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ABSTRACT

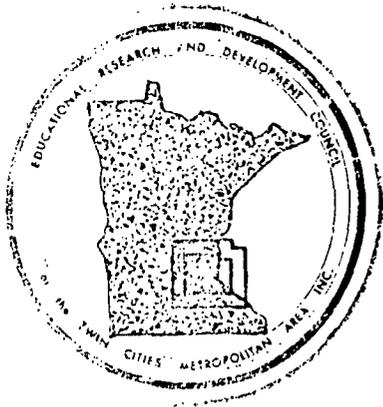
The primary focus of this monograph is on how school districts might involve themselves in the process of drafting cable television ordinances and granting cable franchises. An introductory section surveys the history of cable television, its educational uses, two-way capabilities, the local origination rule, and the role of the Federal Communications Commission. A course of action for educators in the process of granting cable franchises is suggested. The municipal franchising process is described. Essentially educational provisions for inclusion in a cable ordinance are listed; general franchise provisions that have an indirect bearing on education are also described. Some of the variety of options available for cable franchise ownership are explored. An annotated bibliography is also provided. (JY)

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A CABLE TV GUIDE FOR EDUCATORS:

Uses and Provisions

by
Jon Shafer

September, 1972
(Second Edition)

EDUCATIONAL RESEARCH AND DEVELOPMENT COUNCIL
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September 15, 1972

LETTER OF TRANSMITTAL

Dear Council Member:

Municipal officials in many of our metropolitan communities are making decisions relative to applications for cable television franchises. The nature of the resulting contracts will have great impact upon the use of cable systems for educational purposes. As a result, it is extremely important that school district officials have a working knowledge about "cable" so that the language of resulting contracts best meets educational needs.

To this end, a conference was held on September 14, 1971 on issues surrounding cable television. To this end also, the ERDC published A Cable Guide for Educators: Cable Communication Comes to the Twin Cities Area. Since publication of that document, new implications have come to the fore regarding cable TV and education. This update, A Cable TV Guide for Educators: Uses and Provisions, makes current the earlier edition.

A special thanks is extended to the author of this and the previous publication, Jon Shafer, ERDC Research Assistant. Thanks is also extended to D. Wayne Nelson (Bloomington), Douglas S. Hed (Edina), Eugene Olson (Rosemount), Ralph Ives (Stillwater) and Bill Fredell (White Bear Lake) who served as the editorial board for development of the earlier document.

Sincerely yours,

Thomas F. Stark

Thomas F. Stark
Executive Secretary

TFS:bl

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PREFACE

This monograph was written to provide Educational Research and Development Council members with a condensation of important cable television information that will be needed as the Twin Cities metropolitan area municipalities proceed to draft cable television ordinances and grant franchises. The primary focus is on how ERDC school districts might involve themselves in this process and what educational provisions should be considered for inclusion in the cable ordinance. While this material hopefully represents a collection of the best available ideas on the educational aspects of the cable television franchising process, it is not an official position paper of the Educational Research and Development Council.

Similarly, no formal stand has been taken on the basic question of whether or not a community should grant a franchise for cable television. However, it seems obvious that cable television will successfully create, in effect, a "wired nation," as this and other metropolitan areas implement cable systems. The probability is high that in the next two years cable television franchises will be granted in a majority of Twin Cities area municipalities. If the enormous potential of cable communications is to be realized, maximum public participation is required. In particular, if the many educational uses of cable information systems are to be actualized, sustained, informed participation by educators is essential. This monograph is intended to facilitate such participation.

CHAPTER I

INTRODUCTION

The most important thing to know about cable television is that it is not just television received through a cable. Cable systems are like icebergs in that many dimensions of their forms are hidden from first glance. Even though cable television has changed completely and become a two-way decentralized medium, most people still harbor vestigial associations of cable TV with broadcast TV. The rebirth that cable TV (community antenna television) is now undergoing in becoming CIS (cable information systems) requires a brief glance at the past in order to fully comprehend the magnitude of change involved.

History

Cable television began as a community antenna service in 1949 in the valleys of Pennsylvania and Oregon, where towns were shut off from receiving broadcast television signals because of the surrounding hills. Its sole purpose was to extend the range and signal quality of over-the-air television. Antennas were placed on a tower atop a neighboring hill, and a coaxial cable was run down the hill and through the town on existing utility poles. Branches off the "trunk" and "Feeder" cables, called "drops," carried the television signal from the street into the home, where connection was made to the antenna terminals on the back of the television receiver. For this improved reception service, subscribers generally paid from three to six dollars per month.

Past and present CATV systems also include electronic equipment at the base of the community antenna. This is housed in a small building, which sometimes also serves as a studio, and is called a "headend." The electronic equipment improves the quality and the strength of the television signals before feeding them into the coaxial cable. Several amplifiers per mile of cable are necessary to maintain signal strength, though decreasing its quality. Because of this degrading effect on the signal quality, the practical length of the cable that runs from the headend is limited.¹

While early cable systems often had only a four to six channel capacity, the capacity using today's equipment is approximately 30 channels per cable,

using "off the shelf" amplifiers. With dual, and even triple, trunk cable systems coming into existence, 50 to 75 channel capacity is therefore possible. Forty-two and fifty-four channel systems are already in existence.

Educational Uses

This greatly increased channel capacity opens the door to educators, permitting highly specialized, even individualized, uses of the cable system for distribution of educational material. Some of the potential opportunities created by a cable system are outlined by the Metropolitan Nashville Education Association as follows:

1. Redistribution of open circuit instructional TV programs at times most needed.
2. Showing of films from central library over cable system (film previews for teachers).
3. Programs for segmented audiences to serve unique needs (i.e., second language program for those who do not speak English).
4. Teacher education programs: (a) links to university, (b) credit courses for teachers, (c) inservice education.
5. High school equivalency and college extension courses (open university).
6. Information retrieval, dial access (central bank).
7. Live production for pupils to exchange programs with other pupils and other schools (Drama student access, etc.)
8. Teacher conferences via TV.
9. Adult education uses--vocational education.
10. On-job training needs of industry.
11. Computer-to-computer interface.
12. Preschool programs for children at home.
13. Professional programs for doctors (on non standard channels).
14. High school news programs, teen discussion programs.
15. Student film producers' outlet.

16. Selective communications among schools within a given part of the city.²

Some of the above uses could be expanded for wider application. For example, item 13 could apply to any profession, from architecture to zoology. Suggestion 14, news programs, could elicit specials such as a "First Monday" series on student and faculty research or science fair projects. Another idea, suitable for any level group, might be to tape record a verbal report for the children's parents and friends about a class outing or project. That only a few might be interested would not be any problem because of the hundreds of voice signals that can be carried using only a small portion of the cable's bandwidth. Of course, it must be remembered that portable video tape recorders are nearing the simplicity of audio-tape recorders. Consequently, the ideas above could be carried out with approximately equal ease whether using the radio or television capability. Even if just an audio tape were prepared, a television camera could scan drawings or paintings done by the class, depicting individual versions of the project or the activity being described. With a small amount of effort, the audio and visual could be coordinated. Another potential use of just the audio capability of the cable system is for "conference calls." Possibly before "picturephone" service is widely available from the telephone company, "videophone" will come into being through cable systems, providing another reason for cable interconnection among communities.

The collection of regular school activities like plays, holiday programs, concerts, sporting events, and school board meetings is another significant source of material for cable use. Communication among the public, school board, administration, faculty, students, and parents regarding school issues could be facilitated using cablecast panel discussions, in-depth interviews with central figures, or televised call-in talk shows. It is important to remember that with the large number of channels in modern cable systems these programs can be repeated as often as needed, provided that the ordinance includes a sufficient number of channels for educational use.

