Upstart Television: Postponing a Threat

CBS has befriended a new technology that promises to reduce its advertising revenues—but with friends like this . . .

The big business of network television has faced increasingly stiff competition in recent years from a group of technological upstarts. Prerecorded video cassettes have taken over a section of network territory, and cable TV systems, which can offer commercial-free movies, have captured an audience the networks once held hostage. Of late, this increased competition has started to threaten the advertising revenues of the networks, which last year amounted to $4.7 billion. For the first time in 6 years, for instance, the price of prime-time advertising recently decreased in real terms.

To cope with this technological onslaught, the networks are scrambling to beat the alternative video people at their own game, to set up divisions that market cable TV programs, video disks, and the like.

Paradoxical though it seems, the CBS network is currently promoting a new video technology that threatens to erode its advertising revenues. Called teletext, the system allows a TV viewer to call up roughly 100 pages of textual material such as news and weather reports, train schedules, and possibly the price of daily specials down at the supermarket. The threat comes because a viewer, holding a palm-sized selector, might choose to call up teletext during a network program rather than putting up with another commercial.

"There's no question that teletext threatens CBS's advertising revenues," says Julius Barnathan, ABC president for broadcast operations and engineering. "I don't understand it. I've talked to the highest authorities over there and all they say is, 'You can't hide from progress.' Who wants to hide from progress? Let the teletext people compete with us, but why should we help them?"

The answer seems to be that CBS is trying not only to "help" in a general sense but also to help dictate the terms on which the technology is introduced, to help direct the growth of the industry. A teletext system known as Ceefax, one of a handful of such systems now available to U.S. broadcasters, has been used commercially in Britain for 6 years. The CBS empire builders in Manhattan, however, have latched on to and are vigorously promoting a French system known as Antiope. It has never been used commercially, and is apparently far from production. CBS, moreover, filed a petition in late July with the Federal Communications Commission (FCC), asking that the Antiope transmission standard be adopted for all teletext services in the United States. The choice, says CBS, was made on grounds of technical superiority. Vigorous dissenters on this point are U.S. television set manufacturers, who are lobbying for the immediate introduction of the less expensive British system.

The story of the teletext controversy suggests that CBS is fighting for time, fighting for a way to delay the introduction of a technology that could cripple its ability to generate advertising revenues. The stakes, both in dollars and less concrete terms, are great. It is not clear that consumers may want or need this "extra" teletext information, but the fact remains that systems able to deliver a wider range of viewpoints are rapidly evolving. Use, of course, is another question. Corporate interests could push regulatory commissions to adopt policies that lead to the development of teletext systems that are years away, expensive to produce, and which pose less of a threat to the established media.

Not that turning a profit with teletext is impossible, but the methods look feeble compared to the current power of network advertising. A 30-second spot on CBS-produced *Dallas*, for instance, currently pulls in $150,000. CBS officials admit that teletext is not even in the ballpark. "It's not really a network service," says Gene Mater, a CBS broadcast group vice president. "It's primarily a new and different local information and advertising service. We see very limited use from the point of view of the network."

Teletext sends out information over the airwaves by using an interval in the television signal when no picture is being transmitted, the so-called vertical blanking interval. The British systems in use today broadcast roughly 100 pages of text every 24 seconds. The pages electronically flip through a decoder located in or on a TV set, one after another, then the cycle begins again. With a hand-held control, a viewer can stop the cycle, select a page, and have it appear on the TV screen in place of the regular TV broadcast.

In England, teletext systems operating under the names of Ceefax (British Broadcasting Corporation) and Oracle

Antiope Videotex Systems Inc. Photo

Teletext in action

Roughly 100 pages of locally produced information can be called up, possibly in place of a network commercial.

(commercial television) have provided programming on a regular basis since 1974. Consumers in Britain do not pay for use of the system, just for decoders, which cost about $200.

