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# CATV and Access to Knowledge

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What the cable promises is a quantum jump in access to knowledge. Storehouses of films, tapes, records, still pictures, video cassettes, microfilms, programmed instruction, computer games, and instant news printouts might be dialed up on any wired-in television receiver. Two-way conferences with live experts are being cablecast already. In contrast to the *mass* media, which are involved in *broadcasting*, cable represents a *selective* medium for *narrowcasting*. Instead of catering exclusively to the largest possible audiences, cable makes it technically and economically feasible to transmit highly specialized packages of information to small, selected audiences. This parallels the magazine business, where a host of flexible, specialized publications have sprung up to supplant the old monolithic mass circulation magazines.

Michael H. Molenda

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## CATV and Access to Knowledge

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Narrowcasting might mean a physician tuning in to a seminar on cancer research, a housewife checking out consumer ratings on vacuum cleaners, a Chicano child watching *The Electric Company*, a worker getting on-the-job training in welding, a graduate student viewing a filmed debate between B. K. Skinner and Carl Rogers, or you and me watching the nightly news. These are a few examples of educational uses of CATV. They don't necessarily involve schools but since their purpose is to inform rather than merely to titillate, they are defined here as educational.

Seen this way, it is obvious that cable television has vast possibilities for performing educative functions. But before considering these in detail a crucial distinction must be drawn between the educational product (knowledge, skill, etc.) and the process with which it is usually associated (going to school). The two are not synonymous. Most of the knowledge which is useful to use is acquired by bumping into and being massaged by people and things in our everyday environment. Schooling, on the other hand, is a process whereby we receive teaching, advance through grades, and are awarded diplomas. Knowledge can be gained without schooling, and schooling can be undergone without necessarily gaining knowledge.

The point here is that when we talk about the

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educational implications of CATV we can talk about its role in shoring up the process of schooling or its role in making knowledge available to the public. These two functions will be discussed separately here. Greater attention will be devoted to the first, the schooling function, mainly because it is better defined and more predictable at this point than the function of knowledge-giving, which would include all of the intentional and accidental encounters with reality data that occur as viewers scan the media mosaic.

One of the reasons why the issues related to institutionalized schooling have taken clearer shape is that the major interest groups representing organized education have already started to stake out their positions. The first loud DEW-line warning to these groups was sounded in 1968 by a "CATV Data Base" report<sup>1</sup> sent by the Joint Council on Educational Telecommunications (JCET) to its member organizations (twenty of the major professional associations representing teachers, school administrators, higher education, ETV stations, libraries, and the like). During the following year there was a noticeable flurry of action at the local level with educators feeling out relationships with CATV operators. The leading case was in Long Island, New York, where Roger Hill of the Suffolk Educational Center (SCOPE) pushed through favorable ordinances in three towns and negotiated agreements with cable operators in five others. SCOPE's efforts attracted nationwide attention and Hill distributed hundreds of "briefing packets" sharing his experiences with other educators. Similar activities are now spreading out at the municipal and state level, but the major focus has swung back to the national scene while the FCC, Congress, and the President's Office of Telecommunications Policy consider future cable policy. Interest articulation is intense, for the educational system perceives that it has an important stake in the outcome of these policy decisions.

What are the prospects for the educational establishment? First, cable is not going to revolutionize our schools. Public education is too decentralized and too bureaucratized an enterprise to be reorganized by any single movement. Anyway, the managers of these institutions are preoccupied with an entirely different agenda. In both the elementary-secondary schools and the colleges the great problems—inadequate financing, lack of relevance, racial tensions, authoritarianism—are not the sorts of problems that are amenable to technological solutions. Besides that, educators mistrust technology for its dehumanizing tendencies; this is a well-justified fear but ironic coming from a source which has itself so often been found deeply lacking in humaneness.