Suggestion 15, student film producers' outlet, should be enlarged into a visual communications curriculum outlet. Students need to understand and operate the equipment of the new media and be able to utilize this knowledge as a means of communicating ideas, perhaps the foremost means of communication

by the end of the century. The potentials and limitations of the new media hardware, especially portable video equipment, must be discovered by each student and teacher.³ Only the direct, personal use of television can end its technological and psychological intimidation. Once the use of portable television cameras becomes commonplace, it seems likely that television will become an everyday vehicle of expression, e.g., videophone use or "soapbox television" on the public access channel. Because that day is rapidly approaching, the development of visual literacy, and specifically video self-expression ability, is being increasingly recognized as a central part of the communications skills people need in order to function effectively in today's TV society.⁴

If only a few of these many potential uses are developed to any significant extent, multiple channels will be needed. One solution recommended by the Mitre Corporation and being carried out in Bloomington, Minnesota is to provide a limited single cable network linking together the schools.⁵ This point-to-point educational network would be in addition to the full community-wide cable system. The educational network would serve the expected high usage communications routes among schools. It would also be connected to the full cable system so that designated programs could be shared with the whole community. A Minneapolis Public School spokesman, testifying before its City Council's Cable Advisory Committee, estimated that ten cable channels would be needed during school hours. Electronic circulation of audio-visual materials would be triggered by a teacher in a classroom or student in a study carrel telephoning the central A-V library. There personnel or student assistants would locate the tape (a significant number of color video cassettes is envisioned), put it on (or in) a deck, locate an empty channel, and inform the user of the channel number.⁶ Preliminary investigation has indicated that this projected use will be economically feasible within the next year or two when the city of Minneapolis will probably grant its franchise(s).

Before ending this section on a bright note, it might be wise to look at one of the problems to school systems that could arise in implementing these ideas; namely, the direct costs to the schools. Presently, the internal wiring of school buildings costs \$40-\$135 per classroom.⁷ Adding the cost of providing black and white or color receivers brings the estimates to \$200-\$300 or \$400-\$500 per classroom. Of course, if the sets are already available and if the conduit is already in (e.g., in new buildings), the costs of implementing cable TV would be reduced considerably.

The Minneapolis Public School system recognizes the possibility of being forced to absorb the cost associated with the ten channels which they have requested. This cost (not assuming the cost of cable, amplifiers, etc., and limited to the actual cost of activating and sending out a signal) may be no more than \$1,000 per year, per channel.

Costs associated with playback VTR units and personnel to operate them is another consideration.

Perhaps the largest expense of all are the costs of the programming. For example, production costs for the first year of Sesame Street were about eight million dollars. Anyone with previous experience in television production can confirm that the cost of producing effective programs is much greater than the hardware investment.

Where the needed extra money will come from is a question that may take some time to answer satisfactorily.

A significant by-product of the uses of cable systems is its profound effect on the self-images of those seeing themselves on television. The logic behind the effect probably goes something like: "What you see on TV is important. I'm on TV. I'm important."⁸ Though repeated television exposure may wear out this effect, its initial power should not be overlooked. One real life illustration of this force concerned a young boy who emerged from kindergarten into the first grade without having spoken during school. His first words, after seeing himself on a videotape playback, were "What a beautiful boy!"⁹

Two-Way Capabilities

As exciting as today's practical one-way and possible two-way cable applications mentioned previously are, the potential of the two-way capability of modern cable systems is even more far-reaching. The change from one-way television to a two-way information system marks a real system break between the original community antenna concept and the newly emerging community information system. This quantum jump in communications potential occurs when information, in any form, is retrieved and exchanged upon demand.

Time-shared, remote access computers and networking have realized part of this potential for ticket reservations, corporate paperwork, the stock exchange, and even some public school uses (e.g., TIES educational timeshared computer network). The telephone system has sufficed for audio and digital exchange up to a point. Common carrier microwave network and satellite systems

are rapidly growing to help serve the need. But not many homes or even schools can afford private microwave or satellite ground station facilities, nor can the telephone system serve adequately as use and broadband needs grow. Consequently, the cable's potential bandwidth of 300,000,000 cycles per second compares with the telephone voice channel's 5,000.¹⁰

This tremendous difference can greatly change the rules of the educational ball game. Remote retrieval becomes conceivable, two-way feedback a probability, and computer-assisted instruction a natural. With such far-reaching potential changes in store, it may help to return to the fundamentals and re-examine why the educational game was established in the first place.

A recent perceptive listing by Ivan Illich of the functions of a good education system is that it should:

1. Provide all who want to learn with access to available resources at any time in their lives,
2. Empower all who want to share what they know to find those who want to learn from them; and finally
3. Furnish all who want to present an issue to the public with the opportunity to make their challenge known.¹¹

Though there may be disagreement with Ivan Illich as how best to verbalize the basic educational purposes, one thing should be clear: Two-way cable information systems have the potential to enable a direct concentration on and fulfillment of basic goals. This directness may by-pass traditional educational institutions and their secondary socializing, certifying functions.

Perhaps the greatest social benefit CATV could offer would be to serve as an alternative to the institutionalized education system. By removing the educators as gatekeepers, the cable complex of the future might become more responsive to the learning needs of individual users rather than the dictated requirements of certifying agencies. Not only could unemployed workers receive vocational training without the social stigma attached to attendance at special schools, and dropouts have a second chance at acquiring basic skills without returning to the institutions that had already branded them as failures, but minority groups could tune in to specialized programs not otherwise provided by the majority-oriented mass media. Physicians, lawyers, teachers, and other professionals could share information among their peers without having it packaged as graduate courses supervised by the local university. Unlike the finite broadcast spectrum, the cable has channels for all these purposes and more.

One can imagine a complete pre-kindergarten through post-graduate alternative learning system based around CATV and other community social agencies.¹²

The imagination need not extend itself uncomfortably in order to visualize several building blocks which already exist for constructing the alternative learning system; Sesame Street and The Electric Company on one end and the Minnesota Metropolitan State College (MMSU) on the other. This new college-without-a-campus is based on utilizing existing community resources of all kinds not just social agencies. Having come so far in rethinking the resource end of education, it seems unlikely that MMSU will have any trouble in recognizing the advantages of two-way cable communications over two-way car transportation for tapping those resources. Whether the public schools can or will respond to this challenge in any significant degree is an unanswered question. In order to even partially answer it, it is necessary to slowly drift down to earth again after surveying the issue in a broad perspective.

To briefly review: the major advantage of cable's newly emerging two-way capability is in opening up a whole new world of an interactive media that can handle digital, audio, and visual information flow in both directions. This information exchange, storage, and retrieval system is fundamentally different from instructional television, no matter how well done. What is really involved is making available the advances of electronic communications technology to schools for the first time in an acceptable price range. Previously too expensive for anyone except large corporations, these communication tools are now becoming available for public service uses because of: advancing technology; quantity production; and the economy of spreading expenses over a large population due to the interconnection of cable facilities. Thus, two-way capability might someday enable the home viewer to literally talk back to his set or to interact in other ways, such as using the set and attachments as a computer terminal, utilizing a light pen to respond to a light-sensitive CRT (cathode ray tube), or selecting any audio, visual, or printed material stored in a local, or perhaps national, library.

Before going into some more specific uses of the two-way capability, several notes of caution should be added. In the cold economic reality of today's cable television industry, there exists a considerable range of thinking as to how soon these "blue sky" potentials of two-way systems will

become a financial asset and not economic suicide. The question is seldom "If?" but rather "When?" and "To what degree?". Educators may be able to exert significant influence toward the answering of these questions by the franchisee through exhibiting informed enthusiasm or unmitigated apathy. Of course, apart from this possible influence on the voluntary offers being made, the municipal CATV ordinance and franchise supply the opportunity to give legal force to the school's and the community's answer to "When?".

In order for the schools to know exactly what they want and when they can legitimately expect (or demand) to get it, more detailed investigation is required beyond the scope of this monograph.¹³ Each school system, or joint powers grouping of school systems, must determine which of the two-way services practical today and in the near future would be most beneficial. Then action should be taken to insure that such services are made available. This could be done through the ordinance by requiring those specific services, though a special FCC waiver may be required. More general provisions, such as requiring system updating in line with the "state-of-the-art" in the cable industry, are discussed in Chapter III.

Even if the educator decides not to decide right away, steps must be taken to insure that present decisions do not inadvertently narrow those future decisions. For example, the layout of the cable system, if done without adequate consideration for future growth of two-way and switched services, may lock the community into a system that will require unnecessarily large sums of money to expand its capacity.¹⁴ This added cost would ultimately have to be borne by the community users such as the school system. And the more the schools have to pay for channels, the less they will have for utilizing them.

The selection of the winning bidder is another critical process during which these same questions should be raised. It should be recognized that cable companies are presently concentrating on securing more franchises rather than fully developing two-way uses. This is the result of a business decision that it is more important to get as many franchises as possible now (with the top 100 markets just opening up) and develop two-way later after the rush for these contracts is over. There are several dangers for education if this market place mentality is allowed to dominate the course of events. One is that insufficient attention will be given to the franchising process by municipal officials because of the strong pressure they are under from the

cable companies. While most of the damage could probably be rectified later by a determined effort, the cost would be greater.

The potential danger least likely to be corrected is the saddling of a community with a mediocre cable company. Insufficient planning, low quality hardware, insensitive personnel and numerous other pitfalls await the community which gives little attention to selecting the winning bidder. While such a company is more likely to sell out, probably to a better company, refurbishing a cable system and improving poor service costs money. That money must ultimately come from the community. The human cost of poor cooperation with the resultant frustrated hopes and increased cynicism is another burden that the schools, and the rest of the community, would have to bear. Appendix C contains some additional thoughts on the economic aspect of the school-franchisee relationship.

Interactive, two-way cable communications have so recently become reality that no solid evidence is available documenting their economic impact. Nevertheless, interactive units are now commercially available for home or school. A wide range of models with numerous optional attachments provide enough flexibility to serve nearly any need, though not yet many pocketbooks. Also, many "bugs" still exist in this equipment and two-way complications are still being discovered.

One variety of the basic unit consists of: a channel converter, allowing additional channel capacity; a hand set which is a coder-decoder, allowing channel sharing, and a 12-button keyboard, allowing digital response; a microphone, allowing audio response; and a simple frame-grabber, which allows still images to be stored and shown on the television screen.¹⁵ Expansion of this basic configuration might include:

1. Higher capacity frame-grabbers:¹⁶
 - (a) one-page capacity of alphanumeric data
 - (b) one picture
 - (c) series of pictures
2. Teletype keyboard enabling varied responses including computer assisted instruction.
3. Television camera.
4. Light-sensitive cathode ray tube (CRT).
5. Printout attachment for hard copy facsimile reproductions.

6. Paper tape recorder for an in-home record of responses.

7. Credit card reader.

The educational uses of this range of electronic communications equipment are virtually unlimited. Completely individualized instruction is possible, since the student can choose over a wide range of options from highly structured programs such as computer-assisted instruction to random browsing through the material in the central data bank. Combinations of uses can be utilized to take full advantage of this cybernetic system, while allowing the teacher to concentrate on teaching.

Computer-assisted instruction is being tested over the Reston, Virginia cable system, using touch-tone telephones for the in-home terminals. In the Orlando, Florida area, a computer is "on line" over the cable system and, perhaps a first, without subsidy for several hundred homes. Cable's great capacity means it is a better delivery system than the telephone lines; and several computer-assisted instruction packages (pre-tested) are now becoming widely available. This may be one of the first two-way educational uses to find a home cheaply through the cable.

If group usage is desired, audio and even visual contact could be maintained as well as sharing of data held by one of the group or by a computer. Since interscholastic sharing is also possible, another level of interaction and two-way feedback becomes possible. Incidentally, central computer facilities can be time-shared by different communities if their cable systems are interconnected. The variety of uses available is limited primarily by the software or programming costs, not by the cable system itself or the central computer facilities. Because of this, interconnection is essential in order to share the cost of programming over enough school systems so that a wide variety of programmed learning choices are available without exerting a major financial drain on any single cable or school system.¹⁷

It must be emphasized that the two-way systems of varying sophistication outlined above exist mainly as pilot projects in July, 1972. They are discussed in order to show that these uses are technically possible today and will be financially feasible in the near future, almost certainly within the lifetime of the cable franchise being awarded. It is therefore important to take these developments into account when deciding on education's involvement in today's cable television franchising process. Without sufficient attention to long-

range development of communicating systems and the fundamental purposes of education, it is unlikely that enough re-thinking will occur. And without a fresh look, most of cable's potential for education will be lost. True, "wolf" or "salvation" has been proclaimed too often for educators not to be justifiably leary of extreme claims. However, cable communications, with its enormous capacity for carrying information soon upon demand in either direction, must not be underestimated. Cable raises issues of social philosophy which need to be recognized and resolved. Of course, the resolution of questions like, "How can cable's beneficial social impact be maximized?" will require years to answer. Cable should not, and probably could not, be stopped from developing until answers to questions like this are found. But educators need to share in the search for wise system design guidelines.¹⁸ Otherwise they must accept partial responsibility if cable's development is determined by those who talk the fastest rather than who offers the wisest comprehensive plan.

Jonathan

Fortunately, recent technological developments are being combined into a full two-way "community information system" at Jonathan, the new town being constructed 25 miles southwest of Minneapolis. In early 1972, Community Information Systems, Inc. opened a room for public use in the Village One Center where working models of "subscriber response units" are accessible to anyone desirous of trying out the equipment and its two-way services.

This project, funded through a Department of Housing and Urban Development grant and divided into three 12 to 18 month phases, has as its prime goal the determination of what people want and will use in a two-way information system. Phase I, begun in the fall of 1971, is the definition phase, making available a wide range of services to a few points in order to generally determine the community response. Community feedback will be sought covering four major facets: technical, political, economic, and socio-cultural. The initial services offered will include: two-way educational uses, merchandising, polling, security systems, entertainment, and information retrieval. Phase II, the "shakedown" stage, will involve the placement of 25 to 100 units in homes, schools and offices. Through day-to-day use in a natural environment, a clearer picture of the real life applications of this advanced system should emerge. Utilizing the findings from Phase II, Phase III will move into the "operation" itself with 1,000 to 2,000 units in use in a wide variety of settings. By this

time the feedback mechanisms should be sensitive enough to provide accurate information on the use patterns of a broadband communications network.

Visits to Jonathan to see and use an advanced two-way cable system are recommended to provide school and municipal officials with firsthand exposure and information.¹⁹ Group tours are welcomed there as well as at another operating two-way system in Overland Park, Kansas.²⁰ The Overland Park system is using digital, audio, and visual return capability in bringing educational services to a few home-bound students. Incidentally, it seems that using interactive television there has resulted in the creation of a psychological peer group for those home-bound students. The sense of isolation that retarded learning before seems to be significantly reduced.²¹

Local Origination

Another important aspect of cable television that is full of potential for the whole community which should be mentioned is local origination. At first, CATV systems did not engage in any local production. Gradually, the weather scan showing time, temperature, barometer, wind direction and velocity, and a forecast or community announcement came into common use. In a great many cable systems, that is still the only local origination. Of 1,200 systems which responded (out of 2,500 operating) to a 1971 questionnaire from the National Cable Television Association, 780 provide automated origination; 422 are capable of film, taped, or live origination; and 284 systems cablecast on a regular basis an average of 16 hours per week.²² Presently, most non-automated origination consists of old movies, local sports, panel discussions, bingo, and the like.

The potential of local origination in cable television resides partially in the condition of channel abundance which allows for specialized audience programming for very small numbers of people and partially in technical differences which allow the use of television cameras and recorders costing a small fraction of the amount needed for broadcast television equipment. This is possible because the television signal quality is not degraded as much in reaching the home through the cable as it is in getting there through the air. Another significant savings with cable is the elimination of an expensive transmitter for each channel.

The cost reduction is especially marked when half-inch video tape equip-

ment is involved, such as that already owned by most school systems. For example, instead of paying \$100,000 for a camera, \$1,000 is more than adequate, and cameras costing only several hundred dollars are becoming available. Even the Federal Communications Commission has encouraged the use of half-inch video equipment for cable systems.

We note specifically that the use of half-inch video tape is a growing and hopeful indication that low cost video tape recording equipment can and will be made available to the public. While such equipment does not now meet our technical standards for broadcasting, the prospects for its improvement and refinement are excellent. Further, since it provides an inexpensive means of program production, we see no reason why its development should not be encouraged for use on cable channels.²³

Along with this decrease in cost, there is a corresponding reduction in the complexity of operation. Consequently, the simplicity of a portable half-inch recorder and camera is comparable to that of an 8 mm film camera. Because of this simplicity, production can be decentralized with large numbers of people able to quickly develop sufficient skill to produce viewable video tapes. For educators, this means that students (high school, junior high, and elementary) can all be directly involved in production. Many projects around the country have established this not only as a possibility, but as a desirable and achievable goal. It has been said that for children to be raised on television and not be able to produce television is like being able to read without being able to write.

The opportunity for children to make video tapes using half-inch equipment has been available for several years. However, it is only with the coming of cable television that they will have a chance to show their tapes on a community-wide distribution system.

Federal Communications Commission

Why is cable entering the metropolitan areas only now? While historically cable was only an extension of broadcast television, there are other reasons. Broadcasters' resistance to the audience fragmentation that comes with cable's increased channel capacity is one of the primary causes. The Federal Communications Commission (FCC) had formerly required that before any distant signals are brought into a metropolitan area, the local broadcast television stations' permission must be forthcoming. Since that permission was not granted in any

of the 100 largest metropolitan areas, cable television had been virtually frozen out of these markets. In a few instances skyscrapers, hills, local origination, and careful management have provided an environment in which cable television could survive even without importing any distant signals.

But, generally, in metropolitan areas such as the Twin Cities, cable television was not considered a good situation for risk capital investment. What has changed this is the F.C.C.'s gradual change of heart regarding CATV. A milestone of this journey was passed in August, 1971 when the F.C.C. announced its intention to allow a few distant signals into the top 100 markets. Then in February, 1972, the F.C.C. released its full Report and Order which permits the Twin Cities metro area to carry two distant broadcast signals through its cable television systems. It is generally felt in the cable industry that this will provide an adequate opportunity for cable to get a start here.

The Report and Order mentioned above also touches on many other areas of cable regulation, making it an essential document for those educators involved in cable (consult the bibliography for its source). These regulations became effective March 31, 1972. Briefly, the main provisions are as follows for the top 100 markets with Report and Order page numbers parenthetical:²⁴

1. Establishment of a formula which allows this metro area two distant signals;
2. Requirement of a minimum 20 channel capacity "available for immediate or potential use for the totality of services to be offered" (p. 3289);
3. Suggestion of a 15-year franchise length but requiring only that "the initial franchise period and any renewal period shall be of reasonable duration" (p. 3281);
4. Requirement of at least one channel for free public access on a first come, non-discriminatory basis. Furthermore, "the system shall maintain and have available for public use at least the minimal equipment and facilities necessary for the production of programming for such a channel" (p. 3289);
5. Requirement of at least one channel each for use by education and local government free for the first five years (pp. 3270, 3289);
6. Establishment of a formula to require access channel capacity expansion according to demand (p. 3289);
7. Requirement that in live use of the public access channel for five minutes or less, the production cost be borne by the cable

- system owner (p. 3289);
8. Requirement of two-way "technical capacity for nonvoice return communications" (i.e., narrow band) (p. 3289);
 9. Establishment of technical standards (p. 3290-92);
 10. Requirement of a construction timetable to "equitably and reasonably extend energized trunk cable to a substantial percentage of its franchise area each year," suggested percentage being 20% (p. 3281, 3276);
 11. Limitation of municipal franchise fee to 3% of gross subscriber revenue, or in special cases 5% (p. 3281);
 12. Requirement on franchising, saying that "the franchisee's legal, character, financial, technical, and other qualifications, and the adequacy and feasibility of its construction arrangements, have been approved by the franchising authority as part of a full public proceeding affording due process" (p. 3281) and expecting that "authorities will publicly invite applications" (p. 3276); and
 13. Requirement of nonbroadcast bandwidth equal to that of broadcast, plus making available unused nonbroadcast bandwidth for leased access channels (p. 3289).

If there is one thing to be learned from the history of cable television and the F.C.C., it is that there is much uncertainty still in store. For example, the November, 1971 compromise between the cable and broadcast industries changed the August, 1971 "Letter of Intent" outline to limit the choice of distant signals which a cable system could carry. The compromise also allows broadcaster in the top 50 markets unlimited exclusivity rights to programs, a tool that might slow down cable growth in those markets.

Nonetheless, as CATV becomes CIS (cable information systems), perception of it will likely change from being viewed as a luxury to being recognized as a near necessity. Certainly, CIS can offer the prospect of a nearly unlimited entertainment and cultural diet ready upon request. Of more significance, however, is the storehouse of information CIS makes available to the millions of working people who need accurate information on which to base their daily decisions. Because CIS makes available computer technology in a simplified fashion at a low cost, it will probably have more effect on work habits than on play. The low cost of an advanced CIS can be seen by comparing its approximate cost to that of the telephone system, both of which are roughly \$500 per unit.²⁵ It seems probable that people will become

more dependent on CIS than they are on the telephone, as they are forced to use its sophisticated services to solve complex social problems. The flow of information in our society is rapidly becoming as important as the flow of money.²⁶ For this reason the emerging CIS will have vast ramifications in many areas, especially education.

CHAPTER II

APPROACH

In this chapter an outline is developed for actions that educators might consider taking when the cable television franchising process begins (which it almost certainly has already done, albeit unofficially). In a study of cable television in New Jersey, The Center for the Analysis of Public Issues found that local franchise deliberations were best characterized by: lack of competition, haste, no-show franchises, political influence, and pressure on small towns.²⁷

In the Twin Cities metropolitan area, Farmington and Lakeville awarded their franchises perhaps hastily and with no competitive bidding. Stillwater, Oak Park Heights, and Bayport awarded their franchises in a similar fashion several years ago and construction of systems has not yet begun; these are examples of no-show franchises.

As for political influence, Irving Kahn, former Chief Executive of TelePromter, put it this way: "In dealing with any city, you have to go to the guys who know the guys. We're in 88 towns, and we have 88 law firms, all politically connected."²⁸ It is difficult to document the degree of political influence surrounding the granting of cable franchises by municipalities, but some suggest that it is significant. For a discussion of political influences alleged to be at play in the Twin Cities metropolitan area, an article in the October 24, 1971 edition of the Minneapolis Tribune is informative.²⁹

Pressure on small towns to consider only the franchise holder from neighboring municipalities has not yet appeared here, primarily because present local franchise activity is focused on St. Louis Park, Minneapolis, St. Paul, and other large municipalities. After these cities have granted franchises, it seems likely there will be pressure on small towns similar to that in New Jersey during its CATV franchising.

