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<td><strong>Author(s)</strong></td>
<td>Kobayashi, Akiyoshi.</td>
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Trilateral relationship Of Terrestrial Broadcasting, Broadcasting Satellite, And CATV

By

Akiyoshi Kobayashi
TRILATERAL RELATIONSHIP OF TERRESTRIAL BROADCASTING, BROADCASTING SATELLITE, AND CATV.

by Akiyoshi Kobayashi
Executive Director
NHK Broadcasting Culture Research Institute

Aspects of Television
The television manufacturing industry, along with the automobile industry, was one of the key industries supporting the economic growth of Japan. The first aspect of television is the hardware industry.

The second aspect is television as a business. Since the introduction of commercial television in 1950, television has been an enormous success as a software industry. The total revenue of commercial stations now exceeds 2 trillion yen per year, which explains why new media are looked upon by aspiring entrepreneurs as great business opportunities.

The third and most important aspect of television is culture. On average, people watch television for approximately three hours every day, and therefore it cannot help but have great social and cultural impact upon those who watch it. Policy decisions regarding electronic media are going to be among the most important factors in shaping society as we approach the 21st century.

We must have a comprehensive understanding of the nature of technological evolution and we must not underestimate its business feasibility. We will have a clear vision of the kind of society in which electronic communication plays a key role in maintaining freedom of speech. Modern democratic society cannot function without electronic communication systems.

The State of the Media
In Japan, commercial stations are thriving side by side with public service broadcasting stations. Everybody has access to more than seven terrestrial stations in Tokyo.
**TERRESTRIAL CHANNELS**

VHF  1  NHK General Service  (Public)
     3  NHK Educational Service  (Public)
     4  NTV  (Commercial)
     6  TBS  (Commercial)
     8  Fuji TV  (Commercial)
    10  TV Asahi  (Commercial)
    12  TV Tokyo  (Commercial)

UHF 16  Broadcasting University  (State)
        Prefectural Stations  (Commercial)

In addition to the above, there are the following BS and CS channels:

**SATELLITE CHANNELS**

DBS  5  Wowow  (Pay)
    7  NHK BS1  (Public)
    9  HiVision  (Experimental)
   11  NHK BS2  (Public)

CS  Nippon Cable Television (CNN)  (Pay)
    Star Channel (Movies)  (Pay)
    Music Channel (Rock & Pop)  (Pay)
    Japan Sports Channel (Sports)  (Pay)
    Space Shower (Rock)  (Pay)
    Satellite Movie (Japanese movies and plays)  (Pay)

CS channels are usually distributed through CATV but they may be received directly using a satellite dish by buying a decoder.

**CATV**

Multi-channel CATV is growing rapidly in cities. CATV received in cities is quite different from so-called "Community Antenna TV" which is the retransmission of terrestrial broadcasting by cable in remote areas where the terrestrial reception is poor.

Multi-channel CATV has three aims:
1) to be distributed to more than 10,000 households
2) to have more than 5 channels for its own service including public access
3) to be operational in two ways
GROWTH OF CITY-TYPE CATV

<table>
<thead>
<tr>
<th>Year</th>
<th>Systems</th>
<th>Subscribers</th>
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</thead>
<tbody>
<tr>
<td>1987</td>
<td>23</td>
<td>10,898</td>
</tr>
<tr>
<td>1988</td>
<td>39</td>
<td>39,595</td>
</tr>
<tr>
<td>1989</td>
<td>64</td>
<td>194,608</td>
</tr>
<tr>
<td>1990</td>
<td>102</td>
<td>400,154</td>
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Trilateral Relationship

Terrestrial TV has accomplished almost 100% coverage. DBS, which has reached 5 million households, has the advantage of better picture quality including HiVision and better sound quality using PCM which is almost as good as compact disc.

Then came CATV with the merit of multi-channel capacity and there is yet another competitor in the form of VCR. A video can be rented for as little as 300 yen overnight. The following chart shows the diversity of transmission routes:

TRANSMISSION ROUTE

- **TERRESTRIAL**
  - NHK 2
  - Commercial 4-5
  - 40m households

- **DBS**
  - NHK 2
  - Pay 1
  - yet to come 5
  - 5m households

- **CS**
  - Pay 6
  - yet to come 9
  - 6.8m households

- **VCR**
  - 30m households

- **CATV**
  - 6.8m households

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Who is the Winner?
New media developments are welcomed by electronics industrialists as they bring technological triumph as well as furthering the cause of scientific success. New developments can mean great business opportunities for the hardware industry.

For existing broadcasters, every new medium brings additional newcomers to the ratings game. It is not welcome news to hear that in the U.S. three major networks are losing more than one third of their prime-time audiences to CATV since viewing time does not generally increase as the number of channels multiply. What does this new environment mean to the audience? In a true capitalist society the customer comes first. Viewers have greater access to a wider variety of programs and may even have multiple choices according to their tastes. This is vital in a democratic society, but someone will have to pay the price for this increase in choice.

Who will pay?
The Japanese audience used to pay about 1,000 yen per month to receive NHK's public service television. The remaining channels were free-of-charge because commercial stations were paid for by advertisers. NHK introduced the satellite television fee in 1989 so that if one chooses to watch both terrestrial and satellite television, the fee is around 2,000 yen per month. Then Japan Satellite Broadcasting launched Wowow as a pay TV channel costing a further 2,000 yen per month for a single channel of scrambled service.

How much does CATV cost?
In the case of Tokyu Cable Television in Tokyo which offers 34 channels, fees are charged as follows:

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<tr>
<td>Basic fee</td>
<td>3,980</td>
</tr>
<tr>
<td>Star channel</td>
<td>2,575</td>
</tr>
<tr>
<td>Wowow</td>
<td>2,060</td>
</tr>
<tr>
<td>TOTAL</td>
<td>8,615</td>
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Broadcasting laws dictate that everyone with a television must subscribe to NHK, meaning that the total fee for 14 transmission channels and 20 original channels can exceed 10,000 yen. Tokyu cable television has:
Possible households 110,000
Subscribers 24,000
Star channel subscribers 3,300
Wowow subscribers 700

There are also DBS services which use 6 CS channels. All of these are pay services. The fees are as follows:

- Nippon Cable TV (CNN) 900 yen
- Music Channel 900 yen
- Space Shower 900 yen
- Japan Sports Channel 1,000 yen
- Star Channel 2,500 yen
- Satellite Movies & Plays (to be decided)

The Impact of CATV on the Television Business
One of the problems CATV gave rise to is that it has brought forth a change in the business structure of broadcasting. Broadcasting used to be direct-to-consumer business. When CATV comes in as a retailer, broadcasting stations become wholesalers.

Sharing the Cost
Cost-sharing or profit-sharing between the first distributor and the second distributor becomes a keen issue. In the case of commercial television, costs are paid by the first distributor and CATV can usually retransmit without additional charges. But in the case of pay television, the income from the audience must be properly shared by the first distributor and the second distributor. In the U.S. the income is split roughly 50/50
between the CATV operator and the program supplier. The program supplier pays for the satellite rental, and the Hollywood studio (copyright holder).

There are said to be three main reasons why CATV is a success in the U.S.:
1) CATV has income from two sources, pay TV and commercial TV.
2) Satellite distribution of multiple programs has been economically viable since 1975.
3) The strategy of program suppliers to share the revenue 50/50 with the system operator provides incentives to CATV operators.

In the U.K. the penetration of CATV is much lower, and direct reception of medium-powered satellite is not making any significant progress. BSkyB is trying hard to increase its audience by forming an alliance with CATV. While CATV operators tend to have the lion's share, satellite operators, who have to pay copyright to the studio from their meager share, are forced into a financially difficult position.

CATV in Japan
Many of the cable operators in Japan are in financial difficulties. Even now CATV has not reached break-even point. In 1989 the total revenue of CATV operators increased by 25% to 21.5 billion yen, but the total spending increased by 37.7% to 28.5 billion yen leaving a deficit of 7 billion yen.

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In Japan, space cable network (CATV plus CS) is competing with DBS in several ways, namely the variety of programs, the attractiveness of its software and economic efficiency. Space cable network tends to require heavy investment on the part of the operator, while DBS depends more upon user's investment.

Cost Performance of CATV
The following is a cost performance comparison of terrestrial television, DBS and CATV:
One of the principles governing the economy of television is that marginal costs are almost zero. A television program which is watched by 10,000 people may be watched by one million people without any substantial additional cost. Television operation can be made very economical by employing economies of scale. The U.S., with more than 200 million people, can build a more economical television system than Japan with 120 million people. Europe may succeed in building up an even more economical pan-European system for its population of more than 300 million people.

Global Village in Asia

On 26 August 1986, Star TV was inaugurated, the first of its kind as pan-Asian satellite service. Asia Sat is situated at 105.5 degrees East. It has 24 transponders using C-Band. The second generation of Asia Sat will be launched in 1994 at 122 degrees East, and it will use Ku-Band.

In Europe, television without frontiers has become a reality with the advent of medium-powered satellites such as Astra. Pan-Asian satellite will be common by the middle of the 1990's. Along with Intelsat satellites, there will be quite a number of CS transponders available for pan-Asian use. In 1994, Alpha Lyracom/Pan American Satellite and Orion are launching satellites to cover the Pacific area. Columbia Communications and TRW Space and Technology are said to have rented 12 C-Band transponders from NASA. Columbia/TRW already have Pacificom-I which carries both C-Band and Ku-Band transponders.

South Korea is to inaugurate DBS in 1995. Indonesia has already been utilizing Parapa since 1976. Thailand, Malaysia and Singapore are also interested in acquiring CS in the near future. Telecommunication has been regulated nationally, but the electric
signals can easily spill over either unintentionally or intentionally.

International telecommunication is no more costly than national telecommunication. The internationalisation of telecommunications is technically inevitable and is more economically viable than national telecommunication. Progress in electronics technology provides opportunities for business entrepreneurs. However, because television is not only a matter of making money, we must have a clear vision of the social impact of technological progress. Television is a carrier of culture. Technologies of culture must be discussed on an Asian level.

We all know Asia is not one. Diversity is Asia's strength but we must seek uniformity within this diversity using new electronic technology as we move towards the 21st century. Asian villagers will become members of a family of the electronic global village via space cable network.