablecasting. Inmates at the County Prison facility in Northampton, Massachusetts produced their own programming after they were shown how to use video equipment by University of Massachusetts Media Center students.[86]

The University of Massachusetts Media Center is also active in producing programming for the elderly, and this whole area seems to hold promise for cable programming since the elderly are the most avid viewers of television. Students at the Center have produced a series of programs called "Senior Focus" which are intended to ease the isolation experienced by many who are over sixty-five. Representatives from the Amherst, Massachusetts Senior Community Center and Amherst Council on Aging participate in program preparation and host portions of the show. Some of the guests that have appeared on the show include: Senator Edward Kennedy, Arthur Fleming, at that time the chairman of the White House Conference on Aging, and representatives of Ralph Nader's Retired Professional Action Group.[87]

The elderly face many special problems. They often become the rejects of our society, withdrawing into an isolated world of their own. Television frequently becomes their most important means of contact with the world around them yet very little is done to communicate with this segment of the population directly. Even health and nutrition information is not communicated to them.

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[86] Ibid.

[87] "Students, cable systems aid elderly," NCTA Bulletin, April 4, 1972, p. 2.

The Department of Community Medicine of the Mount Sinai School of Medicine designed a cable television project to deal with health issues for the elderly. The site of the project is a large housing project built for the elderly in the East Harlem section of New York. Three hundred thirty residents live in the project and their median age is seventy-six years.

The residents receive a free video signal provided by Teleprompter Cable of New York. (The Lister Hill National Center for Biomedical Communication of the National Library of Medicine has funded the project and pays for the cable subscription as part of the experiment.) An unused channel has been activated for the exclusive use of the tenants. The system is fully bi-directional. Programming can originate from any one apartment and be transmitted to all the others as well as originating in a basement studio and other specially designated community areas.

The idea of the project is to use the persuasive capabilities of the television medium to "sell" health and health services. Programming covers a broad spectrum of subjects relating to the total being of the residents. More than one hundred programs have been developed on such subjects as:

1. News reports—news about neighbors and activities within the housing project and the surrounding community.
2. Shopping aids
3. Accident prevention
4. Personal care
5. Available health resources

6. Nutrition
7. Medication
8. Care of specific organs
9. Early symptom identification
10. Living with specific diseases
11. Mental health
12. Recreational activities
13. Fiscal problems of the aged

Forthcoming programs will deal with sensitive subjects including sex and death.

Tenant response to the project has been substantial. Over one hundred tenants have been on camera. Tenants assist in program production. A Tenant Cable Committee suggests ideas, previews tapes, and provides feedback from other tenants to the project directors. A Nutrition Committee has produced several effective tapes. Sixty-one percent of the respondents viewed the special channel. Attendance at one weekly health activity which was regularly advertised over the channel has increased from an average of fifteen to fifty people.[88]

The project's directors hope to utilize sensory monitoring devices to eventually establish a cable link between the housing project and the emergency room at a nearby medical facility to provide back-up medical services. The National Aeronautic and Space Adminis-

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[88] Edward Wallerstein, et al., "Television for the Elderly—A New Approach to Health," Educational and Industrial Television, 7:20-31, April, 1975.

tration devices could permit "instantaneous readings to the medical center of such things as E.C.G., blood pressure, respiration, etc., as taken by a tenant or a paraprofessional."[89]

The hope and belief in this project, as in all others attempting to innovate with the broadband telecommunications technology of cable television, is that more, better, and less expensive information can be provided to those many and varied special populations that need it.

Most of the 1966-estimated 2,000,000 young people enrolled in special education programs in the United States attend institutions which are part of local public school systems.[90] So far, little direct attention has been given in this study to the ways in which cable can be and is being used to serve the nation's twenty-seven million elementary and eighteen million secondary school students.[91] The next section will review this area.

Cable Television and the Public Schools

A 1970 survey conducted by the National Center for Educational Statistics of the U.S. Office of Education indicates that the country's public schools are semi-capable of integrating cable delivered informational programs into their learning systems. Of the nation's 81,000 secondary and elementary schools, 61,000 or seventy-five percent have at least one television receiver, and almost 21,000

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[89] Ibid., p. 31.

[90] The American Almanac, p. 115.

[91] Ibid.

own at least one video tape recorder. Of those schools that do own television receivers, approximately seventy percent currently utilize educational television materials in their curricula. However, only ten percent of all the nation's schools house ten or more television receivers, while fifty-two percent possess four or less. Thus, while public education has had substantial experience with educational television, its ability to record and distribute large amounts of programming to a number of classrooms simultaneously is very limited.[92]

Limitations aside, there is still a lot of experimentation with cable television happening in the nation's public schools.

The best known example of a school system using television comes from Washington County, Maryland where closed-circuit ETV project was successfully initiated in 1956 as part of a Ford Foundation backed inquiry into the instructional uses of television. By April of 1961, more than ninety percent of the 18,200 pupils in the Washington County School District received at least one period of televised instruction daily.[93] About thirty programs a day are transmitted over the five channel closed-circuit system. Subjects taught range widely from music to math and all grades 1-12 receive televised instruction.[94]

In March, 1972 Washington County made its first move to extend the product of its impressive closed-circuit facility to the.

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[92]Carpenter-Huffman, pp. 167-71.

[93]The Fourth Network, (New York: The Network Project, 1971), pp. 8-9.

[94]Carpenter-Huffman, p. 138.

general community by transmitting its first programming over the local Antietam Cable system. A large planning committee was set up and headed by the Superintendent of Schools who had been responsible for administering the Ford grant that established the CCTV system. Programs were planned for adult education, career forums, student produced series, teacher-initiated specials and public information discussions.[95]

Many schools and school districts are active in producing programming for distribution by cable or in permitting what was formerly closed-circuit programming to be transmitted to the rest of the community. The Danville, Illinois public schools, for example, have been using a dedicated access channel on their local cable system since 1970 that reaches approximately three hundred classrooms and over 11,000. In addition to the dial access film distribution system noted on page 53, the Danville schools use cable for:

1. In-service programs for teachers and administrators. We video tape teaching techniques and methods used by experienced teachers as a help to newer teachers. . . . Also, videotaped presentations by university professors and personnel from the Area Service Center for Gifted Children provide teachers with a varied source for new ideas.

2. Community service. We have taped well over one hundred programs for cable distribution during evening hours to parents in their homes. These include Christmas programs, student written plays, speeches, student council meetings, exhibits, concerts, and other subjects . . . . This can

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[95] Herman Niezielski, "Programs for the Community from the Schools," Educational and Industrial Television, 4:19-20, May, 1972.

be an effective way to show positive school situations which many parents would not ordinarily see.

3. Instructional programs broadcast on WILL-TV, the station of the University of Illinois at Urbana-Champaign, are videotaped and replayed in color at a more convenient time . . . . We have produced a few instructional programs locally . . . and are about to begin producing an art series . . . for students in the elementary grades.[96]

In rural Tamaqua, Pennsylvania, the area's 1,000-student high school has been actively cable casting since the summer of 1972. Programming includes a weekly sports show in which team captains and coaches are interviewed and sports events cablecast, a high school-based community arts council produced dramas, instructional programming which included an Astronomy course in which a camera and a telescope were interfaced, and a tape explaining the high school's new seminar approach to its American History course.[97]

The El Paso County School District No. 11 in Colorado Springs, Colorado serves a total of fifty schools and approximately 36,000 pupils. Its broadcast quality ITV Department has been actively producing instructional television for cable distribution. In one year, the six person staff creates over 1,500 separate pieces of programming including, for example, a series of fifteen minute shows on art and science for the elementary schools or in-service education and general information programs produced in conjunction with curriculum directors,

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[96] "How Schools Use Cable in Illinois," Educational and Industrial Television, 6:20, April, 1974.

[97] Mary Hollowell, "Focus on Tamaqua," BM/E, November, 1973, pp. 61-64.

supervisors, and administrative personnel.

> Four VTRs are used to feed productions to the cable company's central distribution unit, and they are distributed over mid-band Channels F, G, and H. This programming can be picked up and played only on television receivers equipped with special mid-band converters . . . . It cannot be received in the homes of the community.[98]

In Pacifica, California, the educational cable link was established in 1971 by Mr. Layton Jones, chairman of the Mathematics Department at Oceana High School. Beginning that year, Mr. Jones began to hold weekly training sessions for twenty high school students at the local cable studio. After their apprenticeship was completed, the students were invited to produce local origination and public access programming. One student produced documentary received an Emmy award from the local San Francisco chapter of the National Academy of Television Arts and Sciences.[99]

Educators are becoming aware of the cable as a communications channel for their views, needs, and images to the constituencies support them. Cable is being called "the educator's most direct public relations avenues into the community."[100] Cable offers public education an opportunity to let the taxpayer know how his/her money is

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[98] Eugene Waldman, "How Schools Use Cable Television in Colorado," Educational and Industrial Television, 6:22, April, 1974.

[99] Layton Jones, "How Schools Use Cable Television in California," Educational and Industrial Television, 6:22, April, 1974.

[100] Helen Bain, "The Electronic Highway," Cable Television and Education, p. 8.

being spent. It can be useful to the school district that needs an informed citizenry to study questions of school financing, such as bond issues that have to be approved by voters.[101] Available data indicate that these community outreaches are paying off.

For example, more people seem to be getting involved in local education affairs in Coeur d'Alene, Idaho, since the school board meetings have been cablecast. Those who previously had only marginal interest, now seem to be taking a more active role in attending meetings and staying informed of educational issues. Special programs on school budgets and financial issues have drawn favorable responses from viewers and administrators in Elmira, New York and Palm Desert, California, but there is no confirmation that they have been successful in eliciting approval for new financial obligations.[102]

The Willingboro Township Public Schools, whose innovative cable programming for handicapped children was mentioned earlier (see page 65), have been very active in providing a range of school-to-home programs over the cable system, including:

1. Coaches Corner, a discussion of high school athletics.
2. Transmission of student-produced videotapes on such subjects as "How Congress Works" (made in Washington, D.C.), a student interview with the assistant administrator for the Federal Aviation Agency on a proposed jetport in the vicinity of the school district, another student interview with a state senator on the Anti-Ballistic Missile System.
3. Taped sessions of the Social Action Committee established at the junior high school to work for better human relations.

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[101] Ibid., pp. 8-10. [102] Ibid.

4. Entertainment by student musicians and dancers.

5. Information about new school programs.[103]

Much of what is produced by schools for cable presentation is created by the students themselves. John LeBaron of the Massachusetts State Department of Education has placed this process within the context of "open learning" theory. The assumptions of open learning which LeBaron applies to student created television include:

1. A belief that the child should manipulate the tools of learning;

2. that the child should share in the shaping of their school environment;

3. that the school environment should reflect outside experiences;

4. that respect for the child's work should be demonstrated by public displays; and

5. that school curriculum should extend from the child's individualized needs.[104]

Young people are subject to an incredible amount of one-way communication from a present telecommunications system. They become visually sophisticated at a very early age, but, since they rarely have access to electronic media, they are unable to create in the form that they know best. This tends to make them powerless and passive recipients of other people's messages and experience. The structure of our national communications system must surely create more tension for our children who live in the oppressive circumstances of our inner

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[103] Carpenter-Huffman, p. 137.

[104] John LeBaron, "Video, Television, and The Open Classroom" (paper published May 25, 1973, n.p.).

city ghettoes.

In 1972, LeBaron set out to make a contribution toward changing these conditions by establishing the Children's Video Theatre, a pupil-centered television project operated out of the University of Massachusetts School of Education in Amherst. The students participating in the project were drawn from the fifth and sixth grades of the urban core schools of Holyoke, Massachusetts. Their behavior and self-images were influenced by their backgrounds of poverty, low scholastic achievement, and low self-esteem.

It was assumed that the students would respond immediately in a positive fashion to the opportunity to produce their own television programming. However, the children did not at first respond with initiative and responsibility to their new situation. In fact, the children were more disruptive with the project staff than they were in their regular classrooms. These responses seem to derive from the low self-esteem which was firmly entrenched in these students.

A one-year project can not eradicate such deeply held attitudes, but the problems were confronted and sufficiently overcome to allow for the production of six fifteen minute videotapes that were cablecast a total of twenty-four times over the local cable system. The students were encouraged to explore and create programming about their own immediate concern. One production was a how-to-do-it show on soap carving; another dealt with the child's perception of fear as it is evoked in "Dracula."

The project had positive secondary results: academic performance, especially in language skills, was improved. Television is

collective activity; each child had to learn the different functions required in production and to appreciate the problems others face when confronted with a task he has had to master as well. Children who had a reputation for troublemaking had the opportunity to appear before audiences as competent and constructive.

> All curriculum areas are incorporated into the work of a television production. Language skills are exercised, among them researching and organizing information, writing scripts, speaking and listening. The arts are involved in creating sets and graphics, and musical skills are used in providing theme or background music for programs. The continuing cooperation demanded by television production results in positive social learning. The technical skills developed by operating the video taping equipment are of no small importance; they promote a sense of control and help diminish the underachievers' feeling that they "can't do anything right."[105]

Seeing their work on a cable access channel gives the child, especially the less able, a sense of pride enhanced by public recognition. Cable gives the child an electric podium removed from the threatening circumstances of live presentation. Video tape work allows the child an opportunity to correct his mistakes or simply decide to not exhibit them for public view. "Child-created television provides another means for the child to display competence to himself and to others who are important to him."[106]

All of these uses of cable television for educational purposes cost money. A question of priorities must arise: why spend money for the production of cable programming rather than spend it for more tra-

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[105] John LeBaron and Louise Kanus, "Child-created Television in the Inner City," The Elementary School Journal, 75:412, April, 1975.

[106] Ibid., p. 413.

ditional educational methods or for other forms of instructional television programming? In the final section of this chapter, we will develop some information that tends to indicate that, in addition to its other putative benefits, cable is a sound financial investment. We begin by turning back to the nation's largest educational user of cable, Oregon State University.

## Cost Benefit Analysis of Cable as an Educational Delivery System

A 1971 study quoted in Leland Johnson's Cable Television and Higher Education concluded that charges per annum at a resident college will range from $5,000 to $8,000 by 1980, unless some new, cost effective educational delivery systems can be developed.[107] Is cable television such a system?

Johnson concluded that it was in his study of the Oregon State University television operation. Assuming that the extent of savings for a given total student enrollment depends on (a) the size of the classes that would have been required in the absence of television and (b) the amount of time spent by faculty on academic activities outside of preparing for and meeting classes, Johnson found that the savings are substantial.[108]

His analysis compared the number of students enrolled in video taped courses vs. the number of sections that would have to be arranged to accommodate those students if they were in class. One hundred twelve hours per week would be required to teach 8,500 students in class while

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[107] Johnson, p. 5. [108] Ibid., p. 11.

only twenty course hours are necessary for videotaped classes. In-class presentations would require an outlay of $96,000. The cost of faculty time and production expenses must be subtracted from these savings. The bottom line is an estimated savings of $32,000 based on a class size of fifty.[109]

This is a conservative estimate. Dr. Livingston, director of the Television Center at Oregon State University, feels that the savings his operation represents to OSU is well in excess of $100,000 and doesn't even want to know the precise figures because he is concerned about repercussions from the University's heavily unionized faculty.[110] Moreover, these figures do not indicate the massive amount of new capital that would have to be developed to replace the televised courses with classrooms that do not exist and teachers that would have to be hired to sit in them.

We all know that quality television is expensive to produce, but the question is: can educational television for cable be produced for less than the same programming for broadcast? What about equipment? Do educators save money on equipment by using cable delivery systems or is some other equipment configuration more appropriate economically for educational television?

Quick and Wolff estimate that the minimum equipment base for

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[109] Ibid., p. 12

[110] Statement by Harold Livingston, personal interview, Oregon State University, August 1, 1975.

a one inch color television studio is around $75,000.[111] Less is needed if the educational institution decides to use a smaller video format. As Table 5 indicates, per program production costs vary widely in educational television from twenty-five dollars per hour for portapak edited black and white videotape to $35,000 quad color production for broadcast. Obviously, the less sophisticated equipment one has to purchase to make a quality product, the more savings one can obtain. Since signal quality loss is not as great utilizing an amplified cable distribution system as it is with open circuit broadcasting, the video signal produced by small-format, i.e., less expensive, helical scan technology often yields a clear picture when transmitted by the cable.

The most crucial equipment issue concerns the transmission of programming. If the educational institution makes a commitment to purchase a broadcast transmitter, a tower, the land to put them on, the staff to operate and maintain them, it is talking about an investment of a very sizable amount of money. On the other hand, if the educational agency can make use of a pre-existing cable system for the distribution of its programming, the cable line can be accessed with as little as a $1,500 signal modulator which itself must be provided for free to a designated location under the terms of present federal regulation.

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[111] John Quick and Herbert Wolff, Small-Studio Video Tape Production (Reading, Mass.: Addison-Wesley, 1972) p. 31.

Table 5

Summary of Costs for Production of Televised Courses.

| Description | Cost per Hour |
|---|---|
| Simple black and white taped instruction | $25-100 |
| Edu-Cable estimate | $300-1,200 |
| Coast Colleges' psychology course | $3,300 |
| North California Consortium Estimate | $3,500 |
| Chicago TV College | $3,900 |
| Bavarian Telekolleg | $4,500 |
| "Sesame Street" | $31,200-35,400 |
| Coast Colleges' cultural anthropology course | $33,000 |

Source:

Richard Adler and Walter Baer, Aspen Notebook: Cable and Continuing Education (New York: Praeger, 1973), p. 71.

A study by Carl Pilnick, President, Telecommunications Management Corporation, indicates that cable is substantially less expensive than an ITFS broadcast system when an existing cable system can be used for signal delivery.

Pilnick's study assumes that both systems have:

1. One central studio and distribution center.
2. A total of ten schools with an average of five hundred students per school. Eight schools are located within a six-mile radius of the studio and two within twenty-five miles.
3. Four channels of program material (the maximum normally granted under an ITFS license).[112]

Figure 2 is a copy of the assumed ITFS distribution system, and Table 6 is an estimate of the costs involved in it.

