

CABLE

WHAT IS CABLE TELEVISION?

Cable television or CATV is a superior way of receiving television pictures. Broadcast signals received on sensitive antennae at a specially selected site, are fed through a network of coaxial cables to the homes of individual viewers.

FEES: Persons who wish to enjoy the service pay an installation charge to have their set hooked to the cable, and a monthly service charge. The installation fee usually runs from \$10 to \$20, and the monthly service charge is about \$5.

SIZE OF INDUSTRY: There are approximately 2400 community antenna or cable television systems operating in 49 states and the Virgin Islands. These 2400 systems serve about 3900 communities. Estimated annual revenues are approximately \$300 million and plan investment exceeds \$600 million. Approximately 60,000 people are employed in the operation of CATV systems, service, and equipment supply.

AVERAGE SYSTEM SIZE: 1900 subscribers.

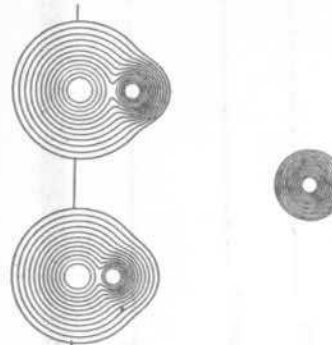
PEOPLE SERVED: Estimating 3.3 persons per home, (service to 4,500,000 homes) CATV systems relay television signals to almost 15 million viewers, or about 7% of the U.S. television audience. In addition to the approximately 2400 operating CATV systems, there were as of January, 1970, approximately 2100 additional communities where CATV permits had been issued but no known construction started, and approximately 1400 communities where CATV applications were pending before local governing bodies. Industry leaders have estimated that, assuming reasonable regulation, the CATV industry will in 10 years serve 30 million homes via 7500 systems, have annual revenues of \$3 billion, have a building investment of \$5 billion, and will directly employ 750,000.

(The above information taken from NCTA News Release, 3/25/70).

U.S. CATV SYSTEMS—BY SUBSCRIBER SIZE (As of Feb. 7, 1969)

Size by Subscribers	Systems
20,000 & over	8
10,000-19,999	50
5,000-9,999	144
3,500-4,999	123
2,000-3,499	279
1,000-1,999	423
500-999	427
50-499	730
49 & under	46
Not Available	260
Total	2,490

TV Factbook No. 40



"In the first stage of the CATV boom, most of the activity has been in those cities, towns and communities that do not qualify as heavily concentrated markets, and which have therefore not been regarded by the FCC or the broadcasters as deserving full TV service. About 45% of the population lives in towns and cities ranging from 2,500 to 50,000 population, and few of these communities have their own TV stations. . . ."

"Most cable systems are still small, the average set-up having about 1,500 subscribers, and the largest, in San Diego, having

CHANNEL CAPACITY OF EXISTING CATV SYSTEMS (As of March 1, 1970)

Over 12	86
6-12	1,720
5 only	459
sub-5	61
Not available	164
Total	2,490

TV Factbook No. 40

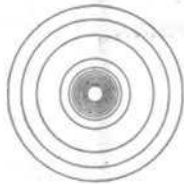
THE FIRST CABLE STATION was founded by Robert Tarlton who ran a radio sales and service shop in Lansford, Pa. . . . When TV sets became commercially available in the late 1940's, Tarlton had trouble selling them because reception was abominable. The nearest stations were in Philadelphia, 65 miles away. The signals reaching Lansford were very weak, and further blocked by a mountain that overshadows the town. Tarlton experimented in 1949 with installing individual antennas for set owners on the mountain. That worked fairly well, and he quickly got a better idea . . . he and several friends pooled their resources and set-up a firm called Panther Valley Television Company.

Panther Valley built a tall master antenna atop the mountain to spear the faint Philadelphia signals. These were fed into an amplifier to bring them back to full strength, and then into a coaxial cable that was strung on poles down the mountain-side and into town. The company offered to hook customers up to the cable for an installation charge of \$125 and a monthly service charge of \$3. Television-hungry residents of Lansford immediately began buying sets from Tarlton's shop and "going on the cable." They received three Philadelphia channels with greater fidelity and clarity than did a lot of people living within 10 miles of Philadelphia—or even in the city itself.

"Today, with its system modernized and rebuilt, Panther Valley Television provides 12 channels to 2,900 residents of the Pennsylvania hill towns of Lansford, Coaldale, Havto and Lake Havto, who would otherwise have little or no TV. Tarlton remains president of the company, and also of Titusville Cable TV in Titusville, Pa." (Nation, 5/18/70, Smith)

THE MODERN CABLE SET-UP CONSISTS OF:

1. Tower selected for good reception,
2. antenna system so that there are separate antennas for each channel to be received, (sometimes distant signals are relayed to the tower by 1 or more microwave transmitters),
3. "headend", a small control station at the foot of the tower where signals are brought up to maximum strength and clarity. (Here, some of the signals may be rechanneled—i.e. cable systems put UHF stations on empty VHF channels),
4. amplifiers, placed at distances of 1,500-2,000 feet along the trunk line into town to keep signals strong,
5. "feeder" lines, "tapoffs", and "house-drops" which carry the signals from the main cable to individual streets and subscribers' homes. (Nation, 5/18/70, Ralph Smith)



CATV'S ORIGINAL PURPOSE AND STILL PRINCIPAL FUNCTION

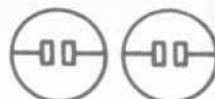
is to provide the viewer with better reception and a larger selection of existing TV stations than he can get from the air since Broadcast TV discriminates against large parts of the population beyond the clear signal range of a few metropolitan areas.

CABLE TV—MORE CHANNELS, LOWER COST OF TRANSMISSION

" . . . One of Cable TV's great potentials is its inherent ability to end the economy of scarcity on which the power of the present TV broadcasting oligarchy is solidly based. Many new CATV rigs are being built for twenty-channel reception, and San Jose, Calif. is installing one for forty-two channel capacity. Experts believe that the cable could carry as many as eighty channels with present technology. If more were ever needed, they could probably be tacked on by using more sophisticated input equipment. . . ."

"Since in a CATV system it is possible to transmit directly over the cable without receiving any signal from the air, the high cost of building and running an over-the-air transmitter is eliminated. In addition, while a commercial over-the-air broadcaster derives his entire revenues from his programming, a cable system does not make its money on what it transmits. The cable runs on the profit from the subscribers' fees, whether or not the system is used for cablecasting."

BROADBAND . . . "there can come into homes and into business places audio, video and facsimile transmissions that will provide newspapers, mail service, banking and shopping facilities, data from libraries and other storage centers, school curricula. . . In short, every home and office will contain a communications center of a breadth and flexibility to influence every aspect of private and community life." (Nation, 5/18/70, Smith)



CABLE GROWTH

28,325. Restrictive policies of the Federal Communications Commission, developed in response to urgent requests from the broadcasting industry, have retarded the growth of CATV systems in metropolitan areas. Nevertheless, cable installations are now coming to heavily populated urban centers, and it is here that the next big growth stage for CATV will occur. Irving Kahn, President of the TelePrompster Corporation, one of two companies franchised to build cable systems in Manhattan, predicts that within ten years 85% of TV reception in the United States will be by cable." (Nation, 5/18/70, Smith)

The first direct intercontinental television link between two schools was made on 31 May 1965 through the Early Bird satellite. It established communication for 50 minutes between the West Bend High School, Wisconsin, in the United States of America and the Lycee Henry IV, Paris, in France, some 4,000 miles apart.

. . . On the American side, the West Bend students collected in their ordinary classroom. When called on by the teacher in charge, they left their places and spoke in front of the camera as if facing an interviewer. On the other hand, the Paris students were gathered around a large table in the library, with a teacher standing among them. On the French side, the actual classroom setting was lost and the participants appeared merely as a group of young people, but this was offset by the gain in freedom.

. . . The programme lasted 50 minutes and took the form of a dialogue. To begin with, it was rather stiff (each speaker occupied the screen for a fairly long time and then formally handed over to another). The discussion soon became more lively.

. . . A striking feature of the experiment was the eagerness of the young people to contact their opposite numbers. They were all careful to speak in each other's language, although they had the right to go back to their own language when in difficulty. The broadcast took place in an atmosphere of great good humour, with a certain amount of facetiousness on the part of the French students and the Americans more earnest but also extremely efficient. Both sides seemed to adapt themselves immediately to this new mode of human relations. The actual course of the discussion bore witness to this, as it shifted very simply from the adult themes which had been laid down to subjects of genuine interest to adolescents (to the great displeasure of the French headmaster, who deplored the flippancy of the conversation).

copyright UNESCO 1968 communication in the space age

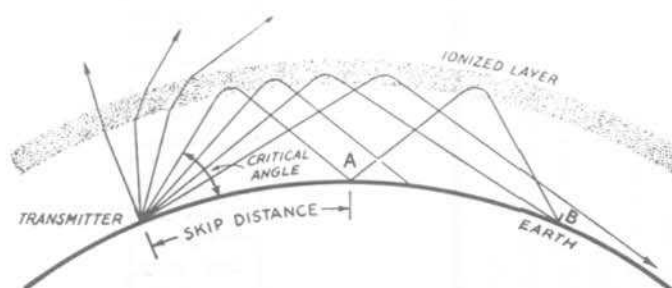
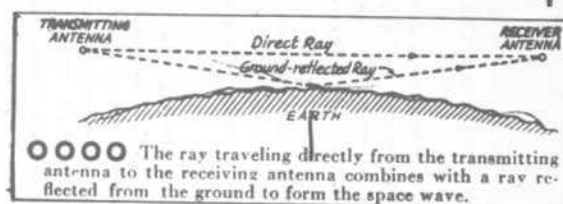


Fig. 1-8 — Behavior of waves on encountering the ionosphere. Waves entering the ionized region at angles higher than the critical angle are not bent enough to be returned to earth. Waves entering below the critical angle reach the earth at increasingly greater distances as the angle approaches the horizontal.

COAXIAL CABLE CONSISTS OF:

1. Copper wire in the center like lead in a pencil,
2. insulated by polyethylene foam (the major part of the diameter in cross-section), and,
3. coated with a tubular shield of braided copper or seamless aluminum sheath. (Nation, 5/18/70, Smith)

When a current or signal is introduced into the cable an electromagnetic interaction takes place between the center wire and the surrounding sheath. The interaction prevents currents from radiating off the cable. This is the secret of the cable's key characteristic—its immense capacity for carrying electronic signals, data and information." (Nation, 5/18/70, Smith)



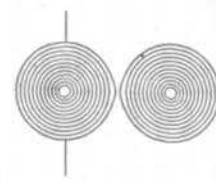
○○○○ The ray traveling directly from the transmitting antenna to the receiving antenna combines with a ray reflected from the ground to form the space wave.

MEDIA OWNERSHIP OF CATV SYSTEMS

Of the 2,490 systems operating as of March 1970, following is by media ownership:

Media	Systems	%
Broadcaster	910	36.5
Phone	146	5.8
Newspaper-publishing	207	8.2

TV Factbook No. 40



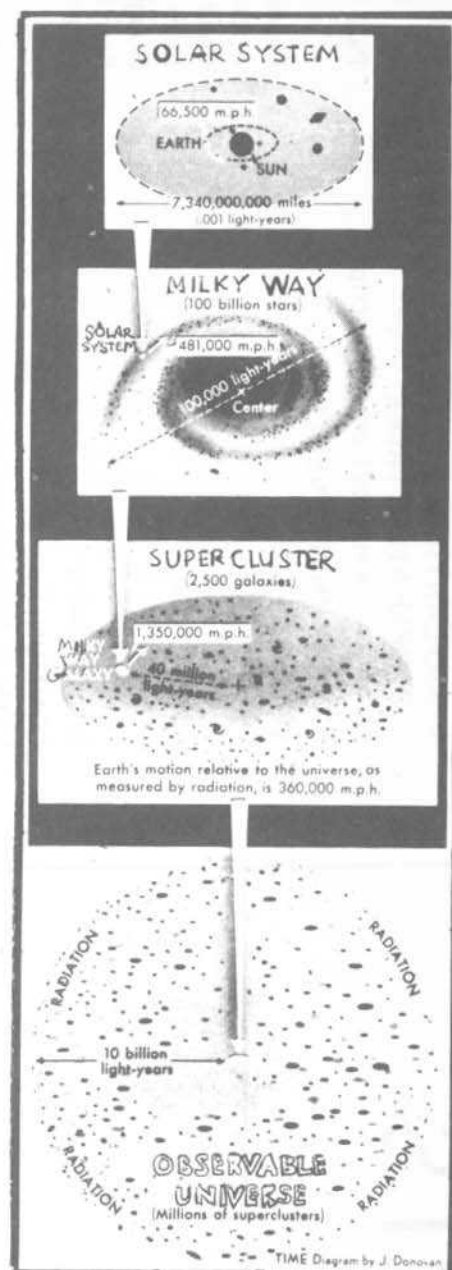
BROADCAST TV—FEW CHANNELS, HIGH TRANSMISSION COST

"Television is a colossal hog of the electronic frequencies. The elbowroom required by each channel is what makes the over-the-air very high frequency (VHF) TV spectrum the scarcest of our natural resources. No more than 12 channels can be carved out of this choicest part of the TV transmission spectrum. When additional allowance is made to avoid overlapping and interference, and for the further restrictions imposed by the economics of a commercially based broadcasting system, it works out that 75% of all American viewers get no more than three or four channels. . . ."

"A year ago, President Nixon, under sharp prodding from Rep. Torbert H. Macdonald (D., Mass.), chairman of the House Commerce Committee's Subcommittee on Communications, finally released the text of a Johnson administration Task Force report on national communications policy. Among other things, the report concluded that money, even more than lack of space on the spectrum, was a major barrier to the expanded use of TV. The cost of building and running over-the-air transmitters, and programming costs, which are rising at a rate of about 8% annually, make any expansion of the present system almost prohibitively costly." (Nation, 5/18/70, Smith)

PRESENT LOCAL PROGRAMMING CONCEPTS

began, in order to make the CATV service more attractive, by filling one or more empty channels on their viewers' sets with such simple fare as weather reports, stock market quotations, and views of an AP or UPI news ticker. Such "programming" costs little, and is easily provided by even a very small system. Soon, a few systems went a step farther—they began to transmit live local material. Today 5-10% of cable systems offer live programming of local origin, usually transmitted for a few hours a day, or irregularly when events of interest take place. These include newscasts, religious programs, school activities, county fairs, fund-raising drives, sports, cultural events, political debates, public hearings, school board meetings, children's programs, and daily variety shows featuring local persons and events. (Nation, 5/18/70, Smith)



Moreover the ability of the ionosphere to reflect radio waves varies throughout the day, causing a fading in signal strength. Experience during the past thirty-five years has enabled diurnal variations to be forecast and the best frequency for use to be selected, but in practice this means that several widely different frequencies must be allotted to each transmitter, thereby restricting still further the number of transmitters which can be used. Even with a choice of frequencies, communications between some points may fail for several hours. There is also a possibility that sudden and unforeseen disturbances of the ionosphere may disrupt all radio-communications. For example, in 1960 an ionosphere storm, associated with a large sun spot and solar flare, interrupted almost every radio telephone and telegraph circuit to the United Kingdom for the three days.

The inadequate number and the unreliability of high-frequency radio circuits has long impeded the transmission of news throughout the world.

Ivor Ray—copyrighted UNESCO 1968