In 1976, it was beginning to look as though the British system might spread to the United States. In that year the general manager for a CBS affiliate station was traveling in Britain and saw the BBC system in action. By 1977, Salt Lake City television station KSL had an in-house experimental version going, and in 1978, with the first such FCC experimental license issued in the United States, KSL went on the air with teletext. Today, through a network of repeater transmitters and cable carriers, KSL is testing the teletext service in six western states.

None of this has gone unnoticed by CBS officials in New York. In 1979 they began their own tests of teletext systems, both the British and the French, and they soon let it be known that the French system was clearly favored. U.S. manufacturers, however, were in favor of the British system. Seeing that a fight

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was in the offing, the FCC in 1979 asked the Electronics Industries Association (EIA), which sets many industry standards, to evaluate rival teletext systems and recommend a U.S. standard. The 23-person task force, made up of executives from TV broadcasting, manufacturing, and engineering companies, was chaired by a CBS official.

After 1 year of evaluation, on 29 July 1980, CBS did an end run around the EIA task force and directly petitioned the FCC to adopt the French Antiope system. The reason soon became clear. On 6 August, a vote taken by the EIA committee showed that the British system had won more adherents than the French system. Though the vote was secret, the *New York Times* reported that the ratio was 2 to 1. This was short of the 18 votes needed before a recommendation could be made to the FCC, but the writing was on the wall. Said *Broadcasting* magazine: "Since the most popular system is the British one, it is highly unlikely that CBS would ever have been able to swing a simple majority, let alone 18 votes, to the Antiope system it favored."

> "Let the teletext people compete with us," says an ABC official. "But why should we help them?"

Whether the move by CBS will prove effective remains in doubt. FCC officials of late have tended to apply a free-market philosophy to regulatory problems whenever possible. Teletext, they say, may be the perfect case for market determination of broadcasting standards. "We clearly would maintain some kind of interference standard," says Paul Fox, an official in FCC's office of plans and policy. "But the staff thinks very highly of not having a detailed, specific standard that would favor a particular system."

If this free-market approach were adopted, many U.S. manufacturers maintain that Antiope would not make the grade. "Any of the experimental Antiope decoders that you see around are bigger than a suitcase," says Walter Ciciora, research and development manager for Zenith, the largest U.S. manufacturer of television sets. "They

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OMB Offers Option on A-21

The Office of Management and Budget has bent a bit on the provisions of new federal accounting rules that have drawn the most strenuous objections from university researchers.

Affected are the requirements for time and effort reporting in the newly revised OMB Circular A-21 that governs accountability on federally sponsored research in universities (*Science*, 3 October). These rules have been the target of a mounting barrage of complaints.

The basic reporting requirements of A-21 will remain unchanged, but OMB will permit an alternative method of documentation that apparently would reduce the paperwork burden on individual researchers.

The alternative is based on a suggestion by Saunders MacLane, professor of mathematics at the University of Chicago and vice president of the National Academy of Sciences. MacLane says that he discussed the matter with the President's science adviser, Frank Press, in August and that the alternative was developed subsequently in exchanges between Press's office and OMB officials. MacLane says that the alternatives meet his own "most serious objection," which is that "A-21 seemed to require reporting of activities not supported by government funds." The present rules require that researchers report fully on all activities connected with their university jobs whether supported by federal funds or not.

In a speech to an alumni group on 16 October, Yale president A. Bartlett Giamatti noted that similar strictures were dropped in 1968 after a government task force decided that such time-and-effort reporting was "meaningless and a waste of time." He blasted the rules as the type of "excessive or unthinking" regulation that has "seriously damaged" relations between government and science.

OMB agreed to the new alternative method in a letter to MacLane on 21 October. MacLane says that at this point discussions with universities of the new option are not far enough along "to know how well it will work out."

The new method provides for a three-stage "multiple certification" to document faculty salary costs. The individual faculty member would certify only the time he spends on "direct activity" related to a research grant. A department chairman would certify percentages of activity relevant to indirect cost categories. The university president would, in effect, certify that faculty were not being compensated with federal funds for activities not specified under grants.

An OMB paper elucidating the new option notes that "OMB is concerned that the proposals would increase the paperwork burden of compliance with Circular A-21 since three certifications would be substituted for one. But if a university chose it, and if faculty and administrators agreed that it was preferable to current reporting methods, then it would be possible to work it out within the framework of the circular."

John Lordan, chief of the financial section of OMB notes that, for multiple certification alternatives to be approved, a "university at large must be willing to do it," not simply the individual researcher.

Details of the new alternative had not reached the universities as this was being written and there was no ready reaction.

—John Walsh

Doctors Must Put Patients First, Says Editor

Doctors should forswear their lucrative sideline income so as to avoid a conflict between their interests and those of their patients. If the medical profession is to have the public's trust, practicing physicians should have no financial stake in profit-making health care enterprises.

That is the message Arnold S. Relman, editor of the *New England Journal of Medicine*, has been trying to get across in recent months. In a special article in the journal's 23 October issue, Relman uses the term "medical-industrial complex" to portray a bourgeoning segment of the economy—proprietary hospitals, nursing homes, clinics and diagnostic laboratories—which last year grossed an income of around $35 to $40 billion. This section is "the most important recent development in American health care and it is

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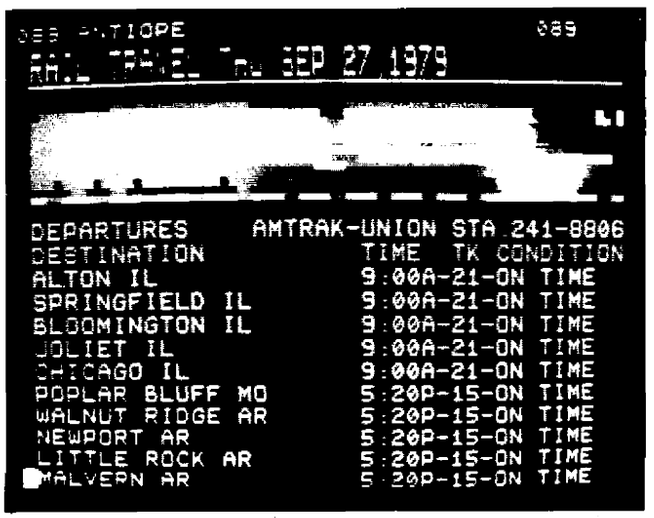

Antiope Videotex Systems Inc. Photos

Teletext: A threat to the billion-dollar revenues of the networks

Produced in Washington, D.C., each of these pages contained a variety of colors, a feature of both French and British systems.

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haven't put it on a chip, and when they finally do, the whole thing will be more expensive than the British system. U.K. teletext is simpler and cheaper, and it's the only one in the world that's available right now." Cost is a crucial factor, says Ciciora. Substantial numbers of potential customers will probably not put down the cash to buy a teletext decoder unless it sells for under $100, a price he says could be achieved if there was large-scale production for the U.S. market. "To most people," he says, "television implies entertainment. Probably no one has yet purchased a television receiver with the specific goal of obtaining information or being educated." The contention that low cost is crucial to acceptance of the system is substantiated by the slow sales of $200 decoders in Britain. Currently, the number of receivers equipped with teletext decoders in England stands at only 85,000.

U.S. manufacturers are also hesitant about Antiope because the French government financed the development of the system and apparently holds the patents. Antiope Videotex Systems Inc., a subsidiary of Telediffusion de France that is marketing the U.S. system, has hinted about royalties. The British, on the other hand, have said anyone can have the rights to the technology for free.

Suspicions about CBS's motives in promoting the Antiope system were raised back in 1979 when it became clear that CBS was sinking millions into testing different teletext systems before bothering to do a market survey. "Where else," asks one rival network official, "do you spend that kind of money without knowing beforehand if there is a market?" Whatever the motive, FCC officials say that CBS network interest in teletext is a boon, one that sooner or later will pay off for the consumer. "As long as CBS is pushing it, we're not going to ask a lot of questions," says one official. "Let's just say there are other fights we'd rather pick."

CBS officials maintain they are not worried about the loss of advertising revenues. "We don't see it as a threatening technology," says Harry E. Smith, CBS vice president for technology. "Our whole business is based on providing a service to the public. I guess we figure that teletext improves the total service that we can provide." Asked about the possibility that Antiope technology might be used as a way to delay the introduction of teletext services into the United States, another CBS official started to answer, paused for a few seconds and said: "Well, draw your own conclusions."

The CBS party line is that Antiope is better, in particular, that it is software-based, which lends the system a flexibility to meet future developments in the communications field. Antiope, CBS maintains, will be able to be interconnected with other computer-based information sources and with videotext (known in Britain as viewdata), a technology similar to teletext in which the information is sent over telephone lines or cable.

Taking issue with this are U.S. manufacturers, who hold that Ceefax does just as well as any other system. Ciciora at Zenith, for instance, discounts any significant difference in terms of compatibility. "No matter whose system you use, there is some conversion necessary because viewdata uses a 10-bit code, and teletext, an 8-bit code." In any case, making the conversion so that Ceefax can interconnect with viewdata technology involves "a trivial extra expense—just a couple of integrated circuits in the receiver."

CBS also maintains that Antiope allows more creativity in making up teletext pages. Disagreeing with these claims is Carl Eilers, who sat on the EIA's teletext task force. "All systems deliver the same kind of service," he says. The allegedly more flexible graphics coding on Antiope is "a statistical argument, really. On some frames you need more instructions with Ceefax and on others you need more with Antiope."

The technical arguments go round and round, and probably will for some time. One final fact suggesting that CBS is motivated more out of financial fear than a sense of public service is that the other networks, ABC and NBC, have consistently done everything in their power to defuse the chance of a teletext invasion.

Consider the case of closed captioning, a service for the deaf. This is a teletext-like service in which subtitles are added to regular network programs, but only for viewers with special decoders. The Public Broadcasting Service got the captioning ball rolling, and the move was warmly supported by ABC and NBC, who have subsequently sunk millions into the development of a closed-captioning system. According to Harry M. Shooshan, former staff council to the House subcommittee on communications, this network enthusiasm was probably generated because the closed-captioning service "wastes" the television signal, reducing by 20 to 30 percent the information capacity that could be otherwise available to a teletext signal. The closed-captioned signals have gone out over the

ABC and NBC networks since March 1980, and receivers equipped with decoders that can pick up the signals are currently in 25,000 homes. Sears sells the decoders for $250. According to the National Captioning Institute, by 1981 more than 150,000 U.S. households will be equipped with decoders. Interestingly enough, CBS opposed the close-captioning system, saying that it would, in the future, incorporate the service into its Antiope teletext operations.

The big question is when those operations are going to begin. A commercial Antiope system has not yet materialized, and before it does, all the components of the current suitcase-sized decoders must be put on a chip. "You've first got to find a semiconductor firm that has the slack resources to do the work," says one TV set manufacturer. "Even then, a guy will not design an integrated circuit even if you offer to pay the $2 million or so in development costs unless he's convinced the chips are going to sell in volume, so he can make a buck." Even if an electronics firm did take on the task, many observers feel the final Antiope product would be too expensive to penetrate the U.S. market.

These ambiguities do not seem to bother the CBS executives, who, from their 36-story citadel in Manhattan, nicknamed Black Rock, are fighting to keep the billion-dollar CBS advertising revenues from being eroded by the onslaught of the new video technologies. They are sticking with Antiope through thick and thin, and preferably with the blessing of the FCC. "There are those who feel the marketplace should prevail," says CBS vice president Mater. "But that is an impossible situation. There has to be a national standard. No question about it."

—WILLIAM J. BROAD

Trouble in Science and Engineering Education

Report sees shortages in engineering, computer science, serious decline in general understanding of science

A new Administration report on science and engineering education* warns that the United States faces immediate shortages of engineers and computer professionals; it also sees a trend "toward virtual scientific and technological illiteracy" in the population at large.

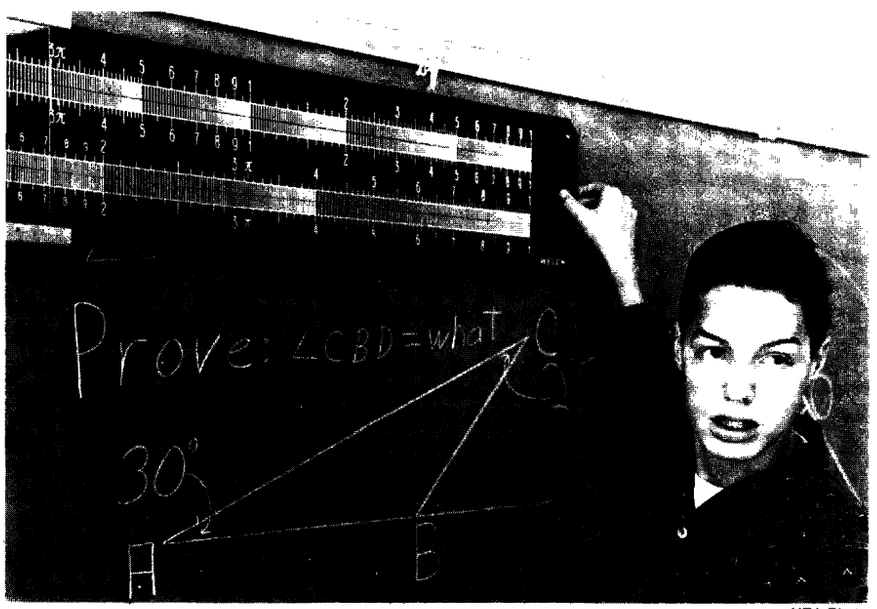
The report's authors suggest that market forces could correct the imbalance in the supply of professionals in the future, but adds "we believe that the innovative capacity of American industry will be severely hampered in the interim."

More general concern is expressed that "while students who plan scientific and engineering careers are receiving an adequate educational foundation, more students than ever before are dropping out of science and mathematics courses after the tenth grade, and this trend shows no signs of abating." According to data cited in the report, only one-sixth of secondary-school students take science and math courses beyond the tenth grade.

Those who do not take such courses are effectively eliminated from the possibility of pursuing careers requiring science and mathematics. This reduces the size of the pool from which the nation's technical manpower can be drawn and blocks individuals from many occupations in a society, where, as the report puts it, "science is a key to success."

As to the implications for national security and economic well-being, the report says, "The declining emphasis on science and mathematics in our school system is in marked contrast to other industrialized countries. Japan, Germany, and the Soviet Union all provide rigorous training in science and mathematics for all their citizens. We fear a loss of our competitive edge."

Initiative for the report came from the President's science adviser Frank Press. According to Press, the idea emerged as a result of his office's involvement in the project which led to President Carter's economic revitalization proposals. Press says he was impressed by evidence that, while undergraduate engineering programs are overloaded with students, graduate programs are not attracting adequate numbers of U.S. students.



NEA Photo

(*Science*, 4 April). There is already a shortage of engineering and computer science faculty, and research is suffering. Equipment in many engineering schools is obsolete. Press says that President Carter agreed that the matter was important and early this year asked the Secretary of Education and the director

*"Science and Engineering Education in the 1980's and Beyond: A Report to the President."

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