Cable Television and Telephone Companies: Towards Residential Broadband Communications Services in the United States and Japan

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Program on Information Resources Policy

Harvard University

Center for Information Policy Research

Cambridge, Massachusetts

A publication of the Program on Information Resources Policy.

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December 1990, P-90-9

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Printing 5 4 3 2 1

December 1990

PROGRAM ON INFORMATION RESOURCES POLICY

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- U.S. General Accounting Office
- United States Postal Rate Commission

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Acknowledgments

Thanks go to the following persons who reviewed and commented critically on drafts of this report:

David Charlton
Tomas Cohen
David Cosson, Esq.
Richard V. Ducey
John R. Hoffman, Esq.
Hiroshi Inose
George Kleinfeld
Jiro Kokuryo
Seisuke Komatsuzaki
David. J. Markey
Herbert E. Marks, Esq.
Janice I. Obuchowski
Frances Seghers
Florence Setzer
Casimir S. Skrzypczak
Walt M. Sorg
Larry J. Sparrow
Gordon Togasaki
Sidney Topol
Gerry Wall
William F. Werwaiss

These reviewers and the Program's affiliates are not, however, responsible for or necessarily in agreement with the views expressed herein, nor should they be blamed for any errors of fact or interpretation.

Executive Summary

The possible deployment of fiber optics to homes, which would make it possible to provide voice, data, and video transmission over a single subscriber line, has given rise to a number of questions and issues concerning the position of broadband communication services to the home in both the United States and Japan. These questions and issues are extremely complicated since they directly concern fundamental structures of communications industries in both countries. In the U.S., the focal point of current discussion is the issue of providing video services and entry into cable television by telephone companies (telcos), which itself consists of many issues such as reregulation of the cable industry, how to achieve greater competition in local video and telephone marketplaces, and rapid realization of an Integrated Broadband Network (IBN). In Japan, current debates on broadband communications services are usually made in a somewhat abstract context of the convergence of broadcasting and communications by way of common carrier facilities.

In the U.S., telcos now have two possible ways to participate in cable television and video services. First, telcos can provide both video programming and transmission facilities by themselves or through affiliates. Second, they can offer video transmission facilities to video programming providers on a common carrier basis (channel service). Currently, regulatory hurdles exist for each way: for the former, the telco/cable cross-ownership ban and information service restriction that applies to Bell Operating Companies (BOCs); for the latter, the local franchise requirement and section 214 approval by the FCC. The current regulatory hurdles pose difficult questions and issues not only for cable services by telcos but also for network evolution towards an IBN.

In Japan, telcos have the same two possibilities as in the U.S. to participate in cable and video services. But analysis of current laws and regulations suggests they cannot provide channel service to video programming providers. Whether they can become providers of both video programming and transmission facilities is not clear. From current

regulatory provisions, it is difficult to judge clearly what telcos can and cannot do in cable and video services in Japan.

Since the issues concerning provisions of broadband communications services to homes are deeply rooted in the fundamental structure of communications industries and marketplaces, the debates involve a wide range of players. This paper concisely presents each player's current views and positions concerning telco/cable cross-ownership and construction of an IBN in both the U.S. and Japan.

Cable television is flourishing in the U.S. But at the same time, it is now reaching a dominant position in the video distribution marketplace. Due to this position, the would-be market power produced by vertical and horizontal integration of the cable industry and customers' dissatisfaction with rate hikes and poor service quality have now evoked concerns about the total control of information and programming by cable operators. These concerns, along with the argument of rapid construction of an IBN through greater competition, comprise important elements in the debates over telco/cable cross-ownership and provision of new advanced broadband services to homes.

Although policy makers envision cable television as a "second subscriber loop," the Japanese cable industry is still in its infancy. It is struggling for its survival and future development. An increase in the number of video outlets, particularly state-backed Direct Broadcast Satellite (DBS), may prevent the growth of cable television in the 1990s in Japan.

Under these circumstances, the Ministry of Post and Telecommunications (MPT) seems to have adopted the policy to preserve the harmonious development of various video outlets, including construction of an IBN by telcos, rather than leave the outcome to competition by establishing a level playing field.

Technological development is about to open the door for telcos to obtain means to deliver video programming and other broadband services directly to the home. In the U.S., regulatory developments – such as Open Network Architecture (ONA), new rate regulations, and accounting rules – seem to help ease telcos' participation in broad-band services. The challenges telcos face, however, still seem great; they consist of not only a number of technical difficulties and regulatory hurdles but also the necessity of enormous capital investment, acquisition of necessary expertise, uncertainty of programming availability, and so on.

In Japan, Nippon Telegraph and Telephone Corporation (NTT) is working actively toward constructing an IBN and providing residential broadband services, like telcos in the U.S. But NTT, a dominant carrier, cannot provide even channel service to cable operators at the moment. Slow regulatory developments and numerous other problems – including the nascent status of the Japanese cable industry – may prevent NTT from constructing an IBN in the 1990s. Instead, NTT probably will focus on expanding its narrow-band ISDN services, while laying down certain bases for future broadband services.

Currently, it is difficult to predict the outcome of the debates concerning telco/cable cross-ownership, construction of an IBN, and provision of new advanced broadband services to homes in both the U.S. and Japan, since various industries, regulations, and concerns specific to formerly separated industries directly cross over in the debates. But one thing seems clear: fundamental and underlying issues for the debates of the 1990s seem the same as those in the past. A number of long-standing fundamental issues in communications industries – equal access to facilities and information, cross-subsidization between regulated and unregulated businesses, universal service, possibility of competition in local loops, and regulations over rate of services – seem to reappear with a different outlook, with a number of new players, and in a new context. Thus, the 1990s' "great competitive upheaval" may follow the same old plot of the same old story of the communications industries.

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Preface

The possible deployment of fiber optics to homes, which would make it possible to provide voice, data, and video transmission over a single subscriber line, has given rise to a number of questions and issues concerning the provision of broadband communications services to the home in both the U.S. and Japan. The first round of battles has been fought over the issues concerning the entry of telephone companies (telcos) into cable television (cable TV) services. As technologies progress further, residential broadband services may become a major battleground of various players in the communications industries of the 1990s.

This paper overviews, analyzes, and discusses current questions and issues concerning residential broadband communications services and their possible effects on public policy (with the main focus on current telco/cable issues) in the U.S. and Japan. Chapters 1 and 3 deal with the U.S. situation, chapters 2 and 4 deal with Japan. Chapter 5 provides five alternative patterns of telco/cable regulations.

Chapter 1 describes and discusses the regulatory history of cable TV, current regulatory frameworks of telephone companies and cable TV, and major regulatory barriers to telcos' entry into cable TV services in the U.S. It also analyzes effects and possible problems that current laws and regulations may pose to the future provision of broadband communications services to the home.

Chapter 2, a counterpart to chapter 1, discusses and analyzes current regulatory provisions for telcos and cable TV in Japan. It emphasizes comparisons between the U.S. and Japan in order to make clear the characteristics of telephone and cable industries and their regulations in Japan.

Chapter 3 mainly deals with the current debates over telco/cable cross-ownership issues in the U.S. It attempts to clarify not only current positions of major players but also core issues of the

controversy by analyzing problems that both cable operators and telcos currently face. Such issues include the current competitive position of cable operators in the video program distribution marketplace, vertical and horizontal integration of the cable industry, line of business restrictions of the Modification of Final Judgement (MFJ) imposed on Bell Operating Companies (BOCs), and the economies of "fiber-to-the-home."

Chapter 4 overviews and discusses current debates over the relationship between cable television and telephone companies, issues arising from the possible convergence of common carrier and broadcast services, visions and problems of the cable industry, and strategies of telcos – particularly those of Nippon Telegraph and Telephone Corp. (NTT) – towards the introduction of a Broadband Integrated Services Digital Network (B-ISDN) in Japan. The discussion and analysis is provided in comparison with that on the U.S. (chapters 1 and 3) as much as possible in order to highlight Japanese characteristics of current issues and questions about residential broadband services. Chapter 4 also analyzes the effects and impact of Japan's specific situations, such as the development of Direct Broadcast Satellite (DBS) and current policies for the video distribution marketplace, on the competition among and development of residential broadband communications services.

Chapter 5 describes the classification of possible regulatory approaches to the entry of telcos into cable TV services as a summary and conclusion of this paper.

In this paper, broadband communications services are defined as services capable of both one-way and two-way transmission of full-motion video. The paper mainly deals with broadband communications services in the residential market and refers to issues concerning the provision of broadband services to business users only when necessary.

CHAPTER ONE

CURRENT REGULATION OF CABLE TELEVISION AND TELEPHONE COMPANIES – THE U.S.

Cables and telephone lines are the major wire communications media currently reaching the home. Although their current service characteristics are different – cable television (cable TV) is mainly a one-way broadband medium for video programming distribution, and telephone lines are a two-way narrowband for voice and data – their services may start overlapping, as telephone networks gradually evolve to broadband networks and cable systems become sophisticated. Therefore, public policy and regulation also may start overlapping.

This chapter briefly looks at the regulatory history of cable TV and, when necessary, in conjunction with telephone regulations, current regulatory frameworks for cable TV and telephone companies (telcos), and regulatory barriers for entry by telcos into the cable TV business.

1.1 REGULATORY HISTORY OF CABLE TELEVISION

1.1.1 Before the Cable Act of 1984

When Community Antenna Television (CATV) emerged in the 1940s and 1950s, it was a medium to retransmit terrestrial broadcast signals to areas with difficulties receiving over-the-air broadcast signals. At first, broadcasters welcomed CATV since it increased the audiences of broadcast programs and thereby contributed to increased advertisement revenues of broadcasters. Accordingly, the Federal Communications Commission (FCC) did not impose specific regulations over CATV at first. The FCC saw CATV as some sort of an ancillary service to broadcasting and found it could possibly benefit the public.[1] The Commission was also uncertain about its jurisdiction, because CATV did not seem to fall into the category of either Title II (common carriers) or Title III (broadcasters) of the Communications Act of 1934. Accordingly, the

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[1] Horwitz, Robert B., *The Irony of Regulatory Reform* (New York: Oxford University Press, 1989), p. 189.

Federal Communications Commission (FCC) did not impose specific regulations over CATV at first.

When CATV operators began to import signals of distant TV stations, FCC policy on CATV also started changing. Distant signal importation by CATV directly collided with the FCC's long-standing policy of broadcast localism. Small broadcasters were also threatened by the distant signals, which could cause the number of their viewers to decline. At this time, UHF TV was in its early stage, and most TV stations were struggling for their survival.

In the 1962 Carter Mountain case, the FCC rejected an application of microwave relay of distant signals and began to assert its jurisdiction over CATV: "[The Commission does] not agree that we are powerless to prevent the demise of the local television, and the eventual loss of service to a substantial population."[2] This decision marks the beginning of FCC de facto regulation of CATV; the FCC continued to excise its de facto authority until enactment of the Cable Communications Policy Act of 1984 (the Cable Act of 1984).

The Commission adopted two important rules concerning cable television in 1965. The "must carry" rule required carriage of all local TV signals by CATV. The "nonduplication" rule imposed a "black out" of distant programs that duplicated those of local stations during a certain period of time. The FCC regarded these rules adequate for fair competition between local broadcasters and CATV.[3] These rules, although amended from time to time, survived well into the 1980s.