Some are questioning whether the educational system can, or should, survive in its present form. Ultimately, cable television's greatest effect may be its contribution toward making the schools obsolete. Historically, educational institutions have derived their legitimacy from their control over the sources of information. The mass media have gradually eroded that control to the point where, as Marshall McLuhan emphasizes, the information level is now lower in the typical classroom

than it is in the average American home, with its color TV, hi-fi, newspaper, and magazines. And the copious cable stands ready to further expand the gap.

It is my feeling, though, that the system has enough momentum, if nothing else, to keep it going for at least another generation. In the meantime, there are a number of potential applications of CATV which may help it adapt to the new telecommunications environment and perform its instructional mission more efficiently.

#### In-school Potentials:

##### Flexible ETV Transmission

Since the mid-50's broadcast and closed-circuit television have become accepted tools of the trade from graduate schools down to the kindergarten classroom. A few public school systems (Hagerstown, Maryland, and American Samoa, for instance) have even adopted televised instruction as the backbone of the entire curriculum. Usually, though, ETV broadcasts play a supplementary role in the curriculum. And most of the 206 non-commercial educational television stations derive their major support from schools' use of such programs beamed into classrooms throughout the daytime hours.

However, with scattered exceptions these programs have had little impact on the total structure of the formal educational system. The general approach has been additive-injecting TV Trigonometry into a rural high school, putting pizzazz ("enrichment") into sixth-grade social studies, and other such one-shot infusions into the existing curriculum.

Outside of the few school systems that have been able (and willing) to make huge capital investments in their own wired closed-circuit or microwave facilities, educators have had to settle for whatever programs trickle one-at-a-time out of their local ETV stations. Only one subject aimed at one grade level is available at any given time over the air. Even then the programs are usable only if the rigid broadcast schedule happens to coincide with the individual school's class schedule. And if reception is not blocked by the terrain or weather conditions.

Cable could change all that. Besides relaying a clear, undistorted signal to all receivers, its multi-channel capability would allow televising of several courses simultaneously with frequent video tape replays throughout the day. But why be limited only to the relaying of broadcast ETV programs? By adding 20-channel converters in the schools and additional transmitters at the cable headend the CATV system could carry one or more private channels which, because of the converters, could be seen only in the classrooms. Thus schools could supplement off-air pickups with their own programming designed for their own exclusive use. In short, the *supply* of instructional TV (ITV) programming could be shaped to meet the *demand* instead of the reverse.

## Remote Retrieval

In fact, even within the existing technology video tapes and films could be supplied to classroom teachers immediately upon demand. Such an "on-demand" retrieval system has recently been pilot tested in Ottawa, Canada, under Bell Telephone sponsorship.<sup>2</sup> In this system the teacher merely consults a catalog 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. The program is then fed to the classroom TV set on one channel of the 12-channel cable network.

Further, there is no reason why such a remote retrieval system need be limited to classroom teachers. A number of colleges have installed dial-up systems which put banks of video tapes at the fingertips of students at individual carrels. The new installation at Fullerton Junior College in California is one of the most advanced. There 32 color-TV-equipped carrels have access to a library of locally produced video tapes and instructional films.<sup>3</sup> Connected into future 100-channel CATV systems, such centralized audiovisual libraries could be at the beck and call of individual students in schools and homes throughout the community.

## Two-way Feedback

Of course, the ultimate weapon as far as schoolmen are concerned is two-way, real-time, broadband communication between senders and receivers. A prototype for such a system is already in operation. It began this past summer in Overland Park, Kansas, when Jeff Hubert, a homebound student, punched a button initiating live audio/video connection with a teacher at the cablecasting studios. A half dozen additional homebound students are to be added during this school year. As more home terminals are added it will become increasingly cumbersome to use audio/video feedback from each student; hence the Overland Park system is also geared to gather digital responses from students. A mini-computer will serve as traffic cop, controlling the flow of incoming messages.

Since 1967 Southern Methodist University's Institute of Technology has been using "talkback TV" for its off-campus graduate courses in engineering.<sup>4</sup> A combined closed-circuit and microwave system, it allows engineers to view live graduate courses at their places of employment. They are able to talk back individually to the instructor using telephones which are hooked into the same microwave sending-receiving system. Stanford University has been using a similar microwave system to transmit on-the-job graduate training to engineers in the San Francisco Bay area.

The SMU-Stanford configuration could easily be translated into cable terms. Imagine, for instance, the local university hooked into the city cable TV system offering in-service training to all the teachers of that district. These teachers would view the programs after school in their own buildings, grouped according to

grade level or subject, each group tuned to a different channel. The teachers would interact with live instructors and each other by means of narrow audio return portions of the broadband channel.

The two-way capability also opens up new opportunities for interplay among groups of students in different schools. Educational games, such as the Inter Nation Simulation, could involve players from several schools at once. Current events discussions and interscholastic debates could be conducted by cable. Why not a student government channel to facilitate the aggregation of interests on a city-wide basis? Let the inner city and suburban kids share their differing experiences, their grievances, their ambitions. However, a caveat is in order here. The ability of black and white, rich and poor, to interact via television might conceivably be employed as a strategy for avoiding actual desegregation of schools. If that sounds farfetched, consider the recent order of a district judge in Dallas. He ruled that showing white children and black children to each other on closed-circuit television was constitutional as a desegregation tool. Black and Chicano parents filed notice of appeal. One observer remarked, "If the desegregation problem can be solved with television, there is reason to think that poverty and hunger also can be easily handled, through scheduled showings of money and food."<sup>5</sup>

Another caveat might be raised regarding the instructional effectiveness of talkback television. Technology enthusiasts still have a tendency to equate technical sophistication with improved learning. Unfortunately, it just doesn't always work out that simply. In fact, a majority of the formal research studies on two-way television instruction have yielded negative findings.<sup>6</sup>

One particular study employed experimental conditions similar to those existing in the Southern Methodist University and Stanford University systems discussed above: students in off-campus classrooms were able to telephone questions and responses back to a studio classroom. The researchers found "inhibition of interaction between students of the class at different ends of the television channel. . . . negative attitudes toward the course . . . and significantly lower grades by members of the class at the end of the channel opposite the teacher."<sup>7</sup>

It would go beyond the scope of this article to attempt to analyze the reasons why most of the efforts to date have failed to support the usefulness of the two-way interactive mode. Suffice it to note that the technique itself is not automatically or easily linked with effective learning. It can be applied in such a way as to evoke active participation, to provide immediate reinforcement, to enable individualized branching, or to promote student-teacher dialogue. Whether these functions are performed *well* continues to depend on the ingenuity of the individual instructor rather than on the theoretical capabilities of the hardware system.

### Computer-Assisted Instruction

The cable's capacity to transmit torrents of digital information and still-frame pictures holds great promise for applications of computer-assisted instruction (CAI). In Reston, Virginia, the Mitre Corporation is pilot testing a CAI system (called TICCIT) which could serve 600 terminals within just one standard television channel.<sup>8</sup> Although computer data can be sent through telephone lines, the greater capacity of the coaxial cable heightens its advantages as a delivery system. For, a crucial cost factor is the availability of a critical mass of users—enough users to justify the expense of software development and headend hardware. The properly equipped cable TV system represents a ready-made delivery system into which schools and colleges can be connected for time-sharing use of centralized computer facilities. With several pretested CAI packages now entering the marketplace we may be near a breakthrough in the widespread adoption of CAI by educational institutions.

### CATV as A Revenue Source

The CATV applications discussed so far may be labeled as steps toward the improvement of school instruction. And prospects in this realm are exciting. But given the real financial crisis facing public and private education, it is not surprising that some educators are viewing CATV primarily as a source of revenue for their institutions.