Pilnick notes that, since current statutes entitle educational institutions to share access to only one cable channel, the other three channels must be leased. The expense involved is estimated at $62,500 yearly. Figure 3 is a description of the cable system assumed, and Table 7 is an estimate of the non-production expenses involved in operating the educational access component. The total figure of $26.75 per student is very substantially less than the $41.42 estimated for the construction and operation of a closed-circuit bi-directional ITFS system. Even if no cable system were available Pilnick's estimates indicate that the schools could build a dedicated four channel cable system interconnecting the schools in this example for about $73,000 (see Table 8). The per student cost is still $1.88 less in this

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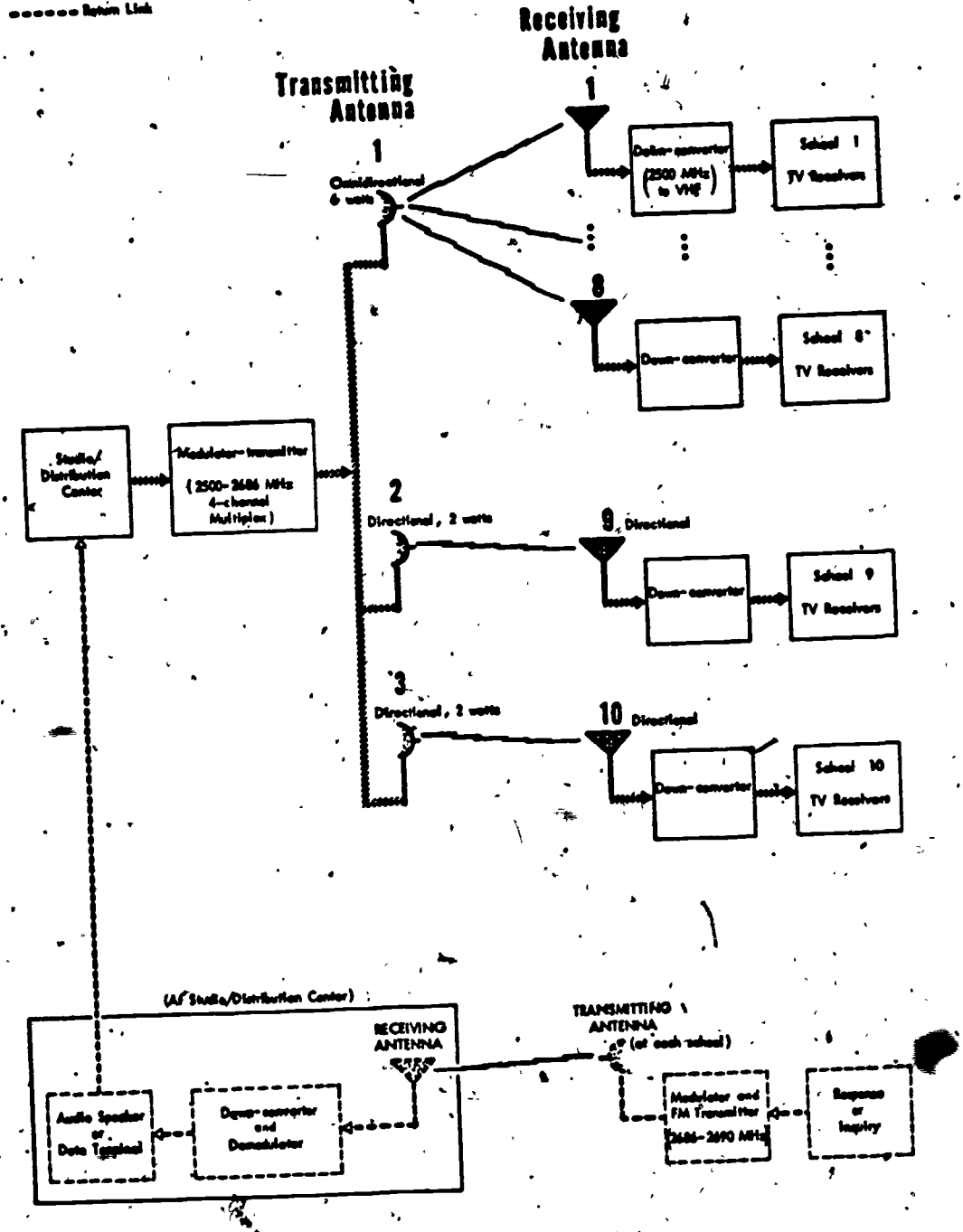
[112] Carpenter, p. 251.

Figure 2

Pilnick's ITFS Distribution Model




Source: Polly Carpenter-Huffman, et al. Cable Television: Developing Community Services. Rand Cable Television Series (New York: Crane, Russack, and Company, 1974), p. 255.

# Table 6

ESTIMATED COSTS, ITFS SYSTEM
10 schools, 500 students per school
(in dollars)

| Component | One-way Communication | Two-way Communication |
|---|---|---|
| A. Items identical for ITFS and cable systems | | |
| 1. Studio/distribution center, color, 4-channel capability | 160,000 | |
| 2. TV receivers (and stands), color, assume 20 per school @ $400 | 80,000 | |
| 3. In-school cabling, from central distribution point to classrooms @ $4,000 per school | 40,000 | |
| 4. Coaxial cable link from studio to transmitter (or cable system head-end) | 5,000 | |
| B. ITFS--one-way communication | | |
| 1. Transmitting tower | 25,000 | |
| 2. Transmitter, 4-channel multiplex, and 3 transmitting antennas | 60,000 | |
| 3. Receiving antennas and down-converters<br>8 @ $1,500<br>2 @ $8,000 | 28,000 | |
| C. ITFS--two-way communication (audio only) | | |
| 1. Push-button actuated microphones (1 per TV receiver @ $50) | | 10,000 |
| 2. FM modulator-transmitter<br>10 @ $5,000 | | 50,000 |
| 3. FM transmitting antennas<br>8 @ $500<br>2 @ $4,000 | | 12,000 |
| 4. FM receiving antenna and down-converter | | 5,000 |
| 5. Audio distribution and switching equipment, central studio | | 1,000 |

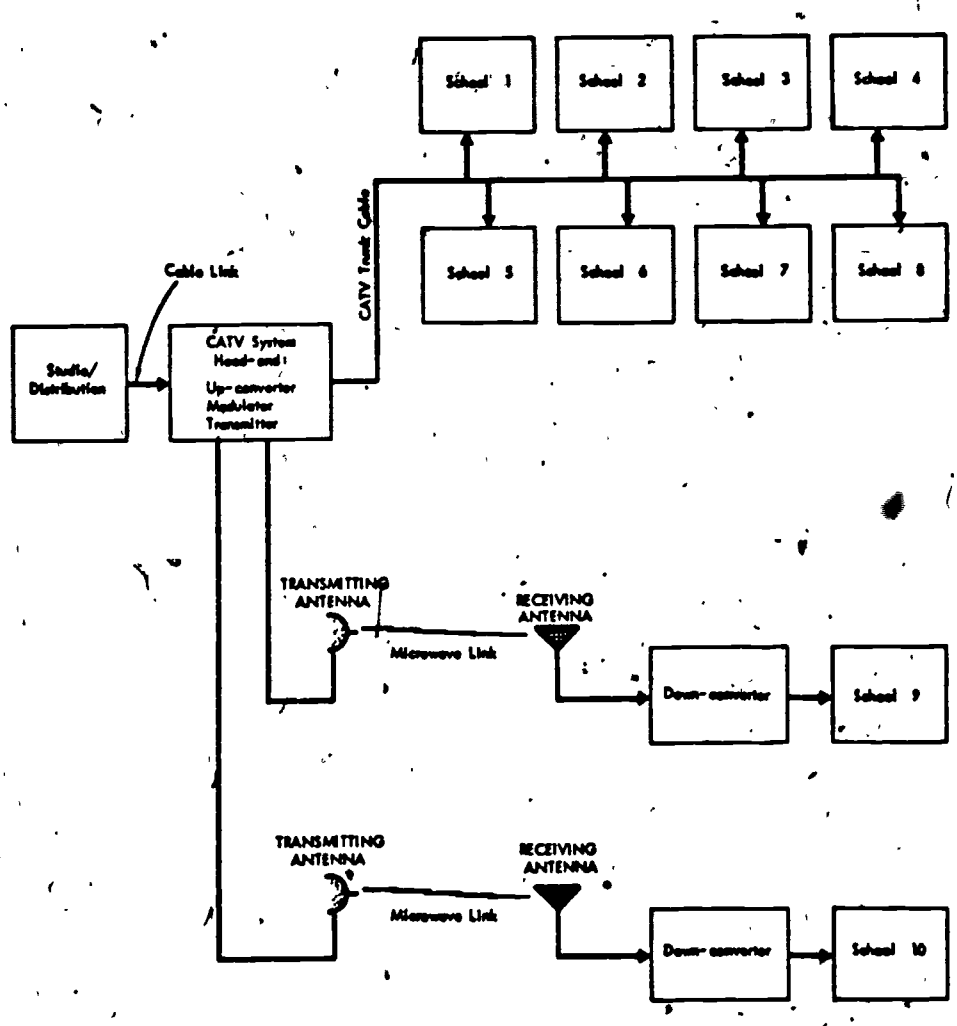
| Cost Category | One-way Communication | Added Cost: Two-way Communication |
|---|---|---|
| Total equipment cost | 398,000 | 78,000 |
| Equipment cost per year (8-year amortization period) | 49,750 | 9,950 |
| Operating cost per year (including rental of buildings and facilities, exclusive of programming) | 100,000 | — |
| Maintenance cost per year (10% of equipment cost) | 39,800 | 7,800 |
| Total cost per year | 189,550 | 17,550 |
| Cost per student per year (@ 5,000 students) | 37.91 | 3.51[a] |

[a] Total = $41.42 per student per year.

Source: Polly Carpenter-Huffman, et al. Cable Television: Developing Community Services. Rand Cable Television Series (New York: Crane, Russack, and Company, 1974), p. 256.

Figure 3

Pilnick's Cable Distribution Model




Source: Polly Carpenter-Huffman, et al. Cable Television: Developing Community Services. Rand Cable Television Series (New York: Crane, Russack, and Company, 1974), p. 258.

## Table 7

ESTIMATED COSTS, EXISTING CATV SYSTEM
(in dollars)

| Component | One-way Communication | Two-way Communication |
|---|---|---|
| A. Items identical for ITFS and cable systems | | |
| 1-4. Same as Table 8 | 285,000 | |
| B. Cable system components—one-way communication | | |
| 1. Pro rata cost of 3 channels of 24-channel CATV system | 62,500 | |
| 2. Microwave links to schools 9 and 10, up-converters, modulators, transmitters and antennas, receiving antennas, down-converters | 40,000 | |
| C. Cable system—two-way communication | | |
| 1. Push-button actuated microphones (same as Table 8) | | 10,000 |
| 2. Schools 9 and 10 FM, transmitter-receiver systems<br>2 modulator-transmitters @ $5,000<br>2 transmitting antennas @ $4,000<br>1 receiving antenna and down-converter @ $5,000 | | 23,000 |
| 3. Audio distribution and switching equipment, central studio | | 1,000 |

| Cost Category | One-way Communication | Added Cost: Two-way Communication |
|---|---|---|
| Total equipment cost | 387,500 | 34,000 |
| Equipment cost per year (8-year amortization period) | 48,438 | 4,250 |
| Operating cost per year (exclusive of programming) | 60,000 | — |
| Maintenance cost per year (5% of equipment cost) | 19,375 | 1,700 |
| Total cost per year | 127,813 | 5,950 |
| Cost per student per year (@ 5,000 students) | 25.56 | 1.19[a] |

[a] Total = $26.75 per student per year.

Source: Polly Carpenter-Huffman, et al. Cable Television: Developing Community Services. Rand Cable Television Series (New York: Crane, Russack, and Company, 1974), p. 259.

## Table 8

ESTIMATED COSTS, DEDICATED CABLE SYSTEM
(in dollars)

| Component | One-way Communication | Two-way Communication |
|---|---|---|
| A. Items identical for ITFS, cable, and dedicated cable systems | | |
| 1-4. Same as Tables 8 and 9 | 285,000 | |
| B. Dedicated cable system--one-way communication | | |
| 1. Cost of special cable system | 75,000 | |
| 2. Same as Table 9 | 40,000 | |
| C. Dedicated cable system--two-way communication | | |
| 1. Same as Table 9 | | 10,000 |
| 2. Same as Table 9 | | 23,000 |
| 3. Same as Table 9 | | 1,000 |

| Cost Category | One-way Communication | Added Cost: Two-way Communication |
|---|---|---|
| Total equipment cost | 400,000 | 34,000 |
| Equipment cost per year (8-year amortization period) | 50,000 | 4,250 |
| Operating costs per year (exclusive of programming) | 100,000 | — |
| Maintenance cost per year (10% of equipment cost) | 40,000 | 3,400 |
| Total cost per year | 190,000 | 7,650 |
| Cost per student per year (@ 5,000 students) | 38.00 | 1.53[a] |

[a]Total = $39.53 per student per year.

Source: Polly Carpenter-Huffman, et al. Cable Television: Developing Community Services. Rand Cable Television Series (New York: Crane, Russack, and Company, 1974), p. 260.

instance than it would be for the ITFS system.[113]

Savings in travel costs alone should make cable a viable option for those institutions that draw heavily upon commuting populations. Making registration information and other administrative data available to cable subscribers should alleviate parking congestion, energy expenses and office supply charges. The Rand study of Cable in the Dayton-Miami Valley estimates that one institution attended largely by commuters could provide all the administrative services currently available at half the costs presently entailed in travel by students to receive them.[114]

Substantial savings can also be achieved by using cable's broadband technology for services which now are delivered by phone lines only, e.g., facsimile transmission of reference material. The Telecommunications Management study of cable applications to institutional service in the Portland, Oregon area focused on this question. Analyzing the needs of the Multnomah County's eighteen library facilities, TMC pointed out that most reference works are located at the main library only. At present, requests for copies of pages from reference works can be filled out at any branch from which they are hand-delivered to the Main Office. Once the materials are located they are copied at a cost of ten cents a page and either mailed back

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[113] Carpenter, pp. 253-260.

[114] Leland Johnson, et al., Cable Communications in the Dayton-Miami Valley: Summary Report (Santa Monica, California: Rand Corporation, 1972), p. 42.

or hand-delivered to the requesting branch. The three day delay that most users can expect forces many of them to expend time and energy to travel to the main library to find their own material.

The libraries have looked into the alternative of facsimile transmission by telephone, but have not found it to be a very effective option because the toll charges involved in switching exchanges from one section of the county to another are too great when multiplied by the three to six minutes required to transmit a single page of copy. The time factor severely limits the number of pages which can be transmitted during the working day to 80-160 pages, assuming continuous transmission.

Newer facsimile terminals are available that can transmit a page in fifteen to thirty seconds or less. They usually require a wider-band circuit than a standard voice-grade telephone line can deliver. Cable can, of course, accommodate these bandwidth requirements.

The newer facsimile terminals lease for between $600 and $800 a month for an encoder/decoder pair. For a normal work month of twenty-two days, this is a cost of about $30-35 per day.

> If the two terminals were used an average of 2 hours per day, at 2 pages per minute, a total of 240 pages would be transmitted each day. At $30-35 per day, the cost of each page, due to the terminal costs, would be 12-15 cents per page. Even after adding in the costs of leasing another cable channel, the cost per page probably would be below 20 cents . . . . 20 cents per page is about the same as copying costs and mailing costs . . . . Thus without estimating the value of instantaneous delivery, the direct cost of cable transmission becomes competitively attractive . . . . The key factor is whether a sufficient volume of communications exists between any two locations to make the per page

cost due to terminals attractively low . . . about 250 pages per day.[115]

Dr. Charles Ruffing of the Michigan State Department of Education discusses a couple of other examples of the costs involved in using narrow-band technologies, such as the telephone, for narrowcasting educational applications. In Macomb County, Michigan, every junior high and high school building has several teleprinters connected to a master computer at the local district school office. The telephone charges for the one hundred teleprinters connected to that computer are $32,000 monthly. Another instance of this kind of interconnection costs a second school district $20,000 yearly. These large fixed charges would be greatly reduced by using the cable which can accommodate many hundred of data channels.[116]

H. S. Dordick, the former Director of Telecommunications for the City of New York and for President Johnson's 1967 Telecommunications Policy Task Force, has developed financial projections for an educational pay cable system. Dordick assumes that fifty percent of the users of the educational pay channel will not be taking the courses offered for credit while fifty percent will. The former he would charge $1.00 per hour of viewing time and the latter $2.00 for an average revenue of $1.50/hour/viewer. He further assumes that five percent

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[115] Cable Communications: Analysis of Institutional Services and Management Plan, n.p. (Duplicated draft).

[116] Charles Ruffing, "Constructing the Electronic Highway," Over the Cable (Washington: National Cable Television Association, 1974), pp. 46-7.

of the system's subscribers will view at least twenty hours of different programming weekly.

Using these figures, Dordick derives yearly revenues of $1,500,000 for a cable system with 20,000 subscribers. Costs are divided into five major categories:/

1. Channel leasing of one channel on a twenty channel system, assuming an average subscription charge of $60 per year, $60,000 indicating a $60 per hour cost for delivery of educational information.

2. Amortizing production costs over four showings, this figure should range from $75-300.

3. Capital and operating costs for a color studio: $160,000 in total capital costs, reducing to $40 per hour amortized over four years; $84,000 in operating costs, reducing to $84 per hour of instruction.

4. $100 per hour in support costs including clerical costs, rents, legal and accounting fees, promotion, etc.

5. Costs for "de-scrambling" units which allow subscriber to receive pay television signal to be installed in every subscriber's home amortized over four years, $250/ billable hour.[117]

Dordick then estimates that an educational pay cable operation subscribed to by five per cent of a 20,000 subscriber CATV system which is not responsible for its own production would begin profitable operations within nine months, break even on total fixed and incremental costs within twenty months, and show a pre-tax return on investment of thirty-five percent once steady-state operations are achieved.[118]

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[117] Adler and Baer, pp. 121-22.

[118] Ibid., pp. 119-125.

## Conclusion

The point of this chapter has not been to present cable television as a panacea for all of education's problems—learning will always ultimately be a matter of people communicating within the social context of their lives. Rather, what we have tried to show is that cable television does offer many opportunities for education innovation that can be achieved at cost-competitive prices.

In the next chapter we will turn to some background data on Marin County, California. This chapter will review, in brief, Marin's social and economic profile, the development of cable television in the county, and the evolution of the use of television in its schools up to the present time. This information will provide us with the context we need to understand the current and planned uses of cable television for educational purposes in Marin which are detailed in Chapter 6.