Throughout the 1960s and early 1970s, FCC policy on CATV tended to emphasize the protection of local broadcasters. The FCC wanted CATV as "a supplement rather than a substitute for off-the-air television

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[2] In re Application of Carter Mountain Transmission Corp., FCC Docket No. 12931, *Decision*, 32 FCC 459, 465 (1962).

[3] Rules re Microwave-Served CATV, FCC Docket Nos. 14895 and 15233, *First Report and Order*, 38 FCC 683, 713 (1965).

service."[4] Not only for the cable and broadcast industries, this sort of policy was also apparent in the telephone industry where it helped preserve the telephone monopoly during this period. The Commission took six years to reach the Carterfone decision in 1968, despite an apparent lack of evidence that the Carterfone device harmed telephone networks.[5] In this environment, cable TV gradually developed and by November 1970 it had reached about 4.5 million homes, served by some 2.5 thousand cable systems.[6]

In January 1970, the FCC adopted for the first time its telco/cable cross-ownership rules in what became a long-time controversy over the relationship between telephone companies and cable TV.[7] Cable operators had long complained about telcos' exclusive control over telephone poles and conduits, warning about the dangers of an anti-competitive environment caused by the concentration of telco's control over conduits and content. The decision for the telco/cable cross-ownership ban was made to preserve a competitive environment for the development of cable facilities and services, and thereby "avoid undue and unnecessary concentration of control over communications media either by existing carriers or other entities."[8] The same year, the Commission also introduced a ban on network/cable and broadcaster/cable cross-ownership.[9]

By the time telco/cable cross-ownership rules were in place, CATV grew to the point where it could become a political power, although its

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[4] Ibid., p. 701.

[5] See generally Horwitz, pp. 230-31.

[6] National Cable Television Association (NCTA), *Cable Television Development*, May 1989, pp. 2-4.

[7] Section 214 Certificate, FCC Docket No. 18509, *Final Report and Order*, 21 FCC 2d 307 (1970), (hereinafter, Section 214 Certificate).

[8] Ibid., p. 325.

[9] See generally Brenner, Daniel L. et al., *Cable Television and Other Nonbroadcast Video* (New York: Clark Boadman Co., Ltd., 1989), pp. 4.9 to 4.11.

influence was still small. This period coincided with that of the civil rights movement. Due to its large channel capacity and potential two-way capability, CATV came to be regarded by many as the champion of new technology, and "participatory and democratic."[10] Some citizens groups, think tanks, and members of the government viewed CATV as the best medium for grass roots participation in the political process, although this view imposed an additional burden on cable's growth through requirements such as unrealistic large channel capacity and two-way service capability.[11] During this period, CATV was renamed "cable television," which was prompted by technological changes such as microwave towers and satellite dishes that replaced master headend antennas of early CATV systems to bring in more remote signals.

Pushed by these movements, the FCC intended to make comprehensive cable rules so as to foster growth of cable TV and, at the same time, ensure fair competition between cable operators and local broadcasters. Cable rules of 1972 contained a number of rather complicated provisions, reflecting this effort by the Commission.[12] Some of these rules are as follow: *must carry, leapfrogging, syndicated exclusivity, channel capacity, program origination requirement,* and *public access channel.*[13] Regardless of the Commission's true intention, the rules were rather restrictive – at least from cable operators' viewpoint. Particularly, the program origination and access channel requirements imposed a heavy burden on cable operators, although they could limit somewhat excessive requests by local franchising authorities.

In the mid-1970s, the wheel slowly began to turn in the other direction. Although reasons and causes behind this change are well beyond the scope of this paper, **Figure 1-1** clearly shows the gradual

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[10] Horwitz, p. 251.

[11] This view emerged again in Japan in the 1980s. See chapter 2, sec. 2.1.

[12] Cable Television, FCC Docket Nos. 18397, 18373, 18416, 18892 and 18894, *Report and Order*, 36 FCC 2d 143 (1972).

[13] For provisions of these rules, see Horwitz, pp. 253-55.

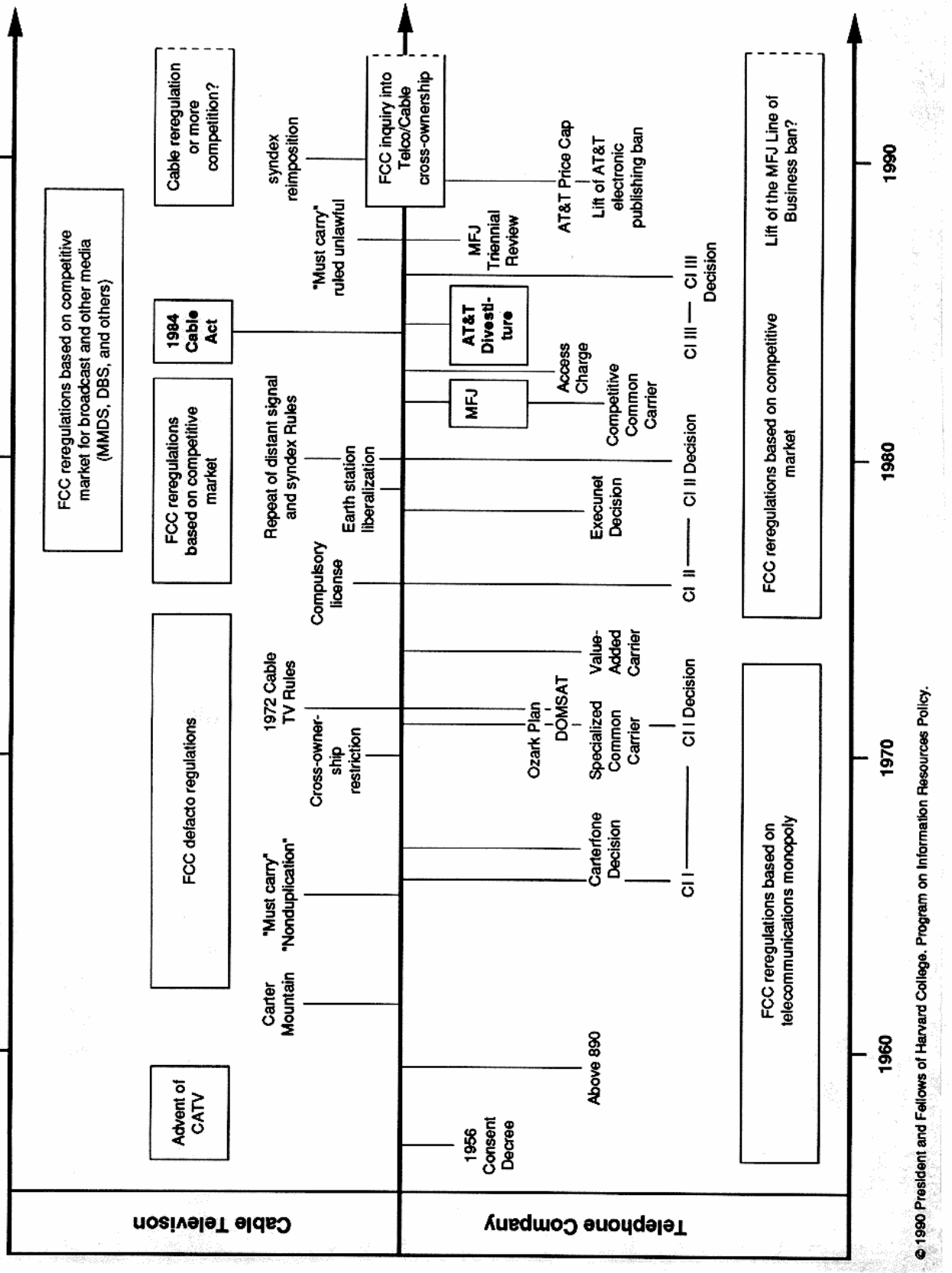

Figure 1-1

Major Regulatory Changes in Cable Television and Telephone Industries

movement towards FCC reregulation policies that emphasize a competitive marketplace in both the telephone and cable industries. This trend was also part of a much larger reregulation movement involving airlines, railroads, banks, and the like. The 1972 DOMSAT decision opened up the way for video carriage by satellite and led to the rise of the "super station" as well as the emergence of cable networks such as Home Box Office (HBO).[14] The reregulation for common carrier services has been driven mainly by needs of large corporate users and their coalition with entrepreneurs. Cable television generally serves ordinary households and was seen as a medium of grass roots. But here can be seen an unintended product of an incident. The opening of the satellite communications market was backed by large users' demand and resulted in the development of a "super station" and cable networks, which in turn promoted further growth of cable TV – a medium of the general public.

Another important issue looming over the cable industry was the copyright of programming for conventional TV. Because cable had carried TV signals without any copyright liabilities, the issue was debated for a long time and the main contention by broadcasters was their claim of unfair cable unfair competition.[15] Although far from solving the issue, the Copyright Act of 1976 created a compulsory license for cable operators as their copyright liabilities.[16] Despite its limitations, the Copyright Act of 1976 undoubtedly contributed to the further growth of cable television.

By the early 1980s, most cable rules made in the first half of the 1970s were modified or abolished either by the FCC or overturned by courts. The number of basic cable subscribers increased to almost 18 million in 1980.[17] Cable television began to flourish. In 1980, the

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[14] Domestic Communications-Satellite Facilities (DOMSAT), *Second Report and Order*, 35 FCC 2d 844 (1972).

[15] For a detailed discussion of cable TV and copyright, see Brenner et al., chapter 9.

[16] 17 USC sec. 111.

[17] NCTA, p. 2.

Commission finally eliminated its long-standing rules of syndicated exclusivity ("syndex" in **Figure 1-1**) and distant signal importation. This decision explicitly shows the Commission's direction towards reregulation based on competitive video market policy. The Commission states

> [T]he evidence . . . demonstrates clearly that increased competition from less proximate broadcasters will not affect adversely the performance of local television broadcasters . . . . [T]here is no evidence that shows . . . that the elimination of the rules will threaten the continued supply of programming.[18]

Another decision from the early 1980s worth mentioning is the FCC refusal to impose restrictions on multiple ownership of cable systems.[19] This decision led to the rapid expansion of trade of cable systems, as in the broadcast industry, and the creation of large multiple system operators (MSOs). These large MSOs have been central to many cable issues in the late 1980s.

Finally, the early 1980s also saw regulatory changes for other video delivery media. Not to mention changes in regulations for broadcast services, the video program distribution market was widely opened up for video outlets such as multipoint distribution system (MDS), satellite master antenna television (SMATV), low-power television service (LTV), and direct broadcast satellite (DBS).[20]

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[18] CATV Syndicated Program Exclusivity Rules, FCC Docket Nos. 20988 and 21284, *Report and Order*, 79 FCC 2d 663, 814 (1980). For a concise history of signal carriage regulation, see Appendix A of *Report and Order*.

[19] CATV Multiple Ownership, FCC Docket No. 18891, *Report and Order*, 91 FCC 2d 46 (1982).

[20] For a concise explanation of regulatory changes for these media, see Krasnow, Erwin G. and Stern, Jill A., "The New Video Market Place: A Regulatory Identity Crisis," *Issues in New Information Technology* (Norwood, N.J.: Ablex Publishing Corp., 1988), pp. 45-145.