The big plum such educators have their eyes on is outright ownership of CATV systems, with the profits going to sustain the educational enterprise. At least one institution—Vincennes University—has operated four profit-making cable systems for a number of years. And the college's ETV station has been kept alive by their revenues.<sup>9</sup> In support of this sort of operation, the Ford Foundation filed comments before the FCC last December urging that non-profit agencies be given preference in bidding for cable franchises.<sup>10</sup> But thus far the Commission has shown no intention of imposing such a restriction on the local franchising entity. By now, most of the obvious CATV markets—the ones which will support a cable system profitably on the basis of just providing clear reception of local signals—have already been franchised to commercial operators. Even though the other markets, including the one hundred largest, have been opened up somewhat by recent FCC rulemaking, they must still be classified as long-range investments at best. Needless to say, schools would rarely be able to undertake financing for such speculative ventures.

A likelier possibility, suggested by attorneys Louis Schwartz and Robert A. Woods is for the school to serve as program supplier to commercial cable operators.<sup>11</sup> Many schools and colleges have well-equipped but under-utilized TV production studios. And since it appears that the FCC will be requiring future CATV's to originate programming to some extent, educators can gain outside revenues by supplying their facilities and academic knowhow to cablecasters and save the cable operator the immediate expense of building his own studio. (And with CATV systems ever hungrier for software for local origination, educators stand a good chance of finding new outlets for their wares.)

### Obstacles

Such are the soft, warm dreams conjured up by the cable in the minds of school and college people. But the reality of cable is a comedown. For what is the likelihood that the class of '84 will have its school days broadened by pushbutton televised encounters? Slim. The obstacles are myriad.

### Local Franchising.

There are about 15,000 potential CATV markets (2600 of which are already wired). Under current regulations, franchises must be negotiated individually at each locale. Many existing franchises make no special provisions for school services. Sentinels such as JCET, PubliCable, and units of the National Education Association are sounding the alarm. But in a war with 15,000 fronts some crucial battles will be lost; many others will be stalemated. Despite the fact that the cable trade association, NCTA, agrees "in principle" that educational institutions should have access to CATV,<sup>12</sup> individual operators are still free to bargain for whatever access terms are politically saleable in their local markets. With channel capacity being his only real product in the long run, the cable entrepreneur is unlikely to cede large chunks of it to the public sector.

### Federal Regulation.

At this writing, the outlines of FCC policy seem pretty well set. Unlike Canada, the U. S. will not institute federal licensing of cable systems. Rather, the Commission will lay down guidelines which will largely be left to state and municipal authorities to enforce. One implication of this move is that access and utilization by educational (and other public) interests will continue to be determined on a case by case basis. Who gets what from whom will depend on the imagination of local schoolmen, their political muscle, and the malleability of the cable system owner—who will increasingly be an absentee landlord.

JCET and other educational organizations have pleaded that like broadcast radio and television licenses, 20% of all cable capacity should be reserved for

non-profit use. But the FCC has chosen not to follow this precedent in regard to CATV. In his August 5, 1971 "letter of intent" FCC Chairman Dean Burch announced that "we will require that one channel be set aside for educational use" to be available at no charge during a five year developmental period.<sup>13</sup>

This one-channel reservation approach does at least give formal recognition to educational needs. Some educators close to the federal scene consider this a victory in light of the diverse and sometimes contradictory demands voiced by school interests during the hearings. But a single channel instead of a set percentage looks puny in the context of a technology aiming toward 40, 80, or 100-plus channel capacity.

On the other hand, the model of reserved broadcast channels is probably not the most appropriate one for the cable situation. It appears to fit today because most existing CATV systems have been designed with a capacity just large enough to handle available broadcast channels. Cable spectrum use has been dictated by broadcast spectrum use. The new medium is treated as though it were the old. Looking long range, the concept of dedicated channels—those reserved for one specific use exclusively—is outmoded. A more logical system would entail a "time-shared" use analogous to the telephone system. The FCC proposes for each channel devoted to relaying broadcast programs that an equivalent amount of bandwidth be provided for non-broadcast uses. Placed in such a public utility context, with firm provision for equitable leasing rates, CATV could be opened up to educational institutions even without a reservations policy. At some cost, of course. But this is nothing new. Public institutions are used to paying for their electric power, their water, and their telephone utilities.

The major concern, then, is for the immediate future. Even now, while existing cable bandwidth is still a scarce commodity, the single federally prescribed channel is not going to be of significant help. The potential uses described above almost uniformly assume a *multi-channel* capability. What educators are seeking is an advance from the one-program-at-a-time service already offered by broadcast ETV.

And even the single channel prescribed by the FCC is to be reserved for free use only for five years under the proposed plan. Given education's present unreadiness to jump into wide-scale televised instruction, it is unlikely that over the next five years it will be able to demonstrate significant use of this new resource. At this point most school and college administrators are only barely

aware of the existence of CATV. The steps from awareness to acceptance to adoption to implementation of new practices have always been slow and arduous in education. One pertinent example: in the first five years after reservations had been set up for broadcast ETV stations, only 24 such stations took to the air. Likewise, a 1966 NCTA survey of educational services by its members drew responses from 416 commercial cable operators; of these, 44 reported that they were originating instructional programs, for an average of about three hours per day each.<sup>14</sup> So only a small start has been made. Education's ability to reach a take-off point in CATV use much before 1977 is questionable at best.

#### Hardware Costs.

An inescapable fact about receiving cable television is that you have to have cables and you have to have television sets. In the case of a school building, an internal wiring system is required to connect together the outlets in each of the classrooms. Estimates of the costs of such wiring vary from \$40 to \$135 per classroom.<sup>15</sup> Add the cost of an average black-and-white receiver and the total comes to about \$200-300 per classroom (\$400-500 for color).

This minimum expenditure will allow simple one-way reception of programs produced and transmitted at someone else's expense. (The capability to record for later playback would add about \$2,000 extra per building.) These figures assume that the channel space, external cable, amplifiers, and monthly subscription fees are all being supplied free by the cable operator.

Assuming that there are over two million elementary, secondary, and college classrooms in use in the U. S.,<sup>16</sup> a capital investment of \$600-800 million would be needed merely to supply the minimum essential reception apparatus. Local production and transmission equipment would be additional. These figures loom large within an enterprise which is facing bankruptcy in many locales.

What makes the picture even more troubling is that the schools most in need of remedial and supplementary education—the rural and inner city schools—are the ones most expensive to reach with a wired system. They are also the ones on the shakiest financial footing, with shrinking property tax bases and/or shrinking populations. As with most social services, the ones most in need are the ones least able to pay. Consequently, if wiring the schools remains a local responsibility, the gap between haves and have nots will be further exacerbated. Special auxiliary services will follow in those areas where CATV operation is most profitable. A recent Rand study by Rolla Edward Park predicts that CATV subscriber penetration in central big-city areas would reach 20-35% (assuming operation under the proposed FCC rules), while penetration would reach 30-60% in the fringe areas. Park concludes that "expected penetration rates seem rather low . . . to support the sorts of innovative programming and other services many hope cable will provide."<sup>17</sup>

### The Boundary Problem.

One of the less glamorous issues, but one which could have insidious long-range effects on the institutional use of CATV, is the fact that CATV plants are not coextensive with school district boundaries. This problem is part of the general metropolitan problem of proliferation of special districts and authorities. We already have city, township, and county governments; sanitation districts; water authorities; legislative districts; school districts; junior college districts; *ad infinitum*. Telecommunications is about to join the throng.

The difficulty for educators is that CATV systems most frequently conform to municipal boundaries; school districts often do not. An illustrative example is Overland Park, Kansas, a suburb of Kansas City. Telecable of Overland Park serves six municipalities, having negotiated separate franchises with each. The area's consolidated school district, the Shawnee Mission School District, encompasses nine communities. Some of these communities are served by Telecable, some by a rival company. Jurisdictional questions immediately arise. If two or more school districts overlap within Telecable's franchise area, which one gets the free channel? Does the local Johnson County Community College also have to compete for the one channel? How are Shawnee Mission's children to be served equitably if some of their schools lie within one cable system, others within another, and others in uncabled areas?

The squeeze becomes even more acute in the big cities, where the trend is toward decentralized semi-autonomous school districts. There one future CATV system may cover a dozen districts, each with its own curriculum, its own organizational pattern. Such a situation is analogous to that of the Midwest Airborne Television Project (MPATI) which began in the late 50's. An airplane circled over a six-state area beaming several channels of instructional television to the schools below. Hassles over scheduling, program content, curriculum approaches, and financing contributed to MPATI's ultimate demise.

For all the rhetoric and controversy raised by politicians and parents and educational philosophers, the directions our schools take are more often shaped by subtle factors such as the tax sources used to finance school operations. Districts rich in property tax resources tend to support a more enriched educational program while kids in poorer districts get a minimum program even though their needs may be much greater. Similarly, the accidental boundary lines of CATV systems may ultimately make or break our efforts to apply this new technology to help the school children who need it most. The prospect is that the suburbs, where cabling is most profitable, will reap greater educational dividends than the inner cities and rural areas, where cabling is more expensive and profits likely to be lower. And in general, the lack of fit between the physical dimensions of school districts and cable districts may completely stymie future dreams of the wired schoolhouse.

### The Cost-Effectiveness Drive.

Public education always seems on the verge of financial ruin. School administrators have been crying wolf for years, but now that wolf is actually sniffing at the schoolhouse door. During the past school year in California 30 districts went bankrupt; in Michigan 80% of the requests for higher property taxes were rejected by voters. Teachers have been laid off in Cincinnati, New York, Chicago, Los Angeles, and Detroit. Nationwide, voters have increasingly been rebelling against school bond issues: in 1960 11% of all school bond issues were rejected; the rate rose to 33% in 1965; in 1970 fully 52% were defeated.<sup>18</sup>

Applying the emerging cable technology to the schools promises to be an expensive proposition. The basic hardware costs mentioned earlier constitute only the visible peak of the iceberg. Besides the hidden costs borne by the commercial cable operator, there lurk the enormous costs of "software development," that is, the professional time, talent, and materials required to plan, research, write, produce, validate, and promote the instructional materials to be disseminated by broadband (or any other) communications vehicles. As nearly everybody knows, it cost about \$8 million to produce the first year of Sesame Street. Other national curriculum projects have spent tens of millions of dollars preparing materials to implement the "new math," "new biology," "new social studies," and so on. Local experiences with broadcast and closed-circuit ITV also confirm that operating costs for producing effective programs quickly overshadow capital investments in hardware.

Can financially pinched schools afford instructional technology? As it has been applied up to now, the answer is no. The problem is that instructional technology (such as ITV, audiovisual aids, CAI, programmed instruction, and the like) has almost always been an "added-on" feature. Flashy innovative techniques have been overlaid onto unchanged traditional structures. Ventures of this sort will have to be able to prove their cost effectiveness from now on before they can be seriously considered. This means that the new technology must be accompanied by basic alterations in the teaching-learning system. Rather than being just another additional cost, it must reduce costs somewhere else in the system.

About the only practical way of reducing unit costs in public education is to increase substantially the pupil-teacher ratio. The technology must replace or at least re-place numbers of teachers. For example, the closed-circuit TV project in Hagerstown, Maryland, has reported that "The redeployment of personnel and equipment made possible by television has produced savings which cover the annual operating costs."<sup>19</sup> The ETV station operated by the Oklahoma City Schools points out that the art and music series they broadcast substitute for dozens of specialist teachers who would

otherwise have to be hired to offer the same courses in person. The Anaheim, California TV system reports cost savings resulting from redeployment of teachers and regrouping of students into larger groups for tele-viewing.<sup>20</sup>

The current movement toward cost-effectiveness measures reflected in performance contracting and other accountability procedures, unfortunately, happens to coincide with a counter-movement: a growing concern with protecting teachers' jobs. During the past two school years we have witnessed an end to the chronic teacher shortage and have moved into a teacher surplus market. Spokesmen for the National Education Association have warned that this surplus is likely to persist and even worsen in the coming decade, mainly because the school-age population has leveled off after the passage of a rather hectic baby-boom growth era. Hence job security becomes an important factor in teacher contract negotiations. The effects of technological changes have begun to be an issue in these negotiations. One can predict that teachers' bargaining agents will feel a pressure to oppose structural changes calculated to raise the overall ratio of pupils to teachers. At the same time, alterations of this sort must accompany the adoption of communications technology if it is to be cost effective.

### Recommendations

In summary, if CATV is to be of significant benefit to the institution of education a number of steps need to be taken:

1. Significant weight should be given to the *non-profit* character of competing franchise applicants.
2. Technical standards must require *two-way* capability, and installations must remain current with the state of the art regarding channel capacity.
3. Federal oversight ought to include guidelines *reserving some percentage* of existing channels for education.
4. In the longer run, CATV should be regarded as a *public utility* with a rate structure regulated so as to guarantee access by non-commercial as well as commercial users.
5. New federal legislation is needed to provide *categorical aid* to assist schools in tooling up to participate in CATV. This is consonant with the existing mandate for equalization of educational opportunity; if left to the local level the gap between haves and have nots will grow.
6. The process of local franchising must be re-examined in order to determine the best way of assuring consistency among the *boundaries* of CATV systems, communities, and school districts.
7. Educators must devise *new institutional patterns* for the teaching-learning process in which communications technology can be employed in a cost-effective manner without sacrificing the humanistic values of person-to-person interaction.

### Out-of-school Potentials

So far this analysis has dealt with the uses of CATV within the confines of the school. A more revolutionary use of CATV, however, would move the instructional process out of the school and into the home. The Mineola, New York, school district is planning to build its own CATV system and supply each student's home with a response terminal.<sup>21</sup> It is 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 tests are due to begin during this academic year.

The university of the air idea is already very much with us. Chicago's TV College has amassed fifteen years' experience in providing home-based junior-college courses via broadcast television; 350 students have completed Associate in Arts degrees exclusively through over-the-air course work. Great Britain's new Open University is well under way with some 25,000 students enrolled for credit. An Empire State College in central New York will be taking to the air soon. Illinois, Massachusetts, and Nebraska are all considering open university proposals. To systems such as these cable offers two important new dimensions: first, the capability of broadening course offerings by transmitting on several channels simultaneously; and second, the two-way channel ability which affords the student live interaction with the subject matter.

As promising as such extramural programs are, they still suffer from a common flaw: they are woven into our society's credentialing apparatus. Employers ask not how much you know but how many diplomas you hold. Colleges-of-the-cable and high school equivalency programs might supply those diplomas, but they also perpetuate the myth upon which the credentials system is based.

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 to 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 all packaged as graduate courses supervised by the local university. Unlike the finite broadcast spectrum, the cable has channels for all these purposes and more.<sup>22</sup>

One can imagine a complete pre-kindergarten through post-graduate alternative learning system based around CATV and other community social agencies. The bottom rungs of such a system already exist in the form of Sesame Street and The Electric Company. But the very real and very large hurdle for such a system is financing. The extremely high cost of developing effective learning materials has already been pointed out.

Then who should pay for alternative cable education? There are several possibilities:

1. Advertisers: The present mass media system has been built as a marketing tool for advertisers; one of the results has been a mass syndrome of conspicuous consumption which is beginning to be rejected by many elements of society. Further, sponsorship of programs is an expensive proposition; the advertiser-investor must seek the safest possible programming and the largest possible audience. The visible result has been a bland diet of programming almost uniformly directed toward majority tastes.

2. Individual viewers (Pay-TV): The technical properties of cable television allow signals to be beamed to selected subscribers who are willing to pay additional fees for certain programs. Entrepreneurs able to invest in the development of educational or cultural materials may find a market willing to pay on a per use basis, but there is clearly no quick money to be made here. There is also the obvious danger that the affluent will be served but not other minority audiences, who may have even greater informational needs.

3. School boards and colleges: Educational institutions have already discovered CATV as a means of expanding their extension activities. Operating similarly to the pay-TV entrepreneurs, they could offer units of credit in exchange for tuition fees. If presented on open channels such programs could also be used by others who want the knowledge but not necessarily the course credit.

4. Foundations: Sesame Street was underwritten largely by foundation funds. Ford, Sloan, and Markle Foundations have shown a special interest in advancing the educational potentials of CATV. A likely source for seed money and funds for pilot programs.

5. Public service agencies: Religious, cultural, health, and similar altruistic agencies might be a limited source of informational programming, each within its own sphere of interest. Many of them seek media outlets, which are scarce in the constricted realm of broadcasting.

6. Federal and state governments: Probably the most promising funding source for educational operations on cable. Coincidentally, the federal government is giving serious consideration to several proposed plans under which parents would be issued vouchers with which they could purchase schooling for their children from public or private sources. The "edu-credit card" could become the backbone of a pay-ETV system, with payments charged on a per use basis. This could be the opening of a radical restructuring of the formal educational system.

1. Joint Council on Educational Telecommunications, *JCET Data Base: CATV* (Wash., D.C., Sept., 1968).
2. C. A. Billows, *On-Demand Educational Television Program Retrieval System for Schools*, 59 Proceedings of the IEEE 998-1000 (June, 1971).
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11. L. Schwarts and R. A. Woods, *Dollars for Education in CATV*, 7-16 4 *Educational Broadcasting Review* 7 (June, 1970).
12. National Cable Television Assoc., *NCTA Adopts Educational Telecommunications Policy*, (Press release, Washington, D. C., April 29, 1969).
13. Dean Burch, *Letter to the Chairman of the Senate Communications Subcommittee* 28, FCC Document 71-787 (Aug. 5, 1971).
14. In the *Hearings Before the Subcommittee on Communications of the Committee on Commerce, CATV as an Investor of Education: An NCTA Survey*, 678-681 U.S. Senate, 90th Congress (1967).
15. The lower figure is suggested in Wm. C. Lewis, *Through Cable to Classroom*, (Washington, D.C.: National Education Assoc., 1967). The Higher figure is suggested by D. F. Mikes in another NEA publication, *Schools and Cable Television*, (1971).
16. According to figures listed in the U.S. Office of Education's Fall, 1968 edition of *Statistics of Local Public School Systems*, there were over 1,893,000 classroom teachers employed in the public elementary-secondary schools alone.
17. Quoted in 11 *Television Digest* number 44, p. 4 (Nov. 1, 1971).
18. J. S. Berke, *The Current Crisis in School Finance: Inadequacy and Inequity*, 2-7, 55 *Phi Delta Kappan* 2 (Sept., 1971).
19. Bd. of Education of Washington County, Md., *Washington County Closed-Circuit Television Report*, (Hagerstown, Md., 1963).
20. From a report of the Anaheim City School District, Dept. of Instructional Media, *Teaching with Television* (Anaheim, Ca., 1971).
21. This plan would reverse the ordinary configuration in that the school board would own the CATV system and would lease channels to entrepreneurs who wished to supply commercial programming to subscribers.
22. A new coalition known as PubliCable has recently been organized in Washington to lobby for such types of non-commercial access to CATV. Instigated by the NEA's Dr. Harold Wigren, it includes traditional educational associations plus such diverse groups as Black Efforts for Soul in Television, the Girl Scouts, the National Grange, Urban Law Institute, and the U. S. Commission on Civil Rights.