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Libraries and CATV: Some Hopes and Fears

I have been trying to decide what it is that librarians do, and I see that the traditional role of librarians has changed greatly. They are no longer merely the custodians of shelves of dusty books, the shushers of small children, the sorters of cards, and the extorters of fines from miscreant bookborrowers. If we examine the full range of their activities, the only thing we can say is that they help people get access to information, help people find new ways of enriching their lives, and play a large role in community development. Some librarians administer systems that serve these ends, which may be just another way of saying that libraries, like universities, are cultural and educational institutions, and those institutions may, in the long run, turn out to be among the heaviest users of CATV.

Figure 1 is a picture of a CATV system, which I will explain somewhat superficially. Over-the-air television signals are captured by the array of special antennas, and are sent to the headend for processing or "cleaning up"—the interference is removed, the color balance is corrected, and all channels are brought to the same level of strength. Other signals are delivered from distant cities by microwave, and are processed in the same way.

Also at the headend are studios and other program sources which are fed onto the main line, or trunk. Periodically, amplifiers bring the signal back up to strength. No subscribers are connected directly to the trunk line. Instead, a sample of the signal is fed into a bridging amplifier which takes the signal from

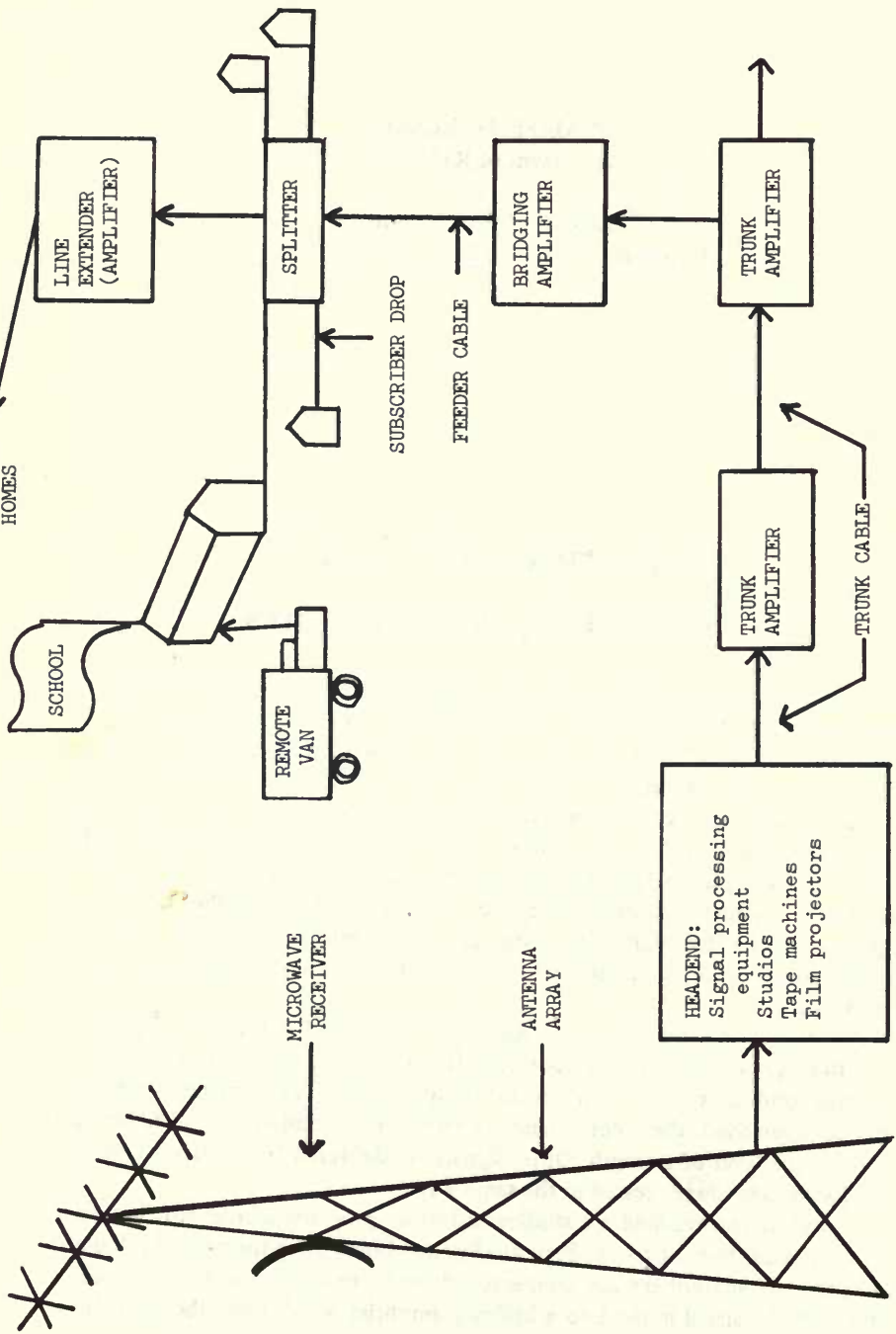

Fig. 1. CATV System.

the trunk onto the distribution or feeder cables. Ultimately, somewhere in each neighborhood, the signal is fed into a splitter which usually divides it into four separate feeds which lead to the subscriber's house through a "subscriber drop." At the end of the cable leg some companies use line extender amplifiers, although the number of amplifiers in a "cascade" should be held to a minimum.

If this is a two-way system, signals can be originated at many points on the system, fed back to the headend, and then out on another channel to everyone on the system.

What does this have to do with libraries as educational and cultural institutions, and with those of us who are in the business of public education–in the broadest sense of that word? Frankly, I am quite hopeful that CATV will have a profound effect upon education and a very positive effect upon society as a whole, although that attitude may sound too optimistic.

In the early 1920s David Sarnoff and Lee Deforest predicted that radio would bring education and culture into every home. In general, radio has not lived up to this expectation; for the most part it has become an electronic jukebox, a communicator of one-minute capsules of nonnews, and above all, a supersalesman for the sponsor's products.

Having failed with radio, there were, in the 1940s, predictions that television would cure our educational ills; but it has not. Dozens of experiments with educational television have come to almost nothing, despite millions of dollars of support. *Public* television, a somewhat different concept, will probably come to almost nothing; it is being strangled for lack of funds and whipsawed by politicians who would prefer a greater measure of control over the content of this occasionally brash and irksome medium. And, with rare exceptions, *commercial* television has become a pipeline of pallid humor, a way of escaping from reality rather than exploring it, and above all else, a tasteless salesmedium for bad breath remedies, sprays for armpits and genitals, cures for hemorrhoids and headaches, and a thousand other products. Indeed, it is evident that television, like radio, has met neither our hopes nor our expectations as a medium of education and as an instrument for social progress. Given this history, how can one expect something different from CATV?

CATV, or cable television as some call it, began as a means of delivering television programs to isolated communities: an antenna was erected atop a mountain, and wires were strung to the homes below, often along fenceposts, through ditches, and occasionally tacked to telephone poles. Today, CATV is much more than that; we now think of it as a sophisticated broadband two-way total communications system. Right now, nearly one family in ten throughout the country is attached to a cable system, and the growth rate is exceedingly high. Although the technology is now much more sophisticated than in the early days, there are many basic similarities: somewhere in the community there is erected a specially designed array of antennas. Sometimes, television and radio

programs from distant cities are microwaved to this tower. The signals are then processed or "cleaned up"—missing picture elements lost in the transmission process are restored electronically, and a strong, crisp signal is sent throughout the community by means of a network of coaxial cables. Amplifiers in the system keep the signal strong and interference-free.

Usually the system operator will maintain one or more studios from which he can originate programs, either live or on film or tape. And, by law, there must now be "public access" studios—a kind of electronic soapbox which any member of the public may use to address, free of charge, anyone who will watch and listen.

If this were all, one could conclude that cable television is very little different from over-the-air broadcasting, and would not see much hope for a significant impact either on education or on society. But there is a great difference.

If one carefully analyzes the reasons why commercial broadcasting has evolved into the kind of medium which is described earlier in such unkind terms, one will find that broadcasting is tied to the unrelenting tether of advertising for its support. This economic structure forces broadcasters to seek ever-larger audiences, for, generally speaking, the larger a program's audience, the more valuable it is as a commercial vehicle. By the same token, maintenance of a large audience requires rigid adherence to the successful formula—experimentation with bizarre (or, as some like to say, "creative") types of programming cannot be tolerated. Finally, because profits are an important consideration, programs must not only attract the largest possible audience and generate a maximum amount of revenue, they must be produced as cheaply as possible. But broadcasters have discovered that it is *not* possible to cheaply produce shows featuring name stars and slick, glamorous locations. So, bowing to the inevitable, they willingly spend $150,000 an hour for a series of twenty-two prime-time programs, and plan on running each show at least twice during the year. Later, after the program has finished its network run, it will be sold in syndication to local stations and overseas—to mislead the viewers in developing countries about the American way of life. In nonprime-time, game shows and soap operas fill the airwaves very cheaply. The net effect is a sameness, for if a program is to be economically successful in several hundred markets, in a dozen time slots over a period of years, it must be inoffensive and bland. For the advertiser's sake, it must not arouse or anger, it must not deal with socially troubling topics, and, preferably, it must be a bit funny. Certainly, if it touches a social nerve, it must not do so seriously. We call this *broad*casting because that is its aim—appeal to the broad mass audience.

The difficulty with this concept is its inevitable result: the majority is served at the expense of a sizable minority. The minority is not just the opera buff or the drama fan, although they are important. I am talking of the model airplane builder, the computer programmer, the antique collector, the amateur

photographer, or the retired person who needs information on social security benefits or geriatric nutrition, or even knitting lessons. The Black, the Chicano, the woman, or even the librarian—these people who are a part of the mass audience are also members of unserved minorities! The broadcaster cannot afford to program to these minorities: he has but a single channel which must serve the majority, and he must serve that majority at a profit generated by mass advertisers.

Thus, we come to the two important truths about commercial broadcasting which—even if we ignore the foibles of the people who control the institution—will account for the fact that broadcasting has not met our expectations: (1) it depends upon mass advertising and mass audiences; and (2) it operates in an environment of scarcity—there are limited numbers of stations, and each must scramble for the largest possible audience.

Significantly, neither of these constraints applies to CATV. At this time, the main source of revenues for CATV systems is subscriber fees. Five or six dollars per month is not an outrageous amount to pay for CATV service on the basis of ordinary television entertainment: one gets perfect color pictures, equally strong on all channels, with more stations than one could get even with a very sophisticated and costly home antenna; one gets a number of other programs originated by the system itself; and one does not have the cost and aggravation of buying, installing, and maintaining a makeshift rooftop antenna which may blow down during a storm. In short, a CATV system is supported by its subscribers. Of course, the programs are essentially the same as those seen on over-the-air television, and the commercial messages are still there.

We must also consider the second point: CATV does not operate in an environment of scarcity. The coaxial cable is a wonderful thing, for it will carry virtually an unlimited number of different signals simultaneously, and in both directions at once. These can be any mixture of television signals, audio or radio signals, and data signals. While most early CATV systems were capable of carrying five or even twelve channels into every home, modern systems are commonly built for twenty or thirty-six channels, and there have even been experimental fifty and 100 channel systems built. In summary, subscriber revenues which are derived from the use of a relatively small number of channels for entertainment television programs will support a system capable of providing dozens of other educationally and socially useful services.

A few examples of how CATV might be used in a typical community in the near future might be useful:

Public meetings could be televised—if one were so inclined, he or she could watch the city council or the board of education at home.

Schools could expand their adult education offerings to include videotaped lessons on almost any subject.

Schools could use the two-way capability of CATV for the teaching of homebound students. One experiment has shown that if homebound students

can see and hear each other and their teacher, and know that they can be seen and heard, their interest in education and in their own physical improvement increases. Schools have discovered that they can teach four or five times as many homebound students with each special teacher.

Libraries can bring their product—their services—right into users' homes, even to the disabled and the aged who might have difficulty getting to the library.

Computer-assisted instruction could become much more common: units similar to those utilized by the PLATO system at the University of Illinois could be placed in schools and homes, with the signals being transmitted at very low cost by the CATV cable.

Security could be increased in major cities: fire and burglar-alarm protection could become a reality for every homeowner.

Community groups could become more integrated as they receive—and produce—television programs of special interest: it is possible to send a discussion of a zoning change, for example, only into the neighborhood directly concerned.

Because it is quite inexpensive to produce programs for CATV, all community groups could offer their input to the community as a whole.

What of the minorities mentioned earlier—the opera or drama lover, the model airplane builder, the older person with a need for special information, the person who enjoys local news—how are they to be served?

A good example concerns the model airplane builder, because I suspect that in many communities there may only be a score of avid practitioners. Will they ever be able to see a series of programs about how to build models on broadcast television? I think not; no one will sponsor a program to reach only twenty or thirty people in a community, and no station would risk the loss of the rest of its audience. But it *is* possible that the maker of airplane glue might see the value of reaching all the airplane builders in the country. The glue company might commission the taping of a series of programs on model building and send these tapes to every cable system in the country. If they reach 20 people in Champaign, 50 people in Springfield, 500 in Chicago, 12 in Danville, 1,000,000 across the country—all potential buyers of the sponsor's product—it can be a good advertising buy.

But will the cable operator run the program—and give away this advertising time? Indeed he will! He has a dozen unused channels, and he knows that the wider the variety of his programs, the more people will sign up for his cable system. By this means, he will increase his income. And by this means, the twenty people who like to build models or hear about new books and library resources will be served. Similarly, the lover of drama or music will find his needs fulfilled, the person who wants education can get some, and the broader needs of a wide range of people can be met. This is not *broad*casting. It is *narrow*casting.

The concept of reaching a limited audience has already been proven. There is a reason why *Intellectual Digest, Popular Photography, MS, Ebony, Modern Crossword Puzzles, Public Opinion Quarterly, Foreign Affairs, Road and Track,* and *Jack and Jill* have survived and prospered while *Colliers, The Saturday Evening Post, Look,* and *Life* have failed. Broadcast television has become the equivalent of the mass circulation, general audience magazine. It is possible that CATV can become the electronic equivalent of the special interest magazines.

CATV will soon be coming to Urbana-Champaign and the University of Illinois, and I would like to outline some of our hopes and plans. The local system will be constructed as though it were three separate but interconnectable systems—one serving Champaign, one serving Urbana, and one serving the University of Illinois campus. This plan offers an unusual degree of flexibility and a number of interesting possibilities for instruction, research, entertainment, and service to the community.

On the campus, the plan is to have a terminal in every classroom building, and these will be connected to the closed circuit television wiring in buildings where that now exists. Thus, our two-channel closed circuit system will be replaced with a sophisticated CATV system offering twenty-seven channels in the forward direction and three in the reverse direction, with service immediately available to dozens of classrooms, and potentially available to all classrooms.

Virtually all office buildings will be connected to the system, as well as laboratories, the central receiving warehouse, the intramural physical education building, the assembly hall, the auditorium, and virtually every other building.

Every dormitory room, every apartment in married students' housing, and every student-staff apartment will be wired. All of these living areas will be connected to the campus system, and it will be possible to originate or to receive signals from every single point on the system.

How could we use this system for instruction? Let us consider lectures from the student's point of view. What goes on at the typical lecture? Information transfer. In large lectures, the students sit bunched together like so many cabbageheads being filled up with information. There is no chance to ask a question, no chance to start a discussion, nothing but an overheated, cramped, poorly ventilated lecture room in which it is often difficult to hear and see the instructor. To get to this hour of torture, the student often arises at the crack of dawn and trudges through snow or rain. One can see that technologically, with CATV, it would be no trick to put the lectures on television so students could watch comfortably at home.

Would students like this? We conducted a random-sample survey to find out. We discovered that almost 70 percent of the undergraduates in University of Illinois dormitories are enrolled in a lecture section of more than 150 students. We asked all of them to imagine that in a lecture-recitation class, the lectures were available both in the classroom and on television in their rooms—

and small recitation groups were retained for more personal interaction. Television lectures would be repeated several times during the day and night. We then gave them a number of alternative choices regarding attending the class or watching it on television: 41 percent of the students said they would always or usually watch it on television; 52 percent would watch it on television if it were inconvenient to go to class.

If tapes of in-class lectures were shown several times later in the day and night, 85 percent of the students said the opportunity of a second exposure would be helpful.

You can see that there are several levels of sophistication possible: we might merely look in, via television, on a typical lecture; or we might just tape the lecture in a studio (and if it were done especially for television, it might be much better) and play the tapes repeatedly. If the lectures were substantially prerecorded, the faculty member would have more time to work individually and in small groups with students.

We asked our survey respondents whether condensed versions of the major points of a lecture, for students to view at home as a supplement to the in-class lectures, would be helpful. Seventy-eight percent of the graduate students and 91 percent of the undergraduates said it would be helpful.

This kind of use just scratches the surface of the instructional possibilities. Educational films and slides could be shown to students in their rooms. Lecturers from other institutions could be microwaved into their midst. Students could tune into samples of disciplines other than their own for a much broader exposure to the educational experience.

How can we serve the two-thirds of our students who do not live on campus? We have arranged for the use of three channels on the CATV systems which will go throughout the communities. Thus, programs being shown on campus can be sent throughout the community—not only to students, but to everyone who might be interested in more exposure to the educational possibilities of the University of Illinois, its library, and its other facilities. This would be truly free education from a university without walls. With the interconnection of CATV systems in other cities, this could become a statewide center for free higher education. If distant students desire credit, this could be arranged through the extension service.

On campus, it is our plan to interconnect six or seven computers via the CATV system for more efficient computer service. These cables make possible the location of computer terminals or PLATO terminals virtually anywhere on campus or in the Champaign-Urbana area.

Consider the possibility of computerizing the card file at the library, and computerizing the check in/check out function. Then, from his home, one could browse through the card file, select a book, and determine if it is on the shelves or checked out by another person.

For anyone interested in what the University of Illinois might do after it embraces the cable, a mimeographed paper on the "Possible Uses of CATV at the University of Illinois, 1973-1980" is available.[1]

I want to sound a note of caution. While CATV may indeed have a profound effect upon society and has great potential for use in education, there is a great possibility that this medium, like radio and television, will come to almost nothing.

There are two insidious forces which concern me greatly. The first is economics. It is now in the economic interest of cable operators to serve a wide variety of interests and to make the cable a socially useful medium. But times will probably change. It seems that it is the job of opinion leaders, of those who have some concern for the future, to exert the appropriate pressures to see that it will always be in the economic interest of cable operators to serve the public well. This is another topic in itself, but, in short, it involves understanding the economics of the cable industry and manipulation of the incentives to good service by city governments, as well as pressure upon the federal government to support and encourage socially useful activities by cable operators.

The second of the insidious forces is inertia. One can see that—with regard to education at least—it is much easier to continue as we are than it is to change or to innovate. In this respect, the University of Illinois is quite fortunate: its administration has been wise enough and foresighted enough to perceive the possibilities offered by cable and to act decisively at the only moment when it is possible, so to speak, to get a piece of the action—at the time franchises are being let for the Urbana-Champaign market. Unfortunately, most universities have failed to perceive the possibilities of this new technology, and have let that moment pass. Others have perceived the utility of cable, but have not devoted their energies to getting a commitment from the cable industry, either through ignorance of how to go about it, or because of timidity and a failure to realize that a university—or a library—can offer assets to the cable operator. Even here it is difficult to predict how much inertia—and a whole complex of incentives and disincentives—will affect the desire of students, faculty and ordinary citizens to make optimum use of this new facility.

Thus, we must conclude that CATV has great possibilities both for education and for social progress, but if these possibilities are to be transmogrified into realities, we must be prepared to control the economic incentives and to overcome the forces of inertia.

In the long run, it should be librarians who decide how libraries can best use these new technologies to increase their service to the public.

I want to sound another note of caution: do not be impressed with technology for its own sake. Before you commit yourself to a new technology, be sure that it will really do a better job than some of the other technologies available, or that it makes it possible to do a job *you* really should be doing.

REFERENCE

1. "Possible Uses of CATV at the University of Illinois, 1973-1980." Available from: Department of Radio and Television, University of Illinois, 119 Gregory Hall, Urbana, Ill. 61801.