1.1.2 The Cable Communications Policy Act of 1984

The Cable Act of 1984 can be described as a product of compromise among various stakeholders and on many issues, as most laws always have been. It is perhaps a temporary solution for many issues fought over for a long time, such as cross-ownership, franchise and its renewal, provision of public access channel, federal/state jurisdiction, rate regulation, and fair competition among various video program distribution outlets. Consequently, "[the Act has an] ambivalent nature[,] . . . a mixture of regulatory and deregulatory provisions."[21] Major provisions of the Act will be introduced in a subsequent section, but the Act's main features can be summarized as follow:

- Establishes a national policy for cable television for the first time.[22]
- Provides a framework for the franchising process and assurance of stability of franchise renewal.[23]
- Provides explicit jurisdiction of the FCC, expressed throughout the Act's provisions.
- Abolishes rate regulations for cable systems in a competitive video distribution market.[24]
- Defines a cable operator as a non-common carrier for cable service but, at the same time, requires mandatory provision of public access channels.[25]
- Codifies FCC cross-ownership rules.[26]

An issue unresolved by the Cable Act of 1984 worth mentioning here is cable's provision of two-way voice and data services. To put it simply,

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[21] Ibid., p. 63.

[22] The Cable Act of 1984, sec. 601.

[23] Ibid., secs. 621, 622, 625, 626. Ambiguous franchising procedures and the uncertainty of franchise renewal had been a source of much controversy and even corruption.

[24] Ibid., sec. 623.

[25] Ibid., secs. 621(b)(1), 611, 612.

[26] Ibid., sec. 613.

the Act does not give clear direction about how to treat entry by cable operators into the telephone arena. The Act reserves the right of the FCC and state authorities to ask for submission of "informational tariff" and the right of states to regulate such intrastate services.[27] But no clear indication exists either for promotion or restriction of voice and data services by cable operators, or on the scope of FCC preemption over states' authority. A report claims that because such a politically sensitive and controversial issue might have prevented the Act from passing Congress, lawmakers intentionally avoided putting it into the Act.[28] But there is another side to the story. In an era where networks may be evolving into an integrated broadband network (IBN), this issue, together with the telco/cable cross-ownership issues, has surfaced to the center of the stage.

1.1.3 After the Cable Act of 1984

Enactment of the Cable Act in October 1984 did not end the battles in the video distribution marketplace. On the contrary, this Act simply created more issues and regulatory problems, just like the turmoil brought about by the Modification of Final Judgement (MFJ) and break up of AT&T. In the Commission's rulemaking that followed passage of the Act, several issues surfaced between cable operators and cities: definition of competitive video market and of basic cable service, signal measurement, and so on. Reportedly, these issues were generally settled in favor of cable operators.[29]

As for content and signal carriage rules, there was some good and bad news for cable TV. The good news was that courts struck down the "must carry" rule twice and ruled it unconstitutional.[30] This decision,

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[27] Ibid., sec. 621(d).

[28] Telecom Publishing Group, *Regulations and the New Video Marketplace* (Alexandria, Va.: Capitol Publishing, Inc., 1988), p. 11.

[29] Ibid., pp. 4-5.

[30] Quincy Cable TV v. FCC, 768 F 2d 1434 (D.C. Cir. 1985), and Century Communications Corp. v. FCC, 835 F 2d 292 (D.C. Cir. 1987). Also, see Brenner et al., pp. 6.54 to 6.55.

however, raised the issue of creating new "must carry" rules, which is complicated by channel alignment and compulsory license issues.[31] The controversies concerning the possible introduction of certain new "must carry" rules have currently heated up between cable operators and broadcasters, and have attracted the attention of Congress.[32] In August 1987, the FCC also decided not to enforce the fairness doctrine on broadcasters.[33] The bad news was that the syndicated exclusivity rule was reimposed on January 1, 1990.[34]

Since passage of the Act, cable television flourished and finally has made it into the "major league." Trade value of a cable system soared to well over $2,000 per subscriber. This expansion of "trafficking" led to vertical and horizontal integration of the cable industry by large MSOs, which in turn evoked Congressional concern. Many complaints have been heard about cable's anticompetitive practices, such as discrimination in the supply of programming to competing technologies.[35] The issue is similar to that of telcos' provision of enhanced services and information services, in that many concerns are centered on the abuse of market power by owners of bottleneck facilities.

Rate hikes of cable TV after the deregulation in October 1986 have also attracted the growing attention of Congress.[36] These concerns have fueled the voices calling for either reregulation of cable TV or competition by entry of telephone companies, or for both within

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[31] *Broadcasting*, June 19, 1989, p. 29.

[32] See *Broadcasting*, December 25, 1989, p. 19, 23.

[33] Brenner et al., p. 6.70.

[34] In the Matter of Amendment of Part 73 and 76 of the Commission's Rules, GEN. Docket No. 87-24, *Report and Order*, 3 FCC Red 5299 (1988).

[35] *Broadcasting*, June 26, 1989, p. 29.

[36] According to the General Accounting Office's survey of cable rates released August 3, 1989, the "lower priced" basic service rose 29 percent between December 1, 1986, and October 31, 1988. *Broadcasting*, August 7, 1989, p. 30.

Congress. Consequently, a large number of bills affecting cable have been introduced in Congress.[37]

As for provision of cable facilities by telcos, several section 214 permissions have been granted for channel services by Bell Operating Companies (BOCs). In the telco/cable cross-ownership arena, reportedly more than 300 small telcos have applied for section 214 approval for construction of cable systems and have operated them either directly or through affiliates, owing to blanket exemption of the cross-ownership restrictions of the Cable Act of 1984 in rural areas.[38] Several RBOCs initiated "fiber-to-the-home" trials – most of which include simultaneous transmission of voice, data, and video – demonstrating their ability to provide "new services" as well as video programming to the home by fiber optics. The FCC launched *Notice of Inquiry* and *Further Notice of Inquiry* to gather the facts regarding possible repeal of the telco/cable cross-ownership ban.[39] The National Telecommunications and Information Administration (NTIA) issued a report expressing concerns about growing vertical and horizontal integration of the cable industry and called for "video dial tone" service.[40]

Quick solutions to these complex issues are unlikely, since they are complicated even more by ongoing debates over the possible repeal of the MFJ line of business ban. But with one step closer to a broadband communications era – with fiber optics and digital technology,

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[37] As of August 1989, fourteen bills have been introduced. *Broadcasting*, August 14, 1989, p. 31.

[38] Telecom Publishing Group, p. 10.

[39] In the matter of Telephone Company-Cable Television Cross-Ownership Rules, CC Docket No. 87-266, *Notice of Inquiry*, 2 FCC Red 5092 (1987), *Further Notice of Inquiry and Notice of Proposed Rulemaking*, FCC 88-249, released September 22, 1988 (hereinafter, the latter is cited as *Further Notice of Inquiry*).

[40] National Telecommunications and Information Administration, *Video Program Distribution and Cable Television: Current Policy Issues and Recommendations*, NTIA Report 88-233 (1988), (hereinafter, *NTIA Report*).

symbolized by Broadband Integrated Services Digital Network (B-ISDN), gradually turning into a real possibility – these issues will dominate the next decades. They will be discussed in later chapters.

As **Figure 1-1** shows, until recently issues in the telephone and cable industries have been relatively independent, even though an incident in one industry affected the other from time to time, and a few hot issues between them have existed, such as telco/cable cross-ownership. But towards the era of a broadband network, we probably will face issues that reflect, encompass, and combine past and present issues of both industries, as summarized in **Figure 1-1**.

1.2 CURRENT REGULATORY PROVISIONS FOR CABLE TELEVISION AND TELEPHONE COMPANIES

Table 1-1 shows major provisions of regulations over cable television and telephone companies. Although it is not necessary to examine them in detail, three major points must be discussed for the purpose of this paper.

The first point is the difference in characteristics of service providers and their services under the current regulatory framework. A telephone company is defined as a common carrier. The Communications Act of 1934 defines a common carrier as "any person engaged as a common carrier for hire."[41] Although this definition is circular and of little use, together with other provisions of the Act it helps define characteristics of the common carrier, such as "any person engaged" in offering telecommunications services on a non-discriminatory basis to anyone who wishes to hire such services upon "reasonable request." Thus emerges its public utility status and one rationale of telcos' universal service obligation.

A cable operator, however, is defined as neither a common carrier nor a public utility – as far as cable service is concerned. Therefore, in

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[41] 47 USC sec. 153(h).

Table 1-1

Major Regulatory Provisions for Cable Television and Telephone Companies

Provisions	Industry	
	Cable Television	**Telephone Company**
Characteristics of Service Provider	Not a common carrier or public utility for cable service [§621 (c)]	Common Carrier [§153 (h)]
Characteristics of Service	One-way transmission to subscriber of video programming, etc. [§602 (5)]	Two-way communications [§153 (a)] Non-discrimination [§202 (a)] Furnish communications service upon reasonable request [§201 (a)]
Entry into Industry	Franchise [§621 (a), (b)] Franchise renewel [§626, §627] Franchise fee [§622]	§214 approval [§214] State certificate of public convenience and necessity
Rates	No regulation in competitive market [§623, 47 CFR, §76.33]	Tariff filing with FCC [§203] Tariff filing with State PUC
Ownership • Foreign • Multiple • Cross-ownership	No restrictions No restrictions Broadcast/cable restriction [§613 (a)] Network cable restriction [47 CFR, §76.501 (a)] No restrictions for other mass-media [§613 (c), (d)]	Foreign ownership restriction (radio facilities) FCC approval [§221 (a)]
	Telco/cable restriction [§613 (b), 47 CFR, §63.54 - §63.58]	
Content	Generally content control and editorial freedom [§624 (b), (f)] Obscene programming restriction [§639] No control over channels for public, etc., and commercial use [§611 (e), §612 (c) (2)] Compulsory license [17 USC §111] "Must carry" rule (now unconstitutional) Syndicated exclusivity, "network nonduplication" rule [47 CFR, §76.92 - §76.163] "Equal opportunity" rule [§315 (a), §312 (t), 47 CFR, §76.205] Fairness Doctrine [§315 (a), 47 CFR, §76.209]*	Obscene or harassing calls restriction [§223]

*In August 1987 the FCC voted to abolish the fairness doctrine on broadcasters; the implications of this decision on cable remain unclear.

continued

Table 1-1 (*continued*)

Provisions	Industry	
	Cable Television	Telephone Company
Other Major Provisions	Cable channels for public, educational, or governmental use (§611) Cable channels for commercial use (§612) Communications services other than cable service subject to appropriate regulations [§621 (d)]	MFJ line of business restrictions on RBOCs Computer Inquiry III requirement on AT&T and RBOCs

Notes: Section numbers of provisions are according to 47 USC and the 1984 Cable Act for cable part, unless otherwise stated.
The FCC forbears most major regulations for non-dominant carriers.

principle, a cable operator is not obligated to furnish cable service to anyone who wants to subscribe. One exception to the cable operator's non-common carrier status is the "public, educational, governmental," or "commercial use" channel requirement. For these services, cable operators have to assume a quasi-common carrier status.

The second point is the diversity in rate and entry regulations between the two industries. Owing to FCC competitive carrier decisions, non-dominant carriers are now forborne from most rate and entry regulations inasmuch as interstate telecommunications.[42] With the FCC's adoption of price caps, AT&T is also relieved from strict rate of return regulation.[43] For intrastate telecommunications, in most states, local phone companies are subject to the state's specific rate and entry regulations.

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[42] In the matter of Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefore, CC Docket No. 79-252, *Second Report and Order*, 91 FCC 2d 59 (1982), *Fourth Report and Order*, 95 FCC 2d 554 (1983).