## Chapter 4

## MARIN COUNTY: PEOPLE, CABLE, AND ETV

The preceding chapter has indicated the breadth of educational activity that could potentially be conveyed via the broadband technology of cable television. In this chapter we turn to the more specific focus of our inquiry.

The object of this thesis is to assess the probability that the potentials outlined in Chapter 3 will be acted upon in one specific region of the United States: Marin County, California.

Before we can understand what Marin educators can or may do to realize the educational potentials of cable television, we must first know more about the socio-economic structure of this county, the development of cable television service within its boundaries and the general experience among educators with the use of television in Marin. These three subject areas comprise the content of this chapter.

Having studied these issues, we can then place the subject of Marin's educational experience with and plans for cable television in a broader context. Knowing more about the people of Marin, the attitudes of local educators towards telecommunications technologies, and the technical and economic parameters structuring the responses and initiations of the local cable system, we should be able to conclude what potential use, if any, Marin educators will make of their legal right to access channel space on a privately owned cable television system.

Marin Profile

Marin County occupies a land mass of approximately 333,000 acres directly to the north of San Francisco, California. The 1970 census showed a total county population of slightly over 206,000, all but 15,600 of whom were classified as urban dwellers.[1] Marin County residents live in the towns and medium sized cities of Novato (30,863), San Rafael (38,977), San Anselmo (13,031), Fairfax (7,661), Larkspur (10,719), Corte Madera (9,645), Tiburon (6,209), Belvedere (2,599), Mill Valley (12,942), and Sausalito (6,158) which abut or are within a few miles of US Highway 101, the main transportation artery into San Francisco.[2]

Marin County residents are, in general, affluent, highly educated, and articulate. An individual Marinite's per capita income of $4,794 places him seventh among residents throughout the United States in this category, and the median family income of $13,931 for Marin's 51,912 families places the county eleventh in the country in this ranking.[3] While the individual towns and cities all show higher than average mean income figures, there is substantial variation throughout the county ranging from $11,800 per family in Fairfax to $30,741 in Belvedere. Not all Marinites enjoy this high standard of living, however. Almost twenty percent of the 8,000 plus blacks and other

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[1] Marin County Statistical Abstract, (San Rafael, California: Marin County Planning Department, 1974), p. 14A-1.

[2] Ibid.

[3] Marin County Statistical Abstract, p. 34C-2.

minority citizens of Marin earn less than the officially defined national poverty level.[4]

Most Marinites hold the kinds of white collar jobs for which high levels of educational attainment are necessary. Members of the professions comprise 22.8 percent, 18.6 percent are in clerical occupations, 14.1 percent are involved in management, and 11.0 percent work in sales. In contrast, only 8.3 percent are craftsmen and 2.9 percent laborers.[5] Among the nine counties making up the San Francisco Bay Area, Marin residents have received more education on the average than any other county. Of the residents, 79.1 percent hold a high school diploma, and 12.8 percent have had some graduate study beyond college.[6] Approximately 60,700 people ages three to thirty-four are currently enrolled in some kind of educational program.[7] Minority residents fall behind again in this ranking. Of the 531 black Marinites aged sixteen to twenty-one in 1970, 235 did not attend school, and 68 had already dropped out of high school.[8]

This kind of educated and wealthy population presents a very favorable marketing mix to cable television operators. That is, Marin residents can easily afford one or more television sets in their homes and any related charges accruing from this purchase, such as monthly cable subscription fees. The general level of educational attainment should make Marinites consumers of a diversity of information thus

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[4]Ibid., p. 30B-15 [5]Ibid., p. 30B-1. [6]Ibid., p. 14B-47.
[7]Ibid., p. 14B-46. [8]Ibid., p. 14B-63.

inclining them toward the greater number of communications channels offered by cable relay systems. Furthermore, the rugged hilly terrain of this "earthquake country" of northern California makes broadcast television reception very poor in many sections of the county. These topological factors provide an extra, and probably crucial, incentive to local residents to subscribe to cable television services when they are made available.

The History of Cable Television in Marin County

In 1955, a few southern Marinites began to receive video signal via the coaxial cable for the first time after a headend and small distribution system were completed by Cable Television of Marin.[9] This was one of several small systems which operated in Marin until 1964 when Ted Charnek from the Los Angeles area began to infuse cable service in Marin with new capital under the corporate name of Clearview Cable.[10]

In the same year, Tele-Vue Systems, at that time a subsidiary of Television Communications Systems with several systems in Washington state, entered the cable franchising fray in Marin and competed with applications from Charnet's firm, Clearview Cable, and Robert Lewis' Cable Television of Marin in six cities, including Larkspur, Fairfax, and Mill Valley.[11]

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[9] Statement by Mrs. Robert Lewis, former owner, Cable Television of Marin, telephone interview, March 23, 1976.

[10] Resume of Theodore Charnek, 1964.

[11] Phil Fradkin, "TV Antenna Man Considers County as Sleeping Giant," Independent-Journal, July 23, 1964, p. 28.

Competition among the three firms was intense and typical of the issues that were being created by the new industry throughout the country. Local regulators were confused. In one instance the Marin County Board of Supervisors granted Clearview the franchise for several unincorporated areas of the county while Pacific Telephone signed an encroachment permit to use its poles to string cable with Tele-Vue for the same areas.[12] In another case, Tele-Vue appeared before the San Rafael City Council and claimed that it had been awarded an exclusive contract to operate a cable system in the Corte Madera franchisa area, when in fact no franchise had been granted.[13]

Local officials decried their position. Noting that neither state nor federal regulatory bodies had taken a stand on cable issues, government representatives based their franchise agreements on a 1963 model developed by Pleasanton for the League of California Cities[14] while calling upon the State Legislature to give the California Public Utilities Commission jurisdiction over cable standards.[15]

The public service potential of cable was also being discussed at this time. One applicant whose franchise proposal was rejected by

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[12]"TV Antenna Agreements Conflicting," Independent-Journal, July 23, 1964, p. 10.

[13]"Clearview Only Firm With Permit," Independent-Journal, July 22, 1964, p. 23.

[14]Phil Fradkin, "Marin Getting Sweet Talk on TV Antenna Systems," Independent-Journal, July 22, 1964.

[15]"Supervisors Seek State Aid on TV Cables," Independent-Journal, October 5, 1964, p. 8.

the City of Sausalito complained that "the schools will suffer" because he had intended to wire local educational institutions.[16] Tele-Vue won a ten year franchise to serve Corte Madera at least in part because it offered to "provide free service to public gathering places."[17] (Unfortunately, no more precise definition of "public gathering places" has been found.)

The most ambitious public service type cable operation to be advanced at this time was proposed by Sausalito Communications Service, a non-profit corporation whose formation was being considered by the Sausalito Foundation. The Foundation was dissatisfied with local cable service and believed that operation of a system might generate revenues to support other community service projects. Two of the Foundation's directors were broadcasters at that time: Jack Waggoner, presently director of broadcast operations for KCBS-AM, San Francisco and Ed Davis, current general manager and owner of KDFC-FM, KIBE-AM, San Francisco-Palo Alto.

The Foundation proposed the carriage of local government meetings, provision of free television service to the schools, city hall, and the public library and other public information activities. Although Sausalito approved of the Foundation's plan and granted it an exclusive franchise to operate in the Sausalito franchise area, the economies of scale, i.e., the cost savings associated with larger

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[16] "Cable Spokesmen Walk Out on City," Independent-Journal, September 16, 1964, p. 32.

[17] "Video Antenna Service Passed," Independent-Journal, February 2, 1965, p. 21.

economic size, demanded by efficient cable operations required Sausalito Communications Service to make applications for franchises outside of its own township. When these proposals were turned down in favor of ones submitted by more highly capitalized systems, the Foundation had to abandon its innovative plan for lack of investment incentive.[18]

The local cable war continued until 1968, when Tele-Vue and Clearview began to operate as a single unit. At that time, both systems carried twelve broadcast signals. Tele-Vue was serving 7,000 subscribers and maintained a 110 mile cable plant while Clearview provided signal to 5,000 through 120-125 miles of plant. The third system operating in the county, Cable Television of Marin, had only 400 subscribers and 27 miles of plant.[19]

In December of 1968, the Columbia Broadcasting System began to discuss terms of purchase with all three operators of cable systems in Marin.[20] In April, 1969, the local press reported the finalization of these negotiations with the sale of Clearview and Marin Cable for approximately $2.5 million in CBS stock.[21]

Two other large cable operators were granted local franchises

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[18] Statement by Mr. Peter Sloss, former director of the Sausalito Foundation, telephone interview, March 25, 1976.

[19] "Supervisors Rap Cable TV Operator on Poor Service," Independent-Journal, May 15, 1968, p. 6.

[20] "Columbia Eyes Marin Cable Firms," Independent-Journal, December 20, 1968, p. 10.

[21] "CBS Acquires Two TV Cable Firms in Marin," Independent-Journal, April 5, 1969, p. 3.

to operate in Marin in the early 1970's. Liberty Communications, the country's nineteenth largest operator with 94,000 subscribers, now owns an 8,500 subscriber system in Novato in northern Marin and Storer, the nation's thirteenth largest operator with 125,000 subscribers, holds an unused franchise to wire the sparsely populated regions of western Marin.[22, 23]

Cable remained an issue in the background of the Marin scene until 1974 when the merged systems of Tele-Vue, Clearview, and Marin Cable (now operated by Viacom; see pages 1-2 of this thesis) began seeking rate increases from its franchisers throughout central and southern Marin. Mill Valley was the first Marin town to respond to this request by appointing a citizens' committee to study the subject in December, 1973.[24]

Mill Valley, with 3,200 subscribers, represents a little over nine percent of Tele-Vue's Marin business. The city's report was very important in setting the tone for future municipality-cable company negotiations because it stressed the public access and local origination provisions of the Federal Communications Commission's 1972 Report and Order, as well as recommending a careful response to Tele-Vue's rate increase requests.[25]

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[22] "West Marin Cable TV Pact Awarded," Independent-Journal, March 3, 1971, p. 17.

[23] "Oregon Firm Buys G'Tec Cable Rights," Independent-Journal, July 11, 1972, p. 26.

[24] Report of the Mill Valley Citizens' Committee on Cable Television (Mill Valley, California: Mill Valley City Council, 1974), p. iii.

[25] Ibid.

The committee's research

> indicated a surprisingly high level of interest in the medium by our community. We submit that a proper and informed use of Cable T.V. will provide the citizens of Mill Valley with a unique opportunity to communicate with each other on a level hitherto unavailable.[26]

In addition to the access requirements in effect nationally at that time, the committee recommended that

1. The cable operator should provide a professionally staffed studio capable of live broadcasting from Marin County.
2. The cable operator should provide a mobile production van.
3. The cable operator should operate in accordance with the latest technical standards mandated by the FCC which may supercede the 20-channel service mentioned in the 1972 Rules.
4. The local origination channel should be governed by an independent group of citizens appointed by the City Council to insure:
   (a) that channel is free of censorship,
   (b) that it is open to all residents of the City on a non-discriminatory basis,
   (c) that it is available for debate on public issues,
   (d) that there is no tampering with program content, and
   (e) that advertising for political or commercial purposes is prohibited.[27]

The Committee also recommended that a permanent Citizens' Cable Committee "to involve the citizens of Mill Valley in developing and executing a grass roots program of community planning for and access to cable broadcasting." The Committee was to have the responsibility to engage in the production of programming felt to be of interest to Mill Valley residents. The Committee pointed out that the

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[26] Ibid., p. 17.

[27] Ibid., pp. 18-20.

very variety of activities participated in by Mill Valley residents makes a full appreciation of the community's talent unavailable through personal interaction or following the local newspapers. Video was felt to be a much more expressive medium that could be used to transmit the people's choice rather than NBC's or CBS's.[28]

Some of the pilot programs suggested included a study of the structure of the local City Council, a report from the city planning commission of Mill Valley's current planning problems, a program for and by Mill Valley's senior citizens, a program about the Mill Valley library, cultural and artistic events in Mill Valley, animals in Mill Valley, and the Mill Valley police.[29]

Mill Valley's call for a county wide cable plan must have been an inspiration to the City of San Rafael, Marin County's largest city, with more than 10,000 subscribers to Tele-Vue's cable system. When the cable operator sought a rate increase from the City, the town manager questioned the validity of Tele-Vue's claim that San Rafael subscribers must bear a portion of the general and administrative expenses of the system's corporate parent, Viacom.[30] The city council appointed a citizens' panel that included Mr. William Osterhaus, General Manager of KQED-TV (PBS), Dr. Virgil Hollis, Marin County Superintendent of Schools and Dr. Donald Leisey, Superintendent of the San

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[28]Ibid., pp. 22-28. [29]Ibid., pp. 31-36.

[30]"San Rafael Against Any Tele-Vue Rate Increase," Independent-Journal, January 16, 1974, p. 13.

Rafael City Schools to study the question.[31]

The committee recommended the hiring of a professional cable consultant to study the San Rafael situation. Tele-Vue agreed to fund this study for $12,000.[32] Carl Pilnick's Telecommunications Management Corporation was hired to perform the analysis. TMC is very well known for its broadband consulting work. (See pages 48-51 of this thesis) Pilnick is the author of several cable studies for government including Telecommunications in Education for the United States Office of Education, and his associate, Herbert S. Dordick, has held a number of cable related consulting jobs including the directorship of New York City's Office of Telecommunications.[33]

Pilnick's study, which is over 150 pages long, analyzed Tele-Vue's financial structure in depth and suggested a package of new rates attached to new services intended to satisfy both Tele-Vue's desire for a higher rate of return on investment and the city's need for a flexible communications channel.

The study suggests the maintenance of the system's present twelve channel capacity, the dedication of one entire channel to community access television, the construction of a full capability color studio at the cost of $225,000, the provision of a mobile television production van worth $107,000, microwave interconnection of the

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[31] "Consultant Proposed on Cable TV Rates," Independent-Journal, July 11, 1974, p. 10.

[32] Ibid.

[33] Resumes of Carl Pilnick and Herbert S. Dordick.

four headends the merged system has been operating with, and the provision of approximately twenty "land links" to remote origination points from the system headend. Table 9 is a list of the land links currently contemplated. Pilnick felt that this was the most reasonable bi-directional plan for Marin County. To have chosen another alternative would have been too great a burden on Tele-Vue's finances.[34] The entire package has been dubbed Level VI after its place on a decision matrix developed by Pilnick.

The Pilnick Report suggested rates for Tele-Vue's other service areas in Marin County and the cable operator has sought "Level VI" on a county wide basis. Unfortunately, as our further discussion will show, Tele-Vue's enthusiasm seems to have been more for the rate increases Level VI would bring rather than the augmented level of community services the technology can provide. The company's success has been mixed. Several city councils have turned down the proposal in the belief that their constituents would not approve of a rate increase whose impact would be similar to that of an increase in the property tax rate. Some sections of the county receive such a poor quality broadcast signal that virtually everyone living near a cable trunk or feeder line subscribes to the system. Eighty-five percent of the residents of Corte Madera, for example, whose homes are passed by the Tele-Vue system, subscribe.[35] Tele-Vue wasn't able to convince the Corte

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[34] Analysis of Cable Television Services and Rates (Los Angeles: Telecommunications Management Corporation, 1972), pp. 18-25.

[35] Letter to Mr. Frank Bigley, Finance Director, Town of Corte Madera from Mr. Neil McHugh, Financial Manager, Tele-Vue Systems, January 16, 1975.

Table 9

Marin County Level VI
Origination Points

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|---|
| Albert Park |
| San Rafael City Hall |
| Dixie School District Administration Building |
| 380 Nova Albion |
| Terra Linda High School |
| Marin Civic Center |
| Marin Civic Auditorium |
| San Rafael School Administration, Third & E Streets |
| Dominican College, 1520 Grand Street |
| San Rafael High School |
| Fairfax City Hall |
| Sir Francis Drake High School |
| San Anselmo City Hall |
| Mill Valley City Hall |
| Mill Valley Public Safety Building, Sycamore Street |
| Mill Valley Club House, Buena Vista |
| Corte Madera Recreation Center |
| Corte Madera Town Hall |
| Larkspur City Hall |
| Redwood High School |
| College of Marin |
| Tamalpais High School |

Source: Letter from Mr. Neil McHugh, Financial Director Tele-Vue Systems of Marin, January 15, 1976.

Madera Town Council that the new level of service promised by Level VI would outweigh the political consequences of raising the cost of what is, in effect, a public utility in their town.

At the end of March, Tele-Vue made a required report to the Marin County supervisors who had granted the company an increase in its rates to those unincorporated areas of Marin that it served. Franchisers regulating approximately seventy percent of Tele-Vue's service area have granted the company the rate increases it feels it needs to provide the community service entailed in Level VI. While stressing that

> lack of support by the Councils who turned down the rate increase have jeopardized the operational and economic viability of this specific plan . . . . The company reasserts its intent . . . to provide Level VI service if at all feasible.[36]

Tele-Vue has established the microwave paths for its proposed interconnection system, consulted with manufacturers and producers on the purchase of production equipment, and conducted "extensive" engineering surveys in anticipation of the construction of remote origination lines. Tele-Vue has stated that it expects Level VI to be implemented on a modified basis by September 1, 1976, "regardless of the disappointing action" taken by some of the city councils.[37]

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[36] Report to the Marin County Board of Supervisors, Implementation of Level VI Service, Tele-Vue Systems, March 30, 1976.

[37] Ibid.

Marin Community Video

Much of the interest in public service cable television in Marin County has been generated by the efforts of a small group of tireless and somewhat disorganized individuals who make up the core of Marin Community Video, Marin County's private non-profit video production agency. Noting the requirements of the 1972 FCC cable rules, an MCV spokesperson comments on "the deeper meaning and potential power of cable TV":

> We can express our concerns, views, artistry, learn more about ourselves, communicate more effectively, and gain greater understanding and respect for the needs and life styles of other people.[38]

MCV first began to take shape in the spring of 1973. By fall of that year MCV activists had begun to "threaten Tele-Vue with a political battle in every city and town that they went to for a rate increase."[39] Their efforts were rewarded when Tele-Vue reluctantly committed a small portion of duplicated channel space in prime time to MCV's use.[40]

MCV's stated purpose is to provide access to local residents to cable television programming by:

1. accepting and scheduling all videotapes submitted by the general community which relate to the community in any way in purpose or process;

2. providing, at minimal expense, a means for members of the community to be introduced to videotape technology and theory through workshops and to provide competently

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[38] Marin Community Video Handout (Corte Madera, California: Marin Community Video, n.d. ).

[39] Ibid.

[40] Ibid.

trained individuals a limited access to the equipment for producing videotapes; and

3. to produce videotapes for local programming on matters of importance to the community as a whole.[41]

MCV's first actual request for cable time pointed out some of the realities of cable access. A million square foot shopping center was scheduled for construction in Corte Madera. Several Corte Maderans were sponsoring a recall election against several councilmen who had voted in favor of the shopping center. They contacted MCV and produced a videotape that was supposed to be aired over the Tele-Vue system. The cable company, facing substantial political heat from the incumbent councilmen, refused to transmit the tape even after they had agreed to schedule the channel time.[42]

The local Marin County newspaper, the Independent-Journal, a Republican organ, representing the "provincial" Marinites of northern and western Marin, expressed concern over the "dangerous void in public cable television." The paper's editors warned local citizens to beware of "totalitarian" groups "seeking to promote its own ideological aims through control of cable programming."[43] Naming MCV as the only group that had shown continuing interest in cable programming, the newspaper editorial leaves the clear impression that it is concerned about the

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[41] Marin Community Video Policy Statement, December, 1975.

[42] "Recall Film Schedule Is Announced," Independent-Journal, September 9, 1973, p. 10.

[43] "Today's Editorial: Dangerous Void in Public Cable Television," Independent-Journal, January 11, 1974, p. 22.

social implications of the group programming the cable channel and recommends the creation of a county wide consortium of public agencies to oversee cable as access.[44]

The newspaper's concern over MCV's potential social impact and a fear of video generally was echoed several months later by some of Marin County's highest officials. In turning down a request by Marin Community Video to tape its meeting, one member of the Marin County Council of Mayors and Councilmen, County Supervisor Peter Arrigoni, proclaimed that the idea was "insane." The supervisor felt that the group would be "asking for trouble" if it let its constituents view the "great quantities of good food and drink" the members are "well known" for consuming. One group of council members wanted to approve the videotaping so that it could "grill" Marin Community Video staffer, Jerry Pearlman.[45]

Since it began regular programming in January, 1974, MCV has produced and arranged for the cablecasting of an enormous variety of videotape. It receives several hundred dollars monthly to produce a weekly half hour program on the activities of the Marin County Board of Supervisors. A special grant from the City of Mill Valley funded a series of programs on its seventy-fifth anniversary. Co-op Stores of Berkeley provide MCV with 1600 square feet of office, studio and editing space in exchange for some rent and a monthly program about the con-

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[44] Ibid.

[45] "Mayors and Councilmen Reject Videotaping of Next Meeting," Independent-Journal, March 28, 1974, p. 3.

sumer chain. One MCV staffer, Burt Arnowitz, created a series of intensely visual, if erratic, pieces of video art-con-journalism called Marin Magazine. Other MCV productions include drama, dance, political panel discussions, journalistic programming of all kinds, musical specials, documentaries on San Quentin, and many more that together comprise a very impressive list of productions.[46]

Beginning in May, 1975, Marin Community Video was able for the first time to afford payment of a production coordinator, Jack Schaefer, whose talents as a production specialist and administrator have contributed to the growing reputation MCV currently enjoys as a quality video production agency.

In addition to presenting its own production interests, Marin Community Video has also made the commitment to facilitate video production by all local citizens and agencies. To this end, MCV representatives have talked with hundreds of Marinites and local agencies about cable access. Representatives of Marin Community Video have initiated discussions of cable's potential with local educators.

The remarkable fact underlying this expenditure of energy is that those involved are dedicated to the social cause of community created television. The organization is run on the shoe-string financing of an occasional grant or production contract; the kinds of personal financial gains that motivate the work of many people are largely absent in this activity.

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[46] Marin Community Video Program Notes, various dates.

In this section we have outlined the development of cable television in Marin County. We've found that a large number of Marin's residents subscribe to cable television service and that in recent years a local citizens' group has begun to exert substantial pressure on the county's largest cable system to allocate channel space to locally produced video programming. Now the cable operator is using the community service potential of cable television as an incentive to convince municipal authorities to permit substantial rate increases in the monthly charges to local subscribers.

In the next section we shall detail the experience of local public educational institutions with the use of television in Marin's schools. We focus on this subject in depth because this background should help us to understand the framework within which any educational use of cable television will develop.

Television in Education: Marin County

Television was first used in Marin's public schools in 1957, when several schools began to receive instructional programming from KQED, the region's educational television station. Marin was participating with thirty-nine other school districts in the funding of this trial programming that was to become the basis for the Bay Region Instructional Television in Education (BRITE) consortium.[47]

Newly elected superintendent of schools, Dr. Virgil Hollis, spoke very positively of the prospects for educational television:

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[47] "TV Teaching Begins in Marin Schools," Independent-Journal, November 3, 1957, p. 1.

> We are making every effort to use practical innovations such as educational television. We have pilot projects emanating from KQED and plans are being made to rebroadcast these instructional programs from within Marin County for wider reception.[48]

Hollis was talking about a series of airplane surveys being conducted at that time to locate suitable sites for KQED that would boost the station's signal. At that time, the county's hilly terrain prohibited its reception by nineteen of the County's twenty-six school districts.[49] The plan was never carried out.

The College of Marin, the county's fifty-year-old community college, began to take an interest in educational television during the mid-1960's. An experimental electronic biology class was enthusiastically viewed by the school's trustees, but a holding action was suggested until more data could be collected on equipment purchases. However, video was praised as a closed-circuit distribution system that could link up the established college site in Kentfield with a new one under consideration in Novato. Dean Roy Mikalson proposed that the community college district operate a UHF station in addition to constructing a closed-circuit facility, noting that "the cost of VTR's was declining and that soon top teachers would be able to distribute tapes throughout the Bay Area."[50]

The Tamalpais Union High School District sponsored a television

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[48]"Hollis Will Be Candidate for Schools Post," Independent-Journal, March 5, 1962, p. 1.

[49]"Educational Video Booster Sites Sought," Independent-Journal, April 30, 1962, p. 8.

[50]"College Trustees Get Televised Lesson From Biology Instructor," Independent-Journal, November 5, 1965, p. 17.

feasibility study at about the same time. The report, written by Dr. Jacob Wiens of KCSM-TV—an educational UHF channel operated by the College of San Mateo to the south of San Francisco—recommended that an interschool instructional television transmitter be built that would link the District's office and three high schools with the Office of the County Superintendent of Schools.[51]

One of the elementary school districts located in the Tamalpais High School District's service area, Reed, purchased several thousand dollars worth of video equipment in 1966 for closed-circuit use. The equipment was stolen in 1970.[52]

In 1967, the County Board of Education lent moral, but not financial, support to the creation of a 2500 megahertz 4 channel ITFS system to serve schools in Napa, Solano, Sonoma, and Marin Counties. The plan was to use Mt. Tamalpais, Marin's outstanding natural landmark, as a relay tower center and the College of Marin as a production center. No action was subsequently taken on this plan.[53]

Nineteen hundred and sixty-nine was a year of substantial importance for educational television in Marin. The Bay Region Instructional Television Consortium (BRITE) underwent an analysis in that year by experts who sought solutions to some of the organization's pressing problems. At that time twenty-five percent of Marin's schools

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[51]"Study Supports Video for Tamalpais Area," Independent-Journal, October 5, 1965, p. 22.

[52]Statement by John Fitch, Principal, Reed School, telephone interview, March 15, 1976.

[53]"Closed-Circuit TV Purchase on Agenda," Independent-Journal, March 8, 1966, p. 8.

were receiving BRITE produced and/or distributed programming through broadcast channel 9 (KQED-PBS) at a cost of $1.10 per pupil. Rapid technical changes plus a congested broadcast spectrum were making BRITE's dissemination function very complicated.[54]

In order to formulate a new role for the BRITE organization in the future development and utilization of educational television, a seven-section questionnaire was distributed to all building principals and district superintendents in the thirteen Bay Area Counties. The objective was to use the data "to assess the feelings and attitudes of these administrators toward the past use of broadcast ETV in the Bay Area."[55]

Thirty-five of the ninety-three Marin schools and five of the eleven county districts surveyed responded to a mail questionnaire composed by the BRITE research team. The survey respondents generally claimed that:

1. Educational television did not fit into classroom schedules;
2. The schools did not have enough money to support the kind of programming and implementation of its use in the classroom.[56]

As Table 10 indicates, teachers, principals, and administrators in the overall survey had markedly different perceptions of the effectiveness of educational television in various uses.

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[54]George Bair, The Development and Utilization of Instructional Television Resources in the San Francisco Bay Area (Columbia, South Carolina: George E. Bair, 1969), p. 9.

[55]Ibid., p. A-1 [56]Ibid., pp. 34-40.

Table 10

Differing Appraisals of Educational Television by Superintendents, Principals and Teachers

| Item | District | Principals | Teachers | p |
|---|---|---|---|---|
| Teacher in-service | 65% | 48% | 29% | .01 |
| Presenting Master Teacher | 28 | 45 | 16 | .05 |
| For information | 63 | 32 | 61 | .01 |
| For Accelerated Students | 13 | 39 | 32 | .05 |
| Presenting Issue | 16 | 39 | 29 | .05 |

Source:

Ray Funkhouser, BRITE Study—Report Number Two. Survey of School Principals and Teachers By Interview (Columbia, South Carolina: George E. Bair, 1969), p. B-18.

Although the effectiveness of educational television was being questioned generally, ETV was moving full speed ahead in at least one Marin high school. Bob Greenwood, a twenty-six year veteran of teaching at Tamalpais High School in Mill Valley, became chairman of the school's Fine Arts department in 1961. By 1967, the school was a buzz with discussion of individualized instruction on a modular basis. Greenwood theorized that large group instruction could be accomplished through a chain of interconnected closed-circuit sets. He submitted a budget for $2,500 to purchase a single camera system. Once purchased, this small equipment base engendered a great enthusiasm for new experiments in the instructional and informational uses of video which resulted in a series of successful new budget proposals.

By 1969, Greenwood had purchased about $20,000 of video equipment including several cameras, a special effects generator, a waveform monitor, an editing deck, distribution amplifier and other components for a television studio that he hoped to build in the music facilities of Tamalpais High.[57] The equipment was kept busy with dance productions, experimental commercials, musical revues, an award winning description of library use, etc.[58]

Jacob Wiens of the College of San Mateo again entered the Tamalpais District television picture and offered Greenwood and other administrators some advice on their program. Several of Wiens sug-

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[57] Bob Greenwood, "ETV Blurb #3," unpublished newsletter, March 28, 1969.

[58] Ibid.

gestions are relevant to the kinds of instructional uses of television that educational cable access advocates have urged including:

1. Identify the ETV program as a "District Project" using Tam as a pilot to the project for the District.

2. Explore all possible areas of relationship to other post high school programs and tie-in's with any form of funded programs possible in special interest area such as "deprived," vocational, "special," etc.

3. An inservice program to encourage, develop, and train faculty use and involvement in standard TV usage as well as external production and classroom usage and production.[59]

Wiens went on to present his views on how developing helical scan video technology could be interfaced with cable television systems at a lower cost than what was available through microwave interconnection.[60]

Greenwood's ETV vision began to fade by 1970. He encountered a number of problems in his plan to coordinate a district-wide ETV system. While he hoped to see the medium used "creatively," others in positions of power within the Tamalpais Union High School District thought only of the medium's use as an off-air recording device to record documentaries and other programming for classroom playback. Other teachers, in the district wanted studio facilities to be housed at their schools. According to Greenwood, many teachers were intimidated by the "master teacher" concept ETV proponents enthused over because it would show up their incompetence. Teachers in several

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[59] Bob Greenwood, "ETV Blurb #6," unpublished newsletter, November 26, 1969.

[60] Ibid.

departments—he named English and Social Studies—accused Greenwood of "building an empire," i.e., invading their territories of control and influence. Greenwood responds that these teachers have no "self involvement" in their work because the nature of their subjects does not require them to renew their modes of presentation or acquire new information. Others accused him of no longer wanting to be a music teacher and using television as "a way to get out of the classroom."[61]

Greenwood's television workshop became the focal point of an on-going battle between the local chapter of the American Federation of Teachers and the Tamalpais High School administration. Many union members felt that the ETV project was another example of decisions being made at the top and then imposed on the implementers. Teacher opposition was aggravated by mechanical failure of the school's video equipment. All of these factors taken together proved too much for Greenwood, who closed up shop in 1970. His feelings about the project are so negative that he did not even realize that the $26,000 plus of television gear, whose purchase he supervised in 1967-1970, is now crated up and collecting dust in boxes at two other Tamalpais District high schools.[62]

Greenwood's version of events is disputed in several important respects by Frank Gold, then President of the Tamalpais Federation of Teachers and presently a teacher in the Math department at Tam. Gold

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[61] Statement by Bob Greenwood, Chairman, Music Department, personal interview, Tamalpais High School, March 29, 1976.

[62] Ibid.

claims that there was no fear of automation unemployment on the part of Tam teachers. "On the contrary," he says, "the faculty is highly qualified and open to innovation." Gold feels that the Greenwood project ran into opposition because a substantial amount of money, $60,000 in equipment and wiring, was spent by the school administration without going through the appropriate decision-making channels that include faculty members. The result of these administration-centered decisions was the construction of a studio model production facility which did not, in Gold's opinion, meet the needs of the high school community.[63]

Although the cause of educational television at Tamalpais High passed from Greenwood's hands in the Winter of 1970, the issue was not dead. Michael Schuetz, now chairman of the Mathematics Department at Tam, took possession of the equipment during the 1971-1972 school year and attempted to fund an innovative television project which would have given him a salary for the work he was then doing in addition to his classroom duties. Schuetz sought funding under the California Vocational Education Act for a series of production classes intended to train students specifically in educational television production. Schuetz envisioned three courses:

> 1. Beginning ETV production: A series of lectures, demonstrations, and studio exercises designed to thoroughly acquaint the student with the operation of closed-circuit television equipment and the operational procedures employed in a television production center . . . . Guest speakers will be invited from all areas of educational television to speak on the operations and employment

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[63] Statement by Frank Gold, Tamalpais Federation of Teachers, April 28, 1976.

opportunities within their . . . fields.

2. Advanced ETV production: This class will be totally involved in the planning and production of educational or instructional programs . . . . Students will work closely with faculty members in various school departments during the planning stages of each production, especially in mathematics, English and social studies.

3. ETV Lab: Students will have the responsibility of distributing programs to appropriate classrooms via the . . . closed-circuit distribution system . . . . Two members of the class will be employed after school as service technicians for the school television facility.[64]

Although Schuetz did not run into as much resistance from his colleague as Greenwood experienced, he had financial problems that Greenwood did not face. His funding proposal was not approved by the State and he was not able to keep his commitments to his teaching work and operate a television facility for free at the same time. He did, however, see quite a bit of production take place during his ETV tenure, including a twice daily campus news show. Without funding, Schuetz was forced to give up on the project at the end of the 1972 school year.[65]

The complete failure of television at Tamalpais High School has not been repeated at the two other secondary schools in the Tamalpais Union District. At Redwood High School, for example, the use of television and video in the schools has made steady, if not dramatic, progress since 1971 . . . . At Redwood High School when Jim Collins, Redwood's audio-visual technician with an electronics background from

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[64]Michael Schuetz, Application for Funding of ETV Project of the Tamalpais Union High School District, State of California Vocational Education Program, 1972.

[65]Statement of Michael Schuetz, Chairman, Mathematics Department, personal interview, Tamalpais High School, April 28, 1976.

the Navy, arrived. At that time Redwood's ETV plant was limited to a few pieces of non-EIAJ standard one-half inch Sony equipment and three monitors. Since then, Collins has overseen the installation of an internal television distribution system at the high school, the purchase of several new pieces of video equipment and nine additional monitors. Redwood's total television plant is valued at $14,000.[66]

The distribution system is in use about seventy-five percent of the school day. Utilization is almost exclusively for playback of off-air recordings of documentaries for social sciences and dramatic productions for English and Theatre classes. The English and social studies departments maintain their own tape libraries. (English owns seventy hours of one-half inch tape and social studies has purchased forty-five hours of videotape for its catalogue.) The A-V collection includes more than 110 hours of video tape.[67]

Collins would like to undertake a regular production schedule, but he has not yet received much support from Redwood's faculty or administration. He would like to see Redwood's teachers actively using video equipment to establish a "relationship" between themselves and televised information. He has not, however, held a workshop for teachers and he has never been approached to do so.[68]

Collins wanted to build a studio at Redwood that would act as a production center for the entire Tamalpais High School District.

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[66] Statement by Jim Collins, Audio-Visual Technician, Redwood High School, personal interview; March 26, 1976.

[67] Ibid.

[68] Ibid.

He submitted a proposal in 1976 to over one hundred private foundations for funding to:

1. provide facilities for district personnel to produce video programs for use in the instructional curriculum;
2. produce instructional television programming;
3. train students;
4. supply educational access programming to the local cable system.[69]

Collins' proposal went nowhere because of inadequate financial support. Only five or six of the foundation contacted responded to his inquiries. However, just as important, if not more so, than the minimal response received from foundations, was the almost complete lack of interest in his idea from the other schools in the District. The communication between district personnel involved in audio-visual matters seems very poor. The only time Collins had any contact with Tamalpais High School personnel was on one occasion that he picked up their unused equipment at the end of their ETV experience. Once he borrowed some portable video tape recorders from Sir Francis Drake High School (the third school in the district about which more follows) and found that he had such a difficult time arranging for use of the equipment that he never wants to try again. He feels that there is an institutional unwillingness to work on coordination problems.[70]

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[69] Jim Collins, "E.T.V. Studio," Redwood High School Inter-Departmental Memo, July, 1975.

[70] Statement by Jim Collins, Audio-Visual Technician, Redwood High School, personal interview, March 26, 1976.

Of the three high schools in the Tamalpais Union District, Sir Francis Drake in San Anselmo has the longest and most successful history of use of video equipment. By general consensus, the development of this program has been the work of one man, George Nelson, the school's A-V technician, who came to Drake after retiring from the Air Force in 1963.

On first arriving, Nelson found several film projectors, tape recorders, and some other miscellaneous audio-visual equipment. He didn't take an interest in television until 1966 when Clearview Cable (see page 104) offered to wire several of the classrooms at the high school. Nelson then produced several demonstration projects for the faculty that indicated the kinds of remote communications that are possible through closed-circuit video.[71]

Beginning in 1966, Nelson, through the Tamalpais District Office, successfully obtained over $40,000 in federal funds to wire his campus and set up an extensive internal television distribution system. Over sixty classrooms are currently attached to the closed-circuit cable. Programming is distributed over six separate channels, and the school owns several portapaks, a studio camera, eight Sony AV 5000's (an early color edit/record/playback deck), lights, audio and other production equipment. However, television production is still a minor activity. "No one individual has ever done three hours of production during a single school year." No training courses have been

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[71] Statement by George Nelson, A-V Technician, Sir Francis Drake High School, personal interview, March 30, 1976.

offered. No requests have been made to record workshops of public meetings. One television production class was organized by an English teacher in the recent past, but has been disbanded because of changing time priorities.[72]

Implicit within the Tamalpais Union District experience with video technology before Tele-Vue began to seek its county-wide rate increase are several factors which seem to be important for evaluation of the potential for the educational uses of cable:

1. video equipment is expensive and demands a re-ordering of budgetary priorities;
2. financial allocations are a political process within the insitution that can lead to acrimony and dissension among the participants;
3. cooperation among school district personnel working with a common technology, in this case video, cannot be assumed.

The relevance of these issues to the educational use of cable technology will be elaborated upon in succeeding chapters.

The video experience at the other high school district within the Tele-Vue service area is somewhat different than that of the Tamalpais Union District. Here, in the San Rafael High School District, leadership in television affairs is exercised by one man, David Swingle, who teaches English at San Rafael and Terra Linda High Schools. Swingle's efforts to introduce television into the curricula of these two schools has been exceptional. This report will, therefore, detail his experience as fully as possible.

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[72] Ibid.

Swingle is a contradictory person. He works very hard at the production of twleve to fifteen hours of video tape every week and the supervision of approximately thirty hours per day of transmitted programming throughout the entire distribution system at the two high schools; at the same time, he openly wonders if "supplying television service is doing anything good for the students."[73]

Swingle received a degree in literature from Montana State University and went on to an M.A. in educational technology at San Francisco State which he received in 1970. He has been teaching in the San Rafael High School District since 1968. He is now responsible for a full academic load in the District's English Department, has a special school with thirty students currently producing seven films, and oversees the District's video production. He does not receive any release time or salary for his television activities.

San Rafael High School began video operations in 1966 with a one-inch Ampex tape deck. Teachers in the English and Drama Departments wanted a video tape recorder for live and off-air recordings and playback. So, in 1970-1971, $1,000 was raised from students and $1,500 from the budgets of those two departments. A Sony AV-3600, two lights, a camera and tripod, one monitor, thirty hours of video tape, and other surplus equipment were purchased with these funds. Then a classroom was selected to serve as a small studio.

Almost immediately, Swingle began to experience a tremendous

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[73] Statement by David Swingle, teacher, personal interview, San Rafael High School, November 4, 1975.

mand for playback. He began building an internal distribution system at Terra Linda High School (the second high school in the district) in 1973 which currently supplies sixty outlets through 8,000 feet of cable. Several departments have at least one monitor, and student assistants are responsible for logistics of playback. Interest in a similar system grew at the San Rafael High School, and in 1973 construction of a large federally financed studio got under way. About forty classrooms are connected by the distribution center at San Rafael High School.

In 1975, Swingle was allocated a budget of $2,500 to operate and maintain his $30,000 plant, that encompasses operations at both high schools, as well as receiving about $17.00 per diem to hire a student assistant. Other departments purchase video tape, and the school's video library grows by about fifty hours yearly.

San Rafael's educational television program is a marginal operation at best. Swingle talked repeatedly of the person hardships arising from the devotion of so much of his energy to a program for which he receives no release time from his teaching chores. The District administration has only passing interest in media. Swingle's program is almost entirely teacher-backed in a district that is experiencing a severe financial crisis. Even though many teachers in the high schools use the system extensively, Swingle wonders if the program can withstand another two years of expected budget cutbacks. Television carries a low priority in the San Rafael schools.[74]

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[74]Statement by David Swingle, English Department, personal interview, San Rafael High School, November 4, 1975.

Money is the most frequently mentioned restraint upon the use of television for education in Marin. Prior to 1971, by which time much of the television equipment in the county's public schools had been purchased, wealthy counties such as Marin paid for public education through property taxes. Then in 1971 a court decision determined that relying entirely upon property taxes for school funding is unconstitutional because it leads to a poorer education for those children who live in poorer areas of the state. California Senate Bill 90 was passed on the heels of this decision. It sets revenue limits on the amount of property tax that can be raised to support education in addition to state and federal funds. This limit is based on the "average daily attendance" (ADA) in a school district. Since national birth rates have declined and political developments in the early seventies indicate that Marinites are not favorably disposed to unrestrained growth in the county, average daily attendance in the county's public schools has actually declined by almost six percent since 1970-1971 to 44,124 for 1974-1975. New projects, particularly in "experimental" fields, such as educational television, are not given a high priority by local decision makers.[75] The situation of educational television in Marin County is so tenuous, that even the instructional programming nationally distributed by the Public Broadcasting Service is not being much used in the schools. (Marin's instructional television experience is not unique. KQED's instructional television revenues have declined from $250,000 in 1969 to their present level of $90,000 according to the station's in-

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[75] "Tax Shift Measure Is Explained," Independent-Journal, March 13, 1973, p. 14.

structional television director, Avon Kirkland.) The San Rafael Public Schools ceased supporting the local PBS affiliate's instructional programming altogether in 1975 and in this year only five of Marin's twenty-one school districts currently contract for this programming. Schools are just unwilling or unable to afford the seventy-five cents per student that PBS programming costs them after collecting a state subsidy.[76, 77]

One may conclude, however, that there are other factors besides finances involved in the reluctance of Marin County educators to support experiments in educational television. Certainly, there is a substantial equipment base in the area that could be used for the creation of locally produced and distributed educational programming. Table 11 was taken from a television survey of local public schools conducted by the Audio-Visual Department of the Marin County Superintendent of Schools. It shows that, of the fourteen schools responding, each had an average of eighteen television sets and 2.6 video tape recorders, placing the county's schools firmly in the upper ranges of television capability among America's public schools (see page 77). Further analysis will reveal a set of attitudes and information sets toward television video as an educational technology that may have as much to do with the low priority given education television

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[76] "San Rafael School Cutbacks Loom" Independent-Journal, February 25, 1975, p. 18.

[77] Statement by Avon Kirkland, Instructional Television Coordinator, KQED-TV (PBS), personal interview, April 27, 1976.

Table 11

Marin County Educational Television Survey



RESULTS OF T.V. SURVEY

24 Districts and Private Schools Surveyed
14 Responses
10 No responses

BREAKDOWN OF RESPONSES

1. Use ITV in some way: 11 yes, 3 no
2. Individual set antenna: 14 no
3. Only one room wired for T.V.: 14 no
4. 2 to 6 rooms wired; master antenna: 11 no, 3 yes
5. Complete system, all classes wired: 9 no, 5 yes
6. Closed circuit; VTR in rooms: 8 no, 6 yes
7. ITFS converts: 12 no, 2 yes (1 & 4)
8. Working T.V sets: 249 in all
9. B & W sets: 247 in all
10. Color sets: 2 in all
11. 1/2" VTRs: 33 in all
12. 1" VTRs: 3 in all
13. TV cameras: 24 in all
14. Broadcast ITV for direct classroom instruction: 7 no, 7 yes
15. Broadcast ITV for enrichment: 6 no, 9 yes
16. Used T.V. equipment to prepare instructional programs: 8 no, 6 yes
17. Used T.V. equipment to prepare teacher in-service: 11 no, 3 yes
18. Used T.V. to prepare teacher evaluation: 12 no, 2 yes
19. Used T.V. to prepare student evaluation: 10 no, 4 yes
20. Does Cable Company provide hook-up? 4 no, 10 yes
21. Does Cable Company provide hook-up free? 8 no, 1 don't know, 5 yes
22. Does Cable Company provide 1 or more local origination channels? 14 no
23. Does Cable Company provide mobile studio? 14 no
24. How best describe schools increased involvement in ITV:
    - 5 no increase planned
    - 2 plan increase in activity
    - 1 plans some of own cablecasting
    - 2 plan to add portable video equipment
    - 4 other plans from no participation to budget study, etc.
25. Do you use educational radio? 14 no
26. Do any schools have a 10 watt transmitter? 14 no

Source: Marin County Superintendent of Schools Office, Corte Madera, California, 1974.

in any form in Marin County as the financial constraints which are so frequently blamed for the low levels of activity in this field.

While the public high schools are evidencing a confusion of purpose toward the use of television, the local public community college, College of Marin, has shown much more interest in telecommunications technology in the last few years. In the early 1970's Albert Heppe, assistant dean for instructional media at the college, conducted a survey of instructional requests for videotaped material on campus. Twelve departments were requesting materials for instructional purposes or seeking equipment for in-class productions: Theatre Arts, the Computer Center, Work Experience programs, Behavioral Science, Dental Assistants, Communications, Business and Economics, Physical Science, Nursing, Adult Education, Humanities, and Art.

David Newby, then of the Communications Department at the College, studied the subject of building a studio and closed-circuit distribution system at the College while on sabbatical leave in 1972. He proposed the construction of a facility that would:

1. help students understand the TV medium in order to use it to skillfully express themselves and exercise their rights in this ever-expanding public medium;
2. train students so that they can provide the college community at large with the necessary expertise in producing videotaped material for other courses or programs;
3. reach out to the larger Marin County public with our offerings via Cable TV and the Bay Area Television Consortium.[78]

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[78] David Newby, "Telecommunications and the College of Marin," 1972, Interdepartmental Memorandum, College of Marin.

Newby proposed that the College spend close to $70,000 to construct, equip, and staff a full-color three-quarter inch video studio that would offer students five classes: Introduction to Broadcasting, TV Production, Radio Production, Broadcast Studio Operations, and Film Production.[79]

In March of 1975 funding for the project was approved by the college's Board of Trustees and the first classes were offered in the Fall of that year. A closed-circuit system presently interconnects five classrooms. Several production classes are being offered, but student product is not yet felt to be of high enough quality to support regular public exposure.[80]

The college is also actively participating in the Bay Area Community College Television Consortium along with twenty-five other community colleges. Since 1973, the College has contributed more than $10,000 yearly to support this effort. Three hundred and nineteen people were enrolled in the four courses offered by the Consortium in Fall, 1975. These courses, which include such series titles as Classic Theatre, The Adams Chronicles, Child Growth and Development, and Pre-Retirement Planning are available through broadcast transmission only at this time.

This review of the development of the use of television by education in Marin County has been included to indicate some of the

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[79] Ibid.

[80] Statement by Mr. Bill Tsuji, Evening School Director, College of Marin, personal interview, November 26, 1975.

forces that were already at work within Marin's educational institutions when educational access to cable television first became a possibility within the county.

We found that there has been a substantial investment in video technology within Marin County's schools and colleges, but that video is used primarily as distribution rather than a creative medium, i.e., there is not a tremendous amount of quality production being generated by local educational video users. Educators who want to make creative use of video technology are not, for the most part, financially supported. There is no funded video production class at any Marin County High School.

One of our most important findings is that the educational experiments that have been tried with video technology haven't worked, at least at the high school level. In other words, a large amount of money has been spent on television equipment and there has not been sufficient payoff or educational benefit deriving from this investment to persuade Marin educators to introduce television into the local educational process on a massive scale.

Given this background it will, perhaps, not be too surprising when we discover in our next chapter that the availability of cable television as an educational technology has not generated anything like the kind of interest its proponents claim it is due.

Chapter 5

# UNREALIZED POTENTIAL: EDUCATION ACCESS TO CABLE TELEVISION IN MARIN COUNTY

## Introduction

Our objective in this chapter is to describe, in as much detail as possible, the development of a relationship between Marin County's educational institutions, the present educational use of cable television in Marin, and the state of any future plans to apply this technology to educational purposes.

In this chapter we shall review:

1. the basic document that outlines the educational service standards that the cable operator must meet under the provisions of the "Level VI" rate increase proposal;
2. the movement that the cable operator has made toward establishing relationships with local educational institutions;
3. the role played by the County Superintendent of Schools' Office in developing cable policy;
4. the views of the potential for educational access to cable held by a number of Marin educators involved in these activities at the local level which parallel those categories of access programming outlined in Chapter 3, i.e., continuing education, higher education, bi-directional applications, library utilizations, special education, public information services, and inservice uses.

The chapter closes with a short discussion of the political and emotional ramifications of educational access.

## The Pilnick Report

Carl Pilnick's Telecommunications Management Corporation's

advisory report to the City of San Rafael contains several specific observations regarding educational access to cable. He mentions that the San Rafael School District "is increasing the utilization of its video facilities, and has offered to make these, and the supporting staff available either as public access centers or production." The report proposes that the two high school facilities be interconnected by cable permitting open-circuit transmission to all cable subscribers or closed-circuit via private cable lines of instructional and inservice programming.[1]

Pilnick notes that the Marin County Superintendent Schools' Office had been represented on the San Rafael Citizens Advisory Committee and had expressed an interest in applying cable communication to all the local schools. According to the report "initial meetings of representatives of all twenty-one school districts in the County . . . have been held to acquaint all districts with cable's potential, so that preliminary planning can begin."

The Superintendent's Office ranked as its first cable priority the interconnection of its media library, valued at $1,500,000 with a $150,000 yearly budget, to the schools it serves. The Audio-Visual Department is currently responsible for over 52,000 transactions per year. The distribution costs and logistics involved in this effort are enormous. Pilnick suggests that an electronic distribution system be substituted after a thorough cost benefit analysis.[2]

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[1]Pilnick, pp. 34-35. [2]Ibid., pp. 35-36.

Pilnick feels that the College of Marin studio facility "has the potential of being the major video resource in Marin County." The College is "the most logical candidate, outside of Tele-Vue's own future studio, to act as a production resource and access center for cable services." Other uses that Pilnick suggests include:

1. In-service teacher training courses.
2. Adult extension or graduate-level courses to home subscribers.
3. High school equivalency and/or vocational training courses.[3]

Pilnick also recommends that the local cable system purchase a "down converter" which transforms microwave frequencies into the standard frequencies used for televison channels 2-12. Three television transmission services, called Instructional Television Fixed Service systems, use these microwave frequencies to relay their programming throughout the San Francisco Bay Area. They are: the Archdiocese of San Francisco, Stanford's Association for Continuing Education, and the University of California Medical Center's system based in San Francisco. With a down converter these microwave signals could be received and transmitted throughout Marin by the Tele-Vue cable system.

The View From the Cable Company

Tele-Vue regional manager, Kurt Jorgensen, puts Pilnick's recommendations in the hard light of corporate priorities. Jorgensen explains that cable systems are in business for profit not as proponents of the public interest. Cable systems resist public service

[3] Ibid.

uses of their plant because "they cost the system money." Jorgensen mentioned several expectations for his system in the coming years:

1. Maintenance of a twelve channel system;
2. No construction of leased channels;
3. No wiring of new areas of the county;
4. Growth from new subdivisions only;
5. Maintenance of current subscriber levels;
6. No interconnection with neighboring systems.

Jorgensen indicated that the cable system will only reluctantly purchase equipment for access programming before passage of the pending rate increase described on pages 108-114 of this thesis. The land links to educational institutions and local agencies mentioned in Table 9 are under engineering study. If Level VI is passed, Tele-Vue intends to actively encourage use of its studio and channel space by local educational institutions. However, it is not now planning to implement this use--as we shall see later.[4]

The Superintendent's Office

Jerry Foley, Coordinator of Instructional Media for the Marin County Superintendent of Schools, represented that agency on San Rafael's Advisory Committee. In an interview, Foley reiterated the office's need for an electronic file distribution system. Such a proposal seems unfeasible at this time because of the investment needed in color receivers at the individual school sites. He felt that the community cable system

[4] Statement by Kurt Jorgensen, Regional Manager, Tele-Vue Cable Systems, November 19, 1975.

could be used for "general communication" by the Superintendent's office, but he didn't think that transmission of school board meetings would be a useful endeavor.

Foley called one meeting in January of 1975 to discuss coordination of educational access among the county's various school districts. Although he felt that the schools would be able to work together on the administration of the channel, he acknowledged that someone or some body would have to administer the channel to resolve conflicts over time allocation specifically.[5]

The Superintendent's Office is the logical coordinating body for educational access in Marin County. The Superintendent describes the role of his office as:

> a service organization which is capable of performing functions that districts are not able to do for themselves, and coordinates programs for districts that can be done more effectively and efficiently on a county-wide basis.[6]

The Office already performs many such functions, including the administration of special education programs, overseeing centralized purchasing, and the supervision of educational research. The latter draws the particular interest of the Office because such great changes are envisioned over the next twenty years. Of the seven "basic problems facing American public education," the Superintendent's Office lists

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[5]Statement by Mr. Jerry Foley, Coordinator, Instructional Media, Marin County Superintendent of Schools, personal interview, October 22, 1975.

[6]Office of Virgil Hollis, Marin County Superintendent of Schools, "The Role of the County Schools Office," Corte Madera, California, April 15, 1969. (Xeroxed.), p. 2.

"methods of instruction" as the second most important issue requiring educational research.[7]

Some educational theorists postulate that the County Superintendent of Schools plays a crucial role in the successful introduction of innovations, such as cable technology, into on-going educational system. Ernest House, for example, speaks of the critical role that must be played by a superintendent as an educational "entrepreneur," an innovator who works for change from his position of power at the top of the local educational hierarchy.[8]

The entrepreneurial inclinations of school superintendents seem to reflect their personal, and particularly early, life experience. House describes the typical superintendent as:

> male, from white, rural, or small-town, Protestant backgrounds. They come from the lower-middle or upper-lower social classes, attend less prestigious colleges, and score slightly below the mean of college graduates on intelligence tests . . . . They are politically conservative. They invariably rise through the ranks, first as teachers, then as principals, to become superintendents . . . .[9]

As the coordinator for administration of county-wide educational programs and the center for educational research in Marin County, the Superintendent's Office could be expected to take the initiative in developing an educational role for cable in Marin. This has not happened.

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[7] Ibid., p. 7.

[8] Ernest House, The Politics of Educational Innovation (Berkeley: McCuthan, 1974), pp. 40-41.

[9] Ibid.

Perhaps Marin County's Superintendent of Schools, Dr. Virgil Hollis, Ph. D., fits what Evans has called the "localite" educational model, i.e., one who does not take a great interest in innovation and conforms in a general way to House's description of a "typical" superintendent.[10]

Hollis' background does reveal several key elements of this paradigm. His early years were spent in extreme poverty in a mill town in northern California. He was raised by Seventh Day Adventist grandparents and graduated from Humboldt State College in Humboldt County, California. He taught first in that area and then later became principal of the Park School in Mill Valley, California (in Marin County). He received a doctorate in Education from Stanford University, and was elected Superintendent of Marin County's Schools in 1959. He considered running for the position of State Superintendent of Public Instruction but withdrew from the race to support his friend Max Rafferty, a conservative protege of California's then governor, Ronald Reagan.[11, 12]

Jerry Foley did sit on the San Rafael Cable Advisory Committee, As Dr. Hollis' representative, and he did conduct a survey of television usage at local schools (see page 137), but he does not consider cable television a high priority at this time. Dr. Hollis does not appear to

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[10] Richard I. Evans, Resistance to Innovation in Education (San Francisco: Jossey-Bass, 1967), pp. 92-98.

[11] "The Man Only the Voters Wanted," Independent-Journal, June 10, 1961, pp. 5-7.

[12] "Hollis Won't Run for State Schools Job," Independent-Journal, September 30, 1961, p. 3.

have any particular interest in the educational potential of this technology. Foley seems to be the man most responsible for setting the Superintendent's Office policy toward cable, and he believes that television simply costs too much money to produce, distribute and administer. He did not comment on any ways in which present costs could be avoided or reduced through the use of cable.[13]

The most tangible effort the County Schools Office has made toward coordinating educational access in Marin came in January 1975 when Foley called a meeting of representatives of the school districts affected by the Tele-Vue rate increase proposal to meet with Mr. Tom O'Connor of the Superintendent of Schools Office of Monterey County, California. Mr. O'Connor administers an educational access channel on the local cable system in Monterey County.[14]

There seems to be some disagreement about what happened at that meeting. Foley and Dave Swingle from the San Rafael School District both felt that there was a worthwhile but unsurprising exchange of information. On the other hand, Syd Smith, Coordinator of Curriculum for the Marin Superintendent's Office, remembers that an argument broke out among the various local districts represented on how the cable should be used that indicated how difficult it would be to coordinate

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[13]Statement by Jerry Foley, Coordinator, Instructional Media, Marin County Superintendent of Schools Office, personal interview, Corte Madera, California, October 22, 1975.

[14]Ibid.

educators around this technology.[15]

Smith holds a key position in developing educational innovations in Marin County. He coordinates changes in county-wide educational programs, such as the introduction of new metric mathematics textbooks, at the request of individual districts. On other occasions he initiates change as he did with drug education in the high schools. Since the individual school districts can rarely afford a curriculum coordinator, Smith spends a substantial portion of his time responding to questions from many of the local schools.

Smith believes in the "master teacher' concept of educational television; i.e., the work of one accomplished individual can be distributed to many people at one time through television delivery thereby bringing about the economic use of limited resources. He does not, however, see television as a tool for direct instruction. Rather, he believes that the medium can be used most effectively to supplement what is already going on in the classroom. He feels that instructional television requires a passive learner who is willing to accept the "lecture method" of instruction. Smith believes that traditional face-to-face contact is still a prerequisite to an effective instructional environment for the young.

He spoke of several specific benefits of cable technology. He liked the idea of student productions being cablecast to a Marin audience. He thought that television holds potential for motivated

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[15]Statement by Mr. Sidney Smith, Coordinator of Curriculum, Marin County Superintendent of Schools, personal interview, November 7, 1975.

adults seeking continuing education. This would make cable a viable distribution mode for training information for specific professions, especially when used along with other instructional media. He lamented that many of the guests the Superintendent's Office invited into the County to conduct workshops and presentations would be unwilling to be videotaped from fear of copyright infringement, i.e., the use of their information without payment. He did note, however, that there are a number of instructional programs, such as mathematics courses produced by publishers, that could be cablecast for free to Marin students which would otherwise have to broadcast at a cost of $100 per hour over the local Public Broadcasting System affiliate. Smith likes the scheduling flexibility of cable; the broadcast schedule does not allow local educators to fit instructional programming into the school curriculum easily.[16]

Smith was very concerned that Marin educators would try to use the cable for "inappropriate" political purposes, e.g., to promote school bonds or other financial issues:

> In political cases, education shouldn't use the taxpayers' money to promote its side of the issue. Promotion can be done through speaking programs and newspaper communication. Use of the cable for this purpose would give the educator an unfair advantage in promoting one side of the issue.[17]

According to Smith, the political potential for the cable caused the animosity that he remembers at the January, 1975 informational meeting.[18]

One department at the Superintendent's Office that would very much like to see the implementation of educational access is the

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[16] Ibid. [17] Ibid. [18] Ibid.

Regional Occupational Program supervised by Ms. Theodora Faiola, who has had a twenty year interest in educational television. Ms. Faiola believes that "her generation doesn't understand the impact of television; but we must!"[19]

Regional Occupation is a major program of the Superintendent of Schools Office. The program offers twenty-two different types of courses, tuition free, to all Marin County residents sixteen years of age and older. The program, which was initiated in 1970 at a cost of $425,000, currently enrolls 542 students in its offerings. This is an increase from 425 enrollees a year earlier. This growth represents a steady pattern in these programs and future increases are expected. Many programs have waiting lists even though the county-wide student population is decreasing.[20, 21]

Many of the occupations taught, such as office occupations, auto smog device installation, welding, and family management occupations lend themselves to the use of televised instructional modules. Faiola believes that the effectiveness of her teachers could be enhanced if the services of professionals were available from the cable studio. Then the teachers would be able to concentrate on content and supporting materials rather than trying to field all the questions that

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[19] Statement by Ms. Theodora Faiola, Regional Occupational Program/Vocational Education Director, Marin County Superintendent of Schools Office, personal interview, April 5, 1976.

[20] Marin County Superintendent of Schools, "Marin Regional Occupational Program," Spring, 1976.

[21] "$464,885 Training Program Outlined," Independent-Journal, February 18, 1970, p. 22.

only the professionals can raise and answer.

Faiola has been using video regularly for teacher evaluation in her department, and she would like to see its application expanded. Thirty-eight of the forty teachers in the program have completed this kind of self-study. The program is "open-entry," i.e. students can join classes at any point during the semester. Naturally late-starting students have a difficult time catching up to the rest of the class. Faiola believes that this problem could be alleviated by recording some set of basic information for in-coming students into every class. She feels that cable could be a very useful tool in her department's efforts to gain the political support and understanding of the community it serves. To this end she is looking for a way to fund video training for her staff through Marin Community Video workshops.[22]

A less sanguine view of video and cable television is taken by Dr. Rudolph Kupfer, Coordinator of Physically Exceptional Education for the Superintendent's Office. Special Education is another large program of this office. More than 750 students are enrolled in the various programs which are broken down in Table 12. Size comparisons are included to indicate growth trends.

Although the figures indicate that these programs are expanding rapidly and recent newspaper articles reveal that parents have expressed dissatisfaction with some of the program's activities and

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[22]Statement by Ms. Theodora Faiola, personal interview, April 5, 1976.

fears over waiting lists,[23, 24] video technology and cable television specifically are not being looked at as a means to meet these growing needs.

Table 12

Special Education Enrollments
Marin County Public Schools

| Program | 1975 | 1976 (first quarter) |
|---|---|---|
| Physically Handicapped | 243 | 316 |
| Educable Mentally Handicapped | 12 | 13 |
| Trainable Mentally Handicapped | 119 | 157 |
| Educationally Handicapped | 122 | 172 |
| Juvenile Hall | 57 | 77 |
| County Jail | 27 | 33 |

Source: Marin County Superintendent of Schools Office

Again the most apparent obstacle to the use of electronic technology for this program is money. Kupfer believes that television facilities cost too much to institute, maintain, and staff for the pay-off his programs would receive. Utilization of the cable would divert resources from on-going programs. Kupfer has not found any programming from existing tape or film libraries that would be useful and allow the schools to avoid the financial expense he believes is inevitably involved

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[23] "Tam District Flayed on Retarded Pupil Program," Independent-Journal, May 25, 1971, p. 17.

[24] "Special Education Programs Are Full," Independent-Journal, February 29, 1972, p. 12.

in production. Kupfer's time is so stretched that he cannot even review the materials that are forwarded to him by producers. Special Education in Marin is "not going out of its way to find new educational means unless there is funding for the programs."

Only the Infant Deaf Program presently uses video to any significant degree. Here the progress of the individual child is studied over an extended term to discover progress or long standing problems. Kupfer doesn't believe that parents would participate in an instructional or supplemental program delivered to them by cable. "The community already knows as much as it wants to know."[25]

Since the January, 1975 informational meeting, there has been little or no progress toward the educational use of the Tele-Vue cable system by the Marin County Superintendent of Schools Office. While the Office may be the most logical coordinating agency in the County for integrating the diverse educational interests in Marin, it has shown no interest in such a role around cable television. There has been neither vision or the financial support to create the staff position that everyone seems to agree is needed in the Superintendent's Office to coordinate these activities.

One common thread that ran through all the interviews with Office officials was the total lack of contact between them and Tele-Vue. This is a key point and one that we will note in succeeding sections.

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[25] Statement by Dr. Rudolph Kupfer, Coordinator of Physically Exceptional Education for the Superintendent of Schools, Marin County, personal interview, April 6, 1976.

Tele-Vue, the cable company with so much to gain from the passage of a county-wide rate increase—a rate increase it is having trouble getting because local regulators do not believe that the company is sincere in its commitment to community television—has made no effort since January, 1975 to bring pivotal educators into the cable decision-making process. In our review of the educational uses of cable nationally, all four of the areas represented by the Superintendent's Office staff members interviewed—film distribution by audiovisual, public information, continuing education, and special education—were found to be potentially heavy users of the cable. Yet in Marin County, most of the educators interviewed had little, if any, name recognition of the cable company itself, let alone a working knowledge of the Level VI Proposal and the community service package offered by it.

Is this situation any different among other educators and educational institutions in Marin? In the next section we will review the interest expressed by a number of educators working in Marin's public high schools toward the educational potential of cable.

Cable and Marin High Schools

Interviews with a wide range of teachers, administrators, and staff among Marin's secondary schools revealed several common elements of their relationship to cable:

1. With one striking exception, they knew very little about cable television in Marin;
2. They had a lot of innovative ideas about the use of television and cable in their learning environments;
3. They have done little practical work on coordinating their energies around the issue;

4. They are not planning to implement educational access.

David Swingle of San Rafael is the only member of the high school community who has made a serious effort to acquaint himself with the issues surrounding cable technology. He first became aware in 1970 of the requirement in the existing San Rafael Tele-Vue franchise to provide free cable drops to the local schools passed by cable lines. The cable company made no initiation of the subject. After a long series of letters, none of which were answered, the cable company began supplying the high schools with drops.[26]

According to Swingle, Tele-Vue cannot be trusted. He believes that they are unresponsive to anything but the "profit motive!" He thinks that the City of San Rafael made a mistake in permitting Tele-Vue to fund the Pilnick study. According to Swingle, Tele-Vue has not been very cooperative on repairs needed to the cable system. (Kurt Jorgensen of Tele-Vue disputes this statement and it was not really clear from talking to Swingle if he was talking about the internal distribution system he built or the connecting links with the Tele-Vue feed that Jorgensen certainly has responsibility for.) Swingle has had no dealings with Tele-Vue since a visit from Pilnick's staff at which he offered to do promotional community programming in support of Level VI if an in-bound link were provided between the high school and cable headend. There was no response.[27]

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[26] Statements by David Swingle, personal interviews, November 4, 1975, December 2, 1975.

[27] Ibid.

Swingle represented the San Rafael School District at several meetings of the San Rafael Cable Advisory Committee. Kurt Jorgensen, system manager, and Neil McHugh, financial manager, of Tele-Vue represented their company at these meetings. They did not recognize Swingle's name. It was Swingle's suspicion that Tele-Vue was making a lot of money hidden in its subsidiary relationship with Viacom.

On those rare occasions that San Rafael City Schools, through Swingle, have produced programming for cable distribution, he has been very disappointed by the poor signal quality of the transmission on the receiving end. He seemed to feel that, since Marin Community Video had the responsibility for scheduling his programming, it was the community access group's responsibility to purchase the equipment needed (a time base corrector) to improve the cablecast signal. He was not clear here on the distinction between MCV and Tele-Vue. As a result of these experiences, he is not anxious to transmit locally produced helical scan programming over the cable system.[29]

Swingle's confusion, however, is like a ray of clear light compared to the almost complete lack of awareness among others in Marin's high schools. Jon Slezak, Director of Instructional Services for the San Rafael City Schools, for example, also represented the San Rafael Superintendent of Schools at the Advisory Committee meetings. He thought that Level VI was slated to be initiated in Fall of 1977 rather than in the Summer of 1976 as stated repeatedly by Tele-Vue. He assumed

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[28] Ibid.

[29] Ibid.

that the San Rafael City Schools would move slowly in utilization of the planned access channel. He targeted one hour a month as a reasonable starting figure for cable access by his schools. Slezak would be an important figure in authorizing cable access for his school district.[30]

Marin Community Video was the only source of cable information for several decision makers at the high school level. Jim Collins, A-V technician for Redwood High (see pages 128-130), proposed that Redwood build a television studio and utilize the Tele-Vue cable system for distribution of student and faculty produced programming. However, he had never heard of Level VI. His awareness about cable regulations and the structure of the local system came from Jerry Pearlman, a director of MCV, in a conversation several years ago.[31]

George Nelson, whose extensive closed-circuit operation has been described as "a one man show," (see page 131), has never been contacted by Tele-Vue and knows nothing of Level VI. Mr. Nelson summarized his attitude toward initiating cable innovation at his facility in this way: "I've done my work here and now I'm just waiting to retire . . . . That's only nine years away and I'm too old to take on any new outside projects."[32]

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[30]Statement by Jon Slezak, Director of Instructional Services, San Rafael School District, personal interview, December 15, 1975.

[31]Statement by Jim Collins, A-V Technician, Redwood High School, personal interview, March 26, 1976.

[32]Statement by George Nelson, A-V Technician for Sir Francis Drake High School, personal interview, March 30, 1976.

Although few educators are knowledgeable in the specifics of Marin County's cable situation, almost all have ideas on how the cable could be put to creative use. Dan Caldwell, Chair of the Drama Department at Tamalpais High School, is a good example.

Caldwell has a lot of background in his work. He holds a master's degree in fine arts from UCLA and has done a number of television dramas at Bay Area commercial television stations. In his work at Tam, he oversees seven or eight dramatic productions yearly, and he produces and directs commercial drama at theatres in San Francisco. His department owns a "portapak"—a portable video tape recording system with a camera that weighs less than thirty pounds—but has done little with it so far.

Caldwell estimates that over 500 students are involved in dramatic and musical productions in the Tamalpais High School District. Productions take place in a very small theatre. The one hundred available seats are sold out for every presentation. Caldwell thinks that musical productions might draw as many as 500 per performance.

Caldwell discussed several potential roles for cable within this structure:

1. Cable could greatly expand audience size and interest in dramatic productions by bringing good high school drama into the home.

2. Promotional excerpts could be cablecast, helping to alleviate one of the students' most important obstacles to a successful production: dealing with adults about publicity.

3. Use of the Tele-Vue studio to teach television production courses in directing and acting.

Caldwell also had a lot of proposals on ways in which Tam High could use the cable for public information functions:

1. Open forum discussion with a telephone audio line into the studio;
2. Management discussions within the district;
3. Discussions of curricular objectives by various departments targeted particularly to students making the transition from junior to senior high school; and
4. General information dissemination.

Caldwell was excited about the idea of seeing his students' work cablecast, and he was not very concerned about any controversies that might erupt as a result of the students choosing to produce an outspoken play. He felt confident that he would have the support of his administration in demanding that cable be preserved as a free speech forum.[33]

One Marin dramatist who teaches at Sir Francis Drake High School has acted on the potential audience cable provides. Dorothy Derosiers is producing a television version of The Serial taken from a weekly feature in Marin's major liberal newspaper, the Pacific Sun. This drama is being produced under the auspices of the Tamalpais Adult Education District. She is using equipment from several sources to complete her production including Sir Francis Drake High School, Marin Community Video, and personal contacts. Her one hour drama is scheduled for cablecast over Marin's Tele-Vue system in the near future.

Local educational administrators have shown some interest in

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[33] Statement by Mr. Dan Caldwell, Chair of the Drama Department, Tamalpais High School, personal interview, December 9, 1975.

cable. Dr. Tom Lorch, who used a Ph. D. from Yale to become coordinator of curriculum for the Tamalpais Unified District, for example, looks at video production as a way to bring the student into an experiential learning environment. In Lorch's vision, high school journalists would get involved in covering local politics, ecology issues, judicial proceedings, etc. Lorch does not, however, think that cablecasting meetings of the local school board is a very good idea. "There seems to be very little interest in school problems," says Lorch citing low attendance at Board meetings. He did say that controversial issues deserved coverage on the proposed access channel, but he has given little thought to the matter since Jerry Pearlman of MCV in 1974.[34]

Ms. Barbara Rosenberg, Information Officer for the San Rafael School District, has had some exposure to electronic media and she would like to see cablecasts of "visible" issues, e.g., students organizing an elevator fund for handicapped classmates. She lamented that the dire financial condition faced by her school district precluded the staffing of a cable coordinator's position in her school district. She had had no direct contact with Tele-Vue and knew nothing of Level VI. Since she is going to have to carry additional duties soon because of budgetary problems, Rosenberg is not planning to implement cable coverage of San Rafael School events.[35]

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[34]Statement by Dr. Tom Lorch, Curriculum Coordinator, Tamalpais Union High School District, personal interview, April 9, 1976.

[35]Statement by Ms. Barbara Rosenberg, Public Information Officer, San Rafael School District, personal interview, April 2, 1976.

Other than David Swingle, who works with San Rafael's Continuation School, no one in the public high schools involved with continuing education could be identified who has a strong interest in cable. Adult education programs are a major effort of Marin County High Schools. Courses offered vary from the Lamaze method of childbirth to personal money management to "parenting" to sewing and everything between. More than one hundred such courses are offered yearly and this figure does not include various classes held by local agencies such as the Mill Valley Parks and Recreation Department. However, none of the administrators of these programs contacted had any knowledge of Level VI or taken much time to consider the implications of cable. This includes one teacher responsible for a class in mass media in addition to her adult education duties.[36, 37, 38]

This apathy toward the cable is reflected in the minimal flow of information about the issue which takes place between high school faculty and administrators. The result is that there is almost no movement toward the creation of a county-wide cable coordinator's post. In Marin this condition seems to mirror a deeper systemic problem of fragmentation and conflicting priorities among the County's five high school and nineteen elementary school districts. Dave Swingle mentions

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[36] "Classes Will Teach Adults To Cope With Modern Life," Independent-Journal, January 3, 1975, p. 14.

[37] "1976 Winter/Spring Recreation Schedule," Mill Valley Parks and Recreation Department, January, 1976.

[38] Statement by Mr. Ed Neumeir, Principal-Adult Education, Tamalpais Union High School District, personal interview, May 5, 1975.

that there is no coordination of the audiovisual departments at San Rafael's two high schools: George Nelson of Drake High knows George Gray, an aide to Swingle, but has never met Swingle himself; Jim Collins of Redwood has to struggle hard to borrow gear from a sister school and doesn't want to undergo the experience again; Michael Schuetz of Tamalpais High School doesn't know what has happened to the thousands of dollars of equipment he used in 1972 . . . . Coordination of activities and exchange of information among those involved in the education uses of telecommunications technologies seems to carry a very low priority.

College of Marin

The local community college has not yet done much with the Tele-Vue cable system since its color studio was completed in Fall, 1975. This is in keeping with the original planning of the college administration which saw the studio as first an instructional facility for students, an in-service production house for the campus second, and a community resource third.

This reluctance to respond to the local community's informational needs is more an administrative than a departmental policy. The telecommunications Department at the College of Marin would like to make a firmer commitment to community service and educational access television, but it is not getting the support it needs from the administrative decision makers that in part determine its activities.[39]

Another problem lies in the continuous turnover of the student

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[39] David Newby, "Telecommunications and the College of Marin," Interdepartmental Memorandum, College of Marin.

population attending the two year institution, and the inconsistency of commitment which seems to characterize many of the young people who attend junior college. These factors mitigate against the production of quality television and could lead to administrative embarrassment.

All of that is on the negative side. There are several signs that students will be doing more with the cable in the future. The College's equipment is very accessible to students. Several older students in the telecommunications program use the gear regularly in productions they participate in along with members of the Marin Community Video staff. One participant in the Emeritus College at COM who is also a graduate student at San Francisco State, Ida Lee Nagel, has been very active in producing short segments about that program for MCV's "Marin Video Magazine." Students in the Telecommunications Department have taken on the responsibility for the production of one half hour of programming monthly for cablecasting, but the product has not been very high quality. One student has done some video interviews for cable distribution.[40]

The adult education program at the college, which is extensive and enrolls several thousand students each semester, has initiated some interest in cable, but Bill Tsuji, who heads up the evening school, cites budgetary constraints as he concludes that the short term prospects for television production or leasing of courseware for cable

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[40] Statement by Jack Schafer, Production Director, Marin Community Video, personal interview, May 15, 1976.

delivery in his program are slim.[41]

Given the newness of this program, the financial problems facing the Marin College itself, and the educational priorities set by the administration, there seems to be little likelihood that anyone at present associated with the college will take on the job of coordinating educational access in Marin. Again, there is very little working awareness of or planning for Level VI. Tele-Vue has never contacted any of the staff of the Telecommunications Department and they have not initiated any discussions of the subject with the cable company. While Tele-Vue claims that its engineering staff is preparing to lay land links to the COM studio, the faculty who oversee the activities of that department know nothing of these plans. If they are so preoccupied with the demands of their instructional and administrative duties on the campus, how can they be expected to plan for all the details and decisions a county-wide educational access program would entail?

Bi-Directional Uses

At present there does not seem to be much potential in Marin County for any of the innovative bi-directional uses of broadband technologies discussed earlier in this paper (see pages 48-65). One constraint arises from the technical limitations of the Tele-Vue system. Using only one twelve-channel coaxial cable for transmission of its

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[41] Statement by Bill Tsuji, Evening School Director, College of Marin, personal interview, November 26, 1975.

signal, the system requires the technique of using "sub-band" channels that send return signal along the same cable:

> Bidirectional transmission over the same cable increases the possibility of signal interference. In spite of filters designed to remove such interference, those few systems that have implemented two-way communications in this fashion have encountered distortion problems in the programs delivered to subscribers.
>
> If a number of remote origination points are connected to any of the reverse channels, the cumulative electrical "noise" of these connections can provide additional interference to signals.
>
> The frequencies used for the reverse channels . . . are subject to further interference from outside sources such as automobile ignitions, etc.[42]

The other obstacle to the development of two-way cable services lies with the general apathy toward ignorance of the issue by those who hold positions in public education in Marin analogous to the implementers of two-way cable in other areas. Data processing in Marin schools is a representative example.

The data processing needs of the County Schools Office have grown enormously since the institution of the program in 1963. By 1966 the school's computers were keeping records on over 37,000 students.[43] The County Schools used the services of College of Marin's data processing services until 1967 when their demands for access became so great that they had to set up their own processing center to handle over $135,000 in contracts from individual schools.[44]

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[42] Analysis of Cable Television Services and Rates, p. 24.

[43] "County School Board to Buy Sex Education Films," Independent-Journal, August 2, 1966, p. 12.

[44] "County Schools Data Job Outgrows Center," Independent-Journal, March 17, 1967, p. 7.

The College's data processing volume has become so large that in 1973 the school contracted to spend $530,000 on an IBM 370/135 computer.[45]

Since the construction of another campus of the community college district in northern Marin, the data processing department is planning to connect the two campuses by remote entry terminals for administrative and instructional purposes at a cost of $500,000-$600,000. The office currently handles personnel records, school accounting, grading, teacher evaluation, registration of students, payroll, and miscellaneous services to teachers. The volume of work, which has increased by 150 percent in the last three years, now requires a staff of ten to meet its objectives.[46]

All of the remote transactions that are being considered are planned to be delivered by phone lines. Transmission of data by broadband technology was not investigated. When asked if the county schools were developing any innovative ideas in the area of data processing, John Coulter, data processing supervisor for Marin College, responded that, as far as he knew, the county school's service was "falling apart" because no one could be expected to "coordinate the needs of all those school districts."[47]

Summary

There are several areas of study that have not been discussed

[45]"College Board Complains Redevelop Plans Not Fair," Independent-Journal, February 12, 1973, p. 19.

[46]Statement by John Coulter, Data Processing Production Supervisor, College of Marin, personal interview, May 6, 1976.

[47]Ibid.

in much depth in this section that were noted in Chapter 3 and should be mentioned before moving on to our conclusions.

Several libraries in Marin, including the 200,000 volume County Library, the San Rafael City Library, and the College of Marin Library, were contacted during the course of this study. Ideas about cable applications to their service agencies were mostly new to them. Mr. Richard Hastings, Assistant Librarian at the County Library, for example, had never heard of Level VI. There do not seem to be any plans for a concerted effort by the libraries to use cable technology, although Hastings did express interest in the kinds of video reference services described on pages 64-65 of this paper and had some awareness of Roberto Esteves' California Video Resource Project (see pages 66-67).[48]

Cable could produce real benefits for in-service training in Marin. Reference was made to one kind of in-service use in the previous discussion of Marin's Regional Occupational Program (see pages 151-52), but an equally important application could come from the recording, editing and cablecasting of the numerous conferences, workshops, and seminars that are sponsored by the schools for faculty, staff, administrators and parents. Many of these group activities would be of great value to newly arrived staff, individuals who were not able to attend the original meetings, citizens trying to keep abreast of educational developments, and serious students trying to get at the forces shaping their experience.

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[48] Statement by Mr. Richard Hastings, Assistant Librarian, Marin County Public Library, personal interview, March 15, 1976.

A list of some of the recent topics of discussion at these group meetings has been extracted from the Independent-Journal and follows on the next page.

Another important issue that has not been mentioned so far in this thesis concerns the public information role that cable will play when heated controversies arise in Marin's schools. Here the need for egalitarian coordination of access is very apparent.

Cable presents Marin educators with a direct line to their constituency, but it requires of them the responsibility to preserve democratic values in their presentation of controversial issues. Marin educators will have to deal with some very thorny questions before they can make this communications channel the valuable public information link it can become. Who will be given access: enraged minority students accused of racial violence, radical teachers, reactionary parents, fired administrators, teacher and staff union representatives, critics living outside the County?

The list of recent controversies which follows in Table 14 indicates how pressing these questions really would become for educational access and how essential it would be that an individual or group of individuals be charged with the fair and judicious allocation of access to the disputant parties. At present the only method by which educational controversies are aired generally in Marin is through the filter of the Independent-Journal, a gatekeeper that many educators believe is slanted and sensational in its reporting of these stories.

In this chapter we have reviewed some of the background needed to form a picture of life in Marin County, the evolution of cable

Table 13

Representative Conferences, Workshops and Seminars Held in Marin County, 1970-1975

| Date | Subject Matter |
|---|---|
| September, 1970 | Educational problems of low income students |
| September, 1970 | Seminar with George Leonard |
| October, 1970 | School legislation and finance workshops |
| February, 1972 | $1,140 invested in workshop for kindergarten teachers |
| March, 1972 | Workshops in language instruction |
| March, 1972 | The Year 'Round School |
| April, 1972 | VD Education Workshop |
| April, 1972 | Black Education in Marin |
| September, 1972 | Career Education Workshop |
| November, 1972 | Environmental Education Workshop |
| December, 1972 | Individualized Instruction |
| February, 1973 | Behavior Disordered Children |
| April, 1974 | Education in the Year 2000 |
| April, 1974 | School Psychologists Workshop |
| March, 1975 | Early Education Workshop |
| June, 1975 | Alcohol Education Workshop |

Source: Independent-Journal, various dates.

Table 14

Representative Educational Controversies in Marin County, 1968-1975

| Date | Topic |
|---|---|
| May, 1968 | Students punished for anti-draft activities |
| October, 1968 | Terra Linda branded seedbed for anarchy |
| December, 1968 | Sensitivity training in schools |
| March, 1969 | Open campus policy |
| April, 1969 | Black militancy at College of Marin |
| August, 1969 | Course in Revolution by SDS |
| September, 1969 | Use of Soul on Ice in school |
| 1969-1971 | Grooming policy for athletes |
| October, 1970 | Flying ecology flag at high school |
| October, 1971 | San Rafael High hit by racial violence |
| December, 1971 | Banning of The New American Movement asked |
| June, 1972 | Sex education |
| February, 1973 | English class held pornographic |
| March, 1973 | Educational goals attacked |
| May, 1974 | High school newspaper seized |
| September, 1974 | Marin County Athletic League attacked as sexist |
| February, 1975 | Innovative courses produce red ink |

Source: Independent-Journal, various dates.

television in the area, the use of television generally by education in Marin and the kinds of educational applications of cable technology being considered or not considered there. We now turn to the conclusions to be drawn from this investigation.

# Chapter 6

## SUMMARY AND CONCLUSIONS

### Summary

#### The Purpose of this Study

The purpose of this study was to examine the potential for the future development of educational access to cable television in Marin County, California. The major questions asked were:

1. How much do Marin County educators know about the potential for educational access to cable television generally and the opportunities presented by their own situation in specific?
2. How well can we expect local educational agencies to work together to bring about full utilization of cable's educational potential?
3. Is sufficient video equipment available in Marin County's public schools to support a substantial amount of locally produced educational programming?
4. What financial supports are given to educators who want to produce programming for curricular use and/or cable transmission?
5. How much interest has the local cable system shown in the implementation of educational access to its system?
6. What impact have local public service community video groups had upon eduators' plans to use the cable in Marin?

To answer these questions we first noted that educational access to cable television is related to the same constellation of socio-economic forces which have contributed to the evolution of educational television in general, i.e., the informational needs of

American society in both its institutional and individual dimensions have been expanding at exponential speed since the end of the Second World War compelling education to turn to electronic media as a means of extending its limited resources.

Cable television is uniquely capable of serving this educational need. Offering a great number of channels, relative to broadcast television transmission, cable provides:

1. greater programming flexibility,
2. channels for the communication of information with a narrow audience appeal,
3. an interactive communications capability, and
4. a technical capacity to transmit video signals created by inexpensive, helical scan technology that is widely available at educational institutions.

Regulatory and Theoretical Background

We then outlined the regulatory background from which cable draws its legal basis. We found that the educational access provision of the Federal Communications Commission's 1972 Cable Television Report and Order derived from a history of local access to rural cable television systems dating back to 1951. The activities of several national educational associations active in the fight to reserve a portion of the channel space available on cable systems for educational information was also noted.

The third chapter of this thesis discussed in some depth the wide array of educational applications to which cable television has already been put to use or for which it has been considered. These applications or proposals fall into seven categories:

1. continuing education
2. higher education
3. bi-directions applications
4. library utilizations
5. special education
6. public information services
7. in-service training

In continuing education we found that millions of Americans are seeking learning experiences beyond traditional educational settings in a wide variety of interest areas. We also found that traditional educational institutions have begun in earnest to recognize the economic reality that they must contact these emerging student markets in order to survive in an era of declining enrollments among full time students and limited national economic growth.

There have been a number of efforts by educators to reach the continuing education market through cable-delivered instructional programming. These include several courses designed for adults preparing for the High School Equivalency examination, career guidance programs, and health courses. No evidence of a major coordinated commitment of educational resources to meet the needs of the non-traditional student emerged from this research.

Higher education has begun to use cable delivery of its courses to students located in off-campus situations, but, again, there does not seem to be any national plan to utilize the cable for this purpose. Several examples were noted including Oregon State University,

the Southern California Regional Consortium for Community College Television, the University of Kansas, and Project REACH in the Dayton, Ohio area.

Interactive applications are among the most exciting uses offered by cable technology. Although a great deal of literature has been devoted to them, very few experiments have actually occurred. Cable provides sufficient bandwidth to transmit video, audio and data signals in two directions, i.e., the source and the receiver of information can be transposed. Thus, cable technology provides a wide array of opportunities for individualized instructional and administrative information transfers. Several examples are outlined in this thesis including an elaborate proposal for the schools and colleges in the Portland, Oregon, area, a computer assisted instruction project at Reston, Virginia, a TICCIT instruction project at Brigham Young University, an on-demand film retrieval system in Ottawa, Canada, and a proposal to install 1,000 two-way terminals in Stockton, California, that would be connected by that region's cable operator.

We discovered that libraries hold a growing interest in the interactive applications of cable technology. Some of the data bank services offered by large firms such as Systems Development Corporation of Santa Monica, California, were described. After indicating some of the technical and financial constraints limiting the development of interactive services generally, the experience of several library systems presently using cable for delivery of reference services was outlined. The production and video acquisition activities of a few libraries, including that of the San Francisco Public Library, are

detailed in this section. The American Library Association has tried to implement a national cable policy, but no comprehensive utilization survey was found to itemize the success of this policy.

Several communities have already begun to utilize the individualized instruction capability of cable technology to serve the needs of their children and others who face special learning disabilities or geographic confinement. The section of this thesis devoted to this topic first discusses the legal rights to public education of children with special learning problems and the kinds of expenses that educational authorities must bear in order to fulfill these obligations. The cable experience of Gallaudet College for the Deaf, Willingboro, New Jersey's public schools, the Ohio State Prison at Chillicothe, the University of Massachusetts' program for the elderly, and the Mount Sinai School of Medicine are detailed here.

American's public schools have shown an interest in cable delivery of instructional and informational programming. [redacted]ancial limitations faced by schools that cannot afford to purchase [redacted]sion receivers or videotape recorders is documented before turning to a number of examples of cable utilization presently in progress. These include the Ford Foundation-funded television school district in Washington County, Maryland, the Danville, Illinois School System, Tamaqua, Pennsylvania's programming, Oceana High School's apprenticeship program for local high school students at the Pacifica, California cable studio. Specific reference is made to the public information function of cable being utilized by schools to inform the local citizenry of educational issues and activities. John Le Baron's "open learning"

theories about cable television and disadvantaged children conclude this section.

Chapter 3 closes with a cost benefit analysis of educational access to cable in relation to traditional classroom instruction, open circuit broadcast, Instructional Television Fixed Service, and telephone lines. Research evidence was cited which indicates that cable is less expensive for a variety of uses than all four of the other alternatives. At Oregon State University, cable was estimated to save over $100,000 in yearly instructional costs. Small format video production and transmission is much less expensive than that required for standard broadcast television. Cable distribution was shown to be significantly less expensive than ITFS service under two sets of constraint criteria. Estimates of savings deriving from the use of cable for individualized instruction and informational data transfer services was very substantial according to the analysis of Carl Pilnick of Telecommunications Management Corporation and Charles Ruffing of the Michigan State Department of Education.

Marin County Profile

Chapter 4 of this study is intended to serve as background material on Marin County, California, that will help us better understand that region's experience with the educational access opportunity. This chapter deals with three areas relevant to the focus of the study: (1) demographic data on Marin County; (2) historical background on the evolution of cable television service in Marin; and (3) the use of video as an instructional technology in Marin's public schools and colleges.

We found that Marin residents are generally well-to-do and well-educated. The market potential of this socio-economic mix has lent itself well to the economic plans of cable entrepreneurs.

The plans of cable operators in Marin were enhanced by the mountainous topology of Marin County which interferes with clear reception of the San Francisco Bay Area's broadcast television stations. Several cable firms competed for franchises in Marin County until 1968 when Columbia Broadcasting System's cable television subsidiary, Viacom, purchased the three operators in business at that time.

The public service implications of cable television did not receive much attention in Marin until 1974 when the conglomerated Viacom system (Tele-Vue) began seeking rate increases throughout Marin County. Beginning in 1973, Tele-Vue began to come under attack from a local non-profit citizens group, Marin Community Video, to provide public access to its system and to initiate plans to meet its obligations under the FCC's 1972 Cable Rules.

Mill Valley, California took this position when Tele-Vue approached the town council for a rate increase in 1974. Calling for local cable television programming that would reflect the diversity of its residents, the Mill Valley Citizens' Report of Cable asked for "a professional quality studio" and other access facilities to be provided before Tele-Vue's rate increase proposal was approved.

The City of San Rafael, Marin's county seat and largest population center, also felt that further study of the Tele-Vue proposal and its obligations under federal law was appropriate before a rate increase could be adopted.

With Tele-Vue's funds, San Rafael employed the services of Telecommunications Management Corporation to prepare a coordinated plan that would serve the community needs of the City as well as providing Tele-Vue with a subscription rate that would increase its rate of return.

Pilnick's study concluded that:

1. the twelve channel capacity of the system should be maintained;
2. one channel should be devoted to community access television;
3. a full color studio and mobile van be constructed and equipped;
4. "land links" be laid between twenty origination points such as high schools and town halls, and the cable trunk line.

Pilnick devoted some study to the question of educational access specifically and recommends that:

1. the video facilities of the San Rafael High School District be made available for public access until construction of Tele-Vue's studio is completed;
2. the Office of the County Superintendent of Schools undertake a study of the feasibility of cable-delivered audio-visual services to Marin schools in the Tele-Vue wired area;
3. the College of Marin consider functioning as the county's central community access facility;
4. the cable be used for inservice training, adult education, and vocational training;
5. the cable system purchase a "down converter" to receive microwave signals from the Bay Area's three Instructional Television Fixed Service facilities.

These community access proposals were attached to a rate increase and the entire package has come to be known as "Level VI."

Municipal franchising bodies regulating cable operations in approximately seventy percent of the Tele-Vue wired areas have approved of this package. Several towns have not endorsed the proposal because they are not convinced that the community service aspects of the package would offset the political furor expected to result from the anger of citizens facing new rate increases. On the whole, however, "Level VI" is still moving toward reality in Marin County with actual operation of a color video facility expected to begin sometime in the Fall of 1976. Tele-Vue claims to have been busy conducting "extensive" engineering surveys in anticipation of laying land-lines to the origi- national points mentioned on page 113 of this thesis.

For the present, however, community access television in Marin is primarily the result of barely funded non-profit citizens "public access" group known as Marin Community Video (MCV). Agitating for video use by every public agency and individual, MCV has had an important impact on the development of cable service in Marin County. MCV first began to produce programming for regular access to the Tele-Vue system in 1974. Since then it has negotiated for a minimum of three hours access to the cable system weekly.

With this background of the development of cable television in Marin in mind, we next turned to the subject of television in education in Marin County. Our purpose here was to discover how previous experience with electronic media might influence the attitudes of educators toward the opportunities presented by cable technology.

We found that television and video technology has historically held a relatively low but not insignificant priority on the agenda of

Marin County's public educational institutions. Interest in the medium has gone through several fluctuations dating back to the late 1950's when instructional television was first introduced into the Marin County public school curriculum.

All five of the high schools in the Tele-Vue service area have purchased helical scan video equipment since 1968 and four have internal cable distribution systems which are presently in operation. Several attempts at the introduction of video technology in Marin's public schools have failed for either lack of funds or inter-departmental rivalries. One experience proved so disruptive and subject to such a high degree of technical failure that it was completely abandoned and the equipment is now stored in boxes at two other locations.

No county-wide plan for the utilization of television has ever been drawn up and none is being considered. Television is primarily a staff rather than an administrative or faculty concern in Marin, i.e., several of the plans to implement new educational video services have been developed by non-academic personnel. The people responsible for television service in education in Marin have had very little contact with each other and what relations they have had cannot be described as pleasing.

However, video does play a significant classroom role. Substantial video tape collections are held at all four of the public high schools with operating systems. While two of the high schools utilized their video facilities almost entirely for playback, the two high school facilities that are managed by an English teacher in the San Rafael school district are involved in twelve to fifteen hours of video

tape production weekly in addition to the transmission of approximately thirty hours per day of recorded programs over the high schools' internal distribution systems.

Marin County schools appear to own significantly more television and video equipment than American schools on the average. Most of this equipment was purchased during the late 1960's and early 1970's. Thus, it does not conform with the present "state of the art" of small format video.

We discovered a somewhat different set of facts upon turning our attention to the television activities at Marin County's two year community college, the College of Marin. Over $70,000 was spent in 1975 to construct and equip a full color three-quarter inch video facility including a super eight millimeter film chain and a technically advanced audio mixing system. This purchase was part of the College's effort to establish a Telecommunications Department for instruction, in-service programming, and campus outreach via local cable distribution.

Present and Planned Educational Use of the Cable

With this detailed background of the development and theory of educational access and the context of Marin County's demographic data, cable service and educational use of television behind us, we focused in Chapter 5 on the current educational uses of cable in Marin and any plans that are presently being considered for use of the cable by Marin educators.

We began by interviewing the manager of the local cable system, Kurt Jorgensen. Jorgensen had almost no information about the kinds of

educational uses to which cable technology could be applied and he foresaw no aggressive actions on the part of his firm to stimulate educational access.

We then turned to those functions performed primarily by the County Superintendent's Office that were shown to have educational access potential in Chapter 3 of this thesis including: audio-visual services, special education, vocational education, public information, and innovation coordination.

We noted that literature in the field of educational innovation theory indicates that the county superintendent plays a critical role in the success or failure of technological innovations for learning such as cable television. Of the five administrators interviewed from the Marin County Superintendent of Schools office, only the coordinator of instructional media services had any knowledge of the local cable situation.

We also talked with the Coordinator of Curriculum for the Superintendent's Office, who also knew little of the local cable company's community television proposal or local education's place within it.

The Vocational Education Coordinator in the Marin County Schools, whose program enrolls over 500 students, was very enthusiastic about the potential applications of television to her work, but knew very little about cable television generally and nothing about the local cable situation.

The Coordinator of Physically Exceptional Education at the Superintendent's Office, who is responsible for the education of over

750 young people with special learning disabilities or emotional problems, was almost wholly opposed to experimentation with video technology, unless funding from outside sources could be located.

All of the staff members contacted at the Superintendent's office shared the feeling that they had a great deal to do. None indicated that they had the time or inclination to study the issues involved in cable television for education in any depth or to work toward actualizing these potentials in their local situation.

This is also the impression that must be drawn from the interviews conducted with administrators, faculty, and staff at Marin's high schools. Only one local high school educator contacted, had a substantial knowledge of cable and he was very suspicious of the cable company's motives as well as dubious of the potential education benefits that could be derived from television.

Many other public school staff members were contacted including audio-visual technicians, dramatists, film teachers, and music instructors, superintendents of school districts and vice-principals of schools, public information officers, and adult education administrators, as well as parent interest groups. Four common themes emerged from these discussions:

1. Marin educators know very little about their local cable access rights.
2. They did have a lot of innovative ideas on the potential educational applications of cable technology.
3. They have not made any efforts to coordinate their energies.
4. They are making no plans to implement educational access

on a county-wide basis and only haphazardly on an individual basis.

The ideas that educators mentioned most frequently fall into three categories developed in Chapter 3 of this thesis:

1. public information on school activities; dramatic productions; and educational planning;
2. open learning situations deriving from student productions;
3. continuing and vocational education.

Marin Community Video has done some work with public educators. Several of the faculty and administration personnel contacted reported that they had discussed the educational potential of cable television with one MCV staff member several years ago. A few productions have been completed by local schools and arrangements for their cablecasting were made by Marin Community Video. In one instance, MCV editing equipment was used by a high school faculty member involved in an independent dramatic production.

The College of Marin has yet to do very much officially with the local cable system. This is primarily because its priorities require that the school's video facilities be used first in the instructional curriculum, then for in-service training and lastly for community programming.

Unofficially, however, several members of the student body are engaged in productions which are ultimately cablecast. Furthermore, the director of the school's evening program, Bill Tsuji, contacted Tele-Vue on his own initiative and has expressed an interest in the production of instructional television programming through his school's television studio.

We discussed the kinds of interactive cable applications noted in Chapter 3 with Kurt Jorgensen, Manager of Tele-Vue Cable, Mr. John Coulter, Supervisor of Data Processing for the College of Marin, and Mr. Richard Hastings, Assistant Librarian of the Marin County Library. The Pilnick Report points out that there are technical limits to the kinds of bi-directional uses the Tele-Vue cable system is capable of. Jorgensen maintains that his firm simply cannot afford the development of any two-way demonstration projects. Coulter and Hastings knew very little about cable television in general and hadn't given much, if any, consideration to its application in their work. The library was not even going so far as to approach its own productions.

In the final pages of Chapter 5 we discussed the variety of in-service programs that have been available in Marin County. It was suggested that the recording and cablecasting of these programs would be useful to those who had not been able to attend the original sessions or new employees of Marin's educational institutions who need condensed information about the work they would be beginning.

Our discussions of the present and planned uses of cable television in Marin concluded with an overview of the potential problems for educational institutions that could be associated with the cablecasting of controversial issues. We noted that Marin educators have expressed differing opinions on the benefits of publically airing emotional issues and we included a table which indicated the breadth of issues involved in educational disputes.

## CONCLUSIONS

We have summarized our findings. How, then, shall we answer the questions which we raised at the beginning of this chapter? Let us take them in order:

1. How much do Marin County educators know about the potential for educational access to cable generally and the opportunities presented by their own situation in specific?

Apparently not very much. From the literature survey conducted in Chapter 3 of this thesis, several educational interest areas were identified as having unique affinities for cable's access opportunity. Interviews with twenty-one educators and individuals with relationships to educational access were reported on in this thesis. Several others which were conducted were not included (See Appendix). Only one—excepting of Jack Schafer of Marin Community Video—had any substantial knowledge of cable's educational potential generally or in the specific Marin County environment. Several knew a little about the Federal Communications Commission's 1972 Cable Rules, but most knew nothing of these rules, educational access, the Pilnick Report, or Level VI.

2. How well can we expect local educational agencies to work together to bring about full utilization of cable's educational opportunity?

Not very well. There are twenty-four distinct public educational agencies presently active in all of Marin County and there are ten political entities which lie within the Tele-Vue service area. Each one of these represents a potentially different and frequently opposing force on the direction of the educational use of the cable.

No single agency expressed a willingness to take responsibility for coordinating education's cable activities. No individual or agency interviewed indicated that funds would be allocated for such a coordination function. The logical coordinating agencies, the County Superintendent's office and the College of Marin, do not consider cable access an important priority.

Schools are political institutions and a review of our findings does not indicate that distrust and territoriality are going to be magically transcended by a new technology. In fact, our interviews indicate that educators in Marin are reluctant to share both information and equipment with each other, two key indexes of the potential success of educational access to cable.

3. Is sufficient video equipment available in Marin County to support a substantial amount of locally produced educational programming?

It is difficult to give a definitive answer to this question. We found that over $150,000 has been spent for equipment and studio space by Marin educators since 1967. On the basis of that figure, one would be led to conclude that Marin's educational institutions could support cable production. On closer inspection, however, we find that much of this video equipment is out of date or out of service and that only the College of Marin's $70,000 three-quarter inch color studio will meet the emerging cable production standards. Since the College does not want to play a coordinative access role, one would then conclude that there is not enough technology to support a high level of production.

But there is another consideration: if Tele-Vue proceeds with its Level VI rate increase—as it says it will—Marin educators will

then have access to a $300,000 modern video facility and technical staff as well as having origination points on campus. Thus, assuming the construction and equipping of the Tele-Vue system in addition to the moderately dated equipment on hand in Marin's schools, we conclude that there is an adequate equipment base to support a substantial amount of locally produced educational programming.

4. What financial support is given to educators who want to produce video programming for curricular use and cable transmission?

Directly, none could be found. Indirectly, there is some support for video productions which are part of a classroom experience and later cablecast. San Rafael High School is a good example. Video production exists on a yearly budget of $2,500 taken out of departmental budgets. The school district pays the minimum wage to a student assistant for six hours of work daily. Some additional funds are raised through student activities. The English instructor who administers the program is paid nothing for his time.

5. How much interest has the local cable system shown in the implementation of educational access to its system?

While it can be argued that Tele-Vue has devoted a great deal of time, energy, and money to meeting its obligations under Pilnick's Level VI proposal, one must conclude that education is not aware of it. Tele-Vue has not initiated any contact with local educators other than paying for Pilnick's overview of their needs which was included in his report. None of the educators interviewed had any informational meetings or other contacts with Tele-Vue other than a few who had participated in franchise review committees. Audio-visual staff who are

responsible for the operation of large video plants had never heard of Level VI and were very surprised to learn that origination links were being laid to their schools.

The cable operator has done no promotional work with schools that could be discovered. This is very interesting in light of the difficulties Tele-Vue has had in getting support for its rate increase request. Educational institutions could conceivably be vocal supporters of the Level VI proposal if the cable company were to take the time to make education's place in this process clear.

This it has not done and probably cannot do. Several depth interviews with both the system manager and the financial manager of Marin Tele-Vue revealed that Viacom's Marin subsidiary has very little interest in the needs of public educational systems within its service areas. These men did not know any of the key decision-makers in the public educational institutions and they did not know how to get to know them. If education in Marin is waiting on the initiative of the local cable operator to actualize the educational potential of broadband technology, it has a long wait.

Cable television has gone a very long way, indeed, since the days of locally owned systems eagerly granting access to community institutions, including the schools, that were managed by friends and neighbors of the system's operators.

6. What impact have local public service community video groups had upon educators' plans to use the cable in Marin?

The activities of one community video group, Marin Community Video, have been discussed. Its impact is hard to assess, particularly since interest in educational access in general is not very high.

However, we know that the vocal advocacy on cable issues taken by Marin Community Video has influenced local educators to some degree. Most of those interviewed were more or less vaguely aware of MCV and its weekly cable programming even though they knew little about educational access as a legal right or Tele-Vue's Level VI proposal.

Marin Community Video has made the most substantial effort in Marin County to inform educators of the opportunities implicit in cable technology, but even their efforts have been relatively ineffective and erratic. So far no coordinated approach to the cable needs of educational institutions has been developed by MCV, although some relationships are evolving between MCV and schools, particularly the local community college.

Perhaps the most interesting note in regard to the influence of MCV on educators' attitudes and knowledge of cable is that, however minimal it might be, it appears to be greater than that exerted by education's national and regional associations who were so important in securing the legal basis for educational access in the first place. Several people interviewed initiated mention of Marin Community Video, but no one discussed the cable activities of the National Education Association or the Association for Educational Communications and Technology.

What, then, can we say finally about the potential for educational access in Marin? We can conclude that there is little or no interest for the educational use of this medium on a local level. Very little is known about it, the evidence seems to indicate that educators would have a difficult time cooperating on administering an access

channel and sharing the video equipment that they have available for production. Teachers are not given any appreciable incentive to create programming for cable transmission and the cable operator is relatively unconcerned with educational issues.

But before we decide that there is no future for educational access in the next few years in Marin County, it is worthwhile to recall that all educational developments have their roots in the perceived needs of the polity that educational institutions serve. Innovative use of new technologies such as cable television systems by educational institutions does not constitute high priority for the citizens of Marin County at this time. There must be some degree of satisfaction with the status quo of educational activities. But the economic and psychological forces of change which constitute the theoretical base for the expanded use of telecommunications channels for instructional and informational uses are growing in influence daily. At some moment in time, these stresses are likely to achieve a critical mass. When and if this occurs, the perception that people have of the needs that can and should be met through technologies such as cable television will change, perhaps in a dynamic and radical fashion. Given this perspective, we may conclude that cable television in Marin County remains a powerful potential energy awaiting ignition by other forces outside of its own field of activity.

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# APPENDIX

## PERSONS INTERVIEWED

Mrs. Rose Ascierto, Director
JOBS Center
Tamalpais High School
Mill Valley, California

Dr. Ethel Grunfield-Booth
Coordinator, Instructional Services
Pepperdine College
Los Angeles, California

Mrs. Maria Van Buskirk
English Department
Redwood High School
Corte Madera, California

Mr. Dan Caldwell, Chairman
Drama Department
Tamalpais High School
Mill Valley, California

Mr. Jim Collins
Audio-Visual Technician
Redwood High School
Corte Madera, California

Mrs. Gene Coulter, Director
Council for Exceptional Children
Novato, California

Mrs. Theodora Faiola, Director
Regional Occupational Program
Marin County Superintendent of
Schools Office
Corte Madera, California

Mr. Jerry Foley, Coordinator
Instructional Media
Marin County Superintendent of
Schools Office
Corte Madera, California

Mr. George Gray
Audio-Visual Clerk
San Rafael High School
San Rafael, California

Mr. Bob Johnson, Instructor
Sir Francis Drake High School
San Anselmo, California

Mr. Kurt Jorgensen, Manager
Tele-Vue Systems of Marin
San Rafael, California

Mr. Ray Josslin, Manager
Big Valley Cablevision
Stockton, California

Mr. Ron Krempetz, Instructor
Drama Department
College of Marin
Kentfield, California

Dr. Rudolph Kupfer, Coordinator
Physically Exceptional
Marin County Superintendent of
Schools Office
Corte Madera, California

Mrs. Joan Lisetor, Member
Marin County Board of Education
Corte Madera, California

Dr. Harold Livingston, Director
Kidder Television Center
Oregon State University
Corvallis, Oregon

Dr. Thomas Lorch
Coordinator of Instruction
Tamalpais High School District
Larkspur, California

Mr. Neil McHugh
Financial Manager
Tele-Vue Systems of Marin
San Rafael, California

Mr. George Nelson
Audio-Visual Technician
Sir Francis Drake High School
San Anselmo, California

Mr. David Newby, Chairman
Communications Department
College of Marin
Kentfield, California

Mr. Phil Pease, Instructor
Social Studies
Redwood High School
Larkspur, California

Mrs. Audrey Petersen, Coordinator
California Instructional Television Consortium
Rohnert Park, California

Mr. Lee Richardson, President
Marin County Board of Education
Corte Madera, California

Mrs. Barbara Rosenberg
Information Officer
San Rafael School District
San Rafael, California

Dr. Charles Ruffing, Supervisor,
Instructional Technology Unit
Michigan State Department of Education
Lansing, Michigan

Mr. Jack Schafer
Production Coordinator
Marin Community Video
Corte Madera, California

Mr. Jon Slezak, Director
Instructional Services
San Rafael School District
San Rafael, California

Mr. Sidney Smith, Coordinator of Curriculum
Marin County Superintendent of Schools Office
Corte Madera, California

Mr. Ric Stortroen, Instructor
Mill Valley Middle School
Mill Valley, California

Mr. David Swingle, Instructor
English Department
San Rafael High School District
San Rafael, California

Mr. Bill Tsuji, Coordinator
Evening School Programs
College of Marin
Kentfield, California

Mr. Charles Weers, Executive Secretary
Marin Central Labor Council
San Rafael, California

Mr. Bill White
Program Director
Moraga Cablevision
Moraga, California