In Fridley, a "lame-duck" city council granted the cable franchise just before two of its members left office. Three of the public school districts that serve Fridley, the County Library Board, and the County Commissioners had each passed a resolution urging that more time be spent in drafting the ordinance and in generally gathering more information. After these requests were not adopted, a referendum drive was successful in acquiring enough signatures for reconsideration and a referendum election. A counter referendum

petition, circulated allegedly by the associates of the cable company, General Television, Inc., was unsuccessful in persuading enough original petition signers to take their names off the referendum petition.

However, the city council did not accept the referendum petitions, and several lawsuits have resulted. The City of Fridley was ordered to accept the petitions and has since appealed that ruling. This episode has had a sobering effect on the franchising process in many Twin Cities metropolitan area municipalities. This action, plus the FCC rules coming into effect, have resulted in a more cautious approach by most municipalities.

For example, joint powers resolutions have been passed in St. Louis Park, Edina, Richfield, Hopkins, Minnetonka and Eden Prairie. Several other groupings of municipalities are being explored. This area-oriented thinking can only benefit educational institutions.

This background material is included to help educators form an accurate frame of reference regarding the franchising process. Commercial cable companies have probably already begun to cultivate contacts with local municipal officials. The official public franchising process may begin only after one of the companies has determined that it has adequate support on the city council to receive the franchise. Consequently, if educators wait until the municipality drafts its ordinance or advertises for bids, the minds of the councilmen and councilwomen may already be made up. That is why the following activities should be begun immediately:

1. It is important for the school system to first do its homework and do it quickly and well.³⁰
Becoming informed about cable television by reading as much as possible is essential, starting with the material mentioned in the bibliography of this report. After reviewing the possibilities for educational uses of cable television, the school administration should make some tentative decisions about the main thrusts of their use of the system. The school board should be kept informed of this process and, if appropriate, asked to ratify these decisions. The school system might wish to draw up a preliminary position paper on cable television, endorsed by the school board, to send to the city council. Such a paper might stress

the importance of taking adequate time to research and write an ordinance and the necessity of engaging competent assistance on the legal, technical, and social aspects of the ordinance. A good municipal approach to franchising, and one that educators might suggest, is to separate the writing of the ordinance from the granting of the franchise. First, the ordinance should be thoroughly researched, written, and after public hearings, passed. This would protect the public interest and provide a framework within which bids can be solicited and evaluated more easily, since the bids would share many common provisions. Those service areas in which emphasis is desired could be left open-ended for the best bidder to competitively show his superiority. The winning bidder would then negotiate and sign a franchise detailing further the rights and responsibilities of both parties. Maximum public participation should be encouraged in general and specifically with regard to other public institutions and citizen groups. A loose coalition with these groups might emerge, focused on maximizing the quality of the CATV ordinance. The city council should be asked to appoint a citizens advisory commission on CATV to handle the large amount of research needed for writing a good ordinance and wisely selecting a franchise. The school system should keep in regular, informal contact with the city council and officials. The best materials that educators come across should be passed on to them in an easily digestible form. The job of writing a good ordinance should be made as easy as possible for municipal officials. A detailed study on the specific ordinance provisions that the school will request should be begun.

2. As the beginning of the writing of the CATV ordinance nears, a well-documented presentation to the school board should be prepared, covering the provisions needed to protect and facilitate education usage of the CATV system and the services desired of the franchisee. Obtaining board approval of this position paper and of an official school representative to the city council on CATV is also important. Board members, school employees, and friends should be encouraged to educate themselves on CATV and to spread cable information throughout the community, always making sure that city officials are fully informed.
3. With the new FCC rules setting minimum and, in some areas, maximum standards for the municipal cable ordinance, many of the benefits educators may wish from cable can no longer be required through ordinance provisions. However, educators can accomplish much the same end by submitting their position paper on cable to the city and the bidders for the franchise. Educators should ask the city to include in the ordinance provision which specifies the information to be contained in the franchise bids, a requirement of bidder response to the school's position paper. Or perhaps the schools would wish to send copies of the position paper directly to the bidders in time for them to incorporate their responses in their official franchise applications. In either case, meetings with the cable companies, the municipal officials and the municipal cable consultant will probably be helpful in clarifying the position of educators and in establishing rapport.
4. Once the school community is informed and united on cable television and the drafting of the ordinance begins, the school's cable representative should be as involved as possible. Direct personal contact

with councilmen is important in order to fully explain the many educational aspects of CATV. It is also important to be in contact with the city manager and attorney, since they will probably be the ones to do the actual drafting of the ordinance. If the school system has investigated the possibility and decided to apply for the franchise itself, in order to invest the profits from the system in providing better educational services for the community, more educational work than before will be required. Or, since municipal ownership is an alternative, perhaps that option should be made more widely known.³¹ Whatever course is decided on, persistence is needed.

5. In the midst of building support for the school's ordinance provisions, involving as many of the local citizenry as possible in the franchising process should not be forgotten, regardless of whether or not they specifically support the school system's position. In addition to stimulating the functioning of the democratic process, increased involvement cannot help but improve the general quality of the ordinance and the bids. Educators might help CATV get good local press coverage and speak frequently about CATV to local civic groups. This will probably be the most important decision that the council will make for many years. Consequently, the process of writing and revising the ordinance should take about a year, with selection of the winning franchise requiring a comparable period. If various forms of nonprofit ownership are considered, as they should be, two years is a reasonable length of time to complete all the detailed investigation required and to make a decision.
6. Direct contact should be made with all franchise applicants in order to insure that they understand

the school's position and its commitment to following through and utilizing the channels, studio facilities, or whatever else constitutes the school's requested ordinance provisions. It is easier to discuss the intricacies of an ordinance in settings less formal than that of an official public hearing. All applicants will be willing to work with the schools to some degree. An important indication of what that degree is can be determined by their reaction to putting their promises to the school and city in solid legal language in the ordinance. The assistance of the school attorney will almost certainly be required in this process. Chapter III contains suggestions on ordinance provisions that should be considered. However, the most important thing to establish in discussions with the franchise applicants is their basic feeling about education; parasite and unlimited source of programming are the two extremes. The essentially cooperative nature of the school's and cable company's activities should not be underestimated. The better the job that one does, the more the other will benefit. The concept of trade-offs between the two often does not apply since both benefit, as does the community. Appendix C has a more thorough discussion of this point.

7. Once a draft of the ordinance is prepared for discussion purposes, copies should be sent to the National Education Association, the National Cable Television Information Center, the National Council of Churches Cable Advisory Service, and any other group from whom informed feedback could be expected. Their addresses are noted in Appendix A.

CHAPTER III PROVISIONS

A. Background

This chapter is divided into three parts. The first section cites research, describing the municipal franchising process and its results. The second section is a list of essentially educational provisions that the school system should consider recommending to the city council for inclusion in the cable ordinance. The third part is a list of general franchise provisions that have an indirect bearing on education and are generally important in upgrading the quality of the franchise. Both lists are stripped of all legal terminology and thus require rewording by an attorney before being included in an ordinance. More detailed information on these provisions should be obtained before advocating their inclusion, so as to have at hand adequate supporting evidence. Neither list is, in any way, inclusive. Both are presented primarily to stimulate thoughtful consideration of some of the more common educational provisions.

Any additional stimulation needed should be found in these observations of Monroe Price, UCLA Law School professor and noted cable authority:

Municipal regulation is the closest thing to no regulation so far as affirmative obligations are concerned. Municipalities do not have the expertise to fashion policy for the spread and regulation of the coaxial cable which is in the national interest. Even if they work diligently to produce the best possible agreement there is usually no enforcement machinery.³²

The finding of Stephen R. Barnett, University of California, Berkeley, law professor specializing in Communications Law, support the above observation:

That municipalities under the present system are likely to have done a careless and unenlightened job of choosing their existing franchises and bargaining for the elements of the franchise would not matter, of course, if there were not a significant public interest at stake in those decisions. But there assuredly is. Issues such as the area to be served by the system; the speed of its construction; the number of channels; the availability of channels for municipal, school, and public use; the provision of community origination centers and filtration devices; the quality of the service to be provided; rates for subscriber service; rates and terms for access

to the "public channels" and the leased channels; provision for two-way capability; interconnection with other systems; franchise fees; the term of the franchise--these go to the heart of the public's interest in the communications revolution that cable television represents.³³

These and other studies of the franchising process reveal similar conclusions. Expertise and experience are severely lacking at the municipal level, and franchising recurs so seldom that development of these qualities seems unlikely. Furthermore:

After the franchise is granted, the regulatory capability of the municipality is even further diminished. Having lost its bargaining power, the municipality must now rely on ongoing regulation to assure that the franchise performs in accordance with the franchise (and ordinance) terms and the public interest--not to mention effecting changes in the franchise that may become desirable. The resources, personnel, and expertise required to do the job effectively may be beyond the capability of even the largest cities; they are surely too much to expect of the middle-sized and smaller ones.³⁴

Nevertheless, lacking any state or metropolitan-level assistance until at least 1973, Minnesota municipalities are forced to bear a major burden, only partially relieved by the F.C.C. regulations outlined on pages 15 and 16. Given this situation, the job of protecting the future of education falls upon each school system working through its local municipality. In roughly 75% of the metropolitan cases, school district and municipal boundaries are not identical. Thus many school systems will be forced to deal with two or more municipalities, assuming that no joint power agreements are made regarding cable televisions. Such agreements, however, made sense, especially for grouping small municipalities. A joint powers approach could make the latest technology available more quickly, encourage cooperation on mutual problems, permit the cost-sharing necessary for effective municipal-level regulation, and perhaps reduce subscription costs through sharing of common electronic equipment (while retaining decentralization of production facilities).

B. Central Educational Provisions to be Considered

Note: Most of the following provisions exceed F.C.C. regulations and thus require a case to be made establishing the need for exception. The support of the franchisee must also be present, since, he is

the one who must "plead his case" in his F.C.C. certificate of compliance proceedings. Thus it may be wiser to elicit voluntary inclusion of these positions on the proposals of the bidders, rather than risk illegally requiring them in the municipal ordinance. Since the proposal of the winning bidder becomes part of the ordinance, it has the same force of law.

1. Free hook-up and ongoing subscription to the cable system for public institutions is now a standard provision in almost all ordinances. A clause should also be included covering any future expansion of these institutions, plus a school option to have the hook-up done in a manner chosen by the school.
2. Reservation additional channel capacity for educational use, provided that a specific plan has been developed requiring special exemption from the F.C.C.'s formula, should be considered. For example, the six months allowed the franchisee before adding channels based on need, may preclude cable's use as an audio-visual distribution network in large school systems in the multi-channel needs.
3. "At cost" internal wiring of public buildings should be considered. Though the need may not now be recognized, the school system will probably want all rooms in all buildings wired within the life of the franchise being negotiated. In provisions such as this, which may involve considerable financial expenditure by the cable franchisee, it may be wise to include a time-delay clause because of heavy early costs.
4. Interconnection with those neighboring municipalities with whom the school system shares overlapping school districts should be included. This interconnection requirement should state that a certain quality signal be delivered to the municipal boundaries, with responsibility for determination of satisfactory interconnection left to the school system or city council. Interconnection with all metropolitan area municipalities is also needed, with the city retaining the authority to direct the franchise to adopt the interconnection system of the city's choice. This degree of interconnection is essential for many two-way uses because of the need for cost sharing of central facilities and programs.

5. Production arrangements suitable to the school's needs should be included. This might include the franchisee giving the school some production equipment, joint ownership of a studio, or company ownership with x hours of school use permitted per week, including all facilities and support personnel at no cost, or some combination of the above. Farmington, Minnesota's ordinance is strong in this respect as the franchisee is required "to make available to governmental, civic and nonprofit organizations the local program origination facilities, without cost, providing the company receives forty eight (48) hour advance notice of such intended use thereof."³⁵
6. Two-way, broadband return capability should be specified, with that capability to be actualized at the request of the schools or city council.
7. The area should be wired in such a way that it can be sub-divided into smaller and smaller sections as the two-way use requires, thus multiplying channel capacity. With this system design, for example, a 40 channel system of ten sections in a municipality could have a potential of 400 different channels. Since the school system provides a natural network with the approximate density needed, the centering of section sub-hubs on elementary schools might be encouraged.
8. A regulatory body with independent professional assistance should be established to monitor the actions of the cable company on a continuing basis and insure compliance with the law. Ordinance provisions are of no use unless enforcement machinery is established and adequate penalty provisions are written into the ordinance.
9. A common carrier situation should be established on all non-broadcast channels by local ordinance in addition to the F.C.C.'s regulation to prevent franchisee interference with educational use. The other F.C.C. regulations should also be duplicated in the municipal ordinance to ensure enforcement.
10. The cable system should provide for interconnection with T.I.E.S. (Total Information Educational Services, computer time-sharing), I.T.E.S. (Instructional Television Fixed Services, 2500 MHz_x microwave), or other local educational communication systems used by

the school districts, in a fashion.

11. A percentage of the subscriber revenue receipts might be requested, perhaps two percent, for public or educational cablecasting purposes. Making this request obviously commits the school to sustained, significant production involvement.
12. Public, nonprofit, and local ownership are factors that tend to made a cable system more responsive to community pressure and more likely to recycle profits into system updating or subscriber rate reduction.

C. Secondary Educational Provisions to be Considered

1. An updating requirement to keep the franchisee in line with the latest "state-of-the-art" developments and prevent system obsolescence should be considered. This provision should be worded so that determination of adequate technological advance is retained by the city council. More generally the city should reserve to amend the ordinance at any time to require additional or greater standards and the construction, operation, maintenance and expansion of the cable system.
2. Interconnection with all municipalities in the metropolitan area is important for two reasons: (a) expensive centralized computer and library facilities require economics of scale that can only result from interconnection; and (b) sharing of program material across municipal boundaries is as important as sharing an interconnected telephone system. One may never use all the possible connections, but it is wise to have the potential. Political agreements on a metropolitan scale must be reached if an efficient low-cost interconnection system is to be developed.
3. A maximum 10-year length is advised by the Ford Foundation, Rand Corporation, Sloan Commission on Cable Communications, the Michigan Committee on the Future of Educational Telecommunications, and PubliCable, a coalition of 53 national organizations including the NEA and J.C.E.T. It is important to realize that the main purpose of renewal procedures is to provide for systematic review of the system's operation. Limited options for ordinance revision might also be required after five years.

4. Technical standards should be included; see Schools and Cable Television, page 51, for details.
5. Forty channels should be required in all but the smallest communities. Dual cable should also be required, where feasible, to provide for easy, low-cost future growth.
6. Public access to studios, equipment, and production personnel must be established at no charge or for minimal fees. Without access to production facilities, public access channels are worthless.
7. The establishment of subscription rates should be done through the city council and they should retain the power to unilaterally adjust rates if the evidence so dictates. Fees for the non-standard channel converter should be included.
8. A provision might be included granting the city or school system an option to buy the system after a period of years. Or, in the event of a transfer of ownership, the city might retain a right of first refusal as well as a veto power over any ownership changes.
9. Any monitoring of the uses made of the cable communications system (e.g. channel selection) should be allowed only when written authorization is granted by those whose use is being recorded.
10. Local origination of material should be dealt with in the ordinance. This can be done by requiring x hours of true local origination material per week by the franchisee and by funding community nonprofit groups through a percentage of the gross operating receipts of the cable system.
11. AM, FM and shortwave radio carriage should be required, with the city retaining its right of specific requirements.
12. The franchise granted should be nonexclusive.