[43] *FCC News*, Report No. DC-1379, March 16, 1989.

To provide cable service, an operator must obtain a franchise from local authorities (in most cases, cities). It is, however, possible for municipalities to issue two or more franchises to multiple operators. Cable competition by two or more operators (over-build) can be introduced if a franchising authority so desires. But it is reported that competition remains extremely scarce, with less than one percent of cable operators competing against each other.[44] Cable operators can enjoy freedom from rate regulation of basic cable services if their video distribution markets are effectively competitive. Note here that rates of pay services have never been regulated. After an intense battle between cities and cable providers, the Commission defined a market of effective competition as one "[where] 100 percent of the cable community receives service from at least three unduplicated television signals."[45] This kind of area covers more than 75 percent of all cable systems and more than 90 percent of all cable subscribers.[46]

As discussed previously, the Cable Act of 1984 does not clearly define how to treat the entry of cable operators into non-video two-way communications services. The FCC would probably classify those cable operators as non-dominant carriers and regulate accordingly if they wish to offer interstate telecommunications services by interconnecting with each other or by some other means. States, too, would exercise their right reserved by the Cable Act of 1984 to regulate the services. The FCC preempted the state's regulations in the Cox Cable case; the issue over jurisdiction will remain important, coupled with national policy for broadband communications and realization of a competitive local telecommunications market.[47]

The third point is that while cable operators can generally enjoy editorial freedom over content – although like broadcasters, their first

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[44] *Cable World*, August 14, 1989, p. 1.

[45] 47 CFR sec. 76.33(a)(2).

[46] Telecom Publishing Group, p. 4.

[47] See chapter 3, sec. 3.2.4.

amendment right is somewhat restricted by complicated content regulations – telephone companies are regulated as a common carrier; therefore, they are content neutral. In other words, cable operators can control both content and conduit, whereas telephone companies can control only conduit.

As the law stands, if telephone companies wish to become cable operators, they have to accept at least some of those complicated content regulations. Such action would, however, directly contrast with the content neutrality of the common carrier. Implications of this question cannot be ignored for consideration of policy, regulation, and issues concerning broadband network services.

1.3 REGULATORY HURDLES FOR ENTRY OF TELEPHONE COMPANIES INTO CABLE TELEVISION

Telcos have two possible ways to participate in cable television service. First, telcos can provide both video programming and transmission facilities by themselves or through affiliates – that is, they can become cable operators. Second, they can lease video transmission facilities to franchised cable operators on a common carrier basis, an arrangement known as "channel service." Currently, there are several regulatory barriers to both methods, which are summarized in **Table 1-2**.

In 1970, the FCC first adopted its restrictive rules concerning telcos' entry as cable operators on the ground that

> the public interest in modern and efficient means of communications will best be served, at this time, by preserving . . . a competitive environment for the development and use of broadband cable facilities and services and thereby avoid undue and unnecessary concentration of control over communications media by existing carriers or other entities.[48]

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[48] Section 214 Certificate, 21 FCC 2 307, 325 (1970).

Table 1-2

Major Hurdles to Entry by Telephone Companies into Cable Television

Telco / Cable Cross-Ownership		
Hurdles	**Restrictions**	**Exemptions, Waivers, etc.**
The Cable Act of 1984	General ban on telco/cable cross-ownership in telcos' own service area [§613 (b) (1), 47 CFR, §63.54 (a)]	Rural exemption [§613 (b) (3), 47 CFR, §63.58] Waiver for areas where cable service could not exist except for telcos' participation and Good Cause Waiver [§613 (b) (4), 47 CFR §63.56 (a)]
Modification of Final Judgment	Information service ban on RBOCs [MFJ §II D] Interexchange service ban on RBOCs [MFJ §II D]	Waiver [MFJ §VIII C]

Channel Service (Common Carrier Transmission)		
Hurdles	**Restrictions**	**Exemptions, Waivers, etc.**
The Cable Act of 1984	Channel service possible only by "carrier-user" relationship [§613 (b) (2), 47 CFR, §63.54 (b) and Note 1, §63.55, §63.57] Local franchise requirement (§621 (b) (1))	The same as cross-ownership
The Communications Act of 1934	Section 214 approval by the FCC [47 USC, §214 (a), 47 CFR, §63.01] Filing of tariff for channel service [47 USC, §201 (b)]	

The Commission's rules were codified in the Cable Act of 1984. The Act prohibits phone companies to provide cable service "in [their] telephone service area[s], either directly or indirectly through an affiliate."[49] This provision is usually called the telco/cable cross-ownership ban. This ban also prohibits channel services by telcos to their directly- or indirectly-owned affiliates in their service areas.[50] The term "affiliate" is defined as "any financial relationship or business relationship," with the single exception of a "carrier-user relationship."[51]

There are two exceptions to the bans. First, a blanket waiver is granted for rural areas, defined as having fewer than 2,500 inhabitants.[52] It should be noted that telcos can provide cable services in those areas regardless of the existence of independent cable operators. Second, the waiver is also granted for areas where a cable service "demonstrably does not exist except through a cable system" by telcos or their affiliates, or "upon other showing of good cause."[53] Note that neither the law nor the Commission's rules have ever prohibited phone companies from offering cable service outside their service areas. Thus, local phone companies such as Centel Corp. possess cable systems outside their service areas.[54]

This statement, however, does not apply to Bell Operating Companies. The MFJ bans BOCs from offering information services, either directly or through affiliates, anywhere in the U.S.[55] It can be reasonably assumed

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[49] The Cable Act of 1984, sec. 613(b)(1).

[50] Ibid., sec. 613(b)(2).

[51] 47 CFR, sec. 63.54 note 1(a).

[52] Ibid., sec. 63.65.

[53] The Cable Act of 1984, sec. 613(b)(4).

[54] Centel recently announced that it will sell six of its cable systems. *Telecommunications Report*, April 3, 1989, p. 6.

[55] United States v. Western Electric Co. et al., Civil Action No. 82-0192 (1982), sec. II D 1.

that provision of video programming falls into the category of information services. Reportedly, one RBOC asked the Department of Justice for a waiver of the MFJ because it planned to purchase a cable system outside its service area.[56] Although the U.S. Court of Appeal reversed the first triennial review of the MFJ by Judge Greene and remanded the information service ban,[57] the issue is still said to be unsettled.

An interesting possibility arises concerning AT&T. Judge Greene ruled not to extend the electronic publishing ban on AT&T after August 24, 1989.[58] There are also some arguments that the telco/cable cross-ownership ban does not apply to interexchange carriers (IXCs) since IXCs do not have a "service area" if it means a local exchange "service area."[59] If this point is clarified, AT&T would be able to provide cable services directly to the home. Although AT&T's entry into the cable arena seems unlikely in the near future, the company could have – at least in theory – an opportunity to integrate its network vertically once again.

The MFJ interexchange service ban is also likely to bar BOCs' cable service. Provision of earth stations by BOCs to receive satellite video programming may be prohibited as an interexchange service.[60]

As for channel service by telcos, it is currently possible in terms of regulations, and a number of services are actually provided by telcos. However, telcos must first satisfy certain requirements. Since this is a common carrier offering, telephone companies must obtain

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[56] Pacific Telesis plans to purchase a cable system in Chicago. *Telephony*, December 25, 1989, p. 13.

[57] Section 214 Certificate, p. 325.

[58] *Telecommunications Report*, July 1989, p. 33.

[59] *Further Notice of Inquiry*, paras. 68-70.

[60] Pepper, Robert M., *Through the Looking Glass*, Working Paper of FCC Office of Plans and Policy, 1988, pp. 28-29.

section 214 approval from the FCC to construct a cable system, and to show proof of the "carrier-user" arrangement of the service. If construction of channel service facilities would be approved for a BOC outside its service area, BOCs could possibly compete with each other in the same area for local transport of broadband services. Of course, such a possibility would not be realized, considering the political, judicial, and regulatory issues as well as economic stakes involved.

Channel service can be provided only to cable service operators who possess or obtain franchises from local authorities. An FCC staffer points out that this franchise requirement may have significant adverse effects on network development into broadband generation.[61] Since cable service as defined by the Cable Act seems to include almost any kind of one-way transmission of video programming, a video shop on a street corner may not be able to provide such services to customers without franchise, even if broadband networks would become available to the public.

Thus, current hurdles pose difficult questions and issues not only for cable services by telcos but also for network evolution towards IBN or B-ISDN, assuming customers' demand, market opportunity, cost, and technology would ever permit the introduction of such public networks.

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[61] Ibid., pp. 31-37.

CHAPTER TWO

CURRENT REGULATION OF CABLE TELEVISION AND TELEPHONE COMPANIES – JAPAN

The development and current status of cable television (cable TV) in Japan are distinctly different from that of the U.S. in many aspects, such as the scale of the system, channel capacity, ownership, penetration rate, and their relationship with telephone companies (telcos). And so is the regulatory framework of the telecommunications market in Japan. These differences affect current issues concerning the relationship between cable TV and telcos, and the way in which they arise in Japan.

This chapter describes the history of the development of cable television, basic regulatory framework of the telecommunications market, major regulatory provisions for both cable and telcos, and barriers to telcos' entry into the cable TV arena in Japan.

2.1 HISTORY OF CABLE TELEVISION IN JAPAN

Community Antenna Television (CATV) appeared in Japan as a system of retransmission of over-the-air TV signals, just like it did in the U.S. and almost at the same time, in the 1950s. At that time, Japan was still recovering from damages of WW II, and many regions did not have even a single TV station. Furthermore, Japan's geography – mountains cover almost 70 percent of all land, and many islands are remote – made it difficult for TV signals to reach a number of communities. (This situation remained well into the 1980s, until service was available by way of Direct Broadcast Satellite.) Given Japan's lack of capital and the non-existence of commercial opportunities in these areas at that time, almost all cable systems were run by non-profit organizations such as cooperatives of community residences.[62]

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[62] Miyagawa, Hiroshi et al., *New Media Technology series: CATV* (Tokyo: Ohmu Corp., 1988), p. 1.

Nippon Hoso Kyokai (NHK), a state-owned public broadcaster, has played an important role in CATV development in Japan.[63] As a public broadcaster, NHK has an obligation to make sure that its signals can be received throughout Japan.[64] NHK subsidized the construction of CATV and even established many systems by itself.[65]

In the 1960s, construction of skyscrapers gave rise to poor TV signal reception in major cities. Although CATVs in large cities were far larger than those in rural areas and their scale evoked some commercial interest, the characteristics of Japan's CATV had not changed. CATV was regarded as a service ancillary to broadcasting, as it was in the U.S., and as some sort of public service which offered welfare to the people. In fact, a large part of construction and operation costs of cable systems was incurred by third parties, such as NHK, regional authorities (prefectures and cities), and constructors of buildings or other structures that caused poor TV signal reception. Cable was expected to disappear eventually as broadcast stations spread throughout Japan.

This characteristic is apparent in the 1968 decision of the Ministry of Post and Telecommunications (MPT) against a company that planned to operate commercial CATV in Tokyo. The MPT concluded that it would be preferable, in the light of public interest, for CATV to be run by a non-profit organization.[66] This characteristic currently remains in many cable systems in Japan and adds a distinctive flavor to the development of Japan's CATV. In 1973, the number of cable systems

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[63] See The Broadcast Law, articles 7-50. NHK is said to be roughly equivalent to the BBC in Britain; it collects TV reception fees from TV households.

