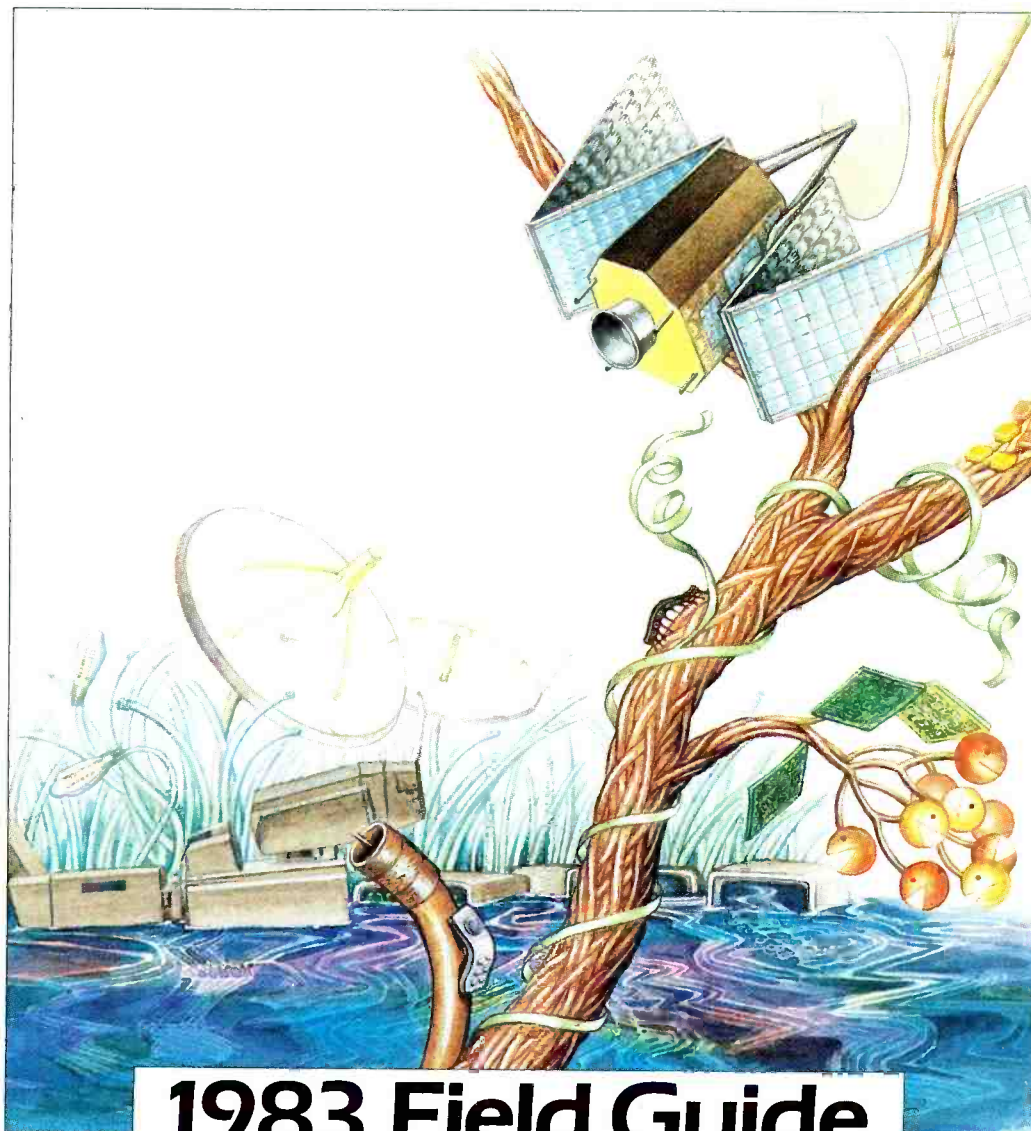


CHANNELS

O F C O M M U N I C A T I O N S

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1983 Field Guide To the Electronic Media

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As an advertiser, you know the selling power of television.

You also know that consumers often find commercial messages an interruption.

Now there's a new, live cable TV program in which buying and shopping are the entertainment, your products and services the stars of the show.

It's called *The Winning Shopper*, and it sells—everything from your latest line of televisions to your most reliable consumer service.

A NEW DIMENSION IN AUDIENCE INVOLVEMENT

The Winning Shopper is the first cable TV program that pays people to watch. We motivate viewers to participate directly. Encourage them to buy in a variety of ways—all with immediate payouts. Viewers can win hundreds of prizes daily...get spectacular buys...

free offers...money-saving tips...and useful consumer information—all for paying extra attention to your sales message.

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The Winning Shopper delivers viewers the product information you choose in an entertaining one hour format designed by merchandising experts. You control the content and presentation of your message, and its length. You can buy standard :30s or :60s. Or take up to six minutes to tell your product story when you buy a program segment.

A NEW DIMENSION IN AUDIENCE REACH

Twenty million viewers can tune in your sales message because *The Winning Shopper* will be carried by CBN. That's over 65 percent of the entire cable

marketplace—consumers who, when they turn to *The Winning Shopper*, will do so to buy and not merely look.

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The Winning Shopper is a joint production of two industry leaders: Metro-media, which owns and operates television and radio stations in 11 major U.S. markets. And Comp-U-Card of America, the world's foremost electronic shopping service, with more than 2,000,000 paying members. Their combined resources assure you the best shopping program in cable television history.

Let us tell you more about cable television's newest selling dimension, *The Winning Shopper*. It pays viewers to watch. It pays advertisers to participate.

Call Richard Sandberg now at (203) 324-9261.

**COMING JANUARY 8,
CABLE TELEVISION TAKES ON
A NEW DIMENSION.**

**WINNING
SHOPPER**

Admit it. Whether you're spending your company's ad money or just spending your own precious time, you probably feel a little guilty now and then about some of the television you're involved with.

Your commercial in *THE DUKES OF HAZZARD* may have been seen by a lot of people, but in what kind of environment? And your stolen moments with *THREE'S COMPANY* didn't do you any lasting harm. But you probably won't discuss the plot at your next cocktail party.

There is an alternative—a television

network you can spend money on, or time with, and feel good about. Cable News Network. High quality broadcast journalism. Reporting that's as exciting as the world it covers. Television that informs. That contributes. The kind of advertising environment you can be proud to be a part of.

It's television without guilt. If you haven't discovered it yet, come on over. And take a load off your back.



TELEVISION WITHOUT GUILT.



A Service of Turner Broadcasting System, Inc.

INTRODUCTION:

TECHNOLOGY WITHOUT FEAR

We call this a field guide, instead of a guidebook or handbook, to stress a point: What we are dealing with is not a line of products but an environment.

It grew up around us rather suddenly the last few years, an electronic forest springing from the union of four technologies: cable-television, computers, satellites, and telephone. If this new landscape eluded almost everyone's notice, it was because it is mostly invisible, made up of such things as microwaves, laser beams, data bits, microcomputer chips, and digital impulses running through wires.

Yet the electronic environment surrounds us every minute of our lives. For these wires, chips, and radio waves combine in a profusion of new media, some of which by now have entangled themselves inextricably with business, education, politics, law, and our popular culture. Indeed, this electronic wonderland already makes a greater claim than the natural environment on the attention of children.

Ever since the Stone Age, the efforts of humans to understand the environment have had three main purposes: survival, opportunity, and enjoyment. These purposes apply as well to the Electronic Age. Survival is the prime issue because the new systems taking root—from two-way cable to cellular radio—portend change in practically every aspect of life. Opportunity, meanwhile, abounds for entrepreneurs in quest of new wealth and influ-

ence, as well as for ordinary citizens seeking convenience, security, and greater personal productivity. As for enjoyment, it is implicit in technologies that put images on a television screen and encourage viewer participation.

The barrier to understanding this new environment, oddly, is language. Everything about it sounds intimidatingly technical—gigahertz, bandwidths, transponders, addressable converters, upstream and downstream signals, bits and bytes, digital and analog. Adding to the bewilderment of the uninitiated is the industries' habit of reducing every newly named system, technique, or service to a set of initials. Thus the landscape has become littered with esoteric shorthand: MDS, MTV, DBS, HVN, MSO, CBN, CNN, ENG, HBO, SMATV, HDTV, LPTV, VCR, ESPN, SPN, SIN, and scores more.

In fact, there is no more reason to be put off by technology in this instance than with jet planes, automatic dishwashers, or old-fashioned radios. Millions of us drive cars without the merest notion of why they run or what goes on beneath the hood.

This 1983 Field Guide sorts out the families, species, and subspecies of the new electronic media and describes them in everyday language that, we trust, will demystify the jargon and dispel fear of the technology. Our aim is to illuminate the expanding electronic forest so that more may explore it for reasons of survival, opportunity, and enjoyment. L.B.

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"You have the power to save lives. Use it."

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As a cable operator, you have the power to bring them Cable Health Network. Use it.

ARTHUR L. ULENE, M.D.
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**Cable
Health
Network**



Keeping America Healthy

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AN ECONOMIC PERSPECTIVE:

THE BUSINESS OF COMMUNICATING

by John S. Reidy

THE 1980s will be recorded in history as a period of dramatic expansion in the scope of home entertainment and information systems—a veritable boom time that promises to change the way we live.

The typical household today has one color television set, which receives programs from three commercial networks, the Public Broadcasting Service, and perhaps one or more local independent stations. To see first-run movies, concerts, plays, or sporting events, we still have to leave our homes. To get detailed information on any subject, we rely on books, magazines, and daily newspapers.

But that should not be typical by the end of this decade. If growth continues at the current rate, most Americans will own several color sets and will be able to watch a wide variety of satellite-distributed programming, in addition to conventional broadcasts, by 1990. Some of the new programming services will be supported by advertising; others will be funded by monthly subscription fees or on a pay-per-view basis. The programming will include new movies and major concerts, plays, and sports events.

The consumer may also use the television set to receive electronically distributed information services providing all manner of textual material, from news headlines to whole magazine articles, from recipes to airline schedules. Subscribers to two-way, interactive information systems will also have the ability to shop at home and make certain banking transactions through the TV set. Moreover, the cables bringing these services to the consumer will also carry burglar and fire-alarm systems, so that the TV set, in effect, will watch the home. Life in the 1990s will be quite different indeed.

The primary route through which these new services will enter our households will be cable television, whose lines are likely to pass nearly 80 million of the 90-to-95 million television homes that will exist by the end of the decade. It is expected that 60 percent of the homes having access to cable will subscribe, so there should be approximately 45 million cable households by 1990, compared with 28 million today.

Despite cable's growth, the commercial networks are assured a dominant position, if not necessarily in distribution then certainly in programming. Today, in areas where cable's penetration is great,

the most popular channels remain those carrying network programs. No new company in any of the new media can afford to finance, schedule, and distribute for free the full menu of weekly series that the networks provide.

Cable faces competition from a number of new distribution technologies already in the marketplace, but it has three distinct advantages over its existing rivals: It can provide many more channels than they, at roughly equivalent monthly fees, it can engage in local programming and services, and it lends itself to total "interactivity," or two-way communication.

The great threat to cable's dominance in distributing entertainment and information comes not from the competing new delivery systems but rather from cable's own escalating costs, which cannot readily be offset by higher subscription fees. The rising spiral stems not only from inflation and high interest rates but from the intense competition for cable franchises, which has led to unrealistic demands from municipal franchising authorities and untenable promises from the cable companies themselves. All these combine to make cable a less attractive investment than before, and this could hamper the medium's development.

There may be a life-saver, however, in the rapid development of pay-per-view devices allowing cable systems to charge consumers for single events. In a number of limited tests, people have demonstrated their willingness to pay more for boxing championships and other major sporting events, as well as blockbuster films and cultural presentations.

In addition, sophisticated cable operators are eventually likely to develop local advertising revenues and tap significant new sources of income from the various transactional options available. At this stage of development, however, it remains unclear how high the typical household will go in paying for video services.

CABLE'S COMPETITORS

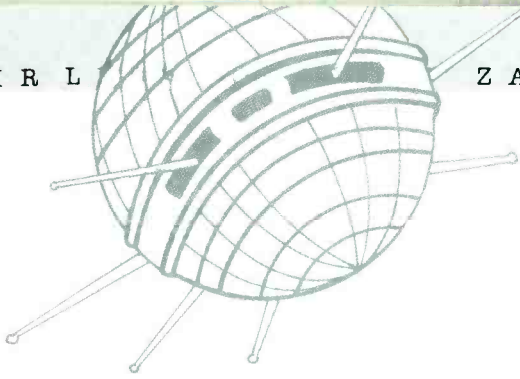
The alternatives to cable in the delivery of premium entertainment are technologies that don't have to rely on the costly and cumbersome wiring of communities. Many are already well entrenched in urban areas not yet invaded by cable, and to the extent that they satisfy their customers, they may survive cable's arrival. These rivals to cable are:

- **STV** (subscription television), a station whose signal is broadcast scrambled and requires decoding equipment in the viewer's home. Also known as over-the-air pay television, it can be installed quickly and the cost of its equipment per subscriber is less than half that of cable. But its disadvantage is that it is a one-signal service, offering none of the variety of television-by-wire. STV may prosper in areas where there is little cable service, but it is likely to lose subscribers as the penetration of cable increases.

- **SMATV** (satellite master-antenna television), a distribution system created by the installation of satellite receiving dishes at modern apartment complexes constructed with master-antenna systems. These operations, which charge a monthly fee for providing the same subscription services as cable, have already skimmed off some of the most desirable urban households, to the great frustration of cable systems that have just won municipal franchises. Although SMATV cannot provide the channel capacity of cable, it should survive as part of the apartment-complex lifestyle.

- **DBS** (direct-broadcast satellites), a technology through which several channels of programming can be beamed directly to households equipped with small, affordable receiving dishes on their rooftops. No full-scale American DBS broadcast service is expected to be in operation before the mid-eighties, and this is a handicap because it allows competing delivery systems to establish themselves in the meantime. A more serious handicap may be cost. The expense of launching a high-power, multiple satellite system could approach \$800 million, and the current price of the components for a home DBS receiving unit is still nearly double the target price of \$400 per home. Because of the enormous capital investment and the large risks involved, DBS is likely to take shape as a single system—rather than several competing systems—and it probably will be offered by a consortium rather than by any single company.

- **MDS** (multipoint distribution service), a system distributed by microwave on the superhigh frequency band, which is used for locally based pay programming. Although it is hindered by reception problems—buildings and trees can obstruct its signal—MDS may receive a competitive boost if the Federal Communications Commission authorizes a



multi-channel service. Despite the shortcomings of range and reception, MDS will have an edge on STV if it can offer subscribers five channels instead of one.

• HVN (Home View Network), an interesting blend of video-cassette-recorder (VCR) and broadcast technologies, which ABC proposes to enter in the pay television sweepstakes beginning in 1984. The network would use its affiliated stations to broadcast a scrambled signal of a current movie during the early hours of the morning. The subscriber would set his VCR to record at the appointed hour and would play the movie back at a convenient time. A decoding device manufactured by Sony and leased by ABC would unscramble the signal for playback. Supposedly, the unit will be programmed to switch codes every month, so recorded tapes will be viewable for

only a limited period of time. HVN should do especially well in households that cannot receive cable.

• Home Video, a catch-all phrase for video-cassette recorders and video-disc players. These technologies are seen by some as competition for cable because they provide vast programming choices and encourage selective viewing. But it appears that video recorders are purchased primarily to allow consumers to watch television programs at more convenient viewing times. The prerecorded cassette business has become mainly one of rentals rather than purchases, since few consumers seem interested in creating their own tape libraries. As for video discs, which permit the accumulation of a library at less cost than with prerecorded tape cassettes, they have been slow to grab hold in the market, and the technolo-

gy's prospects remain unclear.

INFORMATION SERVICES

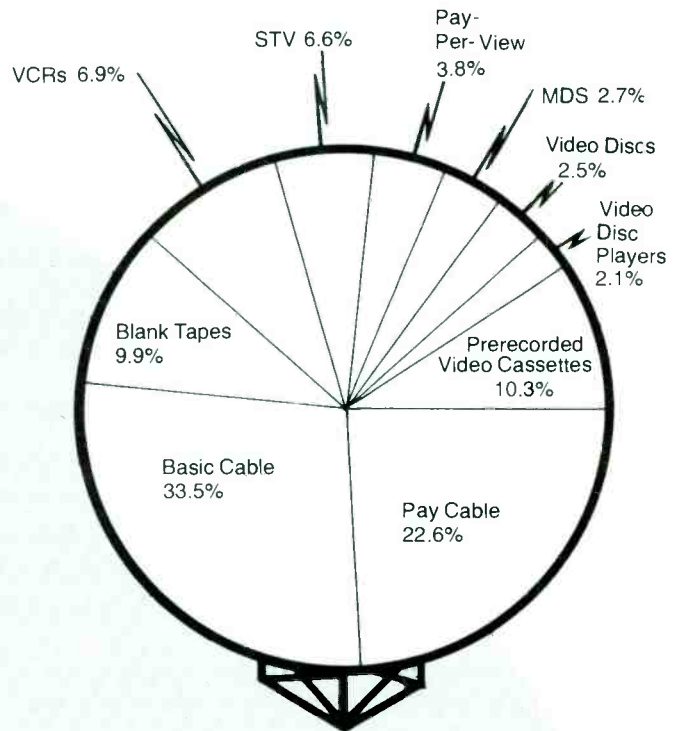
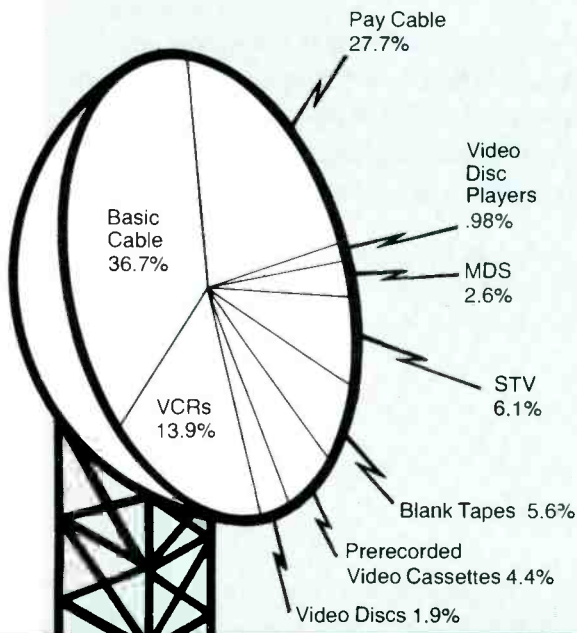
Although cable and the related technologies come into our homes mainly to deliver entertainment, they are also making substantial changes in the way information is distributed. The convergence of computer and telecommunications technologies has made possible the distribution of vast quantities of information from central data banks to television screens at home. In this market, cable and telephone are likely to vie with each other for dominance.

Several corporations have already begun experimenting with the interactive distribution of data, both by cable and telephone lines. Interactivity allows the consumer to send down for precisely the information he wants to receive. While

**HOME VIDEO DOLLARS:
WHERE THEY'VE GONE,
WHERE THEY'RE GOING**

1982

Total = \$6.81 billion



1985

Total = \$11.06 billion

Source: Home Video & Cable Report
©Knowledge Industry Publications, Inc. 1982

cable is a more economic and efficient technology for such videotext services, its shortcoming is that only a handful of the thousands of existing cable systems have two-way capability. Telephone companies have the advantage here, since their lines reach more than 95 percent of all television households, and theirs is a two-way wire. Telephone, therefore, is the most convenient conduit today for videotext services to the television screen; the hitch is that under a recent antitrust agreement with the Justice Department, for the next seven years the telephone companies will limit their role in electronic publishing to transmitting information without controlling or in any way owning the data.

It is too early to determine the eventual size of the market for two-way electronic publishing services, although several surveys estimate an initial potential of between 10 and 20 percent of American households. Nor is it clear how the market will split between cable and telephone. It seems probable that cable will prevail in many of the large cities, where new systems are being installed with two-way capability, while telephone will rule in the smaller communities served by the older, one-way cable systems.

One-way information systems, although limited to information in standard

textual form (such as wire-service news and sports), may actually suffice for a great many consumers. Commercial television stations will soon be offering teletext—a continually updated, indexed collection of information—for the cost of a decoding unit. Teletext will carry advertising, and the consumer will be able to call up the pages he wants to see. Since the medium uses the existing broadcast frequencies, there is nothing to build, so it may make its entry swiftly.

Time Inc., meanwhile, is investing heavily in its own one-way information system for cable. Called Cabletext, its advantage over teletext is that it can carry a great deal more information and make it available to consumers faster, with fewer seconds elapsing between the viewer's request for information and its display on the screen.

Among the mysteries of the moment is what kind of information people will want to receive, and a number of current tests may provide the solution. Information will probably be supplied to teletext and videotext by local newsgathering organizations such as newspapers, and by centralized data banks such as Dow Jones's. Since much of this information will already have been assembled and organized, its electronic distribution could be quite profitable.

PROGRAMMING

To fill all the new television channels created by the emerging technologies, some fifty program services have already been introduced and dozens more are in the wings. About ten or twelve of the existing services hope to survive on monthly subscription fees, and most of the others have pinned their fortunes on the sale of advertising time. Like network television series, most of these new program services are destined to fail. Although cable, STV, MDS, and the other technologies continue to spread across the country, their total audience universe is considerably smaller than that of broadcast television, which means the viewers for any specific cable channel are few indeed in number.

The consumer may be favored by cable systems with 36, 56, or 120 channels—but only so much time in a day can be given over to television. Most operators of the satellite services distributed by cable recognize that they will have to run up losses until cable proliferates in the big population centers, but it seems doubtful that many will last that long. In all likelihood, more than half the present services will be gone five years from now. Others will probably take their place, but the sorting-out process has begun, and may continue for years to come.

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The simple term "new technology" belies a complex pattern of hardware, organizations, and policies. In the Autumn 1982 issue of the JOURNAL, "The 'New Technology': Who Sells It? Who Needs It? Who Rules It?" presents a comprehensive view of some of the historical, economic, and legal dimensions.

Five of the ten articles on the "new technology" are:

- Recent Trends in Communications Legislation and Policy-Making by Willard D. Rowland, Jr.**
- FCC Media Ownership Rules: The Case for Repeal by Chip Shooshan and Catherine Reiss Sloan**
- Telephone Vendors in the New Telecommunications Marketplace by Kas Kalba**
- Public Information and "Electronic Publishing" Services by Kenneth Robinson**
- Beyond Deregulation: Communications Policy and Economic Growth by Forrest P. Chisman**

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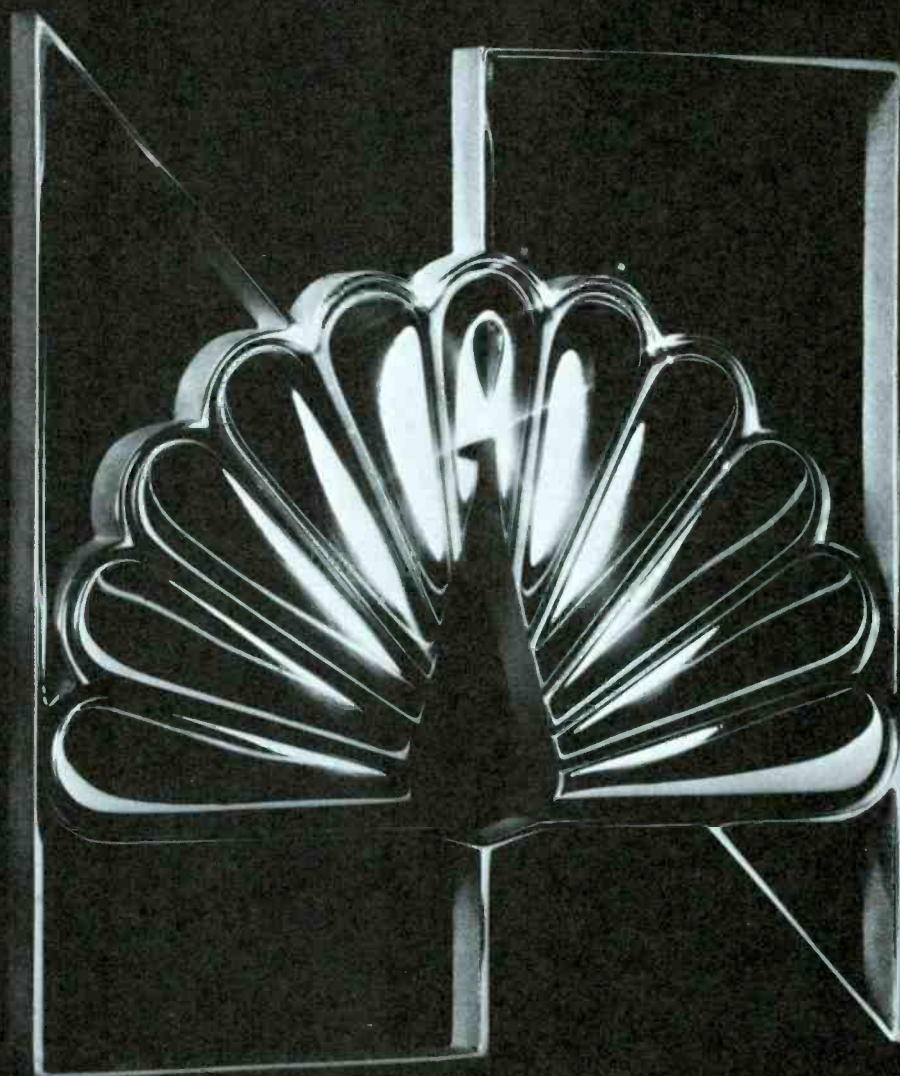
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**QUALITY
SHOWS.**

NATIONAL BROADCASTING CO., INC.

CABLE TV: WIRING FOR ABUNDANCE

BY LES BROWN

CABLE. The word is so prosaic it is no wonder the technology took more than thirty years to catch the nation's fancy. Had cable television developed in urban rather than rural areas, with guidance from marketing experts, it might have been named for what it uniquely provides, rather than for a thick wire, its main technical component. We might speak today of *magnavision* or *wondervision* when referring to this form of television, since it has vastly increased the yield of our home receivers.

Cable is a video cornucopia whose gifts include a multitude of channels (upwards of one hundred in state-of-the-art systems); an abundance of national program networks; a potential for local public access; a range of interactive services from video games to home security; a method of information retrieval from data banks;

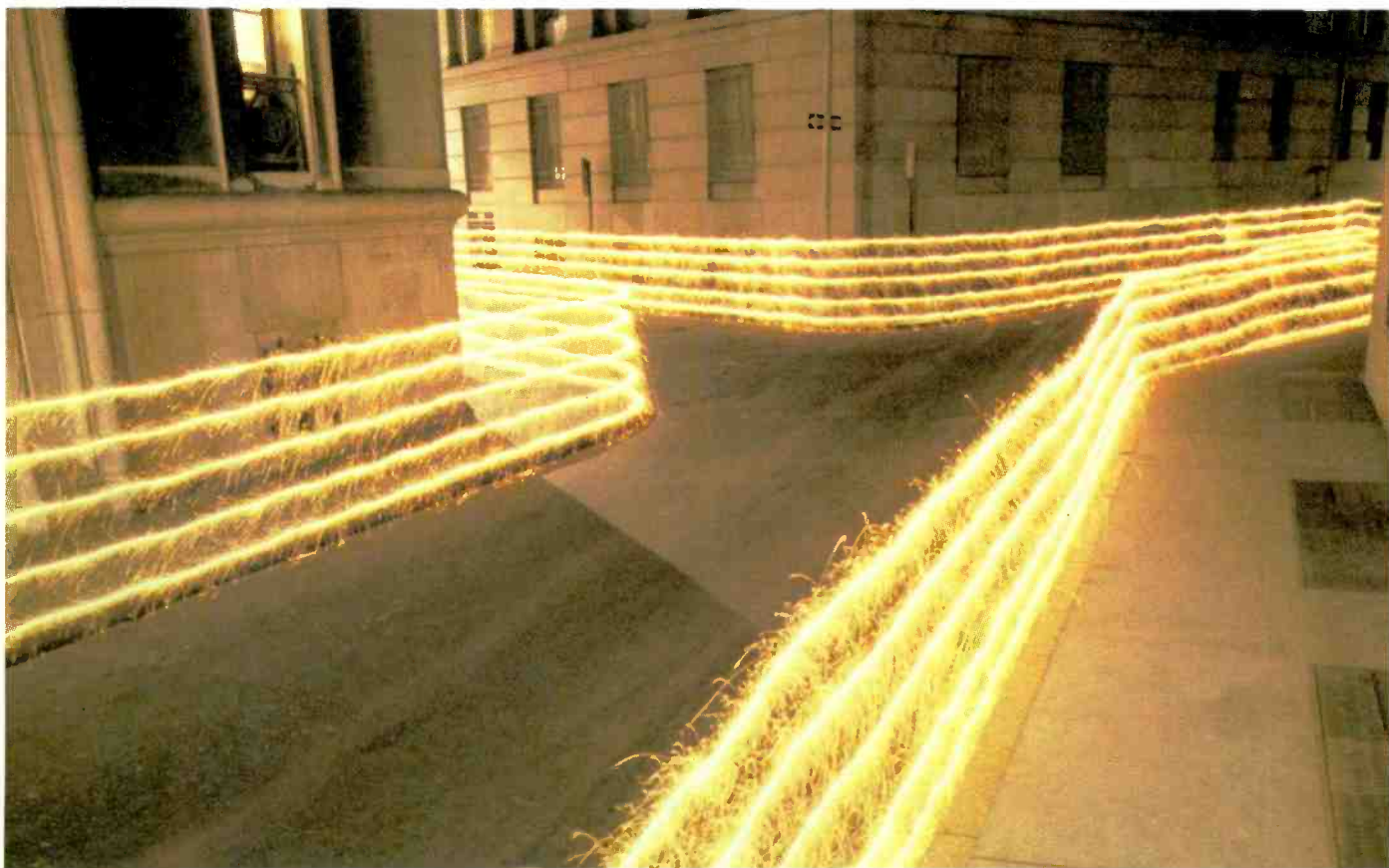
an electronic equivalent of the department store, and an ability to narrowcast to specific audiences, such as physicians and investment brokers.

Cable is more of everything. Beyond being just a television medium, it is also a communications network for a municipality. Many of the new cable installations link schools, libraries, hospitals, and police and fire departments for point-to-point communications. Nicholas Johnson, former member of the Federal Communications Commission, scarcely exaggerated when he observed that "the difference between ordinary television and cable is the difference between a garden hose and Niagara Falls."

Yet, for all this, there is still some confusion among consumers about this new kind of television. Many think they are cable subscribers because they pay

monthly fees to receive movies and other premium fare over the air. But they actually are subscribing to forms of single-channel broadcast television—what we used to speak of two decades ago as pay-TV. Cable is something else; it is television by wire.

As a technology, cable more closely resembles telephone than television. In fact, its wire—a coaxial cable—is strung along telephone poles or through underground telephone ducts and is connected, like telephone, to households paying a monthly charge for the basic service (usually in a range of \$6 to \$10). With some refinements in the technology—conversion to fiber optics, for example—the wire used for telephone service could also carry cable television, and vice versa. Some day a single wire may suffice for all voice and video communications to



ERIC STALLER

"The real power of cable television will be felt later in the decade, when all the major U.S. cities are wired."

and from the home.

One speaks of a *basic* cable service, because all the additional services—the channels specializing in movies and video games, the burglar- and fire-alarm systems, and videotext—call for extra fees. Indeed, from the consumer's standpoint, the hitch with cable may be that it tempts new expenditures by bringing the box office into the home. Some industry analysts believe that once people grow accustomed to the idea of paying for video services their monthly bills for cable will exceed those for the telephone.

What is most unusual about cable, perhaps, is that it was not born in a laboratory like most other communications technologies but rather came into existence accidentally. It began as CATV (community antenna television), an ingenious solution to the television reception problem in rural areas where the terrain interfered with broadcast signals. As the story is told, an appliance dealer in the hilly backwoods of Pennsylvania was unable to sell television sets because picture reception was impossible, so he rigged a large antenna on a mountaintop and connected it to homes in the area by a system of wires. This was in the late forties. Before long, enterprising technicians in numerous communities deprived of television were building tidy little businesses with such CATV installations.

Initially this was good news for the local television stations because it increased their audiences. It soon turned into bad news, though, with the discovery that the wire could bring in signals to fill all twelve channels on the VHF dial; stations from other cities, imported by microwave relay, were added to the CATV service, creating serious competition for the local broadcasters. But this was only the first stage in cable's emergence as the television of abundance.

The sixties saw the development of a converter that increased the capacity of CATV systems to twenty channels, and cable began to be taken seriously as a new medium. No longer a mere retransmission system for existing television signals, it was capable of carrying its own original programming. A decade later, refinements in the converter increased the capacity to thirty-six channels, and the technology has advanced now to provide fifty-two channels on a single cable line. By using two lines, cable systems can provide 104 channels.

During the late sixties, with twenty-channel systems as the lure, large cable companies began laying plans to wire the cities. Those plans were halted by the FCC, which effectively froze the development of urban cable with stiff regulations on the importation of distant signals, while it pondered rules for cable in the hundred largest cities. By the time the freeze ended in 1972, hopes for wiring the cities had been chilled by the horrendous

CABLE'S TOP TEN

Name	Subscribers
1. American Television and Communications	1,950,000
2. Tele-Communications Inc.	1,900,000
3. Group W Cable	1,760,000
4. Cox Cable Communications	1,164,000
5. Storer Cable Communications	1,063,000
6. Warner Amex Cable	1,000,000
7. Times Mirror	715,000
8. Newhouse Broadcasting	646,000
9. Rogers-UA Cable Systems	560,000
10. Viacom Cablevision	543,000

experience of both Teleprompter and Sterling Manhattan Cable, which had already begun operation in Manhattan.

The two companies found that urban construction was far more expensive than anyone had expected, and there were additional problems—the phone company was refractory, landlords demanded payoffs, services were stolen, equipment was vandalized, and police doled out parking tickets to service trucks. But worst of all, New Yorkers showed scant interest in cable, and for several years the companies lost millions of dollars annually. The cable industry made a quick retreat from its march on the cities.

The climate for urban cable changed dramatically in 1975, however, when the eastern-based pay-cable service, Home Box Office, leased a transponder on the Satcom I satellite in hopes of broadening its market. As a national service, it was an instant hit and within two years was operating in the black. But more important, as the first program service to use the satellite, it became, overnight, America's new television network. Its success produced a profusion of cable-satellite networks, as other companies flocked to the satellites for national distribution at relatively low cost. And this gave cable just what it needed for an invasion of the cities: something bigger to sell than improved television reception and more television signals.

There was a clear demand in the cities for pay channels that would deliver movies into the home, uncut and without commercials. Cable was on the move again. By 1980, virtually every city was either being wired for cable or in the thick of the franchising process. Most were demanding large-capacity systems with two-way capability. This favored Warner Amex Cable, the company that pioneered two-way interactive cable with its Qube system, which began operations in Columbus, Ohio in December 1977. Interest in Qube helped Warner Amex win the franchises for Pittsburgh, Dallas, Hous-

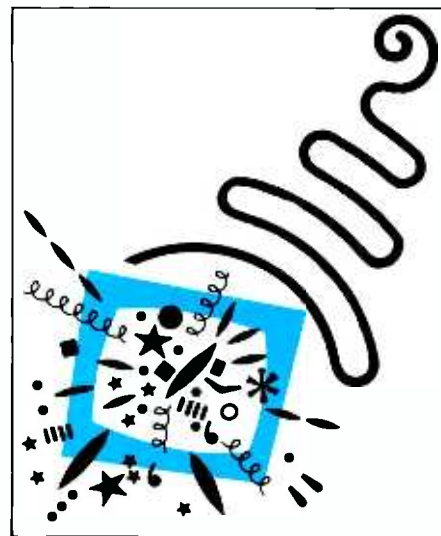
ton, Cincinnati, and parts of New York's outer boroughs.

Much of the general confusion about cable rises from its uneven penetration across the country. While some cities are still years away from being wired, others already have highly advanced systems. Moreover, the dimension of each community's system depends largely on when it was built. Those dating from the early seventies have twenty channels, those of the late seventies about thirty-six, and those of the eighties at least fifty. But more than half the cable systems currently operating predate the seventies and have such limited capacity—twelve or fewer channels—that they can carry only two or three of the cable-satellite services. This unevenness around the country, along with the absence of cable in several of the largest cities, has been the great impediment to the growth of successful advertiser-supported cable networks.

According to the 1982 midyear estimates of the A.C. Nielsen Company, some 34 percent of American households (including those in Alaska and Hawaii) subscribe to cable. But while cable has a penetration of 71.2 percent in Laredo, Texas, it enters only 9.8 percent of homes in the Chicago market and 13.2 percent in Detroit.

Nevertheless, cable continues to spread rapidly across America, its growth rate in the eighties exceeding the forecasts of virtually all the experts. When this decade began there were 4,225 cable systems serving 16 million homes. By mid-1982 there were 4,800 cable systems serving 28 million homes.

The real power of cable as a new communications medium will be felt when the biggest cities are wired and the oldest systems are updated. That will allow the satellite-distributed programming to attain something approaching the uniform national coverage that has been the strength of the commercial broadcast networks all these years.



TWO-WAY CABLE: TELEVISION IN THE ACTIVE VOICE

THE ARRIVAL of two-way, or "interactive," cable television in Pittsburgh has opened the way for, among other novel experiences, electronic match-making.

Every Tuesday evening at 7:30 Steve Hansen, host of *Singles Magazine*, asks searching questions of bachelors and bachelorettes. Then he turns the decision-making over to the viewers. On a recent evening some 300 folks at home pressed buttons on their consoles while a computer at the transmission center of Warner Amex Cable instantly tallied their responses. A fellow named Phil was overwhelmingly the people's choice for a night out with Nancy.

Warner Amex's newly built Qube cable system in Pittsburgh, with sixty-three (of a potential eighty) working channels providing virtually every kind of programming service yet devised, defines the state of the art in cable television. The feature that makes it stand out among large cable systems is interactivity.

Participatory romance is only the most whimsical of the many uses of this versatile technology. It is also used for "instant polls" on political issues and speeches, college exams, and quiz shows. Two-way capacity vastly simplifies "pay-per-view" programming, and even opens up the new business of cable-monitored home-security systems.

Ordinary cable systems connect the home to the source of programming with a single wire: interactive technology uses two wires so that information can flow in both directions. The wires are hooked up to a large central computer that checks each home in the system every six seconds, "reading" communications from viewers. And the viewers, in turn, make their preferences known on a hand-held console that also serves as the channel selector. To choose a date for Nancy, for example, the viewer pressed a "Response" button, and then hit "1," "2," or "3" (for Chris, Phil, or neither).

Warner's first commercial ex-



WARNER AMEX CABLE

Subscribers to Pittsburgh's new Qube system use a keypad (bottom) to select channels and send messages to the control-center computers pictured above.

periments with interactivity were with its Columbus, Ohio system in 1977. Since that time cities soliciting bids to build cable systems have routinely demanded two-way capacity, and other operators have developed their own versions of the technology.

In Columbus, Warner has emphasized the role of two-way systems in promoting "electronic democracy." After President Carter's 1979 energy speech, for example, subscribers were asked to offer instantly their opinion of his performance. On another occasion, consumer advocate Ralph Nader asked viewers whether they would support his petition to change children's advertising.

In Pittsburgh, Qube has edified as much as entertained. Besides

the somewhat tongue-in-cheek *Singles Magazine*, the local interactive Channel 59 offers quiz games for both school-age children and adults, a talent show in which viewers act as judges, and a program in which moral choices are dramatized by actors, after which viewers indicate their solutions to the dilemmas.

But in the long run, for most cable operators, the interactive channel may be a good deal less important than the pay-per-view opportunities of two-way cable. When an ordinary cable system, or a subscription-television channel, wishes to offer a program for a one-time charge, it must advertise well in advance and distribute special decoders to unscramble the signal. The system's popularity,

despite this cumbersome procedure, was proved in September of 1981, when 500,000 homes paid up to \$25 to watch the Sugar Ray Leonard-Thomas Hearns boxing match.

With two-way cable, however, the viewer simply indicates his preference on his console, the computer supplies the signal, and the viewer is automatically billed. In Pittsburgh, Qube offers four pay-per-view movie channels charging from \$2.50 to \$4 a title, and one channel offering lessons-for-pay in softball, home repair, guitar playing, and the like.

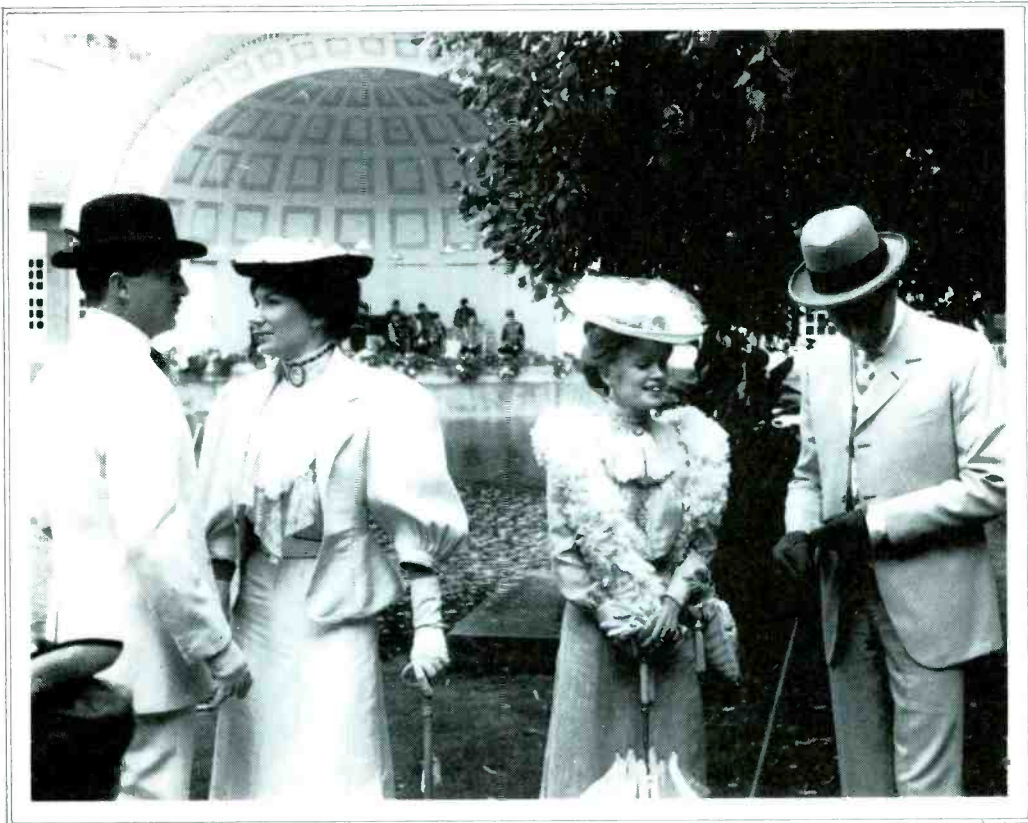
Two-way cable also lends itself to teleshopping, although it is as yet unavailable in Pittsburgh. A teleshopper can pore over televised descriptions of products and buy them without ever leaving home simply by punching in catalogue numbers on the console.

On the eighty-channel cable system of the future, twenty channels may well be devoted to retailing; at least one analyst predicts that by the decade's end 20 percent of America's shopping will be accomplished electronically.

Finally, two-way cable is revolutionizing the security business. Smoke detectors, burglar alarms, and other home-security devices can be connected to a home computer that is in turn connected to a master computer at the cable system's transmission center. The computer sweeps subscribers' homes every few seconds, alerting the police or fire department to changes recorded by the sensors. Cable security services have become another fixture in bids for franchises. In Columbus, more than 5,000 subscribers have already paid \$1,100 to equip their homes with sensors, and are paying monthly fees ranging from \$14.50 to \$16.50 for the cable surveillance.

Gustave Hauser, the chairman of Warner Amex Cable Communications, predicts that home security and pay-per-view will become the two major sources of profit for cable operators in the near future.

JAMES TRAUB



The Good Soldier

1981 INTERNATIONAL EMMY AWARD FINALIST
From Granada Television of England

Produced by Peter Eckersley and directed by Kevin Billington
Adapted for television by Julian Mitchell from the novel by Ford Madox Ford

starring Robin Ellis, Susan Fleetwood, Vickery Turner,
Elizabeth Garvie and Jeremy Brett

soon to be seen on PBS
on MOBIL MASTERPIECE THEATRE



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PUBLIC ACCESS: THE ANYBODY CHANNEL

THE LAST, BEST HOPE for the plugged-in soap box may well lie with homemade television: with the amateur television freaks in a Detroit suburb who produce a dog-obedience school-of-the-air, and with artists, church groups, cops, senior citizens, librarians, rock 'n' rollers, political ax-grinders, exhibitionists, and just plain folks around the country who have something important or entertaining to show to their neighbors.

The public-access movement, from which all this homemade television flows, is anarchic and intentionally amateurish, struggling along in relative obscurity until one of its more inspired members drops his drawers on camera or threatens to overthrow the government. Yet the idea of providing public access to privately controlled mass media is alive and more or less well in hundreds of American communities. And as bothersome as such access seems to those who make policy and profits in modern telecommunications, the movement's success may be essential if citizens are to salvage anything resembling individualized freedom of expression in the wired nation.

It won't come easily. George Stoney, the New York University professor many consider the father of community-access video, readily admits it's "a David and Goliath movement." In this culture, network programming has established what television should look like—so public-access television looks decidedly bush league. But the problem is not the unprofessional look of the programming—at least not as far as Stoney's concerned. For him, amateurism lies at the heart of the movement.

From 1973 to 1978, Stoney directed the internship program on cable access at New York University's Alternate Media Center, which contributed most of the strongest leaders in public access; he remains the inspiration for what Sue Miller Buske, executive director of the National Federation of



AMERICAN TELEVISION & COMMUNICATIONS CORP.

"By setting aside a few channels on each cable system for the free, relatively unrestricted use of the people, the public-access movement is trying to preserve freedom of expression in the wired nation."

Local Cable Programmers (and a former student) calls "the gut philosophy" behind the movement.

"It's got to be a volunteer movement," Stoney says, "not something you're going to make a real living in. It's in the hands of people who have a real interest in their communities and who can afford to devote the time."

Stoney and other community-access enthusiasts want to set aside, for the free, relatively unrestricted use of the public, a few lanes on the new superhighways of telecommunications. They want time on the air, space on the satellites, and channels on the cable systems. But their opponents say that the people who own and run cable systems have the right to decide—free from government interference—how they are used. And everybody claims to have only the public interest at heart.

The issue gets blurred because the cable industry and many of the volunteer groups now using local cable channels make little or no

distinction between *access* programming and *locally originated* programming. But there is a crucial difference.

The operator owns and controls the local-origination (LO, in cable talk) channels, which are equivalent to cable-only broadcast stations, complete with commercials. Public-access channels, in contrast, belong to the citizens of a community according to the terms stipulated in its franchise with the cable company. And citizens, through access committees or boards, make the rules.

In the hands of a benevolent cable company, the process of making noncontroversial LO television might feel very much like public access. Local folks come into a community video center, learn how to use the gear, round up a crew of volunteers, and set off down the street to become their neighborhood's answer to *60 Minutes* (or *The Gong Show*). Since the cable company controls LO, however, it has final say over what

goes on the air.

Public access is different, because neither the cable company nor local government can legally interfere with programming (except when there are scheduling problems, or when programs violate obscenity laws). This independence suggests a peculiarly pure notion of free speech—the only glimmer of such a notion, in fact, in the Electronic Age.

In sought-after suburbs and major cities, companies typically offer many access channels, millions of dollars' worth of equipment, full-time staffers, and even mobile vans—all for community use. With all those goodies in the offing, it's tempting to think that access might finally be coming of age.

But advocates of access say the companies are unlikely to keep their promises. "They're talking out of both sides of their mouth," says George Stoney. Individual cable companies may be upping the ante in the competition for franchises, but at the same time the National Cable Television Association is busy trying to free them from regulatory requirements.

For the last two years, the NCTA has been lobbying fiercely for sweeping cable legislation in federal communications bills, including a provision that would prohibit local and state governments from regulating cable rates or mandating access channels. So far, the National League of Cities and the NFLCP have been able to dilute the proposals before they've been voted on. But if the industry's wishes ever become law, the access people fear that all the cable companies' grandiose promises will be meaningless.

"Things have gotten so out of line with all these promises," says Sue Buske of the NFLCP. "It's all going to backfire. What worries me is what happens *after* the franchise is granted." It's always possible, she says, that communities and cable companies, frustrated by the difficulties of setting up a workable access center from

HOME SECURITY:

UNLEASHING THE VIDEO GUARD DOG

scratch, will ditch the whole idea when it gets more complicated than anyone thought.

To help cities and towns design reasonable approaches to access, the NFLCP acts as a consulting service and tries to put community leaders in touch with others who've gone through the same experience. The group publishes a franchising primer, offers sample bylaws for access corporations, and distributes demonstration tapes. In November, it launched a series of workshops and internship sessions for community-access coordinators.

The success of programs such as the internship plan and much of the NFLCP consulting depends in part on the cooperation of the cable companies, which have raided NFLCP ranks for experts on local programming (including some of Stoney's old students), and are kicking in the money for the access-coordinator training. Stoney approves: "If we don't get inside the industry," he says, "we're licked." But other access people aren't so happy about cozying up to the operators.

Most don't trust the cable industry to remain friendly when the going gets tough, and many are worried that an NFLCP alliance with cable companies will effectively prevent the organization from leading the fight in the communities. Others are simply tired of community organizing and ready to pursue their own interests in filmmaking or video. They'd like to play down the celebration of amateurism and encourage the NFLCP to make as much room for independent film and video people as it has for cable operators and librarians.

A struggle clearly lies ahead. But the access people have already survived quite a struggle. "We've always sounded like radicals," Stoney told a group in Atlanta. And maybe a little crazy too. "If it were an absolutely rational process," says the movement's senior member, "we'd have given up long ago."

BEN BROWN

JUST ABOUT the most popular two-way cable service available today has nothing whatsoever to do with entertainment, or even, in fact, with television. Home security, the first stage in cable's medley of interactive services, is proving particularly attractive to those affluent homeowners who make up the core of cable subscribers.

"We're selling peace of mind, as well as a piece of equipment," says Miklos Korodi, president of Warner Amex's security systems division. "People feel the need for more security today."

For more than a century, the heart of the burglar alarm business has been an operation known as "central station monitoring," in which an alarm installed at a protected premises is connected electronically to a central location. If the alarm goes off, an operator at the central station sees it on a monitor and calls the police. This connection was initially made over telegraph wires, then over telephone lines; now cable operators are capitalizing on the fact that cable can

make that same profitable connection.

For Warner Amex Cable Communications, home security has been the most successful interactive component of its Qube system to date. In Columbus, Ohio, more than 5,000 Warner subscribers took on the home-security service within the first eighteen months of its operation.

Warner's key rival for this market is Dallas-based Tocom Inc., which pioneered two-way cable security services throughout the Southwest. Tocom farms out its considerable expertise and technology to cable operators. Viacom uses the Tocom system in Dayton, for example. By hooking up with Tocom, virtually any cable operator can provide security service comparable to Qube's. Tocom president Mike Carboy boasts of having developed interactive hardware to "out-Qube Qube."

Although cable companies are representing their home-security systems as pushing far beyond the most modern offerings of the burglar-alarm industry, they do not

differ radically from the best conventional systems on the market. Both offer burglar alarms, medical emergency buttons, and police emergency summons. Both rely on a two-way wire between the home and a central monitoring point. But because cable security systems do not pay high telephone tariffs, their prices are considerably lower than conventional systems, which charge up to \$3,000 or more for installation and \$20 to \$50 for monthly monitoring. Cable security systems sell for an average of \$1,000 or less, and charge \$10 to \$15 a month.

For all the excitement over cable security services, subscribers still number fewer than 15,000—less than 2 percent of the nation's homes—and most of them are contracted either to Warner Amex or Tocom. Nevertheless, the next few years will see the wiring of most major cities with two-way cable, and the industry is betting that security will become the first service to wring a profit from all that heavily mortgaged wire.

STEPHEN FENICHELL

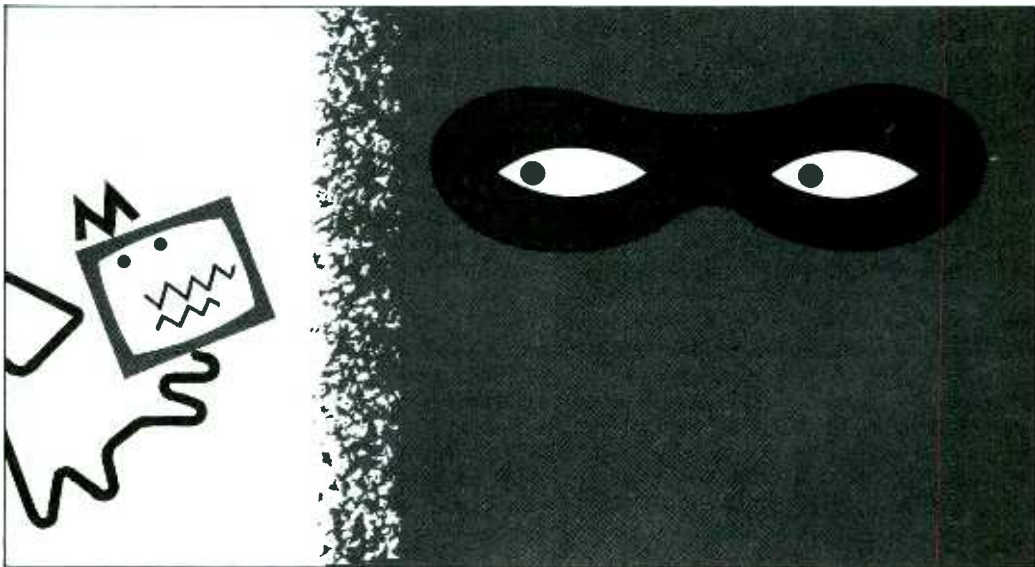


Illustration by Anders Wenngren

"Cable security systems work in much the same way as traditional alarms: When a smoke or intrusion detector is tripped in the home, a signal is sent to a central-station monitoring point, which then alerts the fire or police department. But instead of relying on costly phone lines, the new systems use two-way cable."

SATELLITES:

THE BIRDS THAT MAKE IT ALL FLY

BY JONATHAN MILLER

IN 1962, the tiny, experimental Telstar communications satellite inaugurated transatlantic telecasting—and changed the perceptions of a generation about the limits of telecommunications. Along with its gift of instantaneous global communication, the satellite brought visions of a “global village.” Twenty years later, the importance of satellites has become so widely recognized that when the British sailed for the Falkland Islands last April, for instance, they took a satellite transmitter with them.

In the last few years satellites have begun to work profound changes in the communications environment. The global-scale expansion of the satellite industry now underway will more than quadruple the world’s capacity for long distance communications in this decade. No longer simply another tool in the communications game, used mainly for such things as international news and sports relays, satellites are becoming a major force in the creation of an entirely new information environment. Communications scarcity, dictated by the big three networks and the Bell System’s monopoly, is being replaced by communications abundance.

You cannot read or watch a satellite, but as a powerful distribution technology the satellite greatly expands the power of a host of other technologies and can even spawn media hybrids, such as cable networks and *USA Today*, the new national newspaper beamed by satellite to printing plants across the country.

In 1975, when Time Inc.’s Home Box Office began to transmit its programming on Satcom I, satellites began irrevocably to change the structure of the nation’s television system. Before then, restrictive regulations, imposed largely at the behest of broadcasters, had confined cable to the role of passive relayer of broadcast signals; satellites shattered these limits. Suddenly cable programming could be instantly and economically transmitted nationwide. Cable systems, themselves proliferating rapidly, began to install dish-shaped “earth station” antennas to receive transmissions. And HBO has been followed by a wild profusion of networks offering cable programming. There are arts channels, children’s channels, “superstations” such as Ted Turn-



TELESAT CANADA

**Above: Canada’s Anik C satellite
Opposite: America’s Westar IV**

er’s WTBS in Atlanta, foreign-language channels, “adult” entertainment channels, news channels, and ever more movie channels. As more cable networks have appeared, more satellites have been sent up beyond the atmosphere to handle the electronic traffic. Indeed, competition for space on the most coveted satellite, Satcom III-R, has become so intense that leases to its channels have been sold for tens of millions of dollars.

Satellites are starting to make other inroads on network dominance. The three major networks’ historic monopoly over instantaneous program distribution to broadcast stations, via webs of leased AT&T long lines, has been overthrown. The Public Broadcasting Service and Spanish International Network have already equipped their affiliates with earth stations, and independent, commercial TV stations are starting to install dishes as well. Hundreds of hours of programming now are being delivered to stations

by satellite each week, and even network affiliates are “cherry-picking” some of this fare from satellites as an alternative to the offerings of the networks. A “fourth network,” long talked about, has not yet come to pass. But a new system is falling into place: Any television station can become part of an ad hoc program network that can pit its national programming against the offerings of the big three.

But the use of satellites is not limited to broadcasters and cable operators. Some 30,000 home owners have installed satellite receiving dishes in their backyards, at a cost of between \$3,000 and \$10,000. Dish owners can feast for free on any of the fifty or so program services currently up on the satellites (though the legality of doing so is unclear).

Another recent development of interest to those who can’t afford a dish, or don’t have access to a municipally franchised cable system, is something called SMATV—satellite master-antenna television—which, in effect, is a mini-cable system serving just a single building, or complex of buildings. SMATV installations—including an earth-station receiving dish connected by coaxial cable to individual homes—are being installed in apartments and condominium complexes at the rate of hundreds per month, and provide many of the same movie channels and sports services as conventional cable.

Just as satellites are breaking the networks’ dominance over broadcasting, so they are making it possible to challenge the familiar telephone and data-communications monopolies. In the past five years, more than a million American individuals and businesses have started using non-AT&T long-distance services, such as MCI, which use satellites to relay phone calls between major cities. This number is expected to increase rapidly, although another emerging technology—fiber optics—may in a few years challenge satellites for some of this business.

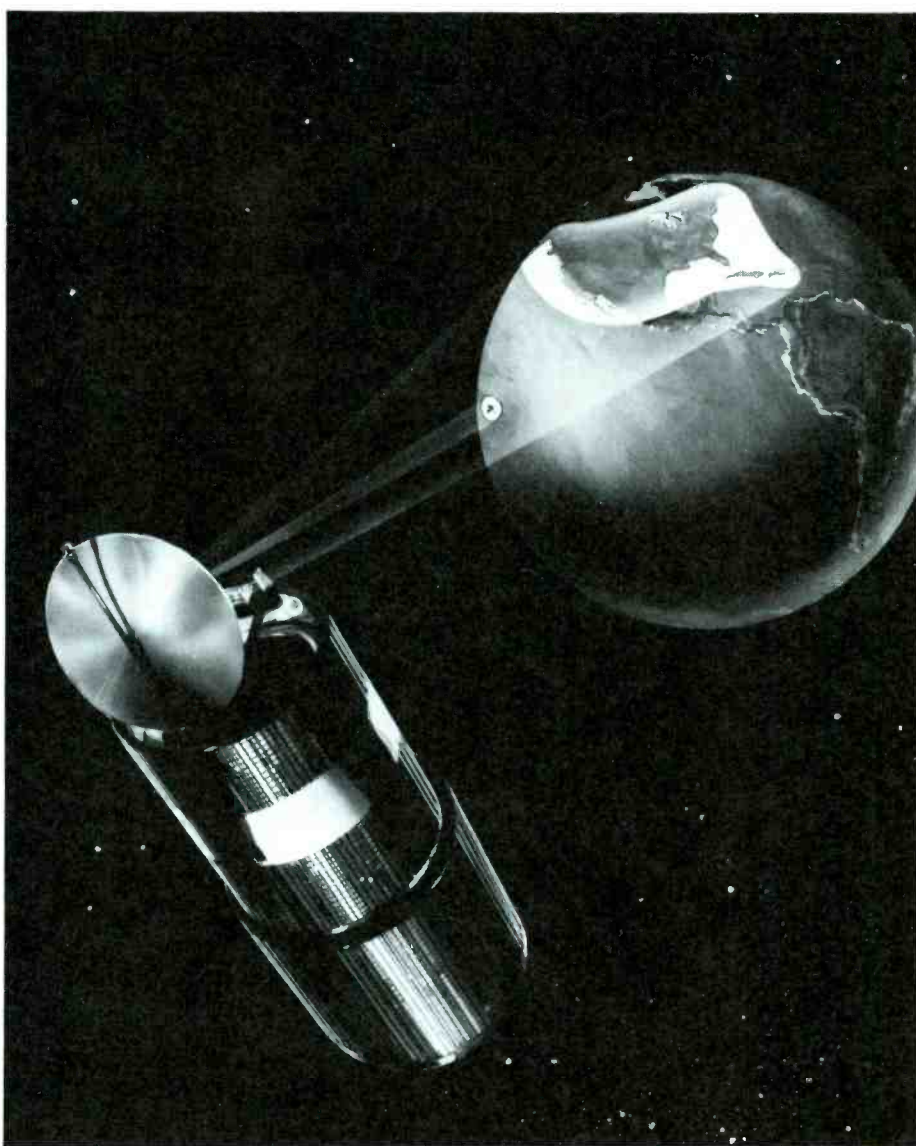
A growing number of companies have begun using satellites as a substitute for executive travel, creating two-way satellite “videoconferencing” or meeting systems able to transmit audio, video, and even documents. Today’s Xerox machine, with appropriate modifications,

could be tomorrow's mail terminal. Connected to a satellite dish, a copier at one location can rapidly transmit documents to similar machines thousands of miles away. Without much fanfare, large corporations are increasingly relying on satellites for instantaneous internal communication.

Also little publicized, but of enormous commercial importance, is the rapid development of mobile communications services using satellites. More than a thousand ocean-going ships have already installed satellite equipment to permit direct-dial telephone and telex links; soon these capabilities will be extended to aircraft and surface vehicles. Something resembling Dick Tracy's two-way wrist radio-TV system could be along before the end of the century.

While the technology of satellites is frequently described as sophisticated, the reality is that today's birds are crude affairs compared to the giant space stations being planned for the next decade. When the space shuttle begins routine operations in 1983, it will be capable of hauling into orbit an entirely new generation of satellites much larger and more versatile than those now aloft. These systems will in effect be orbiting switchboards, efficiently relaying huge amounts of information and possibly reducing the price of an overseas telephone call to that of a call across town.

One proof of the power and importance of satellites has been the fierce debates to which they have recently been subjected. Public-interest advocates argue that satellite technology, underwritten by billions of taxpayer dollars, may already have become a captive of corporate interests indifferent to the public's needs. These complaints are likely to become more insistent following the deregulation of satellite carriers now being undertaken by the Federal Communications Commission. Though originally "common carriers" were required to lease transponders on a first-come, first-served ba-



WESTERN UNION

sis, some satellite owners have recently been selling them to the highest bidder.

Internationally, satellites have been targeted by the Third World in its demand for a "new world information order." Developing nations fear that a few rich countries will gobble up the limited number of

orbital positions and space communication frequencies so quickly that space will be filled by the time the poor countries are ready to launch satellites of their own. The technologically advanced countries, meanwhile, have resisted limits on their ability to launch new satellites at will.

A Satellite Primer

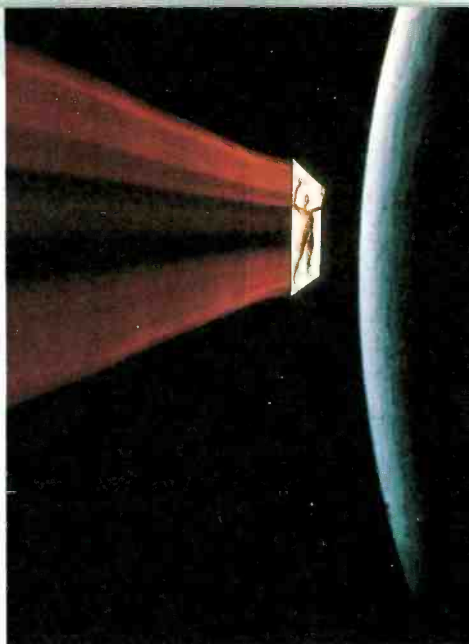
Satellites serve as radio relay stations in the sky. They receive transmissions from the ground, beamed to space from an "uplink," and retransmit them to a receiving dish called a "downlink" or an "earth station." The satellite always remains in the same position relative to ground stations because it has been placed in "synchronous" orbit 22,300 miles perpendicular to the equator, where objects revolve around the earth at the same speed that the planet revolves on its axis.

The most important element of a

satellite is the "transponder," the name given to a single receive/transmit system. Typically, each transponder can relay a single color-television channel, or about a thousand simultaneous telephone connections (although satellite operators are developing systems to double or triple this capacity). Most satellites can carry two-dozen transponders today; those planned for later in this decade will carry forty or more.

The nation using the most satellites is the United States, which currently has fifteen—owned by RCA, Western

Union, Comsat, and Satellite Business Systems (a partnership of Comsat, IBM and Aetna Life & Casualty Co.)—in orbit. Although the U.S. has long dominated satellite communication, the Europeans are building birds of their own, and both European and Japanese companies are competing to sell satellite systems in Asia, South America, and Europe. One recent study commissioned by NASA predicted that the total number of transponders in use by all countries could grow from fewer than 1,000 today to more than 6,000 by 1997.



SATELLITE CHANNELS:

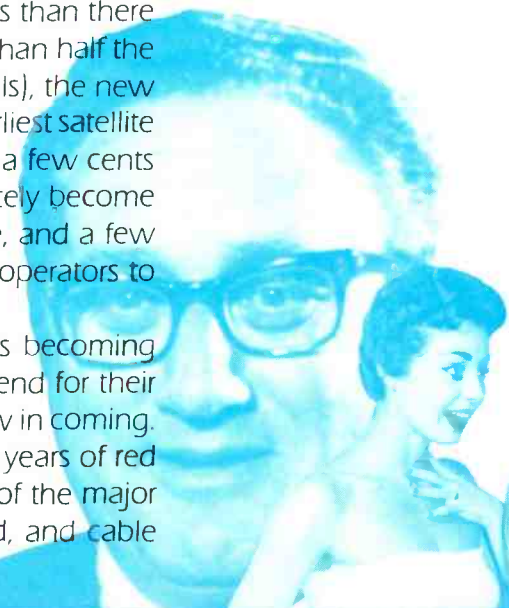
A GUIDE

Cable's abundance of television channels has given rise to some forty new program services, and another thirty or so are on the way. Each is, in effect, a new network, distributing whole schedules of programs by satellite to cable affiliates across the country. Unlike the broadcast networks, many of the program services are "narrow-cast"—aimed at a particular, limited audience.

The networks in this chart are known as "basic services." Subscribers receive them for the standard monthly cable hookup charge, except when a system sells "tiers" of services—usually several in a package—for extra monthly fees.

Since there are many more program services than there are channels on the average cable system (more than half the American systems have a dozen or fewer channels), the new networks must compete for cable affiliates. The earliest satellite program services typically charged cable systems a few cents per subscriber per month, but competition has lately become so fierce that most services are being offered free, and a few new networks have gone so far as to pay cable operators to carry their programming.

With affiliate payments to program services becoming increasingly rare, most of the new networks depend for their support solely on advertising, which has been slow in coming. But those networks prepared to withstand a few years of red ink will be in an excellent position when wiring of the major cities is completed, channel capacity is increased, and cable emerges as a viable national advertising medium.
















	NAME OWNER CITY OF ORIGIN LAUNCH DATE	MEANS OF SUPPORT	HOURS	HOMES REACHED (MILLIONS)	TARGET AUDIENCE	CONTENT
	Entertainment & Sports Programming Network (ESPN) Getty Oil Co. Bristol CT Sept. 1979	Advertising	Around the clock	18	General (esp. male)	In-depth daily sports coverage; major sports attractions, such as Davis Cup, world championship tennis, NBA basketball; college football, basketball, gymnastics; professional boxing; exclusive rights to the new United States Football League (USFL) games
	Christian Broadcasting Network (CBN) Christian Broadcasting Network Virginia Beach VA Apr. 1977	Viewer contributions; telethons; advertising	Around the clock	16.2	Families	"Family programming stressing positive values": classic films; weekend golf; <i>National Geographic</i> specials; weekly series with inspirational themes
	Cable News Network (CNN) Turner Broadcasting System Atlanta June 1980	System pays 15¢ per subscriber; advertising	Around the clock	13.8	Upscale, general	 Continuous reporting of hard news, with live coverage of breaking stories; soft features on subjects ranging from style to cooking
	USA Network Time Inc.; Paramount Pictures; MCA Inc. Glen Rock NJ Sept. 1977	System pays 7-10¢ per subscriber; advertising	Around the clock	12	Daytime: women. Early evening: youth. Nighttime: men	Women's self-improvement programs; prime-time sports, such as college football and basketball, Golden Gloves boxing, NHL hockey, major-league baseball
	Cable Satellite Public Affairs Network (C-SPAN) Nonprofit corporation governed by cable-industry representatives Washington DC Mar. 1979	System pays 3¢ per subscriber	Around the clock	11.5	Adults interested in public affairs	Live coverage of U.S. House of Representatives debates, congressional hearings, National Press Club luncheon speeches, government events; call-in programming 
	TeleFrance USA Gaumont Films; Radio Monte Carlo; Sofirad New York July 1976	Advertising	9 PM -1 AM. Mon-Fri; 10-11 AM. Sat, Sun	8.7	Upscale adults	French cultural programming: classic and contemporary French films; French-language courses; documentaries (French history, culture, and cooking); dramatic adaptations of French literary classics
	Nickelodeon Warner Amex Satellite Entertainment Co. New York Apr. 1979	System pays 15¢ per subscriber; corporate underwriting	8 AM -9 PM. daily	8.5	Children, adolescents	Children's programming, 50 percent original; concerts; foreign and domestic films; sporting events; teenage talk show; preschoolers' programming; comedy series (no commercials)
	Alpha Repertory Television Service (ARTS) Hearst/ABC Video Services New York Apr. 1981	Advertising	9 PM -midnight nightly	7.5	Upscale adults	 Cultural programming: drama; documentaries on the arts and related subjects; profiles of artists, actors, playwrights, etc.
	Daytime Hearst/ABC Video Services New York Mar. 1982	Advertising	1-5 PM. Mon-Fri	6.6	Upscale women	Self-improvement programming in a magazine format; draws on resources of Hearst publications, such as <i>House Beautiful</i> , <i>Cosmopolitan</i> , <i>Town & Country</i>
	PTL Television Network Heritage Village Church and Missionary Fellowship Charlotte NC Apr. 1979	Church contributions	Around the clock	5.8	Christian families	Inspirational programming, entertainment; news; specials

Chart designed by Marian Chin

DAYPART APPEAL IS REAL.

USA NETWORK'S DAYPART PROGRAMMING HAS MORE SUBSCRIBER APPEAL THAN ANY SINGLE BASIC NETWORK BECAUSE USA PROGRAMS TO EVERY MEMBER OF THE FAMILY.

USA's Daypart programming has helped turn 12 million cable prospects into excited cable subscribers. Because when it comes to generating real program appeal, USA is the only basic cable network that has it all. All the right programming. At all the right times. For all the right members of the family.

USA DAYTIME DELIGHTS

Here's eight hours of the most appealing women's programming on TV today. USA Daytime. It's fresh and involving. It's original programming that's packed with a variety of regularly scheduled shows. All at the times women want to watch them.

There's *ALIVE AND WELL*, for health and fitness. *SONYA*, for provocative interviews. *ARE YOU ANYBODY?*, where celebrity spouses speak up. *WOMAN'S DAY USA*, for menu planning and shopping tips. *THE USA MOVIE*, just for fun. England's famous dramatic series, *CORONATION STREET*. And *YOU!*, television's only video fashion magazine.

USA Daytime has more charismatic, top drawing stars than any other women's programming on cable today. It's classy entertainment that satisfies today's women. All daytime long.



USA KIDSTIME CAPTIVATES

When it comes to tuning into kids, nothing turns them on like USA Kidstime.

It's children's programming that grabs a kid by the imagination and won't let go. And it's always on when kids are there to see it. Weekday afternoons and mornings, and weekend mornings.

There's the ACE-award winning *CALLIOPE*. The film festival for kids. *KALEIDOSCOPE*, where kids learn fun, do-it-yourself projects at home. Then on *SCHOLASTIC SPORTS ACADEMY*, kids get winning tips from New York Knicks coach Hubie Brown, former New York Cosmos star Werner Roth, and in the fall, former Washington Capital coach Gary Green. And last there's the new, *USA CARTOON EXPRESS*.

USA Kidstime delivers that magic mix of fun kids crave. And, the award-winning programming parents want.



USA
Daytime

USA
Kidstime

USA SPORTSTIME SIZZLES

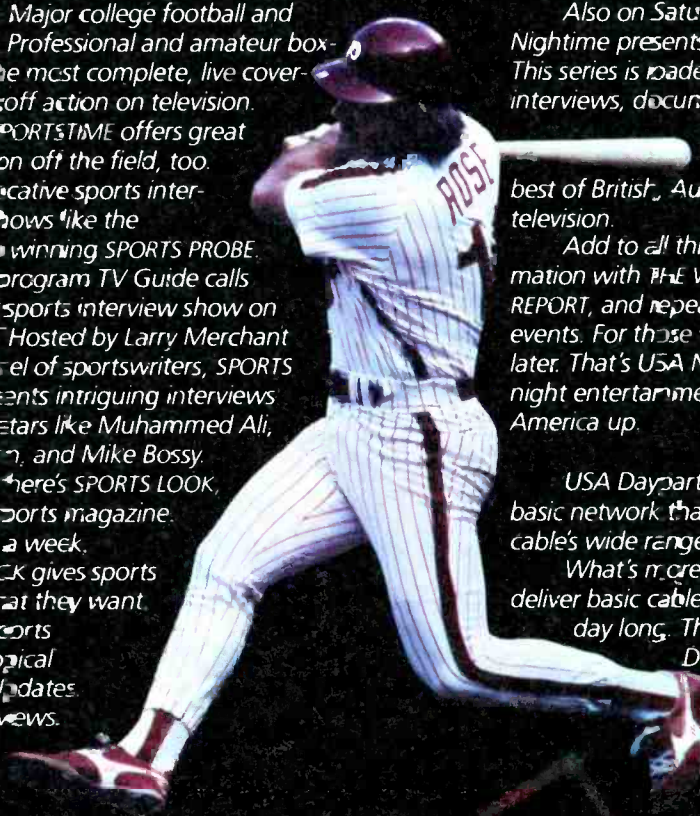
Nothing appeals more to the man of the house than sports. And USA is the leader in exclusive, live, prime-time, major league sports programming. Over 500 major league events a year. More than any other TV Network. And all when men want to see them most — prime-time weekday nights.

There are regularly scheduled sports exclusives like MONDAY NIGHT NHL HOCKEY, WEDNESDAY NIGHT NASL SOCCER, THURSDAY NIGHT MAJOR LEAGUE BASEBALL, THURSDAY NIGHT NBA BASKETBALL, FRIDAY NIGHT MISL SOCCER.

Plus the Masters[®] Golf Tournament, Grand Prix Tennis, Major college football and basketball, Professional and amateur boxing. And the most complete, live coverage of playoff action on television.

USA SPORTSTIME offers great sports action off the field, too. With provocative sports interviews on shows like the ACE-award winning SPORTS PROBE. This is the program TV Guide calls "the finest sports interview show on television." Hosted by Larry Merchant and his panel of sportswriters, SPORTS PROBE presents intriguing interviews with superstars like Muhammad Ali, Tommy Iton, and Mike Bossy.

Then there's SPORTS LOOK, the video sports magazine. Five nights a week, SPORTS LOCK gives sports viewers what they want. In-depth sports analysis. Topical features. Updates. Sports previews. And more.



USA NIGHTTIME IGNITES

Every household has its late night viewers. And USA Nighttime has the programming they don't mind losing sleep over.

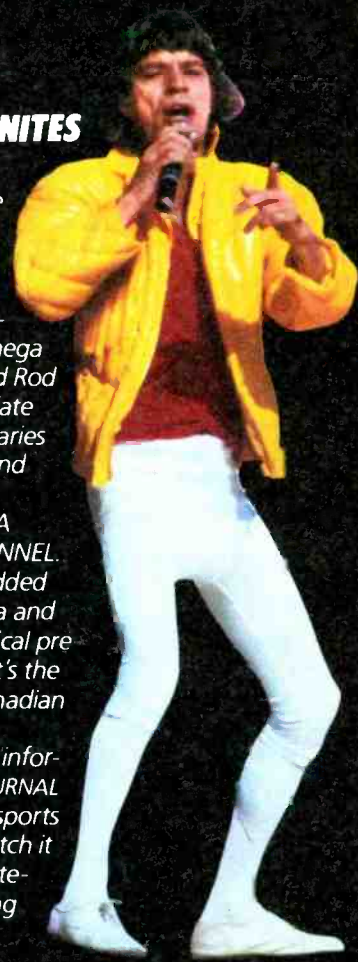
Like NIGHT FLIGHT,[™] every Friday and Saturday night. Featuring superstar concert rock with mega talents like The Rolling Stones and Rod Stewart. And to keep the young late nighters tuned in, NIGHT FLIGHT varies the action with cult film classics and avant garde video features.

Also on Saturday nights, USA Nighttime presents ENGLISH CHANNEL. This series is loaded with star-studded interviews, documentaries, drama and upbeat musical presentations. It's the best of British, Australian and Canadian television.

Add to all this, stock market information with THE WALL STREET JOURNAL REPORT, and repeats of the day's sports events. For those who want to catch it later. That's USA Nighttime. The late-night entertainment that's keeping America up.

USA Daypart appeal is real. It's the one and only basic network that can help you effectively showcase cable's wide range of excitement.

What's more, USA is specially designed to help you deliver basic cable satisfaction to all your subscribers, all day long. That's why, to sell-in basic cable, USA's Daypart Programming Package is today's Basic Best Attraction. Call your USA representative today.


















USA
CABLE NETWORK

THE GREAT AMERICAN NETWORK.

USA
Sportstime

USA
Nighttime

NAME OWNER CITY OF ORIGIN LAUNCH DATE	MEANS OF SUPPORT	HOURS	HOMES REACHED (MILLIONS)	TARGET AUDIENCE	CONTENT
 Modern Satellite Network (MSN) Modern Talking Picture Service Inc. New York Jan. 1979	Advertising	10 A.M.-1 P.M. Mon.-Fri.	5.1	Women	Consumer information; product demonstrations; <i>The Home Shopping Show</i>
 Satellite Program Network (SPN) Satellite Program Network Inc. Tulsa OK Jan. 1979	Advertising	Around the clock	5	General	Regular series on hobbies, business, finance, personal money-management; entertainment and health-care programs; how-to shows; classic movies
 The Weather Channel Landmark Communications Inc. Atlanta May 1982	Advertising	Around the clock	5	General	 The weather: weekend forecasts; season outlooks; special forecasts for pilots, boaters, etc.
 Music Television (MTV) Warner Amex Satellite Entertainment Co. New York Aug. 1981	Advertising	Around the clock	4.5	12-to-23-year-olds	Video version of a rock radio station; tapes of leading groups in concert; hit-songs accompanied by video art; interviews; record promos (in stereo)
 Cable Health Network (CHN) Viacom International Inc.; Dr. Arthur M. Ulene; Jeffrey Reiss New York June 1982	Advertising	Around the clock	4	General	 "Programming devoted to health science and better living": diet-cooking demonstrations; nature programs; fitness shows; talk shows
 Reuters News View Reuters New York Apr. 1971	System pays \$300-\$1,000, depending on size	Around the clock	3.8	Upscale viewers interested in business and general news	Teletext news service: financial news, and sports
 Satellite News Channel Group W Satellite Communications; ABC Video Enterprises Stamford CT June 1982	Advertising	Around the clock	3.1	General	 Hard news and major headlines in 18-minute cycles, with hourly 5-minute regional news inserts
 Spanish International Network (SIN) Televisa S.A.; Rene Anselmo New York Sept. 1976	Advertising	Around the clock	3.1	Spanish-speaking community	Programs in Spanish: news; soap operas; sports; musicals; variety shows; movies; specials; live telecasts from Mexico
 UTV Cable Frank D. Alessio Fair Lawn NJ Jan. 1983	Advertising	Around the clock	3	General	"Involvision" programming, which allows viewers to participate by shopping at home, for instance, or by phoning in and playing along with live game shows
 Trinity Broadcasting Network Paul F. Crouch Tustin CA May 1978	Donations	Around the clock	2	Families	Nondenominational religious fare: talk shows, variety shows, musicals
 Black Entertainment Television (BET) Robert L. Johnson; TeleCommunications Inc.; Taft Broadcasting Washington DC Jan. 1980	System pays 1c per subscriber; advertising	8 P.M.-2 A.M. nightly	2	Black community	 Musical events; political discussions; phone-in shows; regular weekly series on health and fitness, cooking, fashion, career advice, and male-female relationships; movies

Not one,
not two,
not three,
not four,
not five,
not six,
not seven,
not eight,
not nine,
not ten,
but eleven ACE nominations.

Showtime Pay TV was nominated eleven times for the coveted ACE Award for cable casting excellence in four national program series and seven individual shows.

We wish to thank the countless individuals whose talent, dedication, and creativity help to make Showtime the success it is.



We'd also like to thank the members of the NCTA and the producers of the nominated programs for recognizing Showtime as one of the premier cable networks in the country.

It is an honor to be recognized by one's peers. Our commitment to excellence has never been greater.

Thank you. All of you.

All eyes turn for
SHOWTIME  TM




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NAME OWNER CITY OF ORIGIN LAUNCH DATE	TERMS	HOURS	HOMES REACHED (MILLIONS)	TARGET AUDIENCE	CONTENT
 ACSN The Learning Channel Appalachian Community Service Network Nonprofit Lexington KY Oct. 1980	System pays 3¢-5¢ per subscriber	6 A.M.-4 P.M. Mon-Fri; 6 A.M.-1 P.M. Sat, Sun	2	Adults	"Telecourses" that can be taken for credit at participating colleges; how-to programs: cooking, guitar-playing, auto-repairing, speed-reading, small-business management, resumé-writing
NJT National Jewish Television Joel Levitch New York May 1981	Advertising	1-4 P.M. Sundays	1.9	Jewish community	Public-affairs panels; educational shows; television magazine
 CNN2 CNN Headline Network Turner Broadcasting System Atlanta Jan. 1982	Advertising	Around the clock	1.6	General	Major headlines and hard news in 30-minute cycles

OTHER SERVICES

NORTH AMERICAN NEWSTIME/ THE TRAVEL CHANNEL	85
NATIONAL CHRISTIAN NETWORK	75
DOW JONES CABLE NEWS	6
FINANCIAL NEWS NETWORK	5
ETERNAL WORD TV NETWORK	5
ELECTRONIC PROGRAM GUIDE	3

SUPERSTATIONS **

 WTBS Turner Broadcasting System Atlanta Dec. 1976	System pays 10¢ per subscriber; advertising Carrier: Southern Satellite System	Around the clock	22	General	Network reruns; sports; movies; news
 WGN The Tribune Co. Chicago Oct. 1978	System pays 10¢ per subscriber; advertising Carrier: United Video	Around the clock	8.4	General	Network reruns; sports; movies; news
 WOR RKO General Television New York Apr. 1978	System pays 10¢ per subscriber; advertising Carrier: Eastern Microwave	Around the clock	4.9	General	Network reruns: sports, movies; news



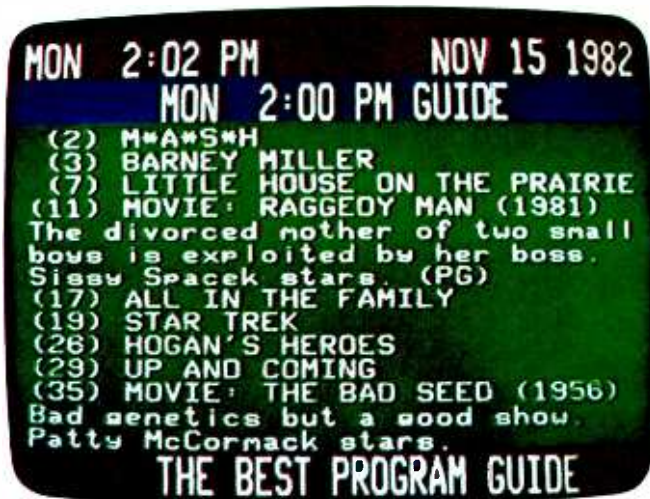
**Typical, advertising-supported urban TV stations whose retransmission via satellite gives them a national audience. This retransmission is arranged by an independent carrier company that collects the fees from the cable systems.

ON THE DRAWING BOARD

Almi Group Network	To be announced	Magicable	Summer 1984
Apollo Satellite Television	To be announced	Nashville Network	Winter 1983
The Buena Vision Channel	Winter 1983	Satellite News Channel II	Spring 1983
Cable Newspaper Corporation	Winter 1983	The Silent Network	Spring 1983
Cableshop	Spring 1983	Sitcom Channel	Winter 1984
Christian Media Network	To be announced	Spanish Universal Network	Winter 1983
Cinemerica	To be announced	SPN/International Network	To be announced
The Community Channel	To be announced	SPN/Financial-Religious Network	To be announced
Family Programming Network	To be announced	SPN/Classic Movie Network	To be announced
Heartbeat Media Network	Winter 1982	SPN/How-To-Network	To be announced
The Job Channel	To be announced	Top Entertainment Network	To be announced
Kidvid Network	Winter 1983	Window	To be announced



How to lose your cable subscribers



A sure-fire way to stimulate churn in your system is to fail to provide your subscribers with information.

Particularly programming information.

Because it's a fact that a majority of subscribers — especially new subscribers — drop their cable service simply because they don't know what's on.

Winning is better than losing.

The most convenient, cost-efficient way to keep your subscribers happy (and hooked up) is to offer them Distributed Information Processing.

Better known as DIP.

DIP is the only comprehensive electronic programming guide available today.

We originated this type of service. And we're still the largest national electronic programming guide (over 1.5 million subscribers).

Us vs. them.

Using DIP will cost you far less money than producing a conventional printed guide.

And compared to other electronic programming guides, DIP steals the show.

DIP's programming listings are gathered and processed by a division of our parent company, which has been providing this service for over 10 years — longer than anyone else. So you can stop worrying about inaccurate listings.

Our competition has to buy its listings.

DIP's hardware was designed and manufactured to our own exacting specifications by VDS and Compuvid, the two leaders in the field.

As a result, we're able to stand behind our equipment with a complete service guarantee.

Our competition uses "shelf" hardware.

And DIP alone is able to offer you 3 separate character generators. Which gives you maximum flexibility and allows you to expand as your system grows.

With our competition, you pay your money and you have no choice.

Finally, all this flexibility gives you the opportunity to sell advertising space — both within the listings and on the crawl — at your own pace.

Stop getting sick over churn.

DIP I and DIP II are available now for lease or sale.

And MSO's will be pleased by our discounts and incentive plans.

For complete information, call Denny Campo at (404) 355-0100.

Unless of course you like losing subscribers.



1819 Peachtree Road, NE,
Atlanta, GA 30309

DIP/TV WATCH is an affiliate of
United Media Enterprises, a Scripps-Howard Company.

Visit us at Booth 505A at the Western Show

VIDEOCONFERENCING:

MEET ME IN ST. LOUIS, ATLANTA, SEATTLE, GRAND RAPIDS . . . ALL AT ONCE

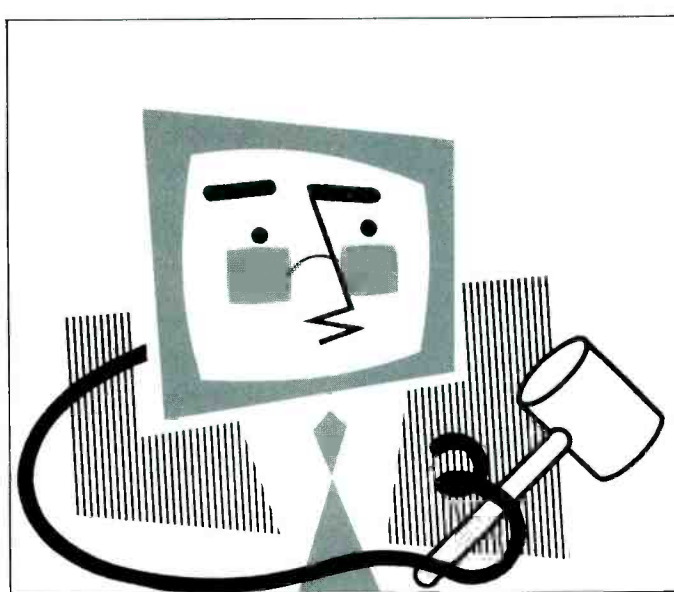
VIDEOCONFERENCING is the next best thing to being there. It is, in fact, an enlarged version of what American Telephone & Telegraph's two-decades-old Picturephone was meant to be—a way of arranging face-to-face meetings electronically, over distances.

Picturephone failed because the economics were against it. Ordinary telephone lines lack the bandwidth to convey images; required instead were television land lines like those used by the networks to send programming to their affiliates. Those proved far too costly for point-to-point personal communication. But videoconferencing is a reality today, because satellites make possible closed-circuit video transmissions at fairly reasonable costs.

Videoconferencing allows corporations and industry associations to conduct their national business meetings privately, without extensive and costly travel. Rather than paying air fares, hotel bills, and per diems for scores of executives to meet in a designated city, many companies today elect to hold their meetings on television screens. The executives need travel only as far as the nearest Holiday Inn, Hilton Hotel, or other facility equipped with a satellite earth station. Thus time is saved as well as money.

A videoconference by satellite not only offers telephone's interactive capabilities—facilitating discussion and questions from every location—but it provides a uniformly clear picture, can be international as well as national, and need run only as long as it takes to get through the agenda. Meetings are conducted, in most cases, on large-screen projection receivers.

The videoconference offers the surest evidence that communications increasingly will take the place of transportation in the new age. The Hilton Communications Network, a joint venture with the



“Large TV screens linked by satellites can bring people face-to-face across continents. Instead of traveling, many executives, conventioners, and even church congregations now gather electronically.”



Hilton Hotels have teamed up with the Robert Wold Organization to stage multi-city videoconferences.

Robert Wold Organization, quotes “rule of thumb” rates of \$90 a person for 1,000 people in ten locations, and \$80 a person for 2,000 people in twenty locations. More modest videoconferences can be staged for even less, but in any

case the meetings by satellite are far less costly than those requiring jet travel.

Other major suppliers of comprehensive services include Hi-Net, the Holiday Inn video network; Pioneer, a joint venture of

Intercontinental Hotels and Comsat General, and the Public Broadcasting Service, which, as the only broadcast network distributed by satellite, has developed a sideline in videoconferencing.

According to some estimates, videoconferencing is a \$30 million industry today; market analysts expect it to expand rapidly in this decade. Atlantic Richfield Company plans such extensive use of video meetings that it is installing its own satellite network connecting seven key ARCO offices.

While private corporations are likely to be the most consistent users of videoconferencing, the technology also has adherents in fields such as medicine, education, and religion. Successful medical conferences by satellite have been conducted, and foreseeably hospitals around the country may become linked in the manner of the Hilton and Holiday Inn hotel chains.

In August 1982, an estimated 500,000 followers of Texas evangelist Kenneth Copeland participated in a closed-circuit video conference over five continents at a cost of \$2 million. The Seventh Day Adventist Church has conducted a nationwide day-long bible conference by satellite. And some of the leading television preachers see videoconference events as a boon to fund-raising.

In the field of education, classes have been conducted cross-country by satellite. Last fall the University of Iowa, in Iowa City, held a coast-to-coast conference on artists in television through a satellite link-up with New York University and the University of California at Los Angeles. Videoconference techniques hold great promise for education. Seminars held in dozens of locations at once can create a national, or even international, classroom, giving new meaning to the idea of the “school without walls.”

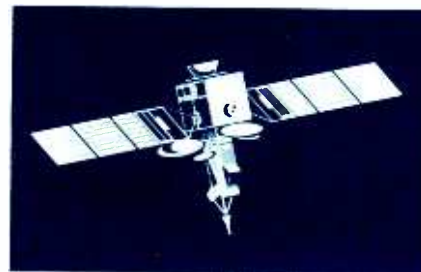
GORDON M. HENRY

The Hilton Communications Network

Illustration by Anders Wenngren

The Wold Guide to Satellite TV

Satellite television is a complex maze of transponders, earth stations, transportable up and downlinks, instant syndication, ad hoc networks, new horizons for news, and videoconferencing.



The theory of communications by satellite was first advanced in the middle forties.

Reality began to replace theory in late 1957 with the launch of Russia's tiny Sputnik I satellite, followed soon by America's Explorer I.

By 1964, trans-oceanic delivery of television signals by satellite had become possible.

Eleven years later—on August 9, 1975—the first live commercial TV program was carried on a U. S. domestic satellite.

This milestone transmission was arranged by Wold, a company which creates television and radio networks for hundreds of customers. It was a baseball game between the Milwaukee Brewers and Texas Rangers, played in Milwaukee and sent by the Westar I satellite to Dallas for Wold's customer, a TV broadcast station.

Soon, Wold had also booked the first satellite deliveries of basketball, ice hockey, news networking and radio sports play-by-play.

The first satellite programs for cable-TV, by the way, were transmitted in the fall of 1975 for Home Box Office.

How many satellites carry TV?

Currently, the equivalent of 10 domestic satellites accommodate TV traffic on some or all transponders.

Transponders, of course, are the devices on satellites which amplify and relay communications between earth stations. Most satellites have 24 transponders which are used for voice and data traffic, both government and commercial, in addition to TV and radio program relays. For the best technical quality, a full transponder is needed for each TV signal.

Some of the current satellites were launched in the mid-seventies and will be retired by the end of 1983. If all scheduled launches occur with success—and some are yet to be authorized by the F.C.C.—the number of active, domestic (non-Alaskan) TV satellites will increase by the end of 1983 to 13.

Are transponders available?

Full-time transponders on the more desirable TV satellites are in very short supply. A seller's market has encouraged satellite owners and operators to escalate prices for transponder leases and purchases.

Certain satellites are more desirable to certain users. Desirability factors include the satellite's age, location, aggregation of similar users and the earth station universe for both up and downlinks.

Part-time and occasional needs are accommodated by Wold and a few others who have full-time transponders dedicated to such use. As the most experienced company in this field, Wold has made a fine art of managing such traffic.

What about RCA?

RCA's *Satcom I* and *Satcom II* each have little more than a year of remaining life. They are loaded mostly with voice, data and Alaska traffic. Some full-time but preemptible TV leases are available on *Satcom I*. Some "occasional" time is available with limited access.

Satcom III-R is called "Cable Net One" by RCA because it is filled entirely with cable-TV programming services. The value of full-time protected and

preemptible transponder leases is the highest of any satellite currently in service.

On *Satcom IV*, five transponders were sold like condominiums at prices from \$13-16 million each. All of the remainder, except five, have been leased. These five full-time transponders are each available for \$13 million up front or \$1.5 million down and term financing with interest as high as 15%.

A new satellite, *Satcom V*, was scheduled for launch in late October, 1982. Having been sold in entirety to an Alaska carrier (which leased back four transponders to RCA for government traffic), it's not expected to have any availability for TV in the lower 48 states and Hawaii.

What about Western Union?

Westar I and *Westar II*, currently operating a year past their life design, have been co-located as the equivalent of a single 12-transponder satellite.

Westar III, the last of the 12-transponder breed, was completed eight years ago as a system spare and was launched three years ago.

Westar IV, with no full-time transponders available from Western Union, is known as "The Broadcaster's Bird."

Wold's place in the satellite universe

The unique role of Wold is to arrange production, distribution and interconnection for hundreds of customers involved annually with thousands of television and radio programs.

Wold's customers include broadcast stations and networks, producers, advertisers, distributors and others engaged in broadcast TV, cable and pay-TV, radio and videoconferencing.

Their satellite needs vary from a single quarter-hour unit to 24 hours daily. By aggregating such diverse needs, Wold is able to provide customers with optimum cost and operating efficiencies.

From a pioneering commitment to a few hundred hours of satellite time in 1975, Wold has grown to a current annual volume of 80,000 hours—and is still growing.

In providing its end-to-end network services, Wold also operates origination and uplink facilities in three major cities, two transportable uplinks and 46 receive-only earth stations.

No other entity comes close to the size or scope of Wold's capabilities in satellite television and radio.

Wold and PBS each have four transponders although PBS sub-leased part of one. SIN has three including one used for traffic from Mexico. Hughes TV has two. Two of the Westar IV transponders were sold rather than leased.

On *Westar V*, another nine transponders were sold—for undisclosed amounts. Westar V's user aggregation is likely to make it "Cable Net Two." Group W has nine transponders, primarily for its cable programming services. Wold has three, two of which will be used for Disney's pay-TV service and one is being used to deliver New York super-station WOR-TV to cable systems.

Occasional time is available through Wold and others on certain transponders of Westar I-II, III and IV.

earth stations, at relatively little expense, to see III-R and D-4 simultaneously.

AT&T has a remaining queue of 83 orders for TV transponders. Orders will be filled on a first-come, first-served basis as AT&T becomes operational in 1983 with its second generation Telstar series of satellites.

What's coming in '83?

RCA will launch *Satcom I-R* and *Satcom II-R* to replace the aging I and II satellites.

RCA has said it will provide three transponders on I-R and 22 transponders on II-R for television use.

In seeking the authorization it got from the F.C.C. to build *Satcom II-R*,

Galaxy I—to be launched in June—will be the first satellite of Hughes Communications, a subsidiary of Hughes Aircraft Company, a major builder of satellites. Hughes has sold all 18 "primary" transponders for a reported total of \$190 million. Six "standard" transponders are still for sale. Transponder use is limited to primarily cable programming.

Galaxy II is scheduled for launch in September, 1983. Hughes plans to market it for general business use.

What about earth stations?

Because satellites are like busy expressways crowded with communications traffic, they need on-ramps and off-ramps—which translate into earth station uplinks and downlinks.

Earth stations are vital to any satellite system.

RCA and Western Union have earth station facilities, for TV use, near only a handful of major cities. Precious few microwave links connect these earth stations with the central cities.

At the present time, AT&T offers no earth station access. Hughes' own uplinks will be limited to Los Angeles and New York.

Thus, the satellite user community has had to construct much of the existing universe of earth stations and microwave links.

More than 5,000 cable systems—according to RCA—have their own earth stations. Many have two or three, aimed at different satellites. Some will soon be equipped to see two satellites with one dish.

About 300 of the more than 700 commercial TV broadcast stations already have at least one earth station and some have two. Most are steerable from one satellite to another, and several have uplink as well as downlink capability.

Wold operates the nation's largest single network of TV-related earth stations. Only Wold has uplink/downlink complexes at the nation's three principal news centers (New York, Los Angeles and Washington, D.C.). Wold also operates 46 receive-only earth stations, mostly co-located with TV broadcast stations.

Who has transportables?

Several companies operate transportable uplink/downlink units which travel to the remote sites of many program originations.

From the site, a transportable can beam directly to a satellite, by-passing expensive local telephone channels.

Wold operates two such units, kept busy from coast to coast.

The orbital spacing issues

Numerous applications for new satellites will not be acted upon at the F.C.C. until resolution of orbital spacing issues, expected in late 1982.

Satellites currently used for TV are all in the C-band of the frequency spectrum (4-6 gigahertz). In this band, a separation of four degrees is required between satellites. If the F.C.C. reduces the separation to three degrees, only five of 13 pending applications for C-band orbital slots can be approved. A reduction to less than three degrees is also under consideration.

In a higher proportion of the frequency spectrum (12-14 gigahertz), Ku-band satellites operate. SBS (Satellite Business Systems) has the only current Ku-band satellites. In this band, the current minimum spacing of three degrees is likely to be reduced to two degrees, leading to approval of some of the pending applications for orbital positions.

The issues are complicated by plans of Southern Pacific (recently sold to GTE) and American Satellite for hybrid satellites containing both C and Ku-band transponders.

An upper portion of the Ku-band spectrum is reserved for high-powered direct broadcast satellites which could bypass broadcast stations and cable systems to deliver TV programs directly to homes. One DBS application was conditionally approved in September.

What about AT&T?

The Comstar satellite system, owned by Comsat General, is leased to and operated by AT&T which in turn has sub-leased some of the capacity to GTE.

Comstar D-1 and *Comstar D-2* are co-located as the equivalent of one 24-transponder satellite. A dozen preemptible transponders are available at a lease rate of \$96,000 per month until August 31, 1983. Earth stations must be provided by lessees.

Comstar D-3 currently accommodates six customers with nine protected transponders: The three major TV networks have five of the nine, two of which are sub-leased from Wold.

Comstar D-4 will begin carrying TV traffic in January, 1983. Because of its orbital location in close proximity to *Satcom III-R*, AT&T expects to populate D-4 with cable TV customers. This would enable cable operators to retro-fit

RCA said (in 1981) that it had at that time "over 175 orders for transponder and television service."

If the F.C.C. approves, Western Union will launch *Westar VI* at the end of 1983 to replace the now-combined *Westar I* and *II*. The launch will be the first of a U. S. satellite by Ariane, a French-based consortium. All previous launches have been handled by NASA.

In filings at the F.C.C. in mid-1982, Western Union said *Westars I* through *V* "are sold out" and that "demand for full-time transponders far exceeds their availability."

Telstar 301, the first of AT&T's own satellites, is expected to be operational in September. If AT&T is authorized a fourth orbital slot by the F.C.C., *Comstar D-1/D-2* will be kept in service and the fourth slot will be for *Telstar 301*. Otherwise, 301 will replace D-1/D-2.

The transponder sales issue

At the end of July, the F.C.C. approved applications of Hughes, RCA and Western Union to provide noncommon carrier services and sell (rather than lease) all transponders on Galaxy I and II, five on Satcom IV, two on Westar IV and nine on Westar V.

They deferred consideration of applications to sell on Westar VI (proposed launch, late 1983), Galaxy III (proposed for 1984) and Southern Pacific's SpaceNet II and III (proposed for 1984 and 1985). Southern Pacific recently announced the sale of its entire planned system to GTE.

Several parties had opposed the applications unsuccessfully. Their arguments contended principally that domestic satellite facilities are scarce resources (with limited orbital locations) which should, under the Communications Act, be offered only on a common carrier basis.

In September, the F.C.C.'s decision was appealed at the U.S. Court of Appeals. Arguments in the case will probably not begin until 1983.

Receive-only transportables are readily available too. Nearly 300 such units may be leased for networking purposes.

What about program origination?

Although much of the live, tape and film programming of satellite TV originates in studio and playback facilities owned by networks and distributors, several new facilities are linked closely with earth station uplinks. These accommodate new kinds of program traffic and minimize signal degradation en route to satellites.

Major uses of these new facilities are for syndicated TV programs, news feeds and private videoconferences.

Wold operates three such centers in New York, Los Angeles and Washington, D.C.

What about syndication?

Distributors of syndicated programming have taken to satellite delivery like a kitten to milk. It has already become a cost-efficient alternative to shipping tapes and films to local stations.

In addition to cost efficiency, satellites offer producers and distributors the additional compelling benefit of timeliness. A syndicated daily news program, for example *Entertainment Tonight*, would have been economically impractical before the advent of satellites.

On its transponder 10D on Westar IV, Wold aggregates ten recurring syndicated programs—the largest single lineup—with more to come aboard in the near future.

The ad hoc network lives again

For years, *ad hoc* networks have been attractive to sponsors and stations, both affiliates and independents.

The new low cost of satellite delivery, and increasing interest among stations in program alternatives, have given *ad hocs* a bright new future.

Live and time-sensitive specials such as concerts and sports go to custom-built network confederations, both national and regional.

Wold, through its Communications and Entertainment subsidiaries, markets all the ingredients of production, time clearance and delivery.

Local news expanding horizons

Satellites have joined minicams and helicopters as new tools for local television news. ENG—electronic news

gathering—has a whole new dimension which Wold calls "Satellite ENG."

Wherever a story is happening—across the state, across the nation or across the world—if it has special local interest, local stations are going to go after it.

Customized reports originate daily from Washington, D.C. to many stations. News networks and services to independent stations have developed in a major way due to satellite timeliness and cost efficiency.

Wold operates a joint venture with Visnews, the world's largest TV news coverage and distribution organization, offering Wold facilities in the U. S. and Visnews facilities in 21 foreign capitals.

Videoconferences a hot item

Electronic meetings have become a promising new industry with the economics and impact of satellite television offsetting the high costs of travel and executive time.

The cost per person for a multi-city videoconference can vary from less than \$50 to as much as \$300 or more, depending on the number of people, number of locations, production values and hotel amenities.



Robert N. Wold discusses the Wold Guide

Bob Wold is the founder and chairman of Robert Wold Company, Inc. and its subsidiaries, Wold Communications and Wold Entertainment. His comments on this Wold Guide:

"During both business and cocktail hours, satellite TV is a frequent subject of discussion. Confusion, unfortunately, is rampant. This guide is meant to help reduce the amount of confusion.

"As an industry pioneer, we feel an obligation to provide accurate information to our customers and prospective customers, business and financial leaders, educators and students.

"I'm joined in welcoming you to this Wold guide by Gary J. Worth, President of Wold Communications, and Wayne Baruch, President of Wold Entertainment."

Major companies have already conducted sales meetings, press conferences, new product introductions, seminars and numerous other forms of videoconferencing.

Wold and the Hilton Hotels jointly market a worldwide videoconferencing service, the Hilton Communications Network.

And don't forget radio

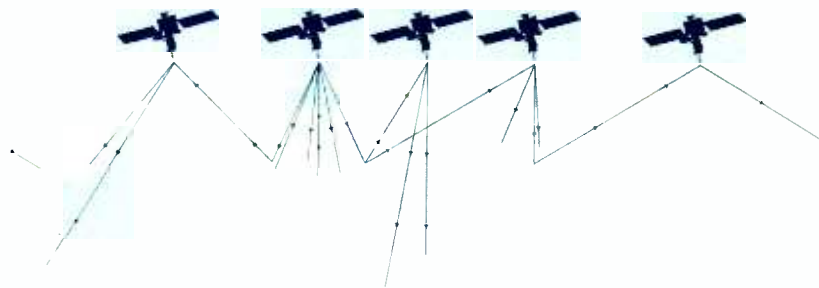
Several new national network program services, not economically feasible before satellites, are now offered to stations and sponsors.

Some originate from the same location as a TV service and are carried on sub-channels with the TV.

Others can originate from multiple locations to transponders which are dedicated to multi-channel audio.

A national network of more than 700 small earth stations is operated by the Associated Press for newspapers and radio stations. Wold shares in the use of this system.

Wold also uses satellites for delivery of many of the thousands of play-by-play sports broadcasts it annually handles.



Videoconferencing—the whole world is in your hands

Live, simultaneous and interactive electronic meetings have become possible around the world as well as within the United States.

The above illustration shows the route of a typical videoconference originating in Dallas with participating audiences in a dozen or more other locations.

In this example, a domestic satellite carries the program from Dallas to other U.S. locations and to the international communications gateways at New York and San Francisco. Four satellites of the Intelsat system relay the program simultaneously to foreign locations.

Although the illustration shows a one-way path from Dallas, both video and audio can be interactive with multiple points of origin.

Wold, in association with Hilton Hotels, offers a total turnkey service in worldwide videoconferencing. Wold also offers the TV production services of Visnews in 21 foreign capitals. Indeed, the whole world is now in your hands.

How to get more information about Satellite Television

The sales people at Wold will be pleased to respond to your request for more information about any aspect of satellite television (and radio).

Please identify the subject (or subjects) in which you have specific interest, and what it is you would like to know more about. Address your request to Wold Sales, 10880 Wilshire Boulevard, Los Angeles, CA 90024.

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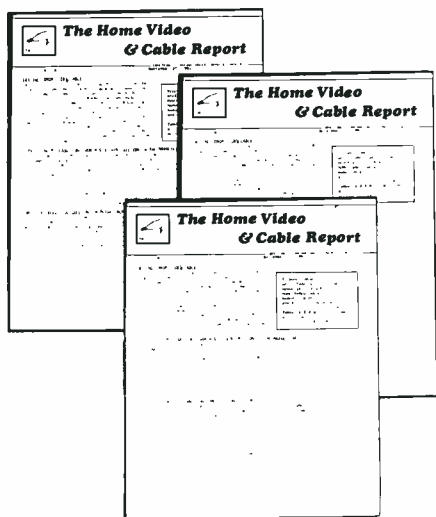
The World Leader in Satellite Television

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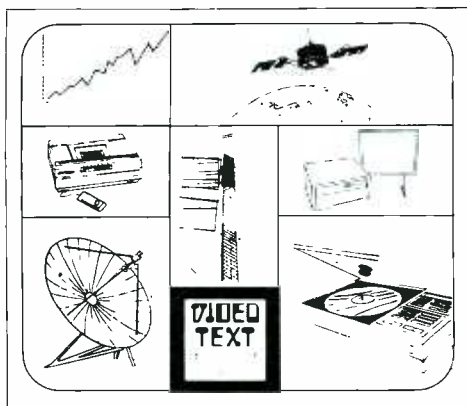
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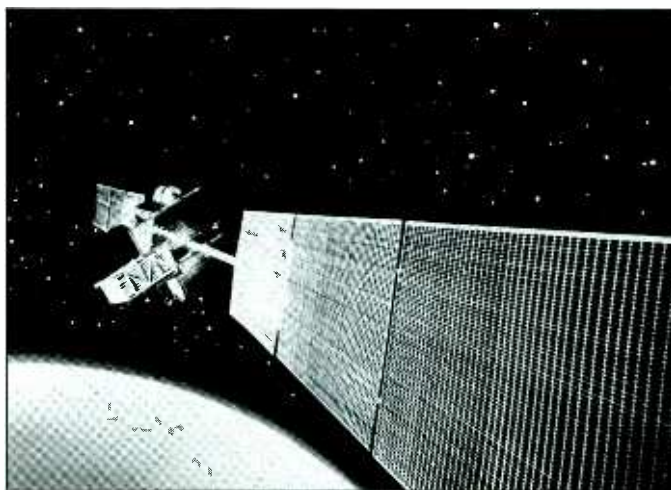
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DBS: A DISH ON EVERY ROOF?

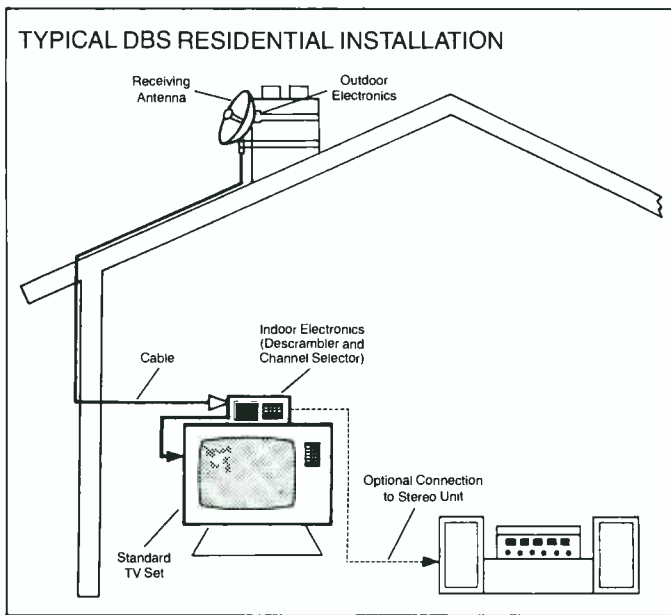
IF A SATELLITE dish were something you could carry home under your arm, would you buy one and stick it on your roof? What if it cost only a few hundred dollars, and allowed you to receive several brand-new channels of movies, sports, and cultural programming—some of them free, some of them scrambled and available for a monthly fee? And if you already had cable, would you still buy the dish?

These and other questions swirl around the sudden arrival of direct-broadcast satellites on an already chaotic television landscape. Direct-broadcast satellites use a newly available span of frequencies—the 12 gigahertz band—and transmit a signal up to forty times more powerful than those of current communications satellites. They send a television beam so strong it can be picked up by a dish smaller than an umbrella—roughly two feet in diameter. (This stronger signal is also narrower than conventional ones; hence it takes as many as four DBS satellites to “cover” an area the size of the United States, as compared to one satellite on the current frequency.) By reaching viewers directly, DBS poses a threat to television stations as well as to cable systems.

Spearheaded by Comsat’s proposal to the FCC in the winter of 1980 for a three-channel subscription service, to be operated by a subsidiary, Satellite Television Corporation, the field of DBS now includes at least eight corporations, among them CBS, RCA, and Western Union. With the FCC encouraging the development of DBS, the first American DBS service could begin as early as September, 1983, when United Satellite Television expects to start beaming four channels of movies, sports, news, and pay-per-view events from Canada’s Anik-C3 satellite. This service will use a relatively weak signal, requiring a somewhat larger dish than do the DBS systems due in the mid-eighties.



UNITED SATELLITE TELEVISION



SATELLITE TELEVISION CORP.

“Beginning late in 1983, direct-broadcast satellites such as GSTAR (top) will beam several new channels of television to homes equipped with rooftop dishes.”

Among the eight American contenders for DBS authorization, one wants strictly common-carrier status—to sell its time in lots to any takers. Most propose a mix of advertiser-supported “free” services and subscriber-supported pay services carrying uninterrupted movies, sports, and specially targeted programming, much as pay-

cable systems now do. Two hope to become the fourth national network, reckoning that cable systems and local stations could pick up and rebroadcast the DBS signal. RCA and Western Union intend to lease out DBS time, but want the right to select their clients, presumably to insure room for their own programming.

The FCC is pushing ahead on DBS with uncommon speed because the new technology stands to be the alternative to cable in the sparsely populated areas that will probably never be wired by cable companies. The commission opened the docket for DBS applications in the spring of 1981, issued licensing guidelines in June the following year, and seems ready to approve construction permits for existing and possibly new applicants. The corporations involved have already begun negotiations with satellite manufacturers; Comsat has even reserved the space shuttle for satellite launches in late 1985 and early 1986.

However, any final decisions on how the spectrum will be divided must await the 1983 Regional Administrative Radio Conference, which will determine how DBS frequencies will be apportioned among all countries in the hemisphere. Already, American companies’ requests for bandwidth exceed even the most optimistic predictions of the amount of spectrum space to be allocated to the United States.

To make matters more complicated, the FCC has agreed that part of the DBS spectrum should be set aside for experiments with high-definition television (HDTV), 1,125-line television, which requires five times the bandwidth of a normal 525-line picture.

DBS systems are expensive to build (Comsat’s alone will cost \$1 billion), but on a per-household basis they figure to cost considerably less than cable. For consumers who already receive cable, DBS offers mainly the novelty of receiving television programs directly by satellite. But some 20 million homes—30 percent of American households—are in areas too remote to be wired economically. For these people, DBS would provide an otherwise unavailable multi-channel pay service—the first national television service in America with no local middleman. JULIE TALEN



Pioneer Television's New Frontier!

Most direct-to-home satellite services by-pass local participation. But one group in the satellite space-race believes that free TV delivered with the help of local television stations has a bright future. United States Satellite Broadcasting Company, Inc.

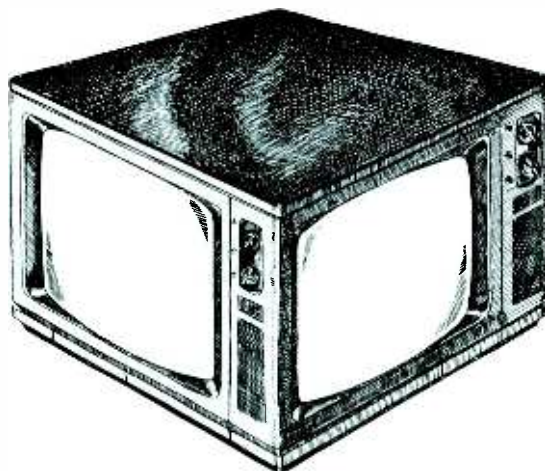
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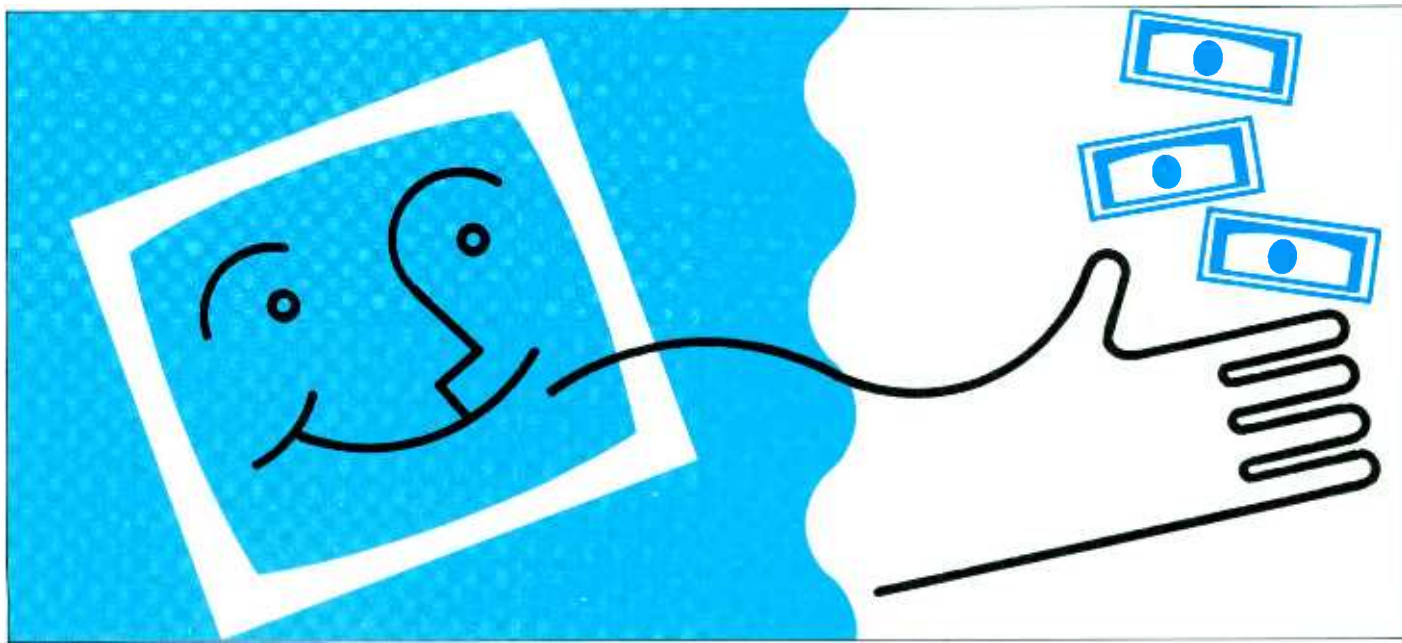


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PAY TELEVISION: THE HAPPY MEDIUM

BY MICHAEL SCHWARZ



NOT MANY YEARS AGO, the sages were saying that people would never pay for television programs when so many were already available free. They weren't just guessing: All the experiments with pay television in the fifties and sixties—in large cities such as New York, Chicago, Los Angeles, and London; in smaller cities such as Palm Springs, California and Hartford, Connecticut, and in little towns such as Bartlesville, Oklahoma, and Etobicoke, Canada—were dismal failures.

Yet today, Americans living where pay television is not available in any form feel sorely deprived. In urban communities, the demand for cable can be traced directly to the desire for those premium pay channels that show movies, sports, and other special entertainment not presented on conventional television. It is nothing short of a monumental change in our culture that people now wish to pay for television fare that comes unabridged and without commercials.

Since 1975, pay television has grown into a billion dollar business and become a medium in its own right. With five routes into the viewer's home—over the air, on cable, on microwave systems known as multipoint distribution service (MDS), on master-antenna systems that can receive satellite signals (SMATV), and on direct-broadcast satellites

(DBS)—it continues to expand.

Mainly, pay-television services are sold to subscribers on a monthly basis; their scrambled signals are decoded in paying households. Home Box Office (HBO), the leading pay service, which pioneered national distribution by satellite in 1975, proved that a subscription network could make huge profits with a mere fraction of the audience drawn by ABC, CBS, and NBC. Two years ago it started a second pay network, Cinemax, which offers an array of movies never intended for mass audiences.

The other leading pay-cable services are Showtime, owned by Viacom, and The Movie Channel, the only twenty-four hour all-movie channel, which is owned by Warner Amex. New to the pay-cable sweepstakes is The Entertainment Channel, a deluxe television network featuring Broadway shows and the pick of the British Broadcasting Corporation's output, among other fare. Joining the field next spring will be the Disney Channel, viewed by the industry as a potential blockbuster. And Group W Cable operates Home Theater Network (HTN), a pay-cable service specializing in movies suitable for family viewing.

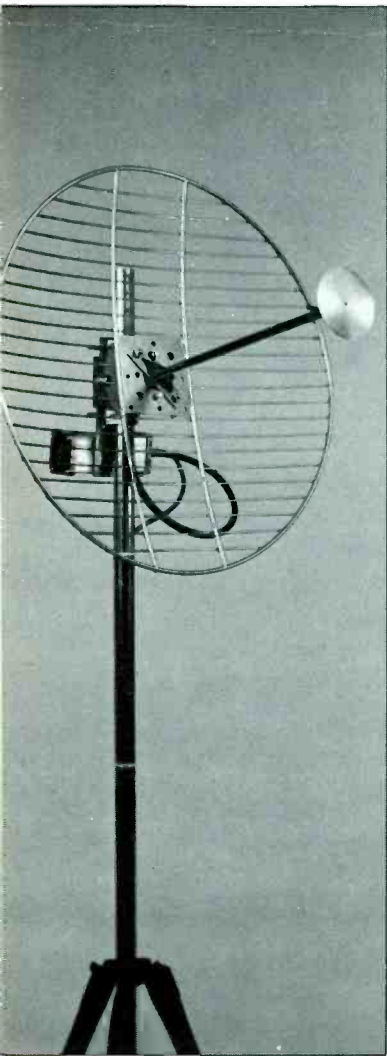
HBO's extraordinary success has linked pay television to cable television in the public's mind. Indeed, of the 14 million households that currently subscribe

to a pay service, some 11.5 million receive it on cable, paying about \$10 a month for each pay network in addition to a monthly fee for basic cable service. The remainder receive their pay service over the air on one of the STV stations (1.5 million subscribers nationally), via MDS (750,000 subscribers), or by SMATV and DBS technologies that are just becoming important.

These forms of monthly subscription television, however, may seem primitive in the latter half of this decade as two-way cable—typified by Warner Amex's Qube system—and “addressable converters” proliferate. These technologies allow people to buy individual programs rather than an entire monthly service. In the long run, pay-per-view television may prove more expensive for consumers than paying monthly fees for pot-luck channels, but the expectations are that viewers will be better satisfied if they can decide for themselves which programs are worth paying for. Pay-per-view opens a new frontier for promoters of special events and holds great new profit opportunities for the various pay-television systems.

Pay cable is now growing faster than basic cable. It appears that paying for television is a habit not very hard to acquire after all.

MDS: MOVIES BY MICROWAVE



TEST INC.

Microwave antenna used to receive MDS signals.

MDS, or multipoint distribution service, which operates in the superhigh frequency broadcast band, came out of obscurity as a communications medium with the advent of pay television in the mid-seventies. Today it is the non-cable conduit for such services as HBO and Showtime, and has a national subscriber count of more than 750,000.

With a microwave signal that travels a distance of only twenty-five miles, MDS had set out ini-

tially to become a common-carrier distribution service for business, lending itself primarily to data transmission and teleconferencing in metropolitan areas. MDS struggled as an industry until Microband Corporation of America, which holds the largest number of MDS licenses, decided in 1975 to use the evening hours for the transmission of pay-television fare to hotels and apartment complexes in major cities. Refinements in the technology soon made it possible to include single-family dwellings in suburban communities. Since then, home entertainment has become an MDS mainstay.

Like subscription television (STV), MDS has succeeded by entering markets ahead of cable. Typically, a subscriber faces an initial cost of less than \$150 for the installation of a special rooftop antenna, and then must pay monthly fees of \$10 to \$15 for the program service. The MDS "feed" is routed into a vacant channel on a standard television set.

MDS provides opportunity for local commercial broadcasters to get into the pay-television business as a sideline, without violating FCC rules of cross-ownership. CBS, for example, has announced its intention to provide an MDS pay-television service in the five cities in which it owns and operates television stations. It can do this because it will not own the MDS licenses, but in effect will be leasing the channels from the owner, Contemporary Communications Inc.

Meanwhile, Microband has asked the FCC for authorization to provide five channels of service in its markets, instead of a single channel. To do this, Microband would take over some of the frequencies previously allotted—but rarely used—by Instructional Television Fixed Service, a microwave television service intended for educational use. If the commission approves, MDS conceivably could grow into an over-the-air version of cable.

SETH GOLDSTEIN

STV: A DIFFERENT KIND OF TV STATION

STV (subscription television) is the least exotic, and the oldest, of the "new" technologies. It is simply pay television transmitted over the air by local television stations that have chosen to offer a subscription service rather than conventional advertising-supported programming. The only thing new about STV is its right to operate.

The technology dates back to 1950, when the first STV test was conducted in New York. For the ensuing twenty-seven years, largely in response to lobbying by commercial broadcasters and theater owners, the Federal Communications Commission suppressed the medium's growth. Today, thanks to the success of pay cable, virtually all restrictions on STV have been lifted.

STV stations, most of them on the UHF band, send out a scrambled picture that a device on subscribers' TV sets can unscramble. The fare is similar to that on pay cable—current movies, entertainment specials, and sporting events—and the monthly charge approximately the same. The great difference is that pay cable comes with all that basic cable has to offer—from all-news to evangelical channels—while STV offers only movies and other typical pay-television programming. But this hasn't proven a handicap. Wherever cable has been slow to get

started—in the large cities, mainly—STV has prospered.

Cable companies require several years to wire a city, but STV stations can enlist subscribers as quickly as they can install decoding devices in homes. Moreover, STV enjoys an economic advantage over cable. By current estimates, each subscribing household may cost an urban cable operator around \$1,000; the costs for STV are only \$200 per household.

After some five years in the marketplace, STV has captured more than a million subscribers nationally and continues to grow in such cities as Los Angeles, New York, Dallas, Washington, Detroit, Phoenix, and Miami. Even in areas where cable has finally arrived as competition—offering its abundance of channels and services—such single-channel STV operators as Oak Industries, SelecTV, and Wometco Home Theatre have managed to hold their ground.

Whether these companies can continue to withstand the march of cable may well depend on new technological developments that would increase program selection for STV subscribers. And, in fact, there is a new decoder that will bring in more than one pay channel. Dallas, with three STV stations on the air, could be the first city to try it. S.G.



OAK INDUSTRIES

STV stations broadcast a scrambled signal, which is decoded by a box like the one above. This form of pay TV has prospered in areas without cable.

SMATV:

MINI-CABLE SYSTEMS GET GOOD RECEPTION

FOR YEARS, builders routinely equipped their new apartment complexes with master-antenna systems (MATV) — special wiring to insure good television reception for all tenants. In effect, they created miniature cable systems, for the MATV installations connect all dwelling units of the building to a single transmission center capable of originating closed-circuit programming. A few years ago, someone thought of hitching the MATV system to a satellite receiving dish, and overnight what had been a residential convenience was transformed into a brash competitor to cable.

Today these installations are known as SMATV, satellite master-antenna systems. They pull down signals from the satellites, including the pay channels, and provide them to tenants paying monthly subscription fees. Wherever SMATV exists, cable has lit-

tle chance of entering, because the two services are quite similar.

The development of SMATV has brought anguish to the cable industry, since it threatens to skim the cream off cable's choicest residential areas even before many cities are wired.

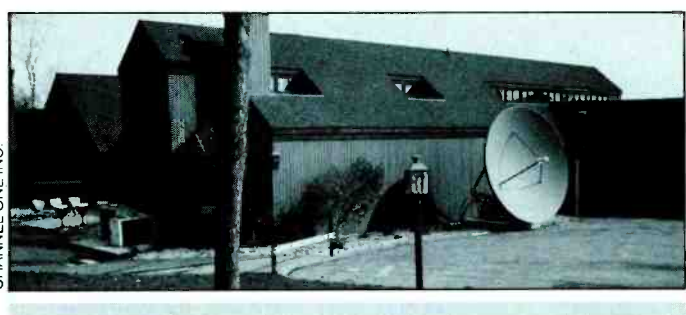
The cities themselves are also frustrated by SMATV because these systems, unlike their cable

counterparts, pay nothing to the municipalities. Because cable operators are franchised by cities and use the public rights of way, they are obliged to pay up to 5 percent of their gross revenues (ostensibly to cover the municipalities' administrative and supervisory costs). Moreover, they are usually required to provide public-access channels and production equip-

ment for community use. SMATV is outside municipal jurisdiction and free from such obligations.

SMATV operators have corralled close to 500,000 subscribers so far, but their chore has grown tougher. Some of the pay-cable networks—Home Box Office, for instance—are faithful to the industry they depend on, and have begun rallying to cable's cause by refusing to let SMATV use their services. A SMATV operator in Phoenix has filed suit against the pay-cable networks and local cable operators, claiming they have conspired to put him out of business.

But this conflict has provided an opportunity to some entrepreneurs. They are racing to develop programming expressly for SMATV, and for the hotels and motels that have installed satellite receiving dishes to provide their guests with added television service. S.G.



CHANNEL ONE INC.

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Paul Kagan's Pay TV Newsletter

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Eric Taub, *CableVision*

"Unlike many of the other pay TV networks (Home Box Office, Showtime, or The Movie Channel), The Entertainment Channel promises a monthly schedule 100% its own."

David Crook, *The Los Angeles Times*

"Webster's defines 'premium' as 'of exceptional quality,' and plenty of quality programming heads skyward [on] The Entertainment Channel."

Peggy Ziegler, *Multichannel News*

"For those wondering when pay TV is going to offer something really new, The Entertainment Channel seems to have the right idea."

Tom Jory, *Associated Press*

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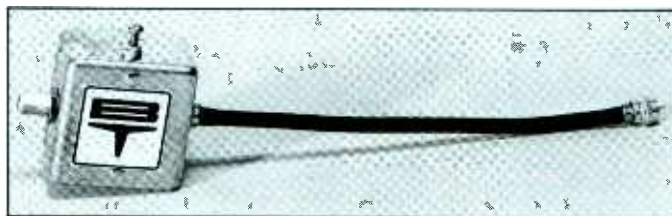
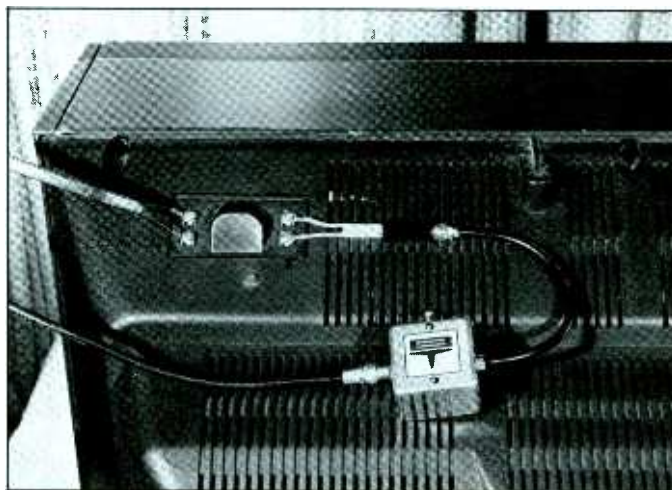
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PAY-PER-VIEW: OPENING NIGHTS AT HOME

IN THE SUMMER of 1986, when the sequel of, say, *ET, the Extra-Terrestrial* opens and the family is dying to see it, you won't have to wait until the lines die down, or fight the crowds and arrive too frazzled to enjoy the film. Instead, even before its theatrical release, you may hear of its television release—a special, one-shot, well-hyped presentation that can be watched at home for less than the cost of a family movie outing.

By 1990, estimates the advertising firm of Ogilvy & Mather, as many as half of all U.S. households could be equipped to receive such "pay-per-view" events. At least 2 million homes already have the capability. Since the first large-scale pay-per-view venture in 1978, consumers in Los Angeles, Phoenix, Chicago, and other cities have been given the opportunity to see prizefights, concerts, Broadway shows, and football games as they happened, for fees of around \$10. Since 1977, subscribers to Qube, Warner Amex's interactive cable experiment in Columbus (and now in several other cities), have been offered pay-per-view telecourses. Group W, the nation's third-largest cable-system owner, also offers weekly pay-per-view events to 2,500 of its subscribers. In late September, Twentieth Century-Fox timed a widespread pay-per-view release of *Star Wars* to occur just after the nationwide theatrical reissue.

While perhaps only interesting



A "disposable trap" allows cable, STV, MDS, and SMATV subscribers to receive a pay-per-view event.

to the consumer because of the convenience it affords, pay-per-view is wildly exciting to business because of its vast—and easily tapped—money-making potential. "Consider a blockbuster film like *Star Wars*," crowns one study. "A 25.0 rating among 50 million homes at \$10 is a \$125 million box office [overnight]." This jumps

the gun a bit, since not even one-tenth that number of homes is ready for pay-per-view. Nevertheless, even the most popular first-run movies don't make \$125 million in a week's theatrical run. It's clear what the excitement is about.

That excitement runs in many quarters, too: Film studios such as MGM/UA and Columbia, multiple

cable-system owners such as Cox Cable, and manufacturers of addressable converters and other equipment designed to make "impulse purchasing" easy for the television viewer—all have begun jockeying for a part of the new market.

But certain problems must be overcome. Especially difficult for cable operators, for instance, has been the defining of pay-per-view for customers already confused by the alphabet soup of the new technologies. "I had a hard time explaining pay cable to my subscribers," one cable operator told *Variety*. "Now I'm going to have to explain pay-per-view."

Another major problem is technical. Attempts at upgrading older cable systems—making them addressable and thus more compatible with pay-per-view (see box)—have been foiled in many cases by equipment malfunction. The leading producers of addressable converters and similar hardware have been grappling with all the bugs of this relatively untried technology. Equipping the nation's cable systems may take years.

But that doesn't preclude our hearing quite a bit on the subject meanwhile. As one-shot presentations of big-budget films and concerts become more common, the purveyors of pay-per-view will doubtless become skilled in their art, adding a whole new dimension to the word "hype."

SAVANNAH WARING WALKER

HOW TO PUT A BOX OFFICE IN YOUR LIVING ROOM

DURING the next five years, many of us will acquire television sets adapted to accept pay-per-view events. Some will have two-way interactive cable, others one-way addressable cable or over-the-air subscription television (STV). What follows are several likely scenarios.

- If you have interactive television, otherwise known as two-way cable (in which case you have two-way addressability),

you can order a program merely by pressing a button on the keypad controlling your set. The cable company's computer will then transmit an unscrambled signal to your home, and bill you for it automatically.

- If you have one-way addressable cable, things aren't quite as convenient: A call or postcard to your cable operator prior to a pay-per-view event will alert him to unscramble the

appropriate channel, which he can do from his end.

- If you have cable, but your television is neither of the above, you have to trek to your cable company and stand in line to buy a small, disposable decoder for one-time use—that is, you screw it onto your cable converter box or the back of your TV set in order to receive the program, and unscrew and throw it out afterwards.

- If you have STV instead of cable, a call or postcard to your operator will be required before you can watch a pay-per-view event. More advanced STV systems, however, do provide their subscribers with a simple decoder device that allows push-button ordering, and facilitates monthly billing by using telephone lines to tally up their charges electronically.

S.W.W.

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- I prefer to save \$5. Send me 2 years of CHANNELS for \$25.
- Payment enclosed. If I'm ever dissatisfied with CHANNELS, I get a full refund.

Name _____

Address _____

City _____

State _____ Zip _____

CHANNELS, P.O. BOX 2001, MAHOPAC, N.Y. 10541

Please allow 4-8 weeks for delivery of first issue. Canada and Mexico—\$18; other foreign—\$22.

KNV211

THE PAY-CABLE



NAME OWNER CITY LAUNCH DATE	HOURS	NO. OF SUBS.	CONTENT
--------------------------------------	-------	-----------------	---------



Home Box Office
Time Inc.
New York
Sept. 1975

Around the clock

9 million

Movies; specials; sports



Showtime
Viacom International Inc.
New York
July 1976

Around the clock

3.5 million

Movies; original programs; Broadway shows; live concerts; comedy; children's shows; documentaries



The Movie Channel
Warner Amex Satellite
Entertainment Co.
New York
Jan. 1980

Around the clock

2 million

Full-length feature films



Cinemax
Time Inc.
New York
August 1980

Around the clock

1.5 million

Movies: 10 A.M.-3 P.M., aimed at female audience; 3 P.M.-8 P.M., youth and family films; 8 P.M.-10 A.M., family and adult features



The Playboy Channel
Daniels & Associates; Cox Cable
Communications Inc.; Cable Vision
Systems Development Co.
Woodbury NY
Dec. 1980

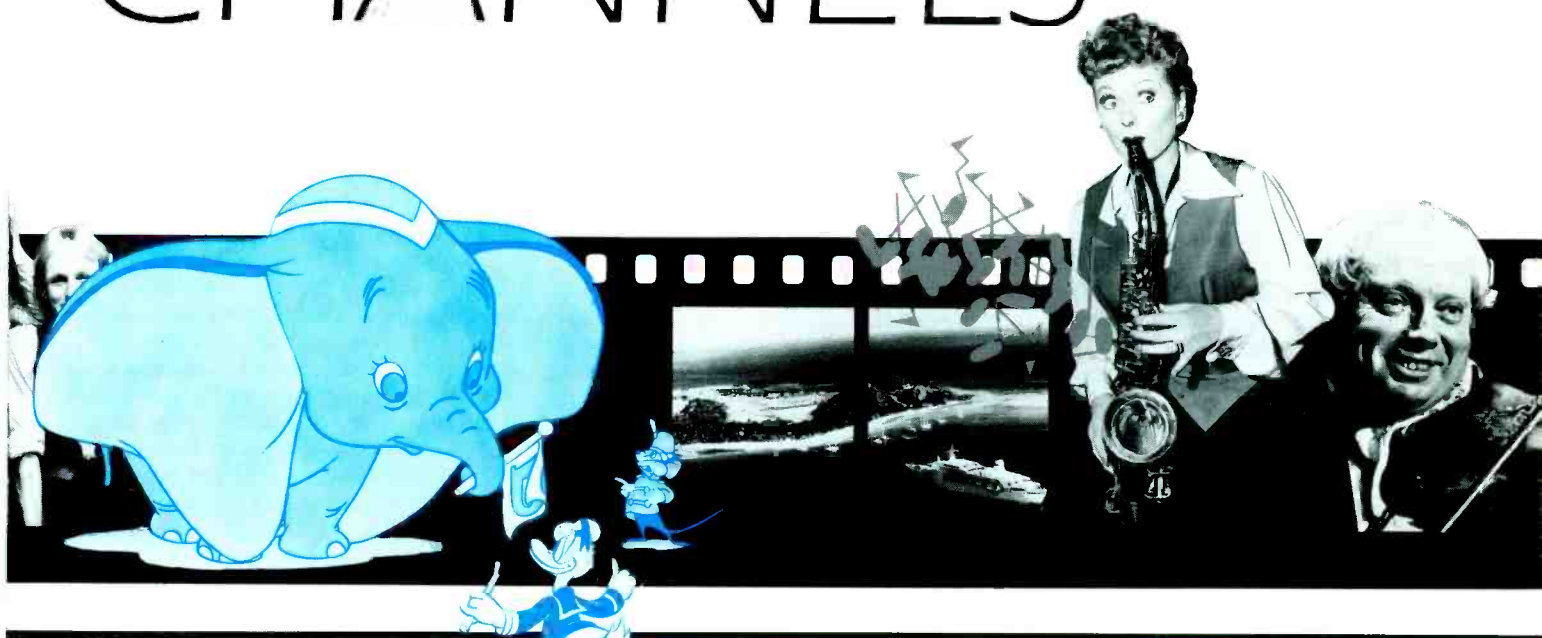
8 P.M.-6 A.M. daily

265,478

Action and soft-core adult films

CHANNELS

HOW THEY SIZE UP



**NAME
OWNER
CITY
LAUNCH DATE**

HOURS

**NO. OF
SUBS.**

CONTENT



Home Theater Network
Group W
Portland, ME; New York
Fall, 1976; satellite distribution
Sept. 1978

4 P.M.-4 A.M. daily

155,000

G and PG movies; travel films



GalaVision
Spanish International
Network (SIN)
New York
Oct. 1979

4 P.M.-4 A.M. Mon-Fri;
around the clock
Sat. Sun

100,000

Exclusive rights to more than 400 Spanish-language films; weekly dramatic series; sports; musical and comedy specials (in Spanish)



Bravo
Daniels & Associates; Cox Cable
Communications Inc; Cable Vision
Systems Development Co.
Woodbury NY
Dec. 1980

8 P.M.-6 A.M. daily

65,734

Performing arts; classical music, dance, and opera; monthly film festival with specific theme or artist



The Entertainment Channel
RCA; Rockefeller Center Inc.
New York
June 1982

Around the clock

(Not available)

Broadway shows; novel serializations; original family programming; foreign and classic films; imported comedy and drama series (first U.S. rights to BBC programming)

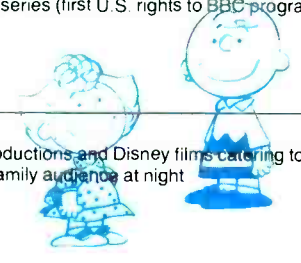


The Disney Channel
Walt Disney Productions
Stamford CT; New York
April 1983 (projected)

18 hours



Original productions and Disney films catering to children under 12; family audience at night



VIDEOTEX: THE ELECTRONIC WORD

A TELEVISION SET is transformed into an information-age appliance as soon as it's connected to a computer. That computer can be a small one in the same room, or a giant one a continent away. *Videotex* is the generic name for the two new technologies that arrange this transformation over long distances.

One makes the connection through telephone or two-way cable lines and thus is interactive. It is known as *videotext* (with the final "t"), and allows the user to perform various transactions with the main computer, such as banking, shopping, and even sophisticated research, using the television screen and a keyboard attached to the set.

The other is a one-way technology that relies on signals broadcast over the air by television stations. Called *teletext*, this system promises to be cheaper and more widely available than videotext, but its information can flow only from the computer to the television set; transactions are not possible. A small keypad is used to select "pages" of information on the screen.

The teletext user, for example, could call up on his screen a theater directory to learn what shows have tickets available, but he could not reserve tickets through the television screen. The videotext user, on the other hand, not only learns what shows are not sold out, but could call for reviews and even to place his order for seats.

The 1980s began with four incompatible videotex formats, each developed in a different country with substantial government funding. Each now competes for a share of the world market.

Prestel, the world's first full-scale com-

mercial videotex service, was introduced in 1979 by the British postal service. France's post office and broadcast authority created the Antiope teletext system, which spawned the more elaborate, two-way service, Telematique. The Canadian Department of Communications sponsored the radically different Telidon

development of videotex services because they also control their countries' postal, telephone, and telecommunications services; they regard the provision of video information as a logical component of a comprehensive public-communications utility. The United States, in contrast, has left the development of videotex to a "free" market—dominated by large communications, broadcasting, publishing, and financial concerns—on the ground that it is not a public utility but rather the technical basis for a new and exciting (if still somewhat vague) commercial enterprise known as electronic publishing.

All four foreign videotex formats are being tested by American entrepreneurs, while other companies are working entirely with American-made hardware and software.

In any format, videotex is essentially a hybrid of mass-communications and computer technologies. Combining television, print, and data processing, it blurs the traditional distinctions between publishing a message, broadcasting a message, transmitting a message, and reporting a message. As a result, videotex defies easy categorization: It can come into the home over the air, by cable, or by telephone; it can be a form of banking, publishing, newspaper reporting, entertainment, shopping, classified advertising, or a host of other "information services." The variety of transmission methods and the range of activities and services encompassed by videotex make it exceedingly difficult to regulate. How the various forms of videotex should be regulated, and who should be responsible for the decisions, are pressing issues of public policy.

VIDEOTEX GLOSSARY

Videotex—The generic term for systems that transmit textual information for display on television screens.

Videotext—An interactive videotex system that uses either two-way cable or telephone lines to connect a central computer to a home television set, allowing for information retrieval and transactions.

Teletext—A one-way videotex system that transmits textual material as part of the standard broadcast or cable-television signal.

Ceefax—British teletext system operated by the BBC.

Oracle—British teletext system operated by ITV (commercial TV).

Prestel—British videotext system operated by government postal and telephone service.

Antiope—French teletext system.

Télematique—French videotext system operated by government postal and telephone service.

Captain—Japanese videotext system operated by government postal and telephone service.

Telidon—Canadian teletext system.

system, and Japan in 1980 introduced its own system, Captain.

These governments funded the devel-

VIDEOTEXT: PUTTING THE TV SET TO WORK

Videotext is the difference between watching television and using it. Yes, using it: to retrieve textual material on the screen when you want it, and to make various kinds of transactions. You might, for example,

summon up an airline's schedule, make your flight reservations, and then instruct your bank to issue a check for the tickets—all at the television set.

You could buy theater tickets in the same manner, make restaurant

reservations, call for the latest stock-market prices and place an order, or select a shirt from an electronic catalogue. With videotext, television also becomes a research library and electronic newspaper.

You make all this happen with a keyboard hooked into your television set. In effect, it connects you to a bank of computers and data bases at the transmission source, either through telephone lines or two-way cable, allowing for many

kinds of transactions at home.

Two videotext services, home banking and home shopping, seem to have the greatest potential for making television something you use rather than watch. They thus receive special attention here.

HOME BANKING

Anyone who has ever waited for the next available teller knows that banking in banks is no fun. In cities the banks are invariably crowded, and in rural areas, they're often a long drive from home. So it may prove a stroke of universal good fortune that banks themselves are disenchanted with the local-branch system. Once an effective way of increasing clientele by making banks more convenient, branches have now become uneconomical to build and operate. This is why more and more banks conduct their business electronically today, offering customers not only the convenience of sidewalk cash machines but, increasingly, the ability to bank at home.

"Banks see electronic services as a means of opening up new markets without a massive investment in bricks and mortar," says Janet Norman, director of the Center for Technology and the Consumer. "Videotext presents them with the opportunity to become a financial-services supermarket, in which the home terminal represents the shopping cart."

Through videotext, bank customers can check the status of their accounts, pay bills, transfer funds, check interest rates and money-market funds, or request more general financial information.

Although most bank-at-home services are still in a testing stage, Alan Lipis, president of Electronic Banking Corporation, a consulting group, predicts there will be approximately a million home-banking terminals by the mid-eighties. "There is a tremendous potential for new accounts, new services, new territories," claims Lipis, "but this will require a major investment not just in technology, but in getting people to know it's there, getting them to sign up, and getting them to use it."

TELESHOPPING

Teleshopping is a way of putting department stores on television—an electronic version of the mail-order catalogue. In October 1980, Federated Department Stores (owners of Bloomingdale's and Abraham & Straus) bought an in-

terest in Comp-U-Card, the nation's first and most extensive electronic shopping service. For an \$18 yearly membership fee, 1.5 million Comp-U-Card subscribers can use cable television, home computers, or telephone lines to get access to a product list of more than 50,000 items.

In conjunction with Times-Mirror, Comp-U-Card has tested The Shopping Channel, a two-way-cable shopping service reaching some 150,000 subscribers in six Times-Mirror cable-system test markets. The Shopping Channel's only competitor has been the *Home Shopping Show*, produced by Modern Satellite Network. But it won't be long before the competition stiffens. Warner Amex Satellite Entertainment has announced plans to test its own shopping service, ShopAmerica, in 1983. Theoretically, people watching ShopAmerica should be able to order products by telephone, charge them to their American Express accounts, and have them delivered from regional warehouses within a few days.

All these shopping services are examples of an entirely new form of commercial programming known as the "infomercial." Based on a largely unproven marketing premise, such television spots can entertain consumers while informing them about the merits of specific products.

But unlike home banking, which has proven readily adaptable to a pure data-processing technique (with a few notable exceptions, such as electronic bill-paying and cash withdrawals), any home shopping service must overcome a number of significant logistical obstacles in devising low-cost systems for order entry, accounting, and delivery. The fastest ordering setup in the world could easily be crippled by a reliance on the post office for speed. Setting up an alternate distribution system would daunt companies whose business is the provision of information. But teleshopping still figures heavily in nearly all videotext trials, including the CBS/AT&T test in Ridgewood, New Jersey and Times-Mirror's two-way cable

test in the Los Angeles area; it is projected as part of Warner Amex's Qube operations in Columbus, Cincinnati, Pittsburgh, and Dallas.

"The point of videotext is to help the consumer get through a very complex, noisy world," says John Warwick, director of the Times-Mirror videotext experiment. "We help them to make a decision and act on that decision. Videotext is the only medium in which the user is in total control; we've given the consumer back the level of choice he had before the advent of the electronic age."

"The things videotext does best are ultimately boring," observes Pat Montague of the Birmingham *Post & Mail*, which is active in England's videotext trials. "Videotext is perfectly suited to providing an unprecedented knowledge of the mundane details of life. But it is those mundane details, the transactions, the record-keeping, the storage of information, that do, in fact, seem to make the modern world go round."

STEPHEN FENICHELL

Videotext Goes On-Line

Name	Location	Subscribers	Transmission Method	Services
Qube (Warner Amex)	Columbus, Cincinnati, Pittsburgh, Houston, Dallas	130,000	Cable	News, weather, home banking, CompuServe
Dow Jones News Retrieval	Nationwide	47,000	Telephone	Business news, information
CompuServe (H & R Block)	Nationwide	28,000	Telephone	News, local newspapers, shopping, games
The Source (Readers Digest)	Nationwide	23,600	Telephone or cable	Electronic mail, stock quotes, news, shopping information
NYTIS (New York Times Co.)	International	5,000	Telephone	News summaries, current and back issues of <i>N.Y. Times</i> , business information
Bank-at-Home (Financial Interstate Services)	Nationwide	500	Telephone	Home banking, CompuServe
Pronto (Chemical Bank)	New York	500	Telephone	Home banking, electronic mail
Videotex America* (Times Mirror Co.)	Palos Verdes and Mission Viejo CA	350	Telephone or cable	Home banking and shopping, electronic mail, news, local newspapers, Comp-U-Card
Cox Cable-Index*	San Diego and Omaha	325	Cable	Home banking and shopping, news, information, The Source
FirstHand* (First Bank Systems)	North Dakota	250	Telephone	Home banking, news, local newspapers, classifieds
Venture One* (AT&T and CBS)	Ridgewood NJ	200	Telephone	Home banking and shopping, news, weather, CBS Publications, local newspapers
Day and Night* (First Interstate Bank)	Los Angeles	200	Telephone	Home banking, information
Prestel (British Post Office)	Nationwide	160	Telephone	Information
Viewtron* (Knight Ridder and AT&T)	Coral Gables FL	150	Telephone	Home banking and shopping, electronic mail, local newspapers, information
Bison (A.H. Belo Corp.)	Dallas	150	Telephone	News, information
Citibank Homebase*	New York	100	Telephone	Home banking
Chase Manhattan*	New York	(Not available)	Telephone	Home banking

*Test operation

Source: Arlen Communications Inc.

TELETEXT: GRABBING PAGES OFF THE AIR



THAT HEAVY BLACK LINE that bobs up annoyingly on the television screen when the vertical hold needs adjusting is not as innocuous as it seems. It holds a hidden treasure, the promise of a new kind of broadcasting known as teletext.

In back of the black bar are twenty-one little-used lines of television signal that can do some amazing things. For these lines can carry specially programmed textual material—news headlines, sports scores, restaurant and theater directories, television listings, stock-market reports, airline schedules, recipes, horoscopes, classified ads—that the viewer may call up at will, either on a blank screen or superimposed on the television image.

Moreover, each of these “pages” of information can be sponsored. The border may read: “Pepsi Presents the Weather Report.” Teletext, then, is potentially a new source of income for a television station, which is why technologists now call the black bar hiding below the screen “the most valuable piece of real estate on the electromagnetic spectrum.”

The black bar is known as the vertical blanking interval, and before the invention of teletext its main purpose was to guide the electron gun in the television set. That gun shoots a beam of electrons horizontally for 525 lines, going from left to right and top to bottom, to create one picture. The process takes one-thirtieth of a second. When the beam hits the 505th line—the start of the vertical blanking interval—it is sent back to the top and starts the process anew. The blanking interval needs only one line to signal the end of a video frame, yet there are twenty-

one lines in the band.

Some of these lines are now being used in sets that have automatic color adjustment, and line twenty-one is reserved as a closed-captioning service for the hearing-impaired. (Specially equipped television sets can display superimposed captions over the regular picture.) Teletext, in the experiments now underway in the United States, uses two other lines of the blanking interval to transmit a “magazine” of some 100 pages of topical information. This information is digitally encoded into the blanking interval by the broadcaster; households equipped with a decoder are able to call up any of the pages to their screens with a waiting time of no more than seven seconds.

Teletext—as opposed to videotext—is one-way, meaning that consumers cannot request specific information, but can only receive what is being sent. Using a handheld keypad, a viewer punches in a page number from a subject index, and the television set “grabs” that page for display the next time it whizzes by in the cycle of pages being broadcast. Since the sender decides what the pages will con-

tain, teletext is similar to a regular magazine. But teletext enjoys one important advantage over its print counterpart: Information can be continually updated.

The first full-fledged teletext service was Britain’s Ceefax, which was started by the BBC in 1976 and now has about half a million subscribers using its television listings, news headlines, basic video games, and sports scores. Oracle, a similar system, also operates in Britain on the independent (commercial) network and is the world’s first advertiser-supported teletext service. The French entered the market with the Antiope system, which is technically more flexible than the British versions, since it can be broadcast over FM radio as well as the standard television signal.

But perhaps the most sophisticated teletext system of all is Canada’s Telidon, which offers more detailed graphics than competing systems. In the United States, Telidon has the additional advantage of conforming to a technical standard adopted by AT&T and CBS. Nevertheless, each of the teletext systems has picked up proponents in the U.S., and it remains unclear

which will prevail.

This question is just one of many that a series of trials around the country is attempting to answer. Assuming people are willing to read their television screens, what will they want to see? Will advertisers be willing to sponsor “pages”? Who is in the best position to “publish” teletext—the networks, local affiliates, or newspapers? What effect will the new service have on conventional broadcasting? And finally, is there a large enough market for electronic publishing to support both teletext and videotext?

Since most of its hardware is already in place, teletext has the advantage of being cheaper and easier to launch. By the end of 1982, Keyfax will have started the first commercial teletext service, transmitting 100 pages of news, information, and advertising to cable subscribers who receive superstation WTBS, for a monthly fee of \$20 (which covers rental of a decoder and keypad). And both CBS and NBC have announced that, pending FCC approval, they will launch national teletext services sometime next year.

GARY ARLEN

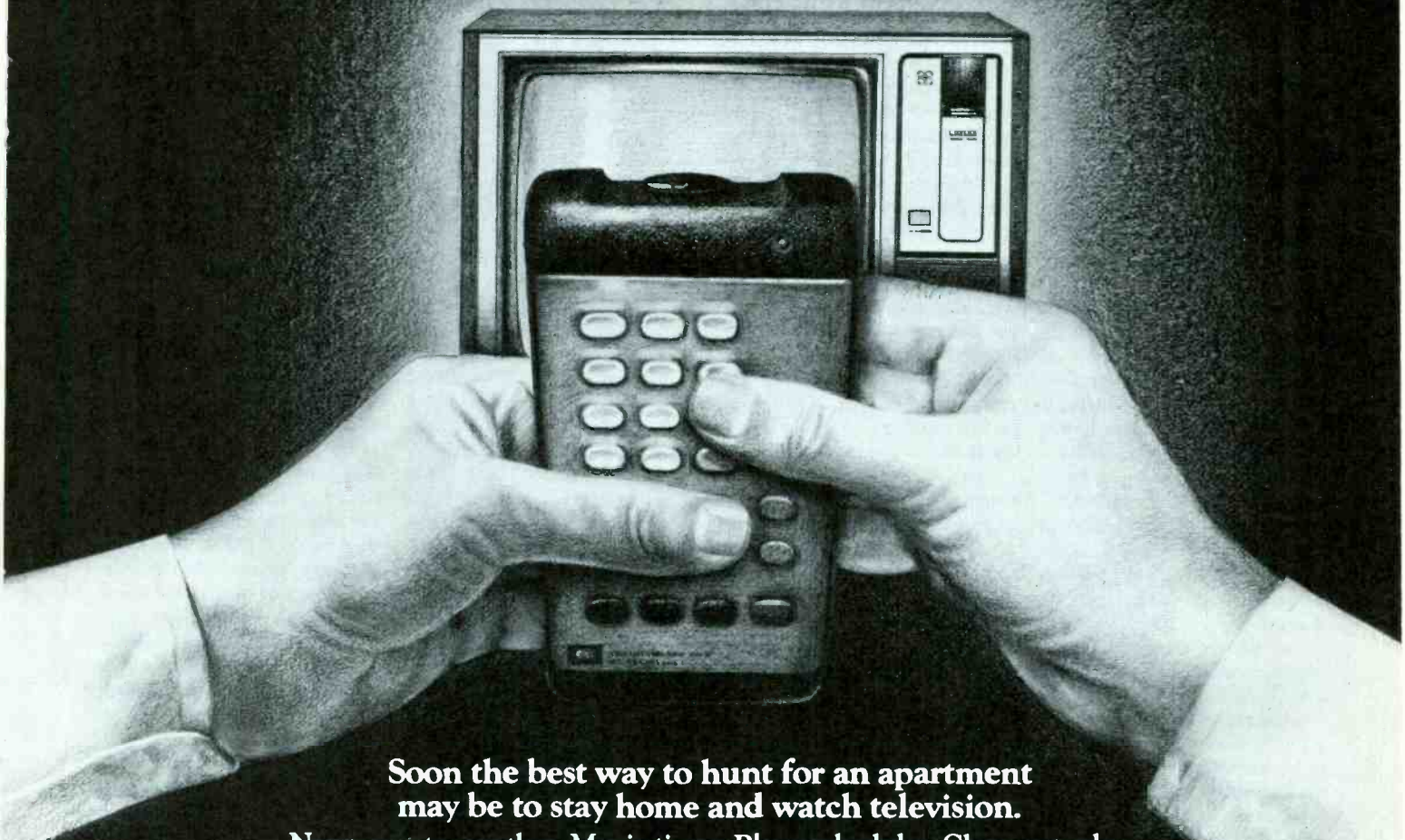
Teletext Takes to the Air

Name	Location	Format	Subscribers	Services
Telecaption (Sears & Nat'l Captioning Inst.)	Nationwide	Line 21	60,000	News, captioning for the deaf
Cabletext* (Time Inc.)	San Diego, Orlando	Telidon	400	A full-cable channel with 5,000 pages of news, information, features, recipes
CBS Extravision* (with KNXT, KNBC, KCET)	Los Angeles	Antiope	100	News, travel information and schedules, classifieds
DirectVision* (Group W with KPIX)	San Francisco	Antiope	75	News, shopping information, classifieds
WKRC*	Cincinnati	British	25	Local news, sports, information
WETA/Alternate Media Center*	Washington	Telidon	Selected public places	Washington Post, N.Y. Daily News, U.S. Weather Bureau
Farm Market Infodata Service	Denver, Tampa, Fresno, Fargo, Springfield MO	Line 21 (via local PBS stations)	(Not available)	Agribusiness news
Keyfax-by-Satellite (KEYCOM Electronic Publishing)	Nationwide	British (via Superstation WTBS)	(Not available)	100 pages of news, sports, information, and advertising

*Test operation

Source: Arlen Communications Inc.

A NEW WORLD AT YOUR FINGERTIPS.



Soon the best way to hunt for an apartment may be to stay home and watch television.

News, sports, weather. Movie times. Plane schedules. Close-out sales. Stock prices. Theatre tickets availabilities. School closings. Classified ads.

Retail information. Program captions for the hearing-impaired.

All this and much, much more. At your fingertips when you want it, for as long as you want it. Thanks to teletext, your television set will be converted into a 24-hour communications center. With the aid of a special decoder, you can receive printed up-to-the-minute information to make your life easier.

CBS has been a pioneer in the development of teletext in the United States, actively testing the technology since 1979, and broadcasting an on-screen "magazine"—called Extravision™—over KNXT Los Angeles since 1981. Feedback has been exciting. In the future our service will be offered nationwide and made available to stations affiliated with the CBS Television Network.

A new source of information you can't get anywhere else. New access for the hearing-impaired. New convenience for everyone.

It's all at hand!

EXTRAVISION™
©CBS

ELECTRONIC MAIL:

VERY SPECIAL DELIVERY

ANYONE who has spent countless days waiting for that important piece of mail to arrive knows that rain, snow, sleet, and hail are often the least of the post office's problems. By the turn of the century, though, there will be no more waiting. Important mail will arrive not in days, but in seconds—directly into your living room.

Electronic mail (EM) could turn out to be one of the most widely used offspring of videotext as home terminals become common household appliances. Sending a letter will merely require typing the message on a home-computer keyboard. The words are transformed into bursts of digital data, which are transmitted as electrical signals over telephone lines or interactive cable television. Central computers sort and deliver the message to the "electronic address" of the recipient's home computer, where the signal is reconstructed into words on a screen or printed on paper.

By replacing the mail carrier with computer-to-computer chatter, EM will handle personal communications faster and more reliably than the post office ever could. But the benefits of EM go well beyond speed and efficiency. Electronic mail will extend the benefits of telecommunications to some groups that have previously been excluded. The hearing-impaired, for instance, were untouched by the miracle of the telephone, but EM will give deaf users, for the first time, instantaneous access to a distant network of friends and business associates. EM will also allow user groups with common interests to link up and share the latest information instantly and inexpensively. Professionals ranging from accountants to zoologists, adoption and disaster-relief workers—all will create their own open-party lines, electronic bulletin boards serving their individual interests.

Currently, home use of EM is limited to subscribers of such services as The Source and Compu-

Serve, networks that offer anyone with a computer terminal access to information banks through telephone lines. But eventually, you will be able to compose a wedding invitation on your home terminal and transmit it simultaneously to the entire universe of your friends and relatives—and the machines will keep track of the RSVPs. If that strikes you as a saver of time and money, then imagine how eager the executives at your local bank or utility will be to mail monthly statements, which are already computerized, directly to their customers with a single command.

The huge volume of business communications makes EM a natural for corporations, and not just for their bills and monthly statements. Internal company com-

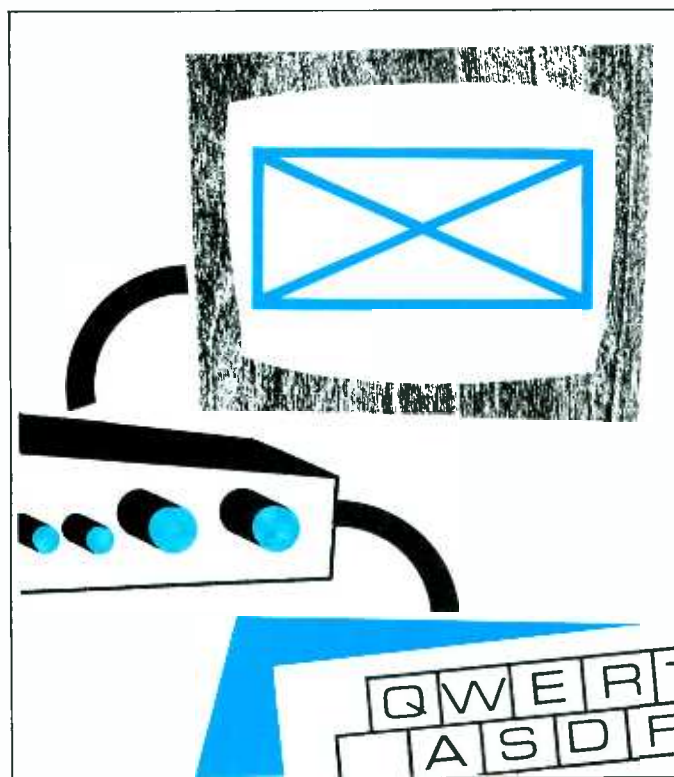
munications, such as memos, charts, or reports that must circulate among offices and factories all over the world, can be distributed by EM and updated instantly. GTE's Telenet, a pioneer in business EM, provides a service called Telemail, which allows traveling executives to tap into their personal "mailboxes" from any location using a briefcase-size portable terminal and a telephone. So promising is the commercial potential of business EM that the competition in that field is fierce and strictly blue-chip. Joining GTE and Tymshare in the office-communications market are Exxon, Xerox, ITT, and IBM. Other computer manufacturers are expected to enter the fray, but the one player watched by everyone is the sleeping giant of the communi-

cations field, American Bell. Among the first words Ma Bell's unregulated child utters will be electronic mail—spoken through Western Electric's "smart" telephones, which will communicate over the company's long-line system.

All these developments spell big trouble for the U.S. Postal Service. Eighty percent of all first-class mail comes from business; according to recent estimates, one-quarter of first-class mail volume could shortly transfer to EM, thereby crippling the USPS. Enter ECOM (Electronic Computer-Originated Mail), USPS's \$40 million counterattack against the telecommunications giants that would dare steal their lucrative business customers. ECOM allows bulk mailers to transmit their messages electronically over phone lines to computers in twenty-five specially equipped postal centers across the country. The computers sort the mail by postal zone and transmit it to the appropriate ECOM post office.

But that's where ECOM's resemblance to electronic mail abruptly ends. As the messages arrive at the local ECOM office, they are printed out, stuffed in special blue-and-white envelopes, and delivered by mail carriers. Delivery is guaranteed within two days. In concessions to postal unions and potential competitors, USPS has vowed never to extend ECOM's reach directly to any recipient's terminal, a fatal limitation for any EM service. As a result, the bulk mailers who were expected to use ECOM to send nearly 30 million pieces of mail per year have been staying away in droves: in the first ten weeks of operation, ECOM's volume did not even reach 1 percent of projections. As business customers begin to defect to commercial EM suppliers, postal revenues will plunge and service will worsen. By the year 2000, we may not have the post office to kick around any more.

MARTIN KOUGHAN



"The post office had better watch out: EM, one of the most promising offspring of videotext, can deliver important mail directly into the home, instantly."



WESTINGHOUSE BROADCASTING AND CABLE, INC.

Group W Radio • Group W Television • Group W Cable • Group W Productions • Filmmation Associates •
Group W Satellite Communications • Group W Television Sales • Home Theater Network • Muzak •
Group W Radio Sales • TVSC

HOME VIDEO: GEARING UP FOR MORE

BY DAVID LACHENBRUCH

IT BEGAN with the screen in the living room. Although activated by its owner, the home screen was at least equally in the service of those fortunate enough to own a television station. Today the screen looks much the same, but it has been changed irrevocably. A group of new technologies, known as the "video peripherals," make it possible to originate programming in the home, shifting complete control over the screen to the living room.

The transformation of the box from a receiver to an all-purpose display device began in 1972, when Magnavox introduced the first home-video peripheral, a game called *Odyssey*. The precursor of today's burgeoning video-game industry, *Odyssey* was the first device that let viewers put images on their screens and control them. And though these images were intended to entertain, they bore no relation to broadcast programming.

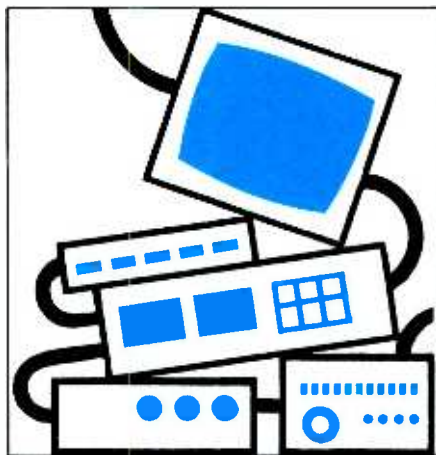
The video game is the most successful peripheral to date. An estimated 4 million games for home TV sets were sold in 1981, and the 1982 figure is expected to be double that.

But the video game is viewed as a transitional product that eventually will merge with the home computer. Computer prices have already fallen to equal those of deluxe video games. More than a million home computers—that is, computers sold as consumer products, not "personal" computers for business use—were sold in 1982, and as early as next year the line between games and computers should begin to blur.

Games and home computers are video peripherals only inasmuch as they happen to use the television screen for display. They really have nothing to do with television except that they compete with it for the user's leisure time—but then, so do swimming pools, books, and non-electronic games. And although the use of a computer or game by one family member ties up the television screen, it's unlikely this situation will continue for long. Most home computers will soon have their own video monitors, leaving the family set free again for television.

More truly competitive with broadcast and cable television—since they offer similar entertainment—are two other popular video peripherals: video-cassette recorders (VCRs) and video-disc players.

The VCR was first introduced as a



A new generation of 'video peripherals' gives us more control over the home screen than ever before.

product for the home by Sony in 1975, and close to 4.5 million are now in use in more than 4 percent of America's television homes. Sales in 1982 are expected to exceed 2 million (up from 1.4 million in 1981).

So far, the growth of the home VCR industry closely parallels that of color television. Annual sales of VCRs in their first seven years on the market match, almost unit for unit, those of color TV sets from 1959 through 1965. If this trend continues, nearly 5 million VCRs will be sold in 1983, which will exceed the most optimistic forecasts of the industry. Whether or not sales reach that level, they are expected to remain strong as the VCR's versatility and ease of operation improve and prices drop.

The home VCR can be used in three ways: to tape television programs, to view prerecorded cassettes, or with the addition of a home video camera, to tape home "movies."

The vast majority of home VCRs are purchased for taping television shows for later viewing. Since a VCR records independently of the television set (it actually comprises a color TV set minus picture tube, loudspeakers, and related circuitry), it can record a program while another is watched on the home set. Virtually all home VCRs have on-off timers, so they can be set in advance to record programs while the viewer is away, asleep,

or otherwise occupied. Many have multi-day (or even multi-week) and multi-channel timers, that turn the machine on, record a designated program, turn it off, then repeat the procedure on a different channel at a specified time, and so forth. Thus, home VCRs are used to unlock programs from television's rigid time slots. With a VCR, any time is prime time.

Used in this way, a VCR can add to the total time spent viewing broadcast or cable television. The rating services recognize this and tally VCRs just as they do TV sets. If a family is watching a program while taping another, both shows are counted as viewed, on the theory that the taped show eventually will be watched.

Most recent-model VCRs have various "special effects" features, and manufacturers vie with one another to add ingenious new ones. Already some machines have variable fast and slow motion in forward and reverse, stop-action, and single-frame advance. There's no record of how often these special effects are used, but it's believed to be infrequent after the first week or so of ownership. An exception is "visible search" or "scan," used to zip through commercials when they've been recorded along with a program.

Whether scanning features negate the value of commercials is arguable. In scanning a commercial at ten to twenty times normal speed, the viewer must pay close attention to the screen so he doesn't overshoot the commercial and cut into the program. The effect may be subliminal, but the ad certainly has more impact than one transmitted while the viewer is foraging through the refrigerator.

Casting a small shadow over the VCR industry, an appeals court ruled last year that home recording of copyrighted material violates the law. The Supreme Court has agreed to review the decision this term. In the meantime, Congress is considering legislation to amend the Copyright Act to make taping for home use legal, and perhaps to levy a fee on sales of VCRs and video cassettes to reimburse copyright owners. Whatever the outcome of these widely publicized judicial and legislative activities, it's not likely to have much effect on future sales or on use of recorders.

In a novel application of VCR technology, ABC and Sony have conjured up the Home View Network, which is expected

to start transmitting pay television programming in 1983 to an audience made up entirely of machines. The network will use its affiliated stations' early morning off-air hours to transmit scrambled programs to home recorders preset to turn on in the wee hours. The shows can be viewed at the subscriber's convenience with the help of a decoder rented on a monthly basis. The Home View Network ingeniously skirts the copyright issue, since the decoder can be programmed to stop unscrambling after a certain period of time.

The second purpose for which VCRs are used is to play prerecorded tapes. Most of these consist of movies, although some original material is produced for cassette (the most popular of which is an exercise tape with Jane Fonda). All the major studios release their movies in this medium, generally before they make them available to cable television. It's estimated, however, that fewer than half of all VCR owners regularly view prerecorded tapes. Many stores specializing in the sale of tapes have already gone bankrupt, as the prerecorded-cassette market changed to a predominantly rental business.

The third use for video recorders, and the least popular, is as a substitute for a home-movie system. Despite much weight-cutting in the last two years, color video cameras and recorders still constitute an awkward encumbrance on a vacation.

Overproduction in Japan, the source of all the VCRs sold in the United States, resulted this year in excess inventory and sharp price reductions. Basic recorders now can be bought for under \$400, and while the most deluxe high-end units list for prices of \$1,500 or \$1,600, they often are advertised at less than \$1,000. All of this has helped to boost sales sharply, even in the middle of a recession.

Two incompatible VCR formats, Beta and VHS, exist side by side, with VHS now commanding more than 75 percent of the market. The VHS system initially gained its edge by offering more recording time per cassette (originally two hours compared with Beta's one). The issue is almost moot now, since time on both systems has been multiplied through slower recording speeds and longer tapes. VHS now has a maximum recording time of eight hours on its longest-playing cassette versus four-and-a-half for Beta.) The VHS manufacturers are now offering machines that can record and play back stereo sound, and in 1983, the Beta manufacturers plan to add an FM multiplexed stereo soundtrack, which should result in the first true high-fidelity sound on home VCR.

But now, after only seven years, both Beta and VHS could be near the end of their run as home VCR technologies. In Japan, a committee of manufacturers has

nearly completed work on a new format using one-quarter-inch-wide tape—half the width of the current systems—in a cassette just a little larger than an audio cassette. Although designed especially for compact, combination camera/recorders, the new format is expected to become standard for all home use. The first machines using the new mini-tapes could be available as early as 1984.

The other major home video technology—the video-disc player—has suffered from inflated expectations and deflated VCR prices. Given a choice between a machine that could record and one that could not, the public bought VCRs instead of disc players. Like the VCR, there are two incompatible video-disc systems, but in this instance there are major differences in the capabilities of each. RCA's CED player is basically a video version of the phonograph—it consists of a stylus and a grooved disc—whose main virtues are its price and simplicity of operation. The costlier and more technologically advanced Laservision system fielded by Philips and Pioneer offers sophisticated interactive features and can be used in conjunction with a computer.

Despite the differences in their capabilities, both video-disc players are generally used for playing preprogrammed material with high quality sound and picture, and both systems do this well indeed. The CED system currently offers a catalogue of more than 300 discs, LaserVision more than 250. The ultimate success of both will depend almost entirely on the pro-

gramming they offer and the continued ability of their corporate parents to pour in cash during the development period.

The RCA-developed CED system bombed when first introduced in 1981, but is now gradually picking up momentum at a new base price of \$299.95, down \$200 from the introductory figure, with new "high end" units featuring stereo sound and wireless remote control.

RCA's dramatic price reduction was designed to get its almost stillborn product moving. But it also was a calculated decision to take the profits on the blades instead of the razor. RCA had been amazed to find customers bought more than thirty records per player in the first year of ownership, and not the ten to twelve it had projected originally.

The growth of the peripheral-equipment market is leading to changes in the TV set itself. As pioneered by Sony and embraced in one form or another by a dozen television brands, the new television is evolving into a "video component ensemble" similar to audio component systems, with separate monitors, sound systems, and tuners. These component systems make it easy to plug in the various peripherals, and offer improved pictures and sound.

Translated loosely, "television" means "viewing at a distance." Applied to the box with the screen in the living room, the new peripherals make the word obsolete, since the distance between an image's source and the set may now be only a few inches. The "home video system" has arrived.

VCR, SONY; VIDEO-DISC PLAYER, RCA; COMPONENT TV, PANASONIC



The television set is evolving into a "video component ensemble," with separate monitors, tuners, and speakers (right), allowing components such as video disc players and VCRs (left) to be added on easily.

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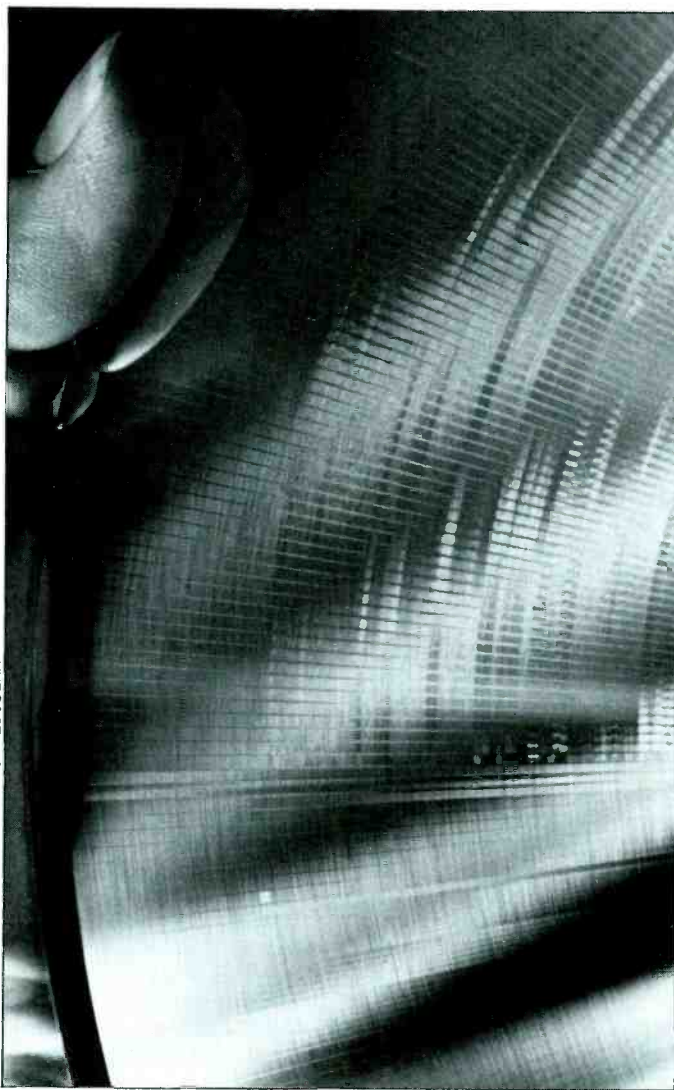
OPTICAL DISC:

THE AMAZING VIDEO MACHINE

SITTING before a screen, you are driving yourself down the main street of Aspen, Colorado. At the first intersection, you touch an arrow on the left side of the screen—and make a left turn onto another street. Midway down the block you come upon a handsome old hotel, stop to examine the architecture, touch the building—and you are inside. Once there you can hear a history of the building by touching it again. And then you can return to your drive, touring Aspen in any order you wish, turning right or left at any crossing.

This is the video travelogue to end all, a trip through a city routed entirely at the viewer's whim. The Aspen Movie Map, as it is called, is a triumphant demonstration of what an interactive technology known as the optical video disc (also known as the laser disc) can do when linked with a computer. The team from the Massachusetts Institute of Technology that created the Movie Map disc in 1977 exploited as never before the optical disc's extraordinary storage capacity—each side contains 54,000 frames of audio and visual information—and random-access capability allowing the viewer to call up any one of those frames instantly. The viewer can control the disc by means of a system of buttons, or a stick, or as in this case, a touch-sensitive screen. In its best use, the optical disc—which looks like a highly polished platinum record—is not played sequentially but randomly. With the Aspen Movie Map, for instance, the viewer can make a building appear bathed in sunshine or shrouded in snow by “accessing” a different set of frames.

It is hard to believe that a device capable of such miracles is not already the pride and glory of the new television age. In fact, the optical disc, having arrived in the midst of the development of cable and satellites, has all but gotten lost in the welter of new electronic marvels. The laser disc had the misfortune of arriving in a television-saturated market, at the



PIONEER VIDEO DISC PHOTOGRAPHED BY JAMES JOERN

This optical disc contains 54,000 frames, which can be viewed in any order and at any speed, by moving a low-power laser beam across the disc's surface.

height of the enthusiasm for cable, and well after the introduction of the home video-cassette recorder (VCR), with which the disc inevitably is compared. Why would anyone want a disc player, the argument runs, when for about the same price you can buy a VCR that not only plays back prerecorded tapes but can also record programs off the air? This astonishing new technology, which should send minds spinning, is faulted instead

for its inability to record.

The laser disc had the additional bad luck of arriving at about the same time as another kind of video disc, which can do much less, but which has been marketed a lot more aggressively. When most people hear the term video disc, they think of RCA's SelectaVision, which plays back prerecorded audio and visual material sequentially, like a phonograph record, moving a needle through

grooves. But the laser disc is based on an entirely different technology, and is likely to have an altogether different destiny.

In the laser optical video-disc system, a low-power laser beam “reads” billions of microscopic pits etched into the disc. The beam scans each of the disc's 54,000 frames for a thirtieth of a second; it can stop at any frame for scrutiny, can move in fast or slow motion, and most important of all, can race from any one frame to any other in no more than three seconds, using a capacity known as “random access.” The disc can only play back prerecorded material; an official at Pioneer Video, which is developing laser optical software, reports that efforts to overcome this limitation have been more or less abandoned.

Pioneer offers a catalogue of about two hundred disc titles, consisting mainly of movies and concerts. The company's reliance on movies may help account for the relatively disappointing sales of discs and players. Not only do movies fail to exploit the disc's capabilities, they also put the disc in competition with more established systems for delivering movies to the home, such as VCRs and pay cable.

The movies are likely to drop away, however, in favor of participatory programs now being designed, including maze games and how-to classes in jogging, cooking, “jazzercise,” and even in watching professional football. The viewer can thread his way through the program, play along, and answer questions, all at his own pace. The First National Kidisc explains how to dance, make paper airplanes, tie knots, all by ingeniously exploiting the fast- and slow-motion and freeze-frame capabilities of the laser disc.

But the disc's greatest contribution may not be to the mass market. As the Aspen Movie Map suggests, the laser disc holds out some thrilling possibilities for education. Much research is being done in this area, and the Department of Education is sponsoring an ambi-

OPTICAL DISC

tious television/video-disc computer project. But no one can safely predict whether this formidable tool will ever have a major effect on the schools.

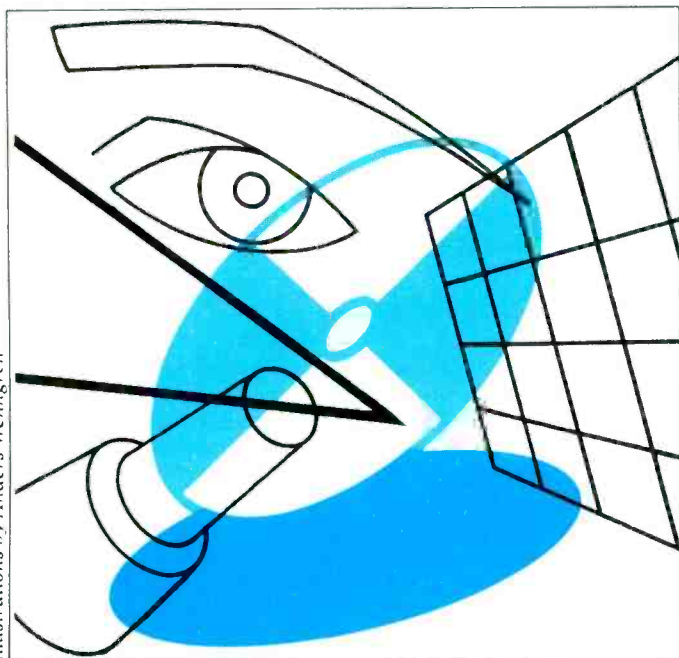
The laser disc's random-access capability and its prodigious storage capacity make it an ideal device for cataloguing, and the National Gallery of Art is making use of this capacity in a video-disc tour through its galleries. You can also use a laser disc to browse through an experimental Sears Roebuck catalogue, or to survey car features in a General Motors showroom.

Where the laser disc will undoubtedly make its mark is in occupational training. The leading software developer, WICAT Systems, based in Utah, charges in the neighborhood of \$250,000 per custom-made, computer-controlled disc, and suffers no lack of customers. It has devised maintenance training courses for the U.S. Army, a course in cell biology for the National Science Foundation, and marketing programs for IBM. Its *Diagnostic Challenges in Gastroenterology*, a series of medical simulations developed for the firm of Smith Kline & French, engages

the doctor in a "conversation" with a patient. To deduce the patient's illness, the doctor can order lab tests and review the results on-screen. After the diagnosis and treatment, he receives a critique of his performance from a computer hooked up to the disc.

Even these achievements seem prosaic, however, when compared with the most recent experimental partnerships between computers and video discs. The paring is spawning programs like 3D Movie Maps (which allows the viewer to either "fly over" or "drive through" an area) and a micro-travel system (which gives the viewer a tour through the workings of a jeep engine). Perhaps most astonishing of all is the Talking Map, in which the computer takes note of the armchair traveler's location, speed, and direction, sifts through its stores of information, and tailors its comments to the situation and the time available. The tour guide's voice still sounds a little mechanical, but technological improvements should soon make it a completely intelligible and intelligent "traveling companion."

JAMES TRAUB



Illustrations by Anders Wennegren

PROJECTION TV: THE LITTLE SCREEN GROWS UP



TELEVISION is most arresting on a large projection screen. Liberated from the little glass-windowed box and elevated to something resembling a movie, it becomes, in any room or circumstance, a presence difficult to ignore. The big curved screen alters the viewing experience and one day could well alter television itself. Few would doubt that large-screen projection receivers represent television's future.

In recent years, important technical innovations have done wonders for large-screen television. The original front-projection units almost required rooms of their own to achieve the proper distance between the lenses and the screens; that problem was solved with rear-projection models incorporating all the circuitry and lenses in a single unit. Picture quality has improved markedly as well. The older models were troublesome because their delicate screens could be damaged merely at a touch. This concern has also been eliminated.

Yet for all its virtues and refinements, large-screen projection television remains an idea whose time still hasn't come.

The promotional hoopla continues to be larger than unit sales. Some 200,000 projection television sets were sold in 1982, compared with 120,000 in 1981 and

only 52,000 the previous year. On its face, this is an impressive rate of growth. But the rude fact is that an entire year's worth of retail sales for projection television is about equal to a single week's worth of sales for conventional TV sets.

Price, mainly, has been the big deterrent to the long-anticipated market breakthrough. For all their trying, manufacturers have not been able to produce units that will sell for much below \$3,000 retail. In contrast to the video-cassette recorder (VCR), whose price has dropped to almost one-quarter the price of the first Sony Betamax in 1975, large-screen television—which has been around much longer than VCRs—has had no dramatic price decline.

Another deterrent is space. Where in the home do you put a large-screen set that actually commands viewing? In today's economy, people are not apt to expand the size of their homes for the sake of television.

Proliferation of large-screen receivers will take more time than the pioneers of projection TV imagined. Indeed, time has already run out on the first company in the field. Advent went out of business in 1981.

S.G.



A large-screen TV made by Zenith. The image is projected from behind.

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Suburban Cable TV, New Jersey

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Group W Cable, Washington

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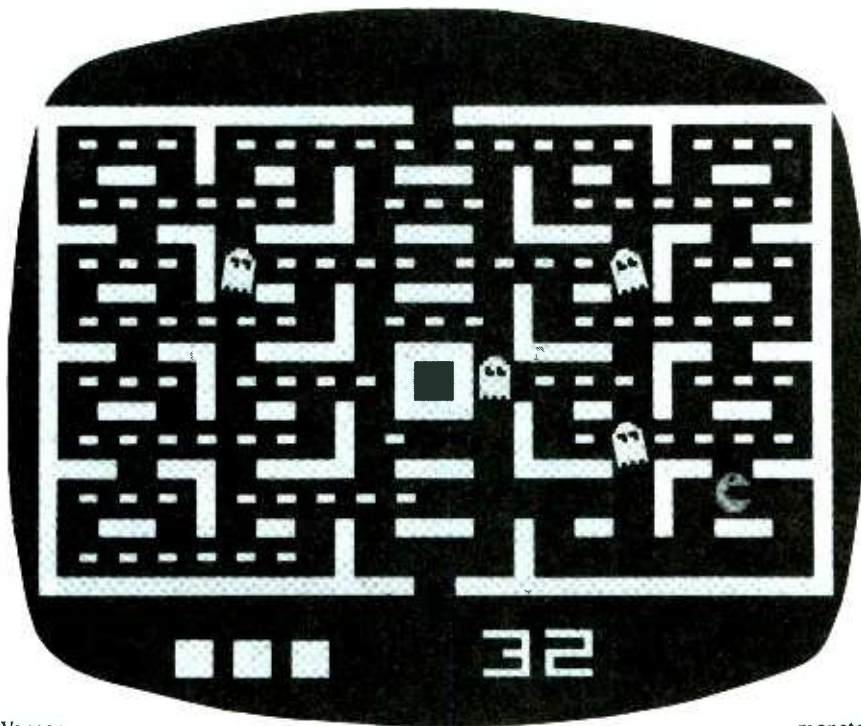
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VIDEO GAMES: THE SUGAR-COATED COMPUTERS



VIDEO GAMES, as Warner Communications Inc.'s 1981 annual report grandly puts it, have "reached the proportions of a sociological phenomenon." While other information technologies promise to change daily life some day soon, these computer-driven games have already changed the habits of millions of adolescents, as well as the rules of the entertainment industry. In 1981, the *annus mirabilis*, movies grossed \$3 billion, while the six-year-old video game business grossed \$6 billion.

One of the first games was Pong, a modest electronic amusement invented in 1972 by a young tinkerer named Nolan Bushnell. Although Pong didn't take, Bushnell went on in 1975 to start a California company that did: Atari. Capitalizing on the development of the microcomputer, Atari began developing such computerized games as Space Invaders and Asteroids. Today Atari, which also produces personal computers, is a billion-dollar-plus subsidiary of Warner, and the colossus of the video-game industry.

Video games come in two varieties: those for the home and those for an arcade. Both involve a microcomputer, a screen, and a set of hand controls. Because the arcade games use a more powerful computer, they are capable of more spectacular effects. But the home video-computer system (VCS) has the same powers as a fairly simple home computer, with a bonus of snappy graphics and sound effects. The VCS plugs readily into a television set, which saves the cost of buying a screen. The games come in the form of cassettes that fit into a slot in the VCS, and are controlled by "joy sticks," or paddles, which also plug into the VCS. The VCS can cost as little as \$135, with cassettes running between \$20 and \$40—a steal when compared to the mountains of quarters the dedicated player feeds into an arcade game.

VCS units are being purchased about as quickly as they can be made, although buyers of the Atari VCS cannot use games designed for the principal competition—

Mattel's Intellivision—and vice versa. Eight-and-a-half million homes now have video games, and some analysts predict that by 1985, 50 percent of America's 80 million homes with television will have them, making them more plentiful, for example, than cable television—which will itself become a servant of video games. Mattel, with General Instrument Corp., has already launched Play-Cable, a channel offering Intellivision owners televised video games—in effect, rentals—twenty-four sleepless hours a day.

Some games have already become as well known as household cleansers. The most famous of them all, Pac-Man, is expected to earn Atari on the order of \$200 million. In Pac-Man the player rushes around a maze "eating" dots before being engulfed. This is considered an unusually peaceful game motif. In Freeway, two players compete to get as many chickens as possible across a ten-lane highway before a car or a truck crushes them or time runs out. The "first

monster-movie computer game" is entitled Crush, Crumble, and Chomp.

Anyone who has walked past a video arcade in the middle of the night and watched adolescents apparently locked in a state of high-tech narcosis may have concluded that video games can be hazardous to one's health. But the similarity between games and more edifying forms of computer work is also too obvious to ignore. Some of the software available for computer use in primary schools involves "math games" or "spelling and reading games," the game being both a form of sugar-coating and a way of organizing the adventure of figuring something out. This development has not been lost on the computer makers themselves. Manufacturers of game computers have begun advertising them to parents as an opening wedge for wider computer use, encouraging buyers to "upgrade" later with keyboards and printouts, while manufacturers of personal computers emphasize their dual use as gaming devices.

JAMES TRAUB

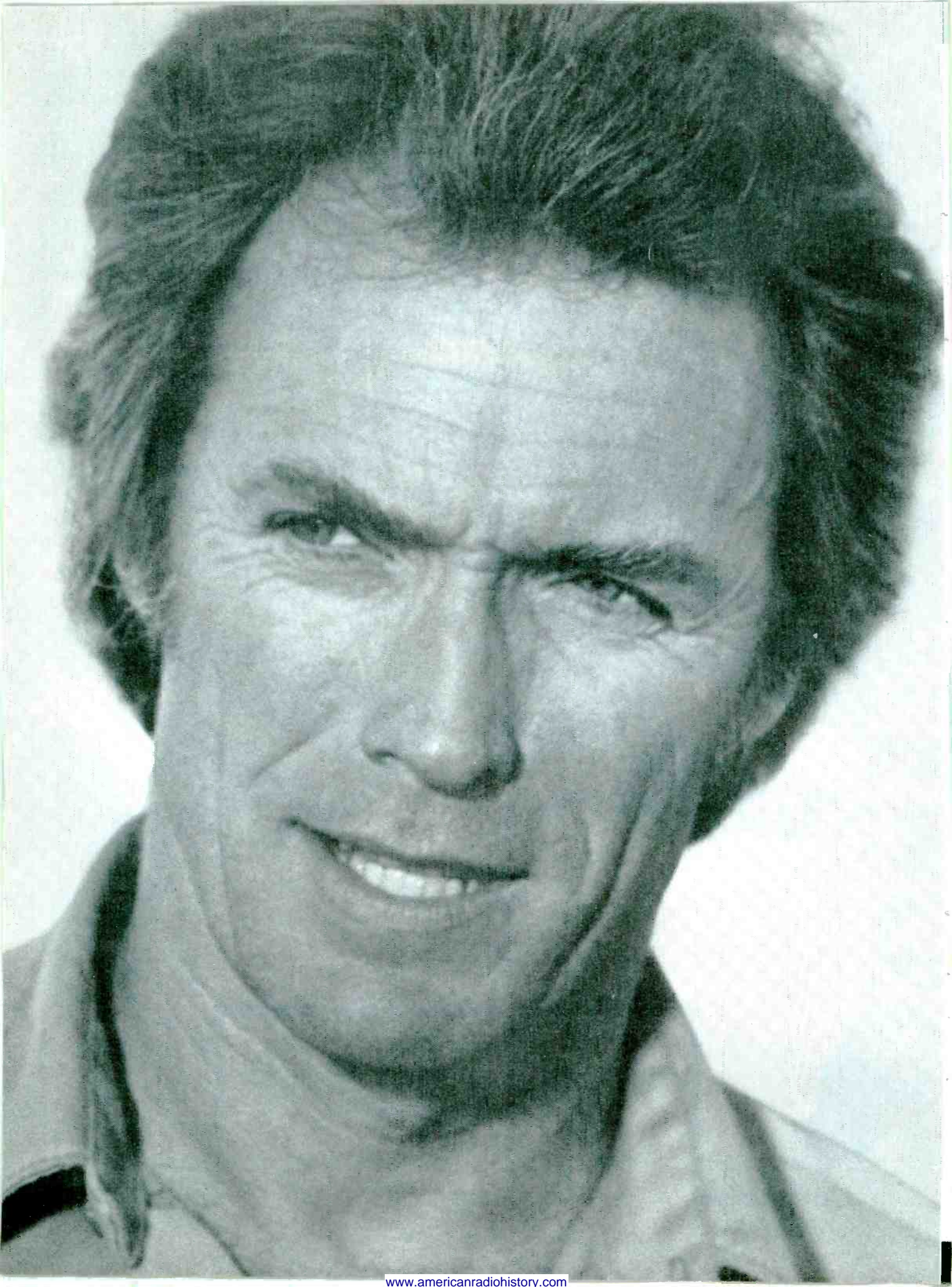


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EASTWOOD



"Directing is knowing the concept you want and getting it."

As an actor, Clint Eastwood has proven to be the fastest draw in the Western box office. His films of the last ten years have grossed \$1.4 billion, and he has been named "Star of the Decade." But much of his energy goes into his own production company, Malpaso Productions. He is unique in turning scant budgets (\$3.5 million for *Every Which Way But Loose*) into extremely high returns (over \$87 million for that same picture). He has directed eight features, including *The Outlaw Josey Wales* and *Bronco Billy*.

"I shoot fast. The first feature I ever directed—*Play Misty for Me*—was wrapped in a little over five weeks. *Breezy* was completed in less than five weeks. It's not just a matter of money. I like to have momentum, to keep the spirit and energy going. To me, directing is knowing the concept you want and getting it.

"Shooting on location is easier, because a crew gets wrapped-up in the spirit of the film. I cast my crews as carefully as I cast my actors. That's why we have such happy, democratic crews. And we move—I try not to keep people on location too long.

"A director should change camera angles a lot. My theory is, when you're looking at a film, you're looking at a flat piece projected onto a flat surface. The only way you can approach a 3-D feeling is to cross over and get the camera right in there. So the audience can feel a part of a group rather

than just observers of a group. Camera work is a lot like penmanship. The way you film a film says as much as the way it's written.

"Casting is one of the most important aspects in making a film. A film can live or die on it. The cast has to bring those characters to life. If you miscast a character, or one stands out wrong, you can throw the whole picture out of whack. It's like having a pebble in your tire.

"People say I know just what the public wants. I don't think the people themselves know what they want until they see it or hear about it. One should judge a property simply by whether or not one would like to go see it. There's a lot of gut instinct going when buying or rejecting a property.

"A lot of critics thought *Dirty Harry* was sort of a right wing film. It wasn't at all. It portrayed the circumstances that one guy was put into, and showed the frustration with our courts and our judicial system. Which is all very timely even today. The film was just ahead of itself. I try to say something different in every film, and this one is about that frustration. *Play Misty for Me* was a little statement on commitment and misinterpreting commitment in men and women. There is no 'Clint Eastwood message.' There are lots of different messages.

"I also try to find a look for each of my films. In *High Plains Drifter* the Mono Lake location, the mirage effect, the telephoto lens work, and especially the scorched,

almost flaming look, all contributed to what I was trying to say. The last was achieved with an Eastman color negative film, which gave me the really black blacks I wanted without pushing the film at all.

"For my latest picture, *Firefox*, we used the new Eastman color high-speed negative film 5293. We must have been among the first to use it in a feature. We were doing a lot of front-screen projection versus live action. We were also getting a lot of deflection. We figured the new high-speed film would save time and lighting, and we were right. We used very little supplemental lighting and got great definition. The scenes also inter-cut very well with the rest of the footage. It was the right film for the problem."

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PERSONAL COMPUTERS:

BRINGING THE INFORMATION AGE HOME

COMPUTERS have grown smaller and smaller and cheaper and cheaper, and ever more familiar: so much so that they appear less like terrifying, alien instruments bound to subvert human nature, and more like technological house pets and ingenious home appliances. Indeed, the fact that the computer can be readily hooked up to that most familiar of appliances, the television set, in order to play games and scan information, has probably helped domesticate it. The popularity of video games has had a like effect: A whole generation of children has been introduced to the microcomputer in the form of such games as Pac-Man and Space Invaders, and has gone on to gain a much wider fluency with this miraculous device than have many adults. But since 1977, when three decades of miniaturization culminated in the advent of the television-size object known as the personal computer, children and adults alike have assimilated it into their lives with unimaginable speed.

The personal computer, like all computers, may be thought of as possessing four parts. The central processing unit (CPU) does all the heroic labor of analyzing and calculating—playing chess or games, figuring your budget, and so forth. But the computer not only processes information, it also stores it in immense quantity. Much of the inside of a computer, which consists of thousands of miniature circuits etched on silicon chips aligned on a series of boards, is devoted to memory. Since a good portion of this memory is wiped clean with each use, information must be preserved on the second component—either an ordinary cassette tape or a “floppy disk” roughly the size of a 45 rpm record.

The third part is an input device, a means by which the user talks to the machine. This is ordinarily a typewriter-type keyboard, or in the case of most video games, a series of hand controls. The final element is an output device, a means by which the computer



A home computer hooked up to Qube. “Two-way cable, or a telephone, can transform any home computer into a powerful communications technology.”

talks back. Normally this is a cathode-ray-tube screen, the same screen used for a television set. When you buy a computer, you can buy a video display terminal as part of the package, or you can just as easily connect your television set to the computer.

The first two parts of the computer, CPU and memory, define its two primary functions—as a calculating machine, and as a device for storing and retrieving information. With this memory capacity, the computer can be used as the central element in a home information system in combination with myriad other technologies, including the video disc, cable, and the telephone. Many people use the computer as a miniature filing system, preserving recipes or travel information or important dates. Some programs for managing various aspects of home life are available at computer stores, along with games and other kinds of “software” that come in the form of cassettes or disks. One unusually sophisticated budget program allows the user to record his checks in any of

twenty-seven categories and a hundred subcategories. Deposits can be automatically apportioned among regular expenses, so the user always knows his available balance. The system also keeps track of energy use and costs.

The computer is also a powerful communications technology when connected to sources of information outside the home. A small, box-like device called a “modem” can translate the audio signals of a telephone, or even the audio and video signals of a cable system, into the digital impulses of a computer. (Some analysts expect a struggle for computer users between American Telephone & Telegraph and operators of two-way cable systems such as Warner Amex Cable transmits the signals more quickly than telephone, but reaches far fewer households.) With a modem and the proper password, the computer operator can use novel systems like Bank-at-Home, an arrangement by which checks can be paid and money transferred from one account to another electronically. The user can also hook into huge

data bases held on central computers. Two major services, CompuServe and The Source, offer a wide array of financial information, as well as newspapers and magazines, travel data, and home-management systems. With some firms charging as much as \$1 for a minute of computer time, some independent souls have turned their own computers into free sources of data called computer “bulletin boards.” A whole subculture of computer buffs now exchanges information and messages via these networks.

But the most powerful applications of the home computer may appear not in its guise as data base and filing system, but as analyst, calculator, and instructor. The value of the computer games now preoccupying much of American youth may be debatable, but many of the principles of these games are now embodied in educational programs used in school and at home. Computer-based simulations can teach practically any subject to children in an exciting way. Games make such rote activities as spelling and arithmetic pleasant and unthreatening. The computer itself can correct and explain errors. And educators have discovered that the process of devising computer programs radically improves a child’s ability to learn.

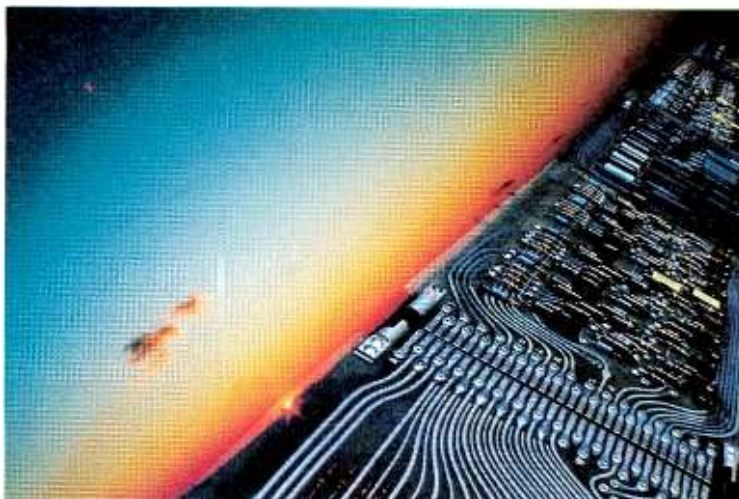
None of this comes free, of course. Though small computers now cost as little as \$100, a computer with various attachments to make it versatile and interesting runs for five to ten times that much. But with the computer already a fixture in 4 million American households, a business that did not exist five years ago is now a sizeable industry. Apple Computer, the kingpin, has already broken into the Fortune 500. And IBM, which just entered the personal-computer business last fall with an upscale model, has its smaller competitors quaking in their boots. There may be no other business in which so much money is to be made—and lost—in the immediate future.

JAMES TRAUB

NEW DEVELOPMENTS

As profoundly as today's new technologies have altered our electronic environment, the process of change is not likely to end soon, or even pause. Already visible on the horizon are new species of communications technologies, some of them still in the laboratory, others being tested in the field. What follow are reports on those most likely to make a mark on the landscape.

DAVID WAGNER



**HDTV•STEREO TV•
FIBER OPTICS•
LOW POWER TV•
CELLULAR RADIO**

HDTV: GETTING THE PICTURE PERFECT

EVEN IF YOU WATCH nothing but *Masterpiece Theatre*, you're still watching low-definition television. "Definition" refers to the amount of visual detail in a picture; on American television screens, even the sharpest pictures are always a little fuzzy because they consist of only 525 lines of information. (This standard was set in 1941 by the National Television System Committee; most European countries receive better pictures because they've adopted the 625-line standard developed in Germany.)

Now much clearer pictures are possible, thanks to the efforts of Japan's public broadcasting organization, NHK, which has figured out how to get twice as much detail onto the screen. Backed in this country by CBS and Sony, high-definition television—HDTV—offers 1,125 lines per picture, a wider aspect ratio (i.e., a wider screen), better color resolution, and the clarity of a motion picture.

With a prototype high-definition video system already being tested by Francis Ford Coppola and other filmmakers, Sony hopes to refine its HDTV system for commercial production within five years. HDTV may well revolutionize the way films and television dramas are made and distributed, since it combines the visual precision of thirty-five millimeter film with the lower costs and

greater flexibility of video. Movies shot on HDTV tape instead of film could be distributed to theaters by satellite. Until more theaters are equipped to receive satellite signals, producers may shoot movies on HDTV and transfer them to film for theater distribution, retaining the original tape for cable and network broadcasts and video-cassette sales.

At the moment, HDTV production equipment is available, but the frequencies over which it could be broadcast are still lacking. That's because an HDTV signal contains much more electronic information than an ordinary one does—so much more that each

HDTV signal actually requires about five times more space on the broadcast spectrum than a regular 525-line picture.

Until this impediment is overcome, there will be little incentive for 100 million television households to junk their 525-line sets for the 1,125-line HDTV models (especially with the high-definition sets estimated to cost 30 percent more than the most expensive television receivers now available).

So CBS currently pins its hopes for HDTV broadcast on the development of direct-broadcast satellites, whose 12 gigahertz band could provide the spectrum space HDTV needs. Although the FCC

has turned down CBS's request to set aside the entire 12 gigahertz band for HDTV, it will allow some experimentation. Experts predict that the availability of broadcast frequencies will make home reception of HDTV possible by 1990.

CBS has already demonstrated HDTV in three American cities, and has used a cable channel in Texas and an over-the-air station in San Francisco for experiments in high-resolution television. But the ultimate prospects for HDTV may well depend on the success of research into "bandwidth compression," which would shrink the amount of spectrum space required by HDTV signals, and hence make their transmission much more feasible.

Also being explored are the possibilities for a modified high-definition system that would work on conventional television sets by packing more information into the available 525 lines. IBM has already filed such a system with the patent office, and other companies may follow. These systems are the precursors of HDTV; their added definition anticipates HDTV's exquisite precision without being able to duplicate it. But by exposing consumers to the pleasures of more and more sharply defined pictures, they could well pave the way for the advent of full-fledged high-definition television.

JULIE TALEN



Left: Sony's HDTV image. Right: Standard TV image.

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*F.G. = Field Guide

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MORE
INFO
CIRCLE
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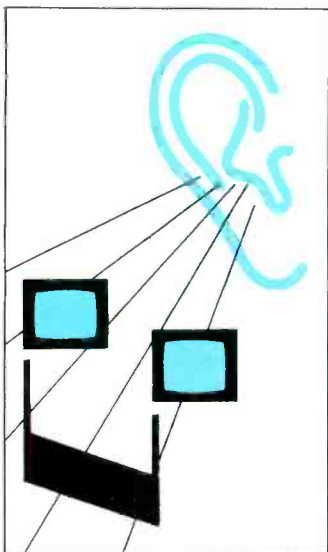


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THE RADIO STATIONS OF THE NEW YORK TIMES (212) 556-1144

STEREO TV:

BREAKING THE SOUND BARRIER



MAINLY it has been the devotees of opera and classical music—the hard-core viewers of public television in America—who have experienced television in stereophonic sound. To them it has been worth the inconvenience of juggling equipment and dialing around the radio band for the stereo simulcast of a concert on television; it has given them the best of sight and sound at once.

But soon this need for dual systems will be obviated by television receivers built with two hi-fi speakers and wired for two-channel audio. When these sets arrive on the market, popular programming will be faced with the challenge to please the ear as well as the eye.

Stereophonic television already exists in Japan and Germany, where it not only provides enhanced sound but also allows for the broadcasting of programs in two languages, one on each of the audio channels. Baseball becomes a special stereo treat in Japan; the crowd noises come across from both the left and right field lines, simulating the effect of being at the park.

A move is on for the adoption of stereo TV in the United States, if only to help commercial television keep pace with its new video competitors. Video-cassette recorders

and video-disc players are making a selling point of their stereophonic audio capability, and at least two cable program services—The Movie Channel and Music Television (MTV), both via Warner Amex Satellite Entertainment—transmit their programming in stereo for viewers willing to attach hi-fi equipment to their TV sets.

The lesson not lost on commercial television broadcasters is that AM radio was devastated by FM largely because the newer band accommodated the legions of stereo buffs. AM radio's hopes for a comeback now rest with its newly gained ability to transmit in stereophonic sound.

The creation of an American stereo TV receiver awaits authorization by the Federal Communications Commission, which first must decide on an engineering standard to make all stereo broadcasts compatible with all television sets. This will rest mainly on recommendations from professional societies, which have been studying a number of proposed stereophonic systems for the last few years. The authorization process is likely to go into high gear when the Electronic Industries Association gives its endorsement to a system—probably before the end of 1982.

Among the leading enthusiasts for stereophonic television, not surprisingly, are the hardware manufacturers. A new stereophonic-sound feature could boost the sales of new television sets the way color has during the last fifteen years. But it also opens a whole new field for the audio-component industry, since existing sets will probably have to be adapted for stereo before new sets are purchased. Indeed, the stereo feature may open the way to component television, the video counterpart of component high-fidelity systems. Sony, Panasonic, and Zenith have already introduced television receiving systems in which the screen, speakers, and tuner are purchased separately.

JON ZONDERMAN

FIBER OPTICS:

THROUGH A GLASS LIGHTLY

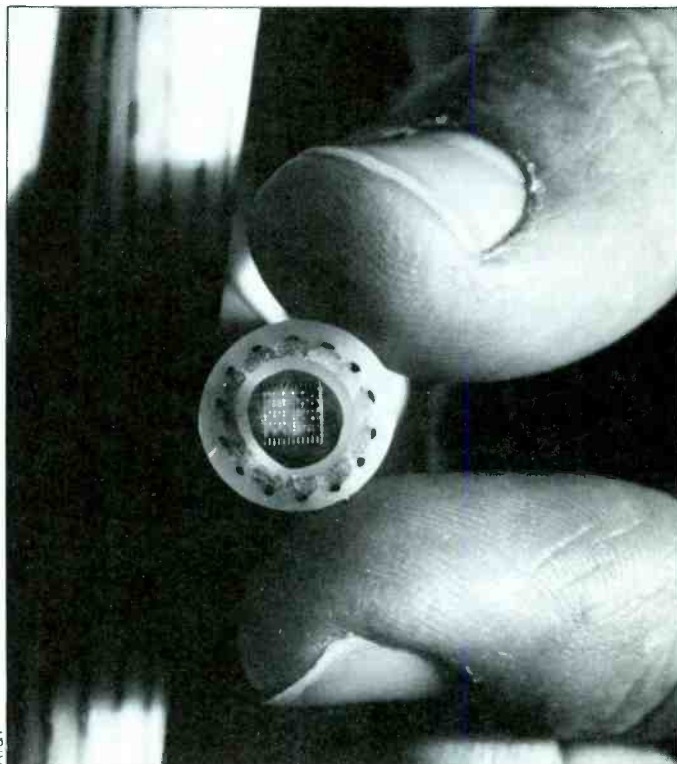
Impressive as the capabilities of coaxial cables are, fiber optics could soon make them obsolete. A single strand of optical fiber no thicker than a human hair can transmit the entire broadcast spectrum or more than 100,000 telephone calls. A bundle of these fibers may eventually bring the whole array of communications media—radio stations, telephone calls, and hundreds of television channels—into the home through a single wire.

Unlike present-day television sets and telephones, whose electronic impulses travel through the air or on copper wire, fiber-optic technology involves digital pulses of light sent through flexible strands of glass. Since light waves are much higher on the spectrum than radio waves, a much greater

amount of information can be transmitted through an optical fiber than through a conventional wire. And since the main ingredient of optical fibers is sand instead of copper, they should become much cheaper to produce.

If fiber optics seems a blessing to the cable industry, it is a decidedly mixed one, because the telephone company also has plans for the technology. Fiber optics would allow Bell to do what cable does—bring video signals into the home. The French government already has plans to wire part of Biarritz with a fiber system that will combine voice telephony, color video, and data transmission. In this country, the cable industry may have to race Bell to get the fiber-optic wire into the home.

ERIC SCHEYE



When AT&T installs new telephone lines today, it uses bundles of optical fibers like the one above. Made of glass rather than copper, the new wire can carry vast amounts of data—including video images.

Illustration by Anders Wenngren

LOW-POWER TV:

BROADCASTING IN A MINOR KEY

WHEN the Federal Communications Commission solicited applications in 1981 for licenses to operate low-power television stations, then-chairman Charles Ferris called the technology "the first new broadcast service in twenty years offering the same intriguing possibilities as the advent of commercial-television broadcasting in the late 1940s."

The mechanism for low-power television has been around since the early days of television. Low-power transmitters, known as "translators," have been used in rural areas to pick up distant signals and rebroadcast them into nearby regions that otherwise would have been bypassed. Until recently, translator operators were forbidden to broadcast their own material. When the FCC lifted this restriction, low-power television became possible. LPTV, as it is called, raised hopes for a new kind of television—small-scale, populist, adventurous. But some of the initial optimism has faded as the reality of economic and bureaucratic obstacles has sunk in.

LPTV uses very weak signals to broadcast over a small area without interfering with other signals. Every city keeps segments of its broadcast spectrum empty to avoid such interference. Philadelphia, for example, cannot use Channel 2 because that channel has been allocated to New York. Stations on the same channel must be 170 miles apart. Limited to only 1,000 watts of power (as opposed to as many as 5 million watts for some standard broadcast channels), the low-power signal will travel only ten or fifteen miles in any direction. The FCC has promised wary broadcasters that should an LPTV channel impinge on an extant signal, it will be hustled off the airwaves.

LPTV has been greeted with enthusiasm by ethnic minorities and community-oriented groups owing to a belief that it was especially intended for them. One "intriguing possibility" is the opportunity for

a geographically defined community to speak to itself over the airwaves—blacks in Harlem, American Indians on a reservation, small-town citizens anywhere. Nonprofit groups could get involved. And so they all have: The FCC received applications from black and Hispanic groups, from unions and religious bodies, from radical television-for-the-people types, and from small-town folk of all descriptions.

But it also received carloads of applications from such big companies as Turner Broadcasting, the Gannett newspaper chain, ABC, and NBC. The FCC received 6,593 applications in all before the stunned commission declared a freeze on applications from all but the most rural areas. Neighborhood TV, a firm for which Sears Roebuck (through its subsidiary, Allstate Insurance)

provided major financial backing, submitted applications for 141 LPTV stations. Its hope was to establish a "fourth network" whose programs would "show what is great about small-town life on a national scale." The FCC has since, however, given notice that applicants with no other LPTV stations will be given preference.

Perhaps more than that of any other communications technology, the future of LPTV rests with the federal government. The FCC will decide who gets the 4,000 or so licenses, though it is not clear when or how the decision will be reached. In the summer of 1981 Congress authorized the FCC to choose winners by lottery, after having figured in a preference for minorities and small owners. The FCC dillied and dallied and finally refused altogether—in large part, some critics suspect, because it

did not want to favor little guys at the expense of large corporations. A second piece of legislation has now passed Congress, but until the lotteries are held, perhaps in mid-1983, no one can know who will finally benefit by LPTV.

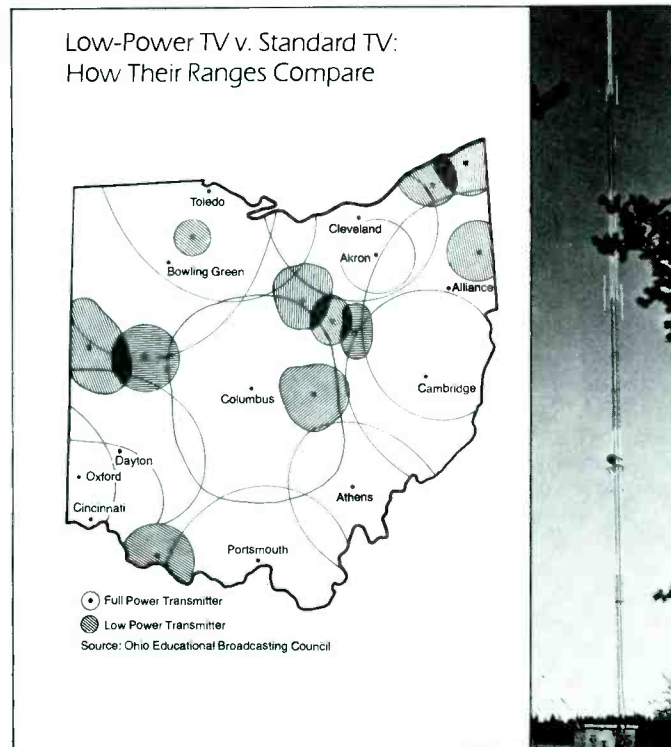
A further problem for LPTV owners is their current exclusion from the "must carry" rule. The FCC requires that cable systems carry all local stations and "significantly viewed" broadcast stations within a thirty-five mile radius. As a result, people who hook up to cable for its better reception, greater diversity, and increased local programming won't be able to watch LPTV unless the rules are changed or the cable operator voluntarily carries it. The prospects for this are decidedly poor: Small cable systems won't have room for LPTV channels, and large ones may well view LPTV as competition, especially if the low-power station engages in pay television.

The independent LPTV operator—the determined neophyte with a station or two—faces one final problem that the government cannot solve: where to find programming. A station may cost only \$50,000 to build, but the costs of original programming are immense for stations with limited revenue potential. This awkward fact has spawned partnerships like that of Gene Autry's Golden West Broadcasters and a black group called Community Television Network; CTN gets the daytime hours and Golden West prime time.

But independent LPTV stations may have great trouble providing the kind of community-based programming they have in mind. An official of SelecTV, which provides movies and special events for over-the-air subscription television, reports the company has been "virtually swamped with inquiries" from would-be owners. The force of economics just might turn LPTV into another fast-buck game. Intriguing possibilities have, after all, been overlooked before.

JAMES TRAUB

Low-Power TV v. Standard TV:
How Their Ranges Compare



"Using weak signals to broadcast over a small area, low power promises thousands of new television stations on a neighborhood scale."

CELLULAR RADIO: THE UPWARDLY MOBILE PHONE

UNLIKE A NUMBER of the new information technologies that face exceedingly murky economic prospects, cellular radio is expected by some analysts to gross an astounding \$3 billion in its first full year of operation. This is largely because cellular radio is not so much a revolutionary new development as a modification of an extant and highly competitive one.

Cellular radio involves neither radio nor cells; it is in fact a new form of mobile telephone communication. As undramatic as this may sound to the average consumer, for whom it is not intended, it represents a great breakthrough for business and the professions. Today a businessman is likely to wait several years for a car telephone. And once he gets it he will generally find the lines jammed and the reception poor. Only twenty-three users can place calls simultaneously from mobile phones in Manhattan. With cellular radio the number might rise to 10,000 or more.

As developed in Bell Labs in the 1970s, cellular radio makes this quantum leap possible by re-using the same stretches of the radio frequency many times. A call from a car or a construction site is now received by a single tower in a given city, which then relays the signal to the recipient. With cellular radio, however, the conversation will be transmitted to one of sixty towers scattered around the city, and then patched into the existing phone network.

The technology depends on the use of a low-power signal that will not interfere with conversations on the same frequency a few miles away. Each tower, or cell, thus commands its own switching area. And with the Federal Communications Commission having expanded to 40 megahertz the section of the radio spectrum available for mobile telephony, each tower will now be capable of receiving 666 two-way channels. But even with the low signal, neighboring cells will not be able to use the same channel at the

same time, so each channel will be able to handle about 222 conversations simultaneously.

Cellular technology has already been proven in experiments abroad, and has satisfied even the most optimistic expectations in tests in Illinois and Washington, D.C. And customers are lining up to fork over the \$150 or so a month that the service will probably cost. Lawyers will suddenly be able to conduct billable conversations while riding about town; construction workers or repairmen will be

able to confer with headquarters as they go through a site or a job. American Telephone & Telegraph estimates that cellular radio can raise productivity 20 to 25 percent for some users. A Wall Street analyst has suggested that 1.5 million potential cellular subscribers exist right now; by 1987, when all of them could be reached, the industry would be raking in \$2.7 billion.

The question is, who will be getting all this money? The FCC solicited applications for big-city cellular franchises last year, and the

ensuing fracas prompted commissioner Joseph Fogarty to tell *Fortune* magazine, "I've been amazed by the greedy reaction throughout the communications industry to the prospect of getting cellular licenses." One firm, Graphics Scanning Corporation, submitted two truckloads of documents in bids for all thirty franchises. Such telecommunications giants as AT&T and GTE, as well as MCI, have gotten heavily involved, while some companies in related businesses, such as Metromedia Inc. and the Washington Post Company, have charged into the field, buying up mobile-phone companies in a last-minute frenzy.

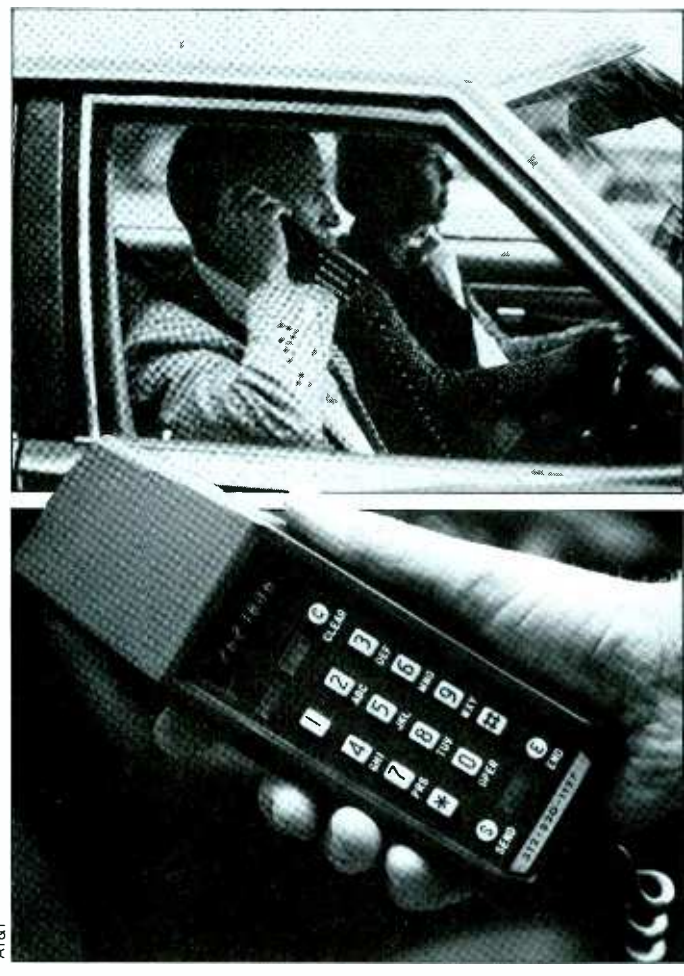
But the field really consists of AT&T, and everyone else. In 1974, when the FCC first began promulgating rules on cellular radio, a D.C. Circuit Court judge stated that the commission allowed a "significant plausibility" of an AT&T monopoly. Some competitors have joined with public-interest groups to call for the exclusion of "wireline" companies, meaning AT&T and GTE.

The FCC has consistently maintained, however, that the real public interest lies in the speedy establishment of a national mobile-phone service, and that AT&T, which has both the local systems and the technological and administrative expertise, should not be excluded. So in the interest of speed as well as competition, the FCC has divided each of the franchises in half, one part for the wireline companies, the other for non-wirelines.

While a gaggle of firms honk at one another over half of each city, AT&T and GTE have already carved up twenty-nine of the thirty franchises between them. And now the fear is that they'll get an early start, and sign up all the customers before the smaller firms get their systems going.

The anxiety may not be misplaced: With the eagerness of the business community for high-quality mobile-phone service, the first one to offer it may reap a windfall.

JAMES TRAUB



"The wireless telephone has come of age, and dozens of companies are scrambling for a piece of this \$3 billion business." Above, a handset for cellular radio.

THE PLAYERS:

POWERS THAT BE

Hundreds of companies are involved in the new television, but only a handful are likely to shape its future. Herewith, a guide to the most important players.

BY JOHN S. REIDY

TODAY'S LEADING SUPPLIERS of home video entertainment—the three television-network companies, ABC, CBS, and RCA (which owns NBC)—doubtless will continue to dominate the field for years to come. As players in the emerging new age of television, they derive their commanding position from great financial resources, from years of experience in programming, and from virtually total penetration into American homes. All three have already begun ventures in the new distribution technologies, and each may expand into cable ownership, now that the Federal Communications Commission has lifted its ban on network involvement in cable.

But the commercial networks themselves, even at the end of the decade, will still attract more than half of the home audience's viewing time. While the new entertainment/information services undoubtedly will claim a substantial portion of the total audience, their effect on the financial future of commercial television will be offset by population growth (by 1990, the number of television households is expected to grow from 81 million to nearly 95 million), and by the likelihood that people will be spending more time each day before the TV set.

Because they will remain unique among the electronic media in their ability to reach a mass audience, the broadcast networks will continue to be a favorite of advertisers. Their revenues are likely to outpace general inflation, though by only a modest amount, through the rest of the decade. In the meantime, their parent companies will be tapping the potential of a variety of related television services.

ABC has been particularly aggressive in exploring new fields. It is a partner in four program services for cable: ARTS

and Daytime (both with Hearst), the Satellite News Channels (with Group W), and a pay-sports operation (with Getty's ESPN). ABC also has a partnership with Cox Communications to explore pay-per-view ventures, and is enlisting its family of broadcast affiliates for Home View Network, a pay-television service that will send movies and other premium programming in the middle of the night to the pre-set video recorders of subscribing households.

CBS plunged into cable with an ambitious cultural service known as CBS Cable but gave it up when, after incurring huge losses, it saw no prospect for a turnaround in the near future. Nevertheless, the company's executives have made it clear that they plan to return to cable. In the meantime, CBS has taken steps to begin an MDS pay service in the five cities where it owns television stations, and it has teamed up with AT&T for a major videotext test in New Jersey.

CBS also produces and manufactures video discs for use with RCA's playback system and has entered the prerecorded video-cassette field in a partnership with Twentieth Century-Fox. And the network is ready to begin broadcasting its teletext service as soon as the FCC grants approval.

RCA is in cable as backer of The Entertainment Channel, in partnership with Rockefeller Center Inc. It also operates the primary cable-programming satellite, Satcom III-R, and has applied to operate a direct-broadcast satellite service in which it would serve as a carrier rather than a programmer. RCA is the largest domestic distributor of video-cassette recorders and one of the two largest domestic manufacturers of TV sets. It also pioneered the mechanical video-disc system—its SelectaVision.

After the three network corporations, the other leading prospectors on the new television frontier are active on a number of fronts:

TIME INC. is the owner of the most successful cable program service, Home Box Office (HBO), and of the largest cable operating company, American Television & Communications (ATC). It also operates a second pay-cable service, Cinemax, and has one-third interest (in partnership with Paramount Pictures and MCA Inc.) in the USA Network, an established advertiser-supported cable service. Time has interests in two STV systems, is developing a one-way cable videotex service known as Cabletext, and has an involvement in film production through its investment in Orion Pictures (formerly Filmways). The company is also starting up a weekly cable-listings magazine, in which it promises to invest as much as \$100 million.

WARNER COMMUNICATIONS is half-owner (with American Express) of Warner Amex Cable, the nation's sixth-largest cable company and the leader in two-way cable technology with its patented Qube system. It also owns Warner Amex Satellite Entertainment Company, which is already operating three cable-satellite services—The Movie Channel, Nickelodeon, and Music Television—and is developing two others, a shopping channel and a games network. Warner Bros. Pictures, a subsidiary, is one of Hollywood's leading motion-picture companies and a producer of video cassettes. But the corporation's most profitable division is Atari, the leading producer of video games.

WESTINGHOUSE BROADCASTING and CABLE is owner of an important

THE BIG EIGHT

	ABC	CBS	RCA	Time Inc.	Times Mirror Co.	Warner Communications	Westinghouse	Viacom International
	2,440*	4,126	8,004	3,300	2,156	3,240	9,367	210
BROADCAST NETWORK	ABC	CBS	NBC					
BASIC CABLE SERVICES	ARTS Daytime** Satellite News Channels**			USA Network**		Nickelodeon MTV: Music Television (Warner Amex)****	Satellite News Channels** Nashville Network**	Cable Health Network
PAY CABLE SERVICES	RSVP**		The Entertainment Channel**	Home Box Office Cinemax	Spotlight	The Movie Channel (Warner Amex)	Home Theater Network	Showtime
TV/FILM PROGRAM PRODUCTION	ABC Motion Pictures ABC	CBS Theatrical Films CBS	NBC	Orion Pictures (part interest)		Warner Bros.	Group W Productions	Viacom Productions
VIDEO CASSETTE/ DISC PROGRAMMING	ABC Video Enterprises	CBS/Fox Home Video CBS Video Enterprises	Selectavision Discs NBC Int'l. RCA/Columbia	Time-Life Video		Warner Home Video		Viacom Enterprises
INTERACTIVE CABLE/ VIDEOTEX	Partnership with Cox Cable	CBS/AT&T videotext teletext	teletext	Cabletext (teletext)	Videotex America (test)	Qube (Warner Amex)	DirectVision** (teletext)	
VIDEO GAMES		Gabriel Toys				Atari		
TV STATION OWNERSHIP	ABC 5 stations	CBS 5 stations	NBC 5 stations	1 station	7 stations		Group W 6 stations	2 stations
STV	Home View Network			A.T.C.				
MDS		MCS**		A.T.C.			Group W	
CABLE SYSTEM OWNERSHIP		Black Hawk Cable		A.T.C.	Times Mirror Cable	Warner Amex Cable	Group W	Viacom Cable
LOW-POWER TV	Applications filed		Applications filed					
DBS		Proposed (for HDTV)	Proposed					
SATELLITE OWNERSHIP			Satcom satellites					
TRANSPONDER OWNERSHIP/ LEASE ***	Satcom IIIIR Westar V	Westar V	Satcom IV Westar V	Satcom IIIIR and IV Galaxy I	Satcom IIIIR Galaxy I	Satcom IIIIR and IV	Westar V and VI	Satcom IIIIR and IV Galaxy I
HARDWARE			TV sets disc players VCRs			Atari home computers and video games		

PROGRAMMING AND INFORMATION SERVICES

DISTRIBUTION SYSTEMS

*Total revenues in millions. For purposes of this chart, companies have been listed in order of the scope of their involvement in video activities.
 **Co-ventures. (Satellite News Channels: ABC and Group W; Daytime: ABC and Hearst publications; RSVP: ABC and Getty; The Entertainment Channel: RCA and Rockefeller Center Inc.; USA Network: Time Inc., Paramount and MCA; MCS: CBS and Contemporary Communications Corp.; Nashville Network: Group W and WSM Inc.; DirectVision: Group W and Sparks Newspapers.)
 ***Satcom IR, IIR, Galaxy I, and Westar VI have yet to be launched. Satcom V was scheduled to be launched before the end of 1982.
 ****Warner Amex is a co-venture of Warner Communications and American Express.
 Information for this chart was prepared by the editors of Home Video & Cable Report, Knowledge Industries Publications.

group of television and radio stations and, with the acquisition of Teleprompter Corp. in 1982, parent of the third largest cable operating company. It also owns a fledgling pay-cable service specializing in family movies, Home Theatre Network, and is a partner with ABC in the Satellite News Channels. With the Grand Ole Opry it will introduce The Nashville Network for cable early in 1983. A television subsidiary, Group W Productions, has long been a leading force in program syndication and has been notably successful in recent years with *PM Magazine*.

COX COMMUNICATIONS is owner of several television and radio stations and is also the country's fourth largest cable operator. One of the more technologically sophisticated cable companies, it has developed Indax, an interactive system used for information services and banking and shopping at home. Cox is a partner with Times Mirror in the Spotlight pay-cable movie service and has joined in pay-per-view explorations with ABC. Cox also has an interest in the Robert Wold Company, a leader in satellite distribution services.

TIMES MIRROR CO. is a newspaper-publishing concern that now ranks as the seventh largest cable operator. It is the founder of the Spotlight pay-cable motion picture service, which it owns in conjunction with four other cable companies. In

addition, it is currently testing videotex in the Los Angeles area, as well as operating seven television stations. But for all these video interests, it derives more than half its profits from its group of newspapers, the flagship of which is *The Los Angeles Times*.

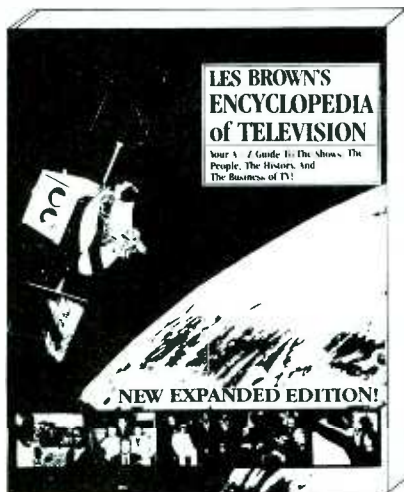
VIACOM INTERNATIONAL is the sole owner of Showtime, the second largest pay-cable service (with more than 3 million subscribers), and owner of the tenth largest cable operation. Viacom also owns a group of television and radio stations and is a major syndicator of television programming.

OAK INDUSTRIES is dominant in the STV field with systems in five major markets, and is also a leading producer of the converter/decoder units installed in virtually every new cable-television household. Oak recently postponed a plan to launch a DBS service in 1984.

TURNER BROADCASTING SYSTEM is the owner of the first superstation—WTBS, Channel 17 in Atlanta—probably the most profitable television station in the world, reaching more than 20 million cable homes. The station, owned by the visionary, entrepreneurial, and mercurial Ted Turner, has been supporting the company's two Cable News Networks. Turner is laying plans now to create a fourth national television network.

20 OTHER IMPORTANT PLAYERS

- Capital Cities Communications**—broadcasting, cable, publishing, videotex
- Dow Jones**—publishing, cable, videotex
- Dun & Bradstreet**—publishing, cable, broadcasting
- Field Enterprises**—publishing, broadcasting, cable, videotex
- General Electric Co.**—broadcasting, cable
- Harte Hanks Communications**—publishing, broadcasting, cable
- Hearst Corp.**—publishing, broadcasting, cable
- Knight-Ridder Newspapers**—publishing, broadcasting, videotex
- Landmark Communications**—publishing, broadcasting, cable
- McGraw-Hill**—publishing, broadcasting, cable
- Metromedia Inc.**—broadcasting
- Multimedia**—broadcasting, publishing, cable
- New York Times Co.**—publishing, broadcasting, cable, videotex
- Scripps-Howard Broadcasting Co.**—broadcasting, cable
- S.I. Newhouse & Sons**—publishing, broadcasting, cable
- Storer Broadcasting Co.**—broadcasting, cable
- Taft Broadcasting**—broadcasting, cable, videotex
- Tele-Communications Inc.**—cable
- Tribune Co.**—publishing, broadcasting, cable
- Wometco**—broadcasting, cable, STV



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WHAT'S WHAT:

A GLOSSARY OF INITIALS

- ABC**—American Broadcasting Companies Inc.
- ACSN**—formerly Appalachian Community Service Network, now known as **ACSN/The Learning Channel**
- ACT**—Action for Children's Television
- AFTRA**—American Federation of Television & Radio Artists
- AIM**—Accuracy in Media
- ARTS**—Alpha Repertory Television Service (Hearst/ABC Video cable service)
- ASC**—American Satellite Company (Comsat)
- ATC**—American Television & Communications (Time Inc.'s cable MSO)
- AWRT**—American Women in Radio and Television
- BBC**—British Broadcasting Corporation
- BET**—Black Entertainment Television (cable service)
- CATA**—Community Antenna Television association
- CATV**—Community Antenna Television, cable television
- CBC**—Canadian Broadcasting Corporation
- CBN**—Christian Broadcasting Network
- CBS**—formerly Columbia Broadcasting System, now known by initials
- CC**—closed captioning for the deaf
- CCIA**—Computer and Communications Industry Assn.
- CCTV**—closed-circuit television
- CED**—capacitance electronic disc (RCA video disc)
- CEN**—Central Educational Network
- CHN**—Cable Health Network
- CIT**—Central Independent Television (Britain)
- CNN**—Cable News Network (cable service)
- COMSAT**—Communications Satellite Corporation
- CPB**—Corporation for Public Broadcasting
- CRT**—cathode ray tube
- C-SPAN**—Cable-Satellite Public Affairs Network
- CTIC**—Cable Television Information Center
- CTW**—Children's Television Workshop
- DBS**—direct-broadcast satellite
- EBU**—European Broadcasting Union
- ECOM**—electronic computer-originated mail
- EEN**—Eastern Educational Network
- EIA**—Electronic Industries Association
- EM**—electronic mail
- ENG**—electronic news gathering
- EPG**—Electronic Program Guide (cable service)
- ESPN**—Entertainment & Sports Programming Network (cable)
- ETV**—educational television
- FCC**—Federal Communications Commission
- FM**—frequency modulation
- FNN**—Financial News Network (cable service)
- GHz**—gigahertz (1 billion hertz)
- Group W**—Westinghouse Broadcasting and Cable Inc.
- GTE**—General Telephone & Electronics Corporation
- HBO**—Home Box Office (cable service)
- HDTV**—high-definition television
- HTN**—Home Theater Network
- HUT**—households using television
- HVN**—Home View Network (ABC)
- Hz**—hertz (a unit of frequency equal to one cycle per second)
- IBA**—Independent Broadcasting Authority (Britain)
- INN**—Independent Network News
- INTELSAT**—International Telecommunications Satellite Organization
- INTV**—Association of Independent Television Stations
- ITFS**—Instructional Television Fixed Service
- ITNA**—Independent Television News Association
- ITT**—International Telephone & Telegraph Company
- ITV**—instructional television or Independent Television (Britain)
- KHz**—kilohertz (1,000 hertz)
- LO**—local-origination channel
- LPTV**—low-power television
- LV**—LaserVision (optical video disc)
- MATV**—master-antenna television
- MBS**—Mutual Broadcasting System
- MCA**—parent of Universal Pictures
- MDS**—multipoint distribution service
- MHz**—megahertz (1 million hertz)
- MPAA**—Motion Picture Association of America
- MSG**—Madison Square Garden Network
- MSN**—Modern Satellite Network (cable service)
- MSO**—multiple cable system owner
- MTV**—Music Television (cable)
- NAB**—National Association of Broadcasters
- NATAS**—National Academy of Television Arts & Sciences
- NATPE**—National Association of Television Program Executives
- NBC**—National Broadcasting Company
- NBMC**—National Black Media Coalition
- NCTA**—National Cable Television Association
- NFLCP**—National Federation of Local Cable Programmers
- NPR**—National Public Radio
- NRB**—National Religious Broadcasters
- NRBA**—National Radio Broadcasters Association
- NSCA**—National Satellite Cable Association
- NTA**—National Translator Association
- NTIA**—National Telecommunications and Information Administration
- NTSC**—National Television System Committee (U.S. color TV system)
- ON TV**—Los Angeles STV system
- PAL**—phase alternation line (German-developed color TV system)
- PBS**—Public Broadcasting Service
- PMN**—Pacific Mountain Network
- PPV**—pay-per-view
- PSA**—public-service announcement
- PTAR**—Prime Time Access Rule
- PTL**—formerly Praise the Lord Television Network, now known by initials (cable service)
- PTV**—public television
- RAI**—Radiotelevisione Italiana
- RCA**—formerly Radio Corporation of America, now known by initials
- RFE**—Radio Free Europe
- RTDNA**—Radio & Television News Directors Association
- SBS**—Satellite Business Systems
- SECAM**—*sequential couleur à mémoire* (French-developed color TV system)
- SHO**—Showtime (cable service)
- SHF**—super-high frequency
- SIN**—Spanish International Network (cable service)
- SMATV**—satellite master-antenna television
- SNC**—Satellite News Channel (cable service)
- SPACE**—Society for Private and Commercial Earth Stations
- SPN**—Satellite Program Network (cable service)
- SSS**—Southern Satellite Systems
- STV**—subscription television
- TARPAC**—Television & Radio Political Action Committee
- TBN**—Trinity Broadcasting Network (cable service)
- TCI**—Telecommunications Inc. (cable MSO)
- TEC**—The Entertainment Channel (cable service)
- TIO**—Television Information Office of the NAB
- TMC**—The Movie Channel (cable service)
- TNT**—Target Network Television
- TRAC**—Telecommunications Research and Action Center (formerly NCCB)
- TvB**—Television Bureau of Advertising
- UHF**—ultra-high frequency
- USA**—a cable network
- USSB**—United States Satellite Broadcasting (DBS)
- USTV**—United Satellite Television (DBS)
- VCR**—video-cassette recorder
- VCS**—video-computer system
- VHD**—video high-density disc system
- VHF**—very high frequency
- VHS**—video home system (a VCR format)
- VIA**—Videotex Industry Association
- VOA**—Voice of America
- VTR**—video-tape recording or recorder
- WARC**—World Administrative Radio Conference
- WASEC**—Warner Amex Satellite Entertainment Company
- WCI**—Warner Communications Inc.
- WHT**—Wometco Home Theatre (STV)

Beyond headlines.



with correspondent
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