CHAPTER IV

ALTERNATIVE FORMS OF OWNERSHIP

There is a variety of options available for ownership patterns. Municipal ownership is probably the most common of these other than commercial, with approximately 25 municipally owned systems in existence. It is important in municipal ownership and in the other possibilities that follow, that provision is made for the would-be profits to be channeled back into the system, either in the form of improved services or lowered subscription rates. Judging from those systems on which information is available, the subscription rates of noncommercial systems are generally about half those of commercial systems. For example, the one municipally owned system in Minnesota, at Jackson, has a monthly subscription rate of \$1.75, compared to the usual \$4-\$6 fees.

A citizen's Cable TV Study Committee appointed by the Detroit, Michigan Common Council recently recommended that the city create a special public authority to finance and construct its cable system. Its 162 page report, Cable Television in Detroit: A Study in Urban Communications, makes a case that public ownership, such as they outline, is most likely to provide the highest level of public services. Financing for this public ownership would come from revenue bonds and would not involve taxpayers' money. Further investigation of this possibility in Detroit has indicated that such a plan is feasible.

The Committee argues, based on its year long study involving numerous independent consultants, that the key justification for public ownership is the opportunity to reinvest system revenues back into the cable system to support the public interest services. "It would be quite akin to a gift of public monies if the City were to negotiate for a system that might have significant profits yet fail to obtain for itself either appropriate financial returns or contribution of services to itself and its citizens".³⁶

The Ford Foundation strongly recommends nonprofit ownership and suggests that a coalition of public institutions and community groups might be a preferable approach to the ownership question. Possible candidates for such an enterprise would include public television stations, universities, "libraries, service organizations, community action agencies, neighborhood association, centers for the performing arts, PTA's, school systems, chambers of commerce, professional associations...."³⁷ The Ford Foundation stated, in testimony before the F.C.C., "Free of the Commercial imperative to invest in services that provide

the quickest return on capital, the nonprofit owner should be more willing to experiment with new technology, to provide services of untested or marginal profitability, and to serve low income areas where potential subscriber interest may be less certain."³⁸

Two other forms of ownership that might be considered are the mutual company and the cooperative. In both cases, the systems would be subscriber owned, probably with some form of elected board directing the activities of a fulltime professional staff. The central problem in this arrangement is that the front-end, or initial investment, costs required to put the system in operation are extremely high. This usually requires borrowing large sums of money and resultant interest costs. In borrowing the capital required to build a cable system, the nonprofit franchise holder must usually go to the same financiers that the commercial owners depend upon. And in that setting, it is usually difficult for the nonprofit franchisee to show the same kind of "track record" proof based on experience that the profit-oriented franchisee can muster.

For this reason, a number of nonprofit groups are considering collaboration with commercial operators. These lease or joint venture arrangements hope to maximize community control over the system and the utilization of experienced managerial and financial resources. It is possible that an enlightened, active community could maintain approximately the same degree of community control over a wholly commercial system. One form suited for full community involvement is to completely separate the construction and maintenance of the physical plant from the programming and local production aspects. An elected cable board, analogous to a school board, could be the form of democratic control utilized in directing this public corporation. Commercial operators vary widely in their reaction to such propositions. Though response is generally negative, it is possible to find commercial interests open to this sort of arrangement, provided that full public support is manifested behind this option.

Ownership of cable TV by public school systems is another possibility. The University City, Kansas school district is reportedly considering such a plan. Also:

The Mincola, New York school district is planning to build its own CATV system and supply each student's home with a response terminal. It's envisioned that pupils would eventually spend several hours a day participating in individualized instruction via the home terminal; they would come to school for group learning and social activities. Pilot test are due to begin during this academic year.³⁹

CHAPTER V

EPILOGUE

What you must do at the national level,
and particularly within the communities where you live,
is immerse yourselves in the decision-making process.

You must come to that bargaining session
steeped in the lessons of fifty years of regulatory
giveaways
and armed with the spirit of the law,
the facts of the technology,
and the imagination to out-man those
whose power comes from the mouth of their lobby
and the persuasiveness of their venture capital.

If you fail,
you will have the illusory satisfaction
of hearing future generation say:
Why didn't someone tell us about all this
when there was still time?

Your job is to say it now,
to document it now,
when you can still make a difference.
You can, you know.⁴⁰

Fred W. Friendly

FOOTNOTES

- ¹Depending on factors such as cable diameter, the number of tops, and the frequency range involved, the maximum length may be 3-30 miles. However, use of LDS microwave can erase this limitation.
- ²"Possible School Uses of CATV," Metropolitan Nashville Education Association, Inc., June 21, 1971. Unpublished.
- ³For additional ideas and assistance in developing visual communications curriculum, contact: Jon Shorr, Milford High School, 5701 Pleasant Hill Road, Milford, Ohio 45150.
- ⁴Visual literacy: "A group of vision-competencies a human being can develop by seeing and at the same time having and integrating other sensory experiences. The development of these competencies is fundamental to normal human learning. When developed, they enable a visually literate person to discriminate and interpret the visible actions, objects, and/or symbols, natural or man-made, that he encounters in his environment. Through the creative use of these competencies, he is able to communicate with others. Through the appreciative use of these competencies, he is able to comprehend and enjoy the masterworks of visual communication." From a poster for the National Conference on Visual Literacy, March 2-5, 1972.
- ⁵The Bloomington, Minnesota Public Schools have received a Title III grant to explore and develop educational ones of the Bloomington cable system. For details, contact: Wayne Nelson, Coordinator of Audio-Visual Materials, Bloomington Public Schools, 10025 Penn Ave. So., Bloomington, Minnesota. 55431
- ⁶"Such an 'on-demand' retrieval system has recently been pilot tested in Ottawa, Canada under Bell Telephone sponsorship. In this system the teacher merely consults a catalogue of available films and tapes, places a telephone call to the origination center, and is told at what time and on which channel her selection will appear. The usual lead time is only about one minute." From Michael H. Molenda, "CATV and Access to Knowledge," Tale Review of Law and Social Action, Vol. 2, No. 3, Spring, 1972, p. 245. His source was "C. A. Billows, On Demand Educational Television Program Retrieval System for Schools, 59 Proceedings of the IEEE 998-1000 (June, 1971)."
- ⁷Wm. C. Lewis, Through Cable to Classroom, (Washington, D.C.: N.E.A., 1967), The lower and D. F. Mikes, Schools and Cable Television (Washington, D.C.: N.E.A., 1971), The higher. Cited by Molenda, p. 247. Much of what follows, relative to cost, is also Molenda, p. 248-9.
- ⁸For some humorous examples of TV's power to create celebrities, see: Studs Terkel, "Image, Image, on The Tube Tell Me Who I Am," Saturday Review, Vol. LV, No. 27 (July 1, 1972), pp. 12-14.

- ⁹From a conversation with Allan Rucker of Media Access Center, Portola Institute, April, 1971.
- ¹⁰For further elaboration of this point, see pages 7-9 in Ralph Lee Smith's The Wired Nation (New York: Harper & Row, 1972).
- ¹¹Ivan Illich, "The De-schooling of Society," in Alternatives in Education, Ed. Bruce Rusk (Toronto: General Publishing Company, Ltd: 1971), p. 106.
- ¹²Molenda, p 249-50.
- ¹³Several good articles to start with are Gerald Walker, "Special Report: Cable's Path to The Wired City is Tangled," Electronics, May 8, 1972 and Walter S. Baer, Interactive Television Prospects for Two-Way Services on Cable, Rand Report R-888-MF, November, 1971.
- ¹⁴Elaboration on this important point may be found in the testimony of Weston Vivian before the Illinois Commerce Commission, April 11, 1972.
- ¹⁵This is a simplified description of the "standard home terminal 'Queset'" of Vicom Manufacturing Company. Taken from "Interaction Television-Inter action Terminals," March 18, 1971.
- ¹⁶Research and development is making headway toward perfecting silicon storage tubes which could serve as frame grabbers, yet cost only \$10-\$15, in large quantities.
- ¹⁷One set of cost estimates for various systems of this sort is included in an interesting paper by R. A. Dunn, "Cable Television Delivery of Educational Services," presented at the IEEE Eascon Conference, October 7, 1971.
- ¹⁸A useful place to start that search might be Robert Bogus Law's The New Utopians: A Study of System Design and Social Change (New York: Prentice-Hall, 1965), 213 pp., \$2.45. Recognizing that we are all practicing futurologists, whether or not we are conscious of it or good at it, note the "Suggested Reading for Alternative Futures" in the bibliography.
- ¹⁹⁻²³See p. 34 in 1st edition
- ²⁴Federal Communications Commission, Report and Order Federal Register, Feb. 12, 1972, Vol. 37, #10, Part II.
- ²⁵⁻³⁵See pp. 34 & 35 in 1st edition
- ³⁶Cable Television in Detroit: A Study in Urban Communications, A Report Prepared by the Cable TV Study Committee for Common Council (Detroit: City of Detroit, 1972), pp. 30-31.

37-38 See pp. 35 in 1st edition

39 Molenda, p. 249

40 Fred W. Friendly, Ke note speech at Public Cable Conference, May 5, 1972, p. 21.
Available from NEA; see bibliography.

APPENDIX A

Annotated Bibliography

1. Educational

Molenda, Michael. "CATV and Access to Knowledge," Tale Review of Law and Social Action, Vol. 2, No. 3, Spring 1972, A special issue entitled "The Cable Fable."

National Education Association. "Cable TV--Protecting Its Future in Education," Interpretations, November, 1971. An Occasional Paper published by the Association for Supervision and Curriculum Development. Washington, D.C.: NEA, 1971. 8 pp. Single Copies Free; more 15¢ a piece from ASCD, NEA, 1201 16th Street N.W., Washington, D.C. 20036.

Man-Made Moons: Satellite Communications for Schools. Contributors: Lawrence P. Grayson, Frank W. Norwood, & Harold E. Wigren, Washington, D.C.: NEA, 1972. 48 pp. \$3.

Schools and Cable Television. Division of Educational Technology. Washington, D.C.: NEA, 1971. 66 pp. \$2.25, 10% off for 2-9, 20% off for more.

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Federal Communications Commission. Cable Television Bureau. Washington, D.C. 20554

National Cable Television Association, 1918 16th Street, Washington, D.C. 20036

Address to which one can send ordinances for review:

National Cable TV. - Information Center
2100 M St.
Washington, D.C. 20037

or

Dr. Harold Wigren, Division of Educational Technology, NEA.
address above

APPENDIX B: GLOSSARY

CATV - The original meaning was "Community Antenna Television," but gradually it has also come to mean cable television.

CIS - Community (or cable) information system, a more accurate term for a modern two-way cable system which distributes information in digital, print, audio, or visual form.

CABLECAST - To originate and distribute television signals solely over a cable system, not over the air as in broadcasting.

COAXIAL CABLE - A cable of $\frac{1}{2}$ "- $\frac{3}{4}$ " thickness with a copper wire at its center, like the lead of a pencil. Surrounding the wire is plastic foam which is encased by a jacket of knitted aluminum covered by a durable plastic sheathing.

DROPS - In cable systems a trunk and branch method is used with a main trunk line and branches off the feeder lines of the trunk. Drops are the smallest branches which connect the antenna terminals on the back of the television receiver to the feeder line in the street.

DUPLEX - A two-way cable system.

HEADEND - Is a building near the tower where the television signals are electronically cleaned and strengthened before being sent out over the trunk line. Often a small studio is incorporated into the building as well.

I.T.F.S. - Instructional Television Fixed Service. 2,500 megahertz frequency used for educational microwave distribution system.

MEGAHERTZ 1 MH = 1 million cycles per second of electrical signal.

SINGLE FRAME GRABBER - A video tape recorder which upon command records a still image or perhaps successions of them. These images can then be watched by the individual without using channel time.

ZERO SUM GAME - A situation in which whatever one party gains, another loses. The changes always add up to a zero sum, as then is only a fixed finite amount of reward to be distributed. In a non-zero sum game there is a variable amount to be distributed and so the changes add up to a non-zero sum.

APPENDIX C: "THE FREE CHEESE OF MOUSETRAPS"

Twice in the past few months this author has talked with prominent individuals, one in education, the other in cable, who expressed attitudes toward the educational uses of cable communications that seemed limited in their understanding of the school-cable company relationship. In the first such incident, exception was taken to the use of the word "free" in describing some of the educational provisions that might be considered for inclusion in ordinances and franchises. "The only free cheese comes in mousetraps," was the thesis. Anything you get "free" from one hand you can expect to have taken away in another form by the other. The cable operator in question expressed a similar view on the topic of interconnection, "The schools do not expect free electricity from the power companies. Why should they expect free interconnection from the cable companies? Let them use ITFS. That is what it is there for."

Both of these conversations point up a basic question about the working relationships that may develop between the schools and the cable companies. Is the relationship essentially a competitive situation, or zero sum game, in which what the school system "wins" in the form of ordinance provisions is "lost" in some financial form by the cable system? Or, on the other hand, is the school-company relationship more accurately viewed as basically cooperative, mutually beneficial, or a non-zero sum game? Holding this latter view, the author feels a need to verbalize his understanding of this central issue in the hope that more open discussion will be stimulated, aiding both "sides" in gaining a clear perspective.

Few would disagree with the general statement that there are some areas of cable television in which a potentially mutually beneficial situation exists. One obvious example is the whole area of programming. The cable companies need the school district's special events in order to help fill the channels available on the new systems. They are paying hard cash in some cases in order to obtain programming, or "software," from other sources. And here we have the schools, a potential "free" source of software. Free programming in exchange for free channels & inter-connection seems to be a relationship benefiting both the school and the cable company.

The Central question for a commercial operation is "Will educational programming sell cable subscriptions?" The answer to that depends on the

particular school uses. If supplementary classroom material is shown at night over the cable system, then the programming, of whatever quality, would probably result in more subscribers. However, since most cable systems have significantly less than 100% penetration, this use could be justifiably protested as being discriminatory. Even parents most willing to assist their children's education would likely balk when seeing this desire channeled through a commercial cable system.

This dilemma points up a problem which might be alleviated through public ownership and the probable lower fees, but which will never disappear until ways are found to reduce the subscription vote to zero. Revenue from leased and pay TV channels will help, and so will cost savings from such uses as enabling the electric company to reduce electrical demand during peak periods in selective ways like turning off one of the water heater elements. See the Mitre report for details on this possible (and proven) saving.

Even if less extreme dependency were created by more peripheral educational use of cable, the principal remains unchanged. To the extent that education uses the cable system effectively to that extent does it also help the franchise. This should cause any clear thinking cableman to warmly encourage the school's development of cable as an educational distribution system. That warm encouragement would appear most clearly in the form of educational provisions similar to those mentioned in Chapter III.

Because the more dependency, the more profit, these educational provisions actually benefit the cable franchise holder as much as they do the schools. While this benefit is not instantaneous and 100% automatic, no investments are. The potential for return to the cable system operator is high and increasing. Because of the synergistic interaction that takes place when a CIS is built for a society, everyone stands to gain.

Most cable operators are fine people, trying hard to make an honest living. But before you give the community's only CIS in marriage, be sure she's found a cable partner with symbiotic sensibilities.