[64] Ibid., article 7. See generally for Japanese broadcasting system, Kitatani, Kenji, "Japan," *International Handbook of Broadcasting* (New York: Greenwood Press, 1988), pp. 173-85.

[65] Miyagawa, p. 5.

[66] Ibid., p. 3.

reached about 1.2 thousand, with 1.1 million subscribers – all of which offered retransmission of local TV signals as their major service.[67]

Despite the MPT's decision, in the early 1970s commercial CATV began to appear, stimulated by the emergence of large systems in urban areas, by technological possibilities of CATV, and by development of the U.S. cable TV industry. This movement is generally called "the first CATV fever." There had not been many regulatory problems concerning CATV until that time. CATV was regulated by the Wire Communications Law and the Law concerning Provision of Cable Broadcast Services, effective since 1953 and 1951, respectively.[68] The laws were not intended particularly for CATV: the former was developed for telecommunications facilities as a whole, both public and private, and the latter for offerings of cable radio (audio) broadcast. Under these laws, cable operators had only one requirement: to notify the MPT of their intent to establish facilities and services. But the appearance of commercial CATVs brought about the necessity for more coherent and rigid legislation, particularly rules concerning the relationship between cable operators and subscribers.

The Cable Television Broadcast Law (the CATV Law) came into effect in January 1973, and is still effective.[69] The CATV Law stipulates the definition of cable television broadcast; requires cable systems with more than a certain number of subscribers to get from the MPT permission to establish facilities, and tariff authorization for TV signal retransmission to cable systems in certain areas; and imposes on non-broadcast channels content regulations that are almost the same as those imposed on broadcasters.[70]

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[67] Ibid., p. 4.

[68] The Wire Communications Law of the early fifties was entirely amended in 1985 and is largely different from the current law with the same name.

[69] The Law concerning Provision of Cable Broadcast Services became the Law concerning Provision of Cable Radio Broadcast at this time.

[70] For the provisions of the law, see sec. 2.2.

Note here that jurisdictional issues have never occurred in Japan. The MPT is a solo government organization that formulates national telecommunications policy, regulates the industries, and even drafts legislation.[71] If one takes account of Japanese systems and characteristics, strangely – or perhaps naturally – no court battles have occurred concerning regulations and decisions of the MPT. Note also that this period coincided with the so-called "first liberalization of the telecommunications circuit" for the use of data communications. The Public Telecommunications Law, repealed in 1985, was amended to allow certain data communications over telephone networks. To some extent, changes in telephone regulations and public movement calling for certain liberalization of telephone services contributed to the wake of "the first CATV fever" and establishment of the CATV Law.

Despite passage of the CATV Law, "the first CATV fever" quickly died out. This mainly was due to serious economic recession brought about by "the first oil shock" in 1972, which shook the entire Japanese economy to its foundation. Since then, throughout the 1970s and well into the 1980s, the Japanese CATV industry did not change much; it has kept its public and welfare status, and retransmission of local TV signals as its main task (although some cable systems began to import signals of distant TV stations, which were mainly from Tokyo, and the number of systems and subscribers steadily increased). In other words, cable television in Japan remained fairly stable, from both regulatory and technical points of view, until the beginning of the 1980s. Only a few government-backed CATV systems, such as Coaxial Cable Information System of the MPT and the highly publicized Hi-Ovis of the Ministry of International Trade and Industry, conducted some innovative experiments during this period.[72]

Comparison with cable TV development in the U.S. reveals some interesting features of cable TV in Japan during this period, many of

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[71] See the Law concerning Establishment of the Ministry of Post and Telecommunications, articles 1-4.

[72] For these systems, see Miyagawa, pp. 6-7.

which are still apparent and influencing current issues. First, neither superstations nor cable networks such as CNN had developed in Japan. Telecommunications networks were a complete monopoly of government-owned Nippon Telegraph and Telephone Public Corporation (NTTPC), and satellite communications were not opened to private companies.

Second, no major conflicts had arisen between cable operators and NTTPC. These two industries were well separated in terms of regulations and services. Entrepreneurs probably could not see any business opportunities in the cable industry, given the public and welfare nature of CATV as well as the rigid monopoly over telecommunications networks. NTTPC was busy with its two major objectives of that time: realization of a universal telephone service (elimination of telephone backlogs), and fully-automated telephone systems throughout Japan.

Third, no complicated cable rules, particularly between broadcasters and cable operators like those of the U.S., were introduced. Perhaps because CATV was still in its infancy, Japanese broadcasters did not see any conflicts between their interests and cable's.

The most significant feature of Japan's CATV that affected this period and remains even now is its public and welfare nature. As Figure 2-1 shows, almost 65 percent of cable systems with more than 500 subscribers are still operated by various non-profit organizations, such as cooperatives of local residences. This fact may significantly influence debates over network evolution towards a broadband era in a competitive marketplace.

In April 1985, the monopoly of NTTPC was finally broken down and the telecommunications market in Japan was opened up to competition. NTTPC was privatized and became a "special" company under the name of Nippon Telegraph and Telephone Corporation (NTT).[73] To facilitate these

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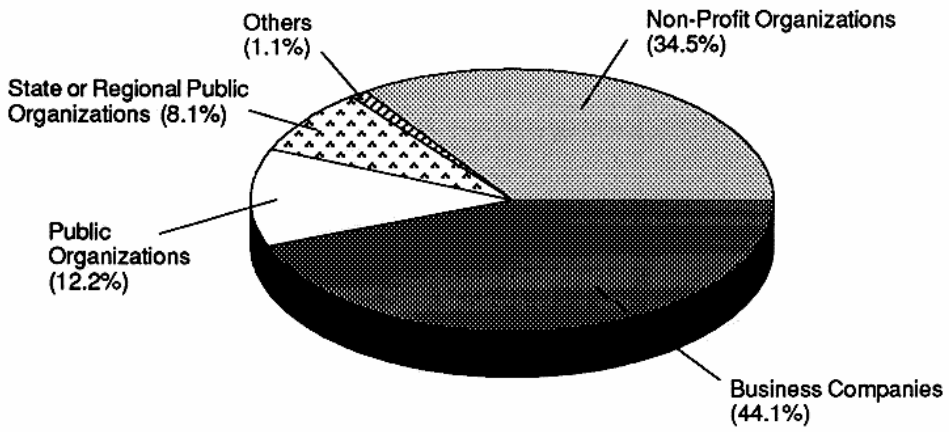
[73] Originally, the government planned to sell NTT's company shares to the public within five years after NTT's privatization; the government would hold one-third of the shares at the end of this period. However, the sale was not made in 1989 due to a slump in share price.



*The number of systems with more than 500 subscribers as of December 31, 1988.

Source: The Ministry of Post and Telecommunications, *Hoso Journal (Broadcast Journal)*, July 1989, p. 55.

Figure 2-1

Ownership of Cable Systems in Japan

changes, three new laws were introduced: the Telecommunications Business Law (the TB Law), the Nippon Denshin Denwa Kabushiki Kaisha Law (the NTT Law), and the Law for Changes and Amendments to Relevant Laws for the Introduction of the TB Law and the NTT Law.[74] Although NTT was not divested like AT&T, almost the entire telecommunications market became subject to competition – at least in principle. As of September 1989, in addition to NTT and Kokusai Denshin Denwa Kabushiki Kaisha (KDD), 50 Type I telecommunications carriers now operate in the market, consisting of three terrestrial long distance common carriers, two satellite carriers, eight mobile communications carriers, five regional (or local) common carriers, two international carriers, and a number of radio paging service companies. Type II carriers, both general and special,

[74] For provisions of the Laws, see sec. 2.2.

total 770.[75] (For a brief chronology of cable TV and telephone regulations in Japan, see **Figure 2-2.**)

In the course of debates prior to the so-called "liberalization" of the telecommunications market in 1985, and in the enthusiastic aftermath of the drastic changes, entrepreneur's interest in CATV revived. This competitive free market (if it is real in Japan) gave rise to the possibility of program delivery by way of a commercial communications satellite. Cable's technological potential was rediscovered, and the possible impact of cable TV on local communities was passionately discussed. The MPT successively established several study groups – composed of academics, equipment suppliers, cable operators, program suppliers, opinion leaders, and people from various media industries – on the future of CATV and the measures that should be taken to foster Japan's development of CATV. In fact, cable TV became a "champion of new media," just like in the late 1960s in the U.S. Program delivery by way of a communications satellite was given the fancy name "space cable network"[76] – even though the satellites had not been launched yet.[77] A report issued by one MPT study group describes a development scenario of CATV in Japan and predicts that the number of households subscribing to CATV would reach 13 million (about 40 percent of Japan's households) by the beginning of the 21st century.[78] The report states that "CATV would grow to a core medium of local community of 21st century Japan."[79] Another MPT report continues:

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[75] Denki Tsusin Shingikai (The Telecommunications Council), *Kongo no Denki Tsushin Sangyo no Arikata, Chukan Toshin (Interim Report on the Future Structure of the Telecommunications Industry)*, October 2, 1989, p. 287 (hereinafter, *Interim Report on the Future Structure of the Telecommunications Industry*).

[76] See generally the MPT Space Cable Net Suishin Kondankai, *CATV Shinjidai Sengen (Declaration of CATV New Era)*, (Tokyo: Gyosei Corp., 1988), (hereinafter, *Space Cable Net*).

[77] The satellites were launched in spring 1989.

[78] *Space Cable Net*, pp. 29-39.

[79] Ibid., p. 35.

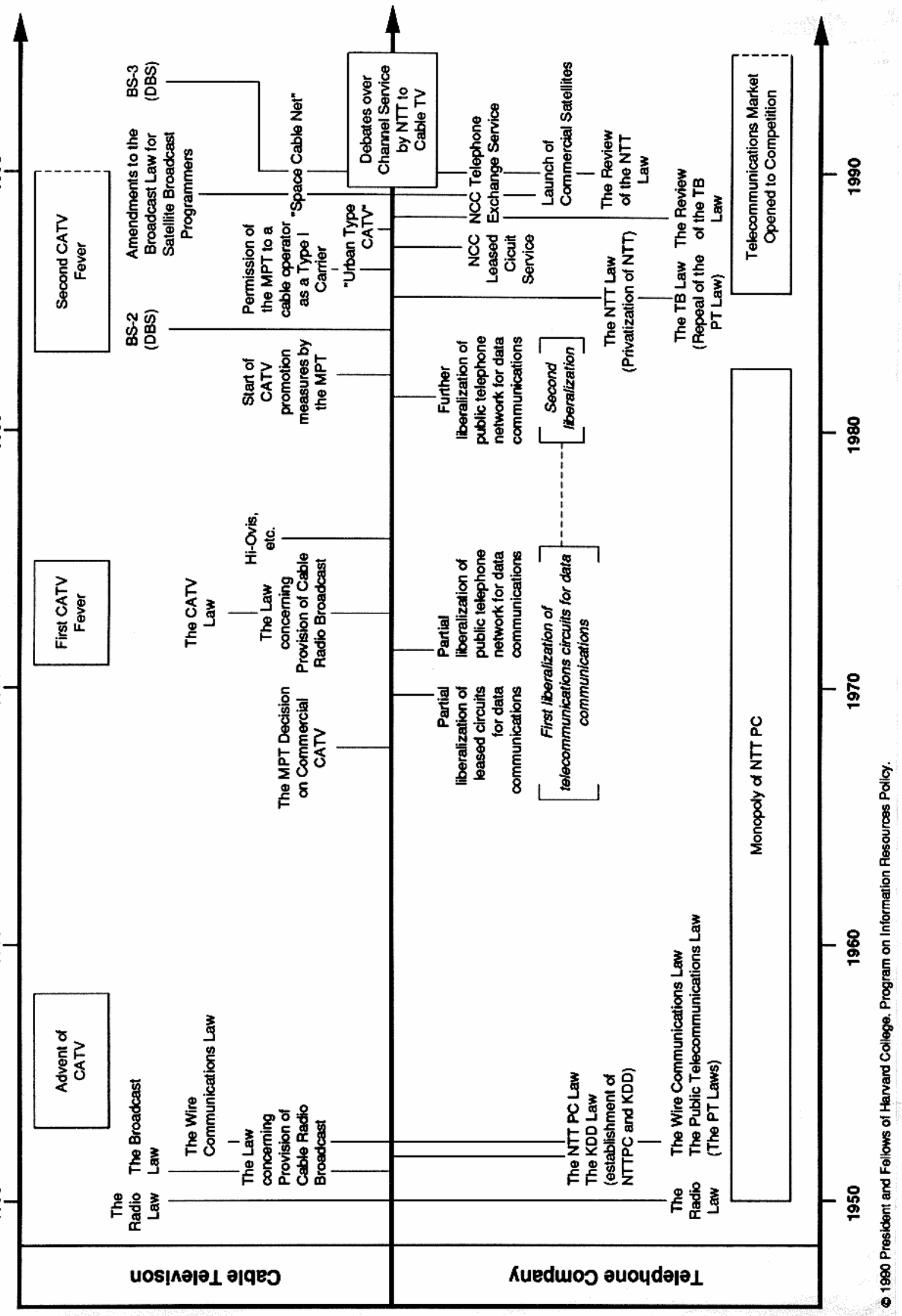

Figure 2-2

Brief Chronology of Cable Television and Telephone Regulations in Japan

> Since CATV, among other telecommunications media, with its large transmission capacity, two-way capability, friendliness with communications satellites, broadcasting satellites, Hi-vision (HDTV), personal computers and so on, has the function [and role] of a total public medium, it is expected to contribute greatly to the "creative local community" and "recreation of home town" as a major information and communications infrastructure in the local community.[80]

In addition to these visions of the future, the following measures have been taken to promote cable television's development:

- Financial assistance to cable operators and, to some extent, to program suppliers such as low-interest loans from the government fund[81]
- Some tax relief on CATV systems[82]
- Amendment of the Copyright Law in order to stipulate clearly cable operators' rights and obligations regarding copyright of programming[83]
- Ease and simplification of the procedures for cable operators to acquire permission to use public right of way[84]
- Designation of 67 cities throughout Japan as "Teletopia City," where various new media will be introduced and assessed through the use of residences; of these cities, 38 plan to introduce CATV systems as a part of their experiments.[85]

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[80] The MPT, Bureau of Broadcast Administration, *CATV Gyosei '88* (*CATV Administration '88*), (Tokyo: Gyosei Corp., 1988), p. 2.

[81] See ibid., pp. 73-80.

[82] Ibid., pp. 81-85.

[83] Ibid., pp. 99-114. See also Japan, The Copyright Law, articles 9, 23, 34, 38, 44, 91-100, 102.

[84] Ibid., pp. 85-94.

[85] Ibid., pp. 125-43. Most of the systems will be constructed and run by so-called "third sector companies," which usually involves active participation of local authorities.

Given these visions and promotional measures, many private companies have begun to enter into the cable TV industry, mainly in urban areas. These profit-seeking companies have systems that are far larger than previous systems and boast more channel capacity. These systems employ the conventional tree and branch configuration, and some systems installed fiber optics in their main trunk and distribution plants.[86] They are equipped with simple two-way capabilities, such as pay-per-view addressability, but only a few systems have started providing services using two-way capability.[87] In short, they are technologically similar to current cable systems in the U.S. Since these systems are usually established in major cities, they are often called "urban type CATV."[88] As of June 30, 1989, 51 "urban type CATVs" have obtained the MPT's permission to establish facilities; already, 21 of these systems provide service. These systems currently have about 52 thousand subscribers.[89]

The following statements sum up the current status of cable television in Japan:

- Although the total number of cable systems increased to about 45 thousand with 5.8 million households (about 18 percent of total TV households), Japan's cable industry is still in its infancy.[90] Despite the increase of large scale systems as described above, 98 percent of total cable systems have fewer than 500 customers.[91] Most systems have only seven-channel capacity and need a complete upgrade to cope with the age of

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[86] *Nikkei Communications*, May 22, 1989, pp. 67-69.

[87] For example, Tokyu Cable Television provides a quiz show in which viewers can participate by sending "yes" and "no" signals from their home. *Nihon Keizai Shinbun*, October 8, 1989, p. 30. (All citations to *Nihon Keizai Shinbun* refer to the North American satellite edition.)

[88] The definition of "urban type CATV" is unclear. The term broadly distinguishes newly-built large scale cable systems from traditional ones.

[89] *Hoso Journal (Broadcast Journal)*, July 1989, pp. 41-43.

[90] This increase is current as of December 31, 1988. Ibid., p. 54.

[91] Ibid.

the "Space Cable Network."[92] Many systems still retain the characteristics of public and welfare services (**Figure 2-1**, above).

- The CATV Law has not changed substantially since 1973. Cable-specific rules like those in the U.S. have not been introduced.
- Current CATV development (called "the second CATV fever") is state-driven or, more specifically, MPT-driven as shown above. Heavy involvement of regulatory authority in the cable industry may have significant implications for telco/cable issues in Japan.
- The successful launch of two commercial communications satellites in spring 1989 finally made possible program supply from space.[93] Nineteen program suppliers have started (or plan to start) providing programs to cable systems by way of the satellites.[94] However, their viability in Japan has yet to be proven.
- NTT has begun to show clear interest in cable television with its narrowband and broadband Integrated Services Digital Network (ISDN) development strategy.

NTT plans to replace copper gradually with optical fiber in subscriber loops and ultimately to provide broadband communications services to the home, like telcos in the U.S.[95] But this transition is happening in quite a different setting than in the U.S., as shown above. In addition, NTT remains a dominant common carrier in both local and long distance telecommunications services. Its scale is enormous by comparison with other New Common Carriers (NCCs) or cable companies. Ongoing fierce debates concerning NTT's divestiture cast a shadow over all current telecommunications issues.

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[92] *Space Cable Net*, p. 21.

[93] Japan Communications Satellite's JCSAT 1 was launched on March 6, 1989, and Space Communications Corporation's Super Bird A on June 6, 1989. *Nihon Keizai Shinbun*, March 7, 1989, p. 8 and also June 7, 1989, p. 7.

[94] *Nihon Keizai Shinbun*, November 6, 1989, p. 38 and November 29, 1989, p. 10.

[95] See sec. 4.4.1.

In this situation, telco/cable broadband issues in Japan could be seen as NTT/cable issues. That may not, however, necessarily be so. Due to the ambiguity of the laws and their implementation, the movement towards "telco TV" has already been in progress behind the scene, as we shall see in chapter 4.[96]

2.2 CURRENT REGULATORY PROVISIONS FOR CABLE TELEVISION AND TELEPHONE COMPANIES

2.2.1 Basic Regulatory Framework

Figure 2-3 shows the basic framework of telecommunications laws in Japan. First of all, there are two basic telecommunications laws: the Radio Law and the Wire Communications Law. The Radio Law not only stipulates regulatory requirements, procedures, and standards for both broadcasters and common carriers to obtain licenses to establish and operate radio stations, but also technical standards and requirements.[97] The Wire Communications Law has basically the same kind of provisions for wire communications facilities as the Radio Law; however, some provisions, such as regulatory requirements and procedures concerning the MPT's permission to establish telecommunications facilities, do not apply to Type I telecommunications carriers.[98] Such provisions are dealt with by the Telecommunications Business Law (the TB Law).

Under two basic telecommunications laws, several laws govern respective telecommunications businesses. When there are differences between provisions of the basic laws and these laws, the latter apply. They can be classified into two categories according to the relationship of the businesses with the content of communications transmitted: in general, laws concerning broadcasting have something to do with content, while those of common carriers are content neutral. This distinction generally corresponds to the division of Title II and Title III of the U.S. Communications Act of 1934, but the cable television business is

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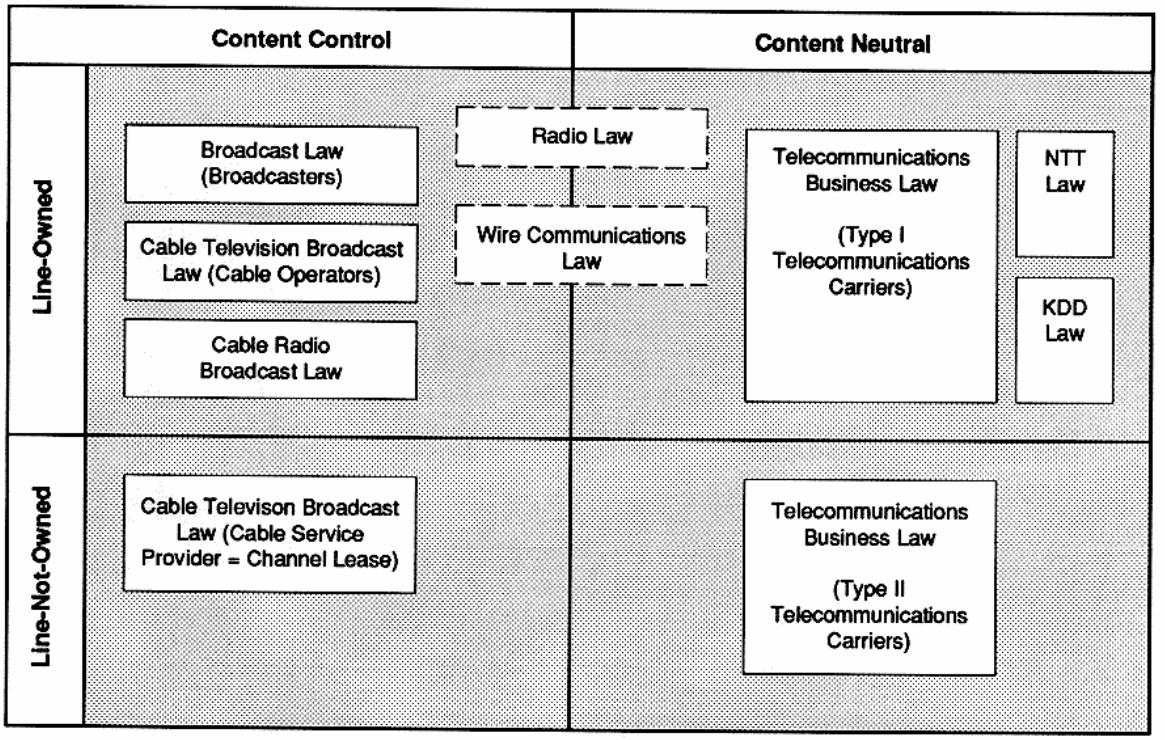
[96] See sec. 4.4.2.

[97] The Radio Law, see especially chapter 1 of the law.

[98] The Wire Communications Law, article 3(4).



* [ ] Denotes Basic Telecommunications Laws. [ ] Denotes laws governing respective telecommunications businesses.

**Several ordinances of the Cabinet and the MPT are attached to each law.

Figure 2-3

Structure of Telecommunications Laws in Japan

clearly included in the broadcasting category in Japan, as the name of its law suggests.

The broadcast laws, particularly the Broadcast Law and the Cable Television Broadcast Law, have an important principle behind their provisions, which is often called the "software and hardware integration" of broadcast services. Although the laws do not have a specific provision that articulates the "software and hardware integration principle," it is generally held by interpretation of the various provisions that licensees of broadcast stations and cable systems have to provide programming for themselves. In other words, the

licensees have to assume responsibility for both transmission facilities and programming.[99] In a strict sense, this means the licensees own the facilities. Title III of the Communications Act of 1934 could be said to make the same assumption. This principle is central to the issues concerning program delivery by way of a communications satellite, which ultimately led to amendments of the Broadcast Law in October 1989, as well as provision of cable facilities (channel service) by NTT to cable operators.[100]

There is, however, an ambiguous provision in the CATV Law, which prescribes that

> [i]f the licensee for cable television broadcasting facilities is asked by a person, who intends to conduct a cable broadcasting service, to use the cable television broadcasting facilities . . . [the licensee] shall accept the request.[101]

Although the provision can be read as a channel lease for commercial use of the Cable Act of 1984, the relationship with the "software and hardware integration" principle and facility provision by a common carrier for cable services remains unclear.[102]

For common carriers, the TB Law stipulates regulations for the businesses and services. Telecommunications carriers in Japan are classified into two types by the so-called "line-owned, line-not-owned dichotomy" of the TB Law. A Type I telecommunications carrier provides

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[99] Yuseisho Tsushin to Hoso no Kyokai Ryoikiteki Service nikansuru Kenkyukai (The Study Group of the MPT Concerning the Services on the Boundary of Communications and Broadcast Services), *Interim Report*, February 10, 1989, p. 6, 17 (hereinafter, *Interim Report on the Boundary Services*).

[100] See secs. 2.3, 4.1.2, and 4.2.

[101] The CATV Law, article 9.

[102] As of December 31, 1988, 17 cable systems with more than 500 customers are providing the channel lease. *Hoso Journal*, July 1989, p. 55.

services by owning its own "transmission line facilities."[103] A Type II carrier is other than a Type I carrier.[104] Often called a Value Added Network Service Provider (VAN), it is generally considered equivalent to an enhanced service provider in the U.S., although the category includes simple resellers.[105]

Note here that there is no distinction between services that Type I and Type II carriers can provide. A Type I carrier can provide, in principle, any kind of enhanced communications services.[106]

In addition to the TB Law, NTT and KDD are subject to the NTT Law and the KDD Law, respectively. These laws prescribe the purposes, scope of business activities, obligations, and so on of NTT and KDD. Although there is no line of business restrictions found in the MFJ, some provisions may function in a similar manner. For example, article 1 of the NTT Law defines NTT's business as "to operate [a] domestic telecommunications business." The article also stipulates that "[NTT] may . . . engage in business activities incidental to [domestic telecommunications business]" and "other business activities necessary to achieve the purpose of the Company." Although the terms used are ambiguous, some argue that NTT may not engage in manufacturing and certain kinds of information services (certain content origination).[107]

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[103] The TB Law, article 6(2).

[104] Ibid., article 6(3).

[105] For more details on Type I and Type II carriers, see Kira, Masao, *Where to Put the Smarts: Network or CPE?* (Cambridge: Program on Information Resources Policy, Harvard Univ., 1987), pp. 21-28.

[106] For more details see Shukunami, Tatsushiro, *The Race for Value-Added Services: Challenges and Opportunities in the U.S., Japan, and the U.K.* (Cambridge: Program on Information Resources Policy, Harvard Univ., 1988), pp. 15-18, 31-32.

[107] Despite the argument, NTT is currently providing certain information services. See sec. 4.1.

However, it is also commonly held that NTT has freedom of investment. Affiliate companies of NTT can engage in any kind of business.[108] But it is by no means clear what NTT can and cannot do, just as the freedom of BOCs in the U.S. is not clearly defined. Other Type I and Type II carriers have no such restrictions.

Finally, in cable television services, different laws and regulations apply to cable systems according to their size, as shown in **Table 2-1**. The degree of strictness of the regulations also differs; cable systems with fewer than 50 subscribers are regulated the least. This paper considers in subsequent sections and chapters those cable systems with more than 500 subscribers.

2.2.2 Regulatory Provisions for Cable Television and Telephone Companies

A comparison between current regulations for cable television and telephone companies is shown in **Figure 2-4**. In general, cable operators and Type II telecommunications carriers are, as quasi-public utilities, less strictly regulated than Type I carriers and broadcasters. For the purposes of this paper, a Type I carrier means a telephone company.

The TB Law clearly defines a telephone company as a common carrier (as in the U.S.), although it does not use the term.[109] A Type II carrier also has common carrier obligations.[110] Among Type I carriers, only NTT has the universal service obligation for telephone services.[111] NTT is not, however, obligated to provide universal services for other

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[108] The Telecommunications Council recommended on October 2, 1989, to impose certain restrictions on the scope of business activities of NTT's subsidiaries. *Interim Report on Future Structure of Telecommunications Industry*, p. 227.

[109] The TB Law, articles 2(iii), 7.

[110] Article 7 of the TB Law reads: "Any telecommunications carrier shall not discriminate unfairly in providing telecommunications service."

[111] The NTT Law, article 2.

Table 2-1

Scale of Cable Systems and Applicable Laws in Japan

<table>
<tr><th>Number of Subscribers</th><th>Services Provided</th><th>Establishment of Cable System</th><th>Provision of Services</th><th>Two-Way Telecommunications Services*</th></tr>
<tr><td>More than 500</td><td rowspan="2">Retransmission of TV signals only, or retransmission and other programs</td><td>Cable Television Broadcast Law

Wire Communications Law

(Permission of the MPT)</td><td rowspan="2">Cable Television Broadcast Law

(Notification of Intent to the MPT)</td><td rowspan="2">Telecommunications Business Law

Wire Communications Law

(Permission of the MPT)</td></tr>
<tr><td>51 - 500</td><td rowspan="2">Wire Communications Law

(Notification of Intent to the MPT)</td></tr>
<tr><td>Fewer than 50</td><td>Retransmission of TV signals and other programs, or other programs only</td><td rowspan="2">No regulations</td></tr>
<tr><td></td><td>Retransmission of TV signals only</td></tr>
</table>

*Excluding subscriber interaction required only for provision of cable services such as selection of video programming.

telecommunications services such as digital data transmission and radio paging.

Although cable TV service is included in the broadcast category (as described in a previous section), the CATV Law requires cable operators to offer cable services to anyone in their service areas "unless there is a justifiable reason."[112] This provision, coupled with the cable operator's liability to make available cable facilities to third-party cable service providers, attaches a rather strong quasi-common-carrier-status to cable operators. The provision seems to originate from the public welfare status of CATV in its early days.

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[112] The CATV Law, article 16.

Industry		Characteristics of Service Providers	Characteristics of Services	Entry into Industry	Rates	Ownership	Content	Other Provisions
Cable* Television		Assumed responsible for both facility and services Obligation to provide services for anyone	Cable broadcasting intended to be received directly by the public, except for cable sound broadcasting	Establishment of facilities • Permission of the MPT Provision of service • Notification of intent to the MPT	Tariff authorization of the MPT (retransmission only in the area designated by the MPT) Submission of tariffs to the MPT (other than the above)	Foreign ownership restrictions	Freedom of program content, except to make sure the news is neutral and does not offend the public interest Establishment of self-regulatory broadcast program consultative organization "Must carry" only in the area stipulated by the law	Liability to make facilities available to a third party
Telephone Company	Type I	Common Carrier Obligation for universal telephone service (NTT only)	Intermediating communications of others through the use of telecommunications facilities	Permission of the MPT	Tariff authorization of the MPT	Foreign ownership restrictions Business Transfer • Authorization of the MPT	No censorship Obligation to protect secrecy of communications	NTT subject to the NTT Law in addition to the TB Law
	Type II		Type I with establishment of telecommunications circuit facilities Type II other than Type I	General Type II • Notificaton of intent to the MPT Special Type II • Registration with the MPT	General Type II • None Special Type II • Submission of tariffs to the MPT	Business Transfer • General Type II - notificaton to the MPT • Special Type II - registration with the MPT		

*Cable operators subject to the Cable Television Broadcast Law.

Figure 2-4

Major Regulatory Provisions for
Cable Television and Telephone Industries in Japan

It takes two steps for a person to become a cable operator. First, instead of obtaining franchise from a local authority (as in the U.S.), one must obtain the MPT's permission to establish cable facilities.[113] The MPT has to hear opinions from the authority of relevant prefectures for the application. Second, one must notify the MPT of one's intent to become a cable service provider.[114] It is unclear whether the MPT would permit over-build of cable systems in the same area, since such a case has rarely occurred in Japan. Although the permission standards set in article 4 of the CATV Law do not prevent competition, such permission will not likely be granted, given the current infant status of Japan's cable television industry.

Entry into Type I telecommunications business is granted by the MPT, which is roughly equivalent to section 214 approval by the FCC.[115] Compared with cable permission, the standard for the permission is rather strict, especially in terms of the so-called "demand and supply adjustment" provision of the TB Law; article 10 prescribes that the MPT must decide if "services to be provided by a telecommunications carrier [are] appropriate in the light of demand in the service territory."[116]

As for rate regulations, the CATV Law requires tariff authorization by the MPT for retransmission service of TV signals only in areas designated by the MPT.[117] For other cable channels, only submission of the tariffs to the MPT is required. This means that most cable operators are virtually free from rate regulations.

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[113] Ibid., article 3.

[114] Ibid., article 12.

[115] The TB Law, article 9.

[116] This is a rather strange provision since it seems to say that the government can judge customer demand better than an entrepreneur.

[117] The CATV Law, article 14. These areas have poor reception of over-the-air TV signals.

The most important feature of the CATV Law, for the purpose of this paper, is that it has only one restriction on ownership of cable systems: they cannot be foreign owned. Ownership of multiple systems is possible, although MSOs like those in the U.S. have not appeared yet. There are no restrictions on cross-ownership of cable TV and telephone companies, broadcasters, and networks. As far as telco/cable cross-ownership is concerned, there was no need to impose a cross-ownership ban; this is perhaps because when the law was drafted, only one state-owned public telephone company existed. But the market was opened to competition, and NTTPC was privatized. This feature gives rise to a very interesting, or rather strange, situation concerning telco/cable cross-ownership issue in Japan, as we shall see in the next section.

There are significant differences in content-related regulations of cable TV between the U.S. and Japan. While cable operators in Japan generally have control and editorial freedom over their programming and content (just like their U.S. counterparts),[118] they must adhere to rather strict and burdensome obligations for their programs (in contrast with the U.S. regulations), although less so than broadcasters. For example, as in the U.S., cable operators in Japan must not violate public safety and interest, or distort facts in the programs. Additionally, cable operators must set programming standards and make them public. Furthermore, they need to establish a self-regulatory "broadcast program consultative organization" to self-check their own programming regularly.[119] These burdens may effect the development of not only CATV itself but also that of a broadband network.[120]

On the other hand, there are not many complicated content-related rules such as syndicated exclusivity and network non-duplication between

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[118] The CATV Law, article 17(1).

[119] Ibid., article 17(2), (3), (4).

[120] Despite these strict regulations, the quality of most broadcast programs in Japan is surprisingly poor. The current controversy over the indecency of broadcast programs in the U.S. is almost nothing when they are compared to some programs in Japan.

cable operators and broadcasters. The "must carry" rule applies only to certain TV signals in designated areas.[121] In fact, without retransmission of over-the-air TV signals, Japan's current CATV cannot survive. In this respect, there is growing concern regarding a provision that requires cable operators to obtain the agreement of broadcasters to retransmit their signals.[122] While this provision serves as some sort of a blanket rule, leaving settlement to negotiations between cable operators and broadcasters and room for the MPT's intervention, the number of cases where broadcasters (commercial "key" TV stations in most cases) reject agreement of retransmission (distant signal importation) is increasing, as they are becoming aware of cable TV's potential threat.[123] As Japan's CATV grows, so does the need for rules similar to those of the U.S., such as compulsory licenses.

Japan's telephone companies are strictly content-neutral, as in the U.S. The TB Law stipulates prohibition of censorship and obligations of carriers to protect the secrecy of communications.[124]

Finally, what regulations apply if a cable operator wishes to provide two-way communications services over his cable system? In this case, the TB Law applies, and the operator must obtain the MPT's permission to become a Type I carrier. Compared with the U.S., the situation in Japan is rather simple. Given the competitive market policy of the MPT for Type I telecommunications businesses, such an application would most likely be granted. One cable operator is now providing leased circuit

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[121] The CATV Law, article 13(1).

[122] Ibid., article 13(2).

[123] *CATV Gyosei '88*, pp. 114-21. The "key" stations function just like three major TV networks in the U.S. There are now five "key" stations in Tokyo. They seem to protect local TV stations with which they have a close relationship.

[124] The TB Law, articles 3, 4.

services as a Type I carrier. Moreover, it seems that the MPT's policy is to develop cable systems as second subscriber loops.[125]

But what about entry by telephone companies into the cable television arena?

2.3 REGULATORY HURDLES FOR ENTRY OF TELEPHONE COMPANIES INTO CABLE TELEVISION IN JAPAN

The CATV Law has no provisions that prevent cross-ownership between a telephone company and a cable operator, as shown above. But this does not necessarily mean that telcos can provide cable TV services either by themselves or through affiliates, or that they can construct cable facilities for lease by cable operators. Since CATV is a fairly new major telecommunications media, the issue is quite new in Japan. In addition, ambiguity in the provisions of the laws leaves some uncertainty about what telcos can and cannot do. The following discussion is based on what is written in the laws as well as some information about current regulatory practice.

2.3.1 Channel Service by Telephone Companies

There are no particular provisions in current laws that clearly restrict telcos from leasing cable facilities to a cable operator. Two barriers, however, exist for telcos' channel service. First, the "software and hardware integration principle" of broadcast services requires a cable operator to establish cable TV facilities and provide cable services by himself, in general. The operator must be responsible for administration and maintenance of the facilities and, in its strict interpretation, must own the facilities. This principle virtually prevents telcos – NTT, new regional carriers such as Tokyo Tsushin Network (TTNet), or any other NCC – from providing cable facilities as a common carrier service. Although the principle has begun to break down

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[125] See generally *CATV Gyosei '88* and *Space Cable Net*.

in some other cases, it is safe to assume that it still holds for the telco/cable case.[126]

Like the U.S. franchise requirement, this principle is a serious obstacle for the development of a nascent broadband network and the provision of broadband communications services to residential homes. In fact, it seems much more serious. The CATV Law defines cable television broadcasting as

> the transmission of a cable telecommunication intended to be directly received by the public . . . which is other than the cable sound broadcasting.[127]

According to this definition, video program delivery from a street corner video shop by way of a future broadband network likely will be regarded as cable television broadcasting. The shop has to obtain the MPT's permission to establish its cable system and actually has to construct the facilities at its own expense, even if the public broadband network did exist. This principle, together with heavy obligations for program content imposed on cable operators, may seriously affect the increase of local video program distribution outlets.

The second barrier is tariff authorization of channel service by the MPT. Since a channel service would be a common carrier telecommunications service, telcos must obtain the MPT's authorization of the tariff to start providing such a service.[128]

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[126] One example of the breakdown of this principle can be seen in the amendment of the Broadcast Law in October 1989. See sec. 4.2.

[127] The CATV Law, article 2.

[128] The TB Law, article 31.

2.3.2 Cross-ownership (Telcos as Cable Operators)

2.3.2.1 NTT or its affiliates

Since the NTT Law defines NTT's business activities as those to provide domestic telecommunications services,[129] it seems that NTT cannot provide cable service by itself since cable service is classified as a broadcast service. NTT's affiliates are, however, free from the constraint. Although NTT has expressed no intention to provide cable programming services (that is, becoming a cable operator) either directly or through affiliates,[130] it is possible from a regulatory point of view that one of its affiliates could apply for the MPT's permission. However, it is unclear whether the MPT would grant such an application.

2.3.2.2 Other telcos or their affiliates

For NCCs, the only barrier is to obtain the MPT's permission, as stipulated in the CATV Law for the establishment of cable systems. But just as in the case of NTT affiliates, the outcome of such an application remains uncertain.

On the other hand, affiliates of NCCs may be able to become cable operators. Several "urban type CATVs" are affiliated with a company that has control over one regional NCC.[131] Although it is unclear whether these parent company cases can generally be extended to affiliates of NCCs – no public discussion has taken place, nor have any official statements or comments been made public for either the parent company cases or NCCs' affiliates – the parent company cases seem to suggest a rather strong regulatory possibility for entry into cable business by affiliates of NCCs.

Table 2-2 summarizes the possibility of telcos entering the cable TV arena.

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[129] The NTT Law, article 1.

[130] *Nikkei Communications*, May 22, 1989, pp. 70-71.

[131] Ibid., pp. 70-71. See also sec. 4.4.2.

Table 2-2

Summary of Entry by Telephone Companies into Cable Television in Japan

	Cross-Ownership	Channel Service
Laws and principles that affect the outcome	• The NTT Law • The CATV Law	• "Software-Hardware Integration Principle" (the Broadcast Law and the CATV Law) • The TB Law
NTT or its affiliates	? *NTT – probably not* *NTT's affiliates – uncertain*	No
Other telcos or their affiliates	? *perhaps yes*	No

From current regulatory provisions, it is difficult to judge clearly what telcos can and cannot do in cable TV services. It is often pointed out that there are differences between provisions of the laws and the ordinances, and their practices in Japan's telecommunications regulatory implementation.[132] The procedures and process of making such regulations are often unclear, and not much information concerning the rulemaking is made public. Although it is difficult to observe what is really going on under these circumstances, it can be said at least that there are some inconsistencies and ambiguities in current laws and regulations, as well as in their implementation, concerning the relationship between telcos and cable TV.

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[132] Sugaya, Minoru, *America no Denki Tsushin Seisaku (Telecommunications Policy in the U.S.)* (Tokyo: Nihon Hyoron Co., 1989), p. 1.

CHAPTER THREE

ISSUES AND QUESTIONS CONCERNING TELCO/CABLE CROSS-OWNERSHIP – THE UNITED STATES

> *If we thought that, after working out the details of the divestiture, we could achieve stability for a while and catch our breath, we were wrong. The next great competitive upheaval already confronts us.*[133]

According to Dennis Patrick, the former chairman of the FCC, "the next great competitive upheaval" – drastic changes in the marketplaces and the industries of broadband (video) and narrowband (voice and data) communications services – is about to begin. These changes are brought about by the possible merger and convergence of "modes" of delivery for voice, data, and video communications, caused by the never-ceasing progress of communications technologies such as fiber optics, data processing, digital, and other electronic and optical devices. The battle among the players involved in these changes has already started. The first round is being fought over telco/cable cross-ownership, the issues of telephone companies' entry into cable television (cable TV) service.

This chapter provides an overview of the players, current situation, and problems faced by two main players – cable operators and telephone companies – as well as some communications policy issues concerning cable/telco cross-ownership.

3.1 THE PLAYERS

Before the issues and questions raised by the possible entry of telephone companies (telcos) into cable service are discussed, this section first summarizes current positions and views of the major players.

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[133] Patrick, Dennis R., "The Telecommunications Marketplace of the 1990s: New Opportunities and New Challenges," *IEEE Communications Magazine*, January 1989, p. 16.

3.1.1 Industry Players

3.1.1.1 Cable operators

Because cable operators are potential losers if the telco/cable cross-ownership ban is repealed, they strongly oppose telcos' cable service, which would provide not only transmission but also programming.[134] Their main concerns are discrimination against access to telcos-owned poles and conduits, and cross-subsidization between regulated and unregulated services by telcos. They claim that existing regulations, such as the Pole Attachment Act of 1978, are not strict enough to ensure equal access to the poles and conduits. And neither non-structural safeguards adopted by Computer Inquiry III (CI III)[135] nor Cost Allocation and Separation Rules[136] are proven effective or adequate for the video marketplace.[137] Cable companies also raise serious questions about benefits, such as cost savings and new advanced services, that telephone companies claim to bring to the public by way of the integrated broadband network (IBN).[138] Some operators doubt even the viability of duplicate, competing cable systems in a service area.[139] In sum, cable operators claim that if telcos are allowed to provide cable service, "[they] would monopolize the provision of video

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[134] When cable operators refer to telephone companies in this context, they seem to mean local exchange carriers (LECs). In this paper, "telephone companies" refers to LECs unless otherwise stated.

[135] Third Computer Inquiry, CC Docket No. 85-229, *Phase I Report and Order*, 60 RR 2d 607 (1986), *Phase II Report and Order;* 2 FCC Red 3072 (1987).

[136] In the Matter of Separation of Costs of Regulated Telephone Service from Costs of Nonregulated Activities, CC Docket No. 86-111, *Report and Order*, 2 FCC Red 1298 (1987), *recon.* 2 FCC Red 6283 (1987), (hereinafter, *Joint Cost Order*).

[137] Comments of the National Cable Television Association (NCTA), *Further Notice of Inquiry and Notice of Proposed Rulemaking (Further Notice of Inquiry)*, CC-Docket No. 87-266 (hereinafter, *NCTA Comments*).

[138] Ibid., pp. 39-53.

[139] Comments of Tele-Communications, Inc. (TCI), *Further Notice of Inquiry*, pp. 24-25 (hereinafter, *TCI Comments*).

programming and of telecommunications facilities"[140] through anticompetitive behavior.

3.1.1.2 Local telephone companies (LECs)

Although there are some differences among opinions and comments of Local Exchange Carriers (LECs), they generally support the Commission's findings and conclusions in the *Further Notice of Inquiry and Notice of Proposed Rulemaking* to repeal the cross-ownership ban. Their rationales for the support are as follow. First, eliminating the ban can bring greater competition to the video distribution marketplace and therefore greater benefits to the public, such as lower cable rates, more choices of programming, higher-quality service, and quick realization of customers' demands.[141] Second, existing safeguards are appropriate and strict enough to prevent LECs' possible anticompetitive conducts stemming from their monopoly power in local telephone services.[142] In addition, the cable television industry is already firmly established, and telephone companies have no advantages to curtail competition in the video distribution marketplace. Third, provision of video programming supplies proper incentives and a certain assurance for telcos to engage in research and development of new technologies, and to construct an IBN that has the potential to bring new advanced telecommunications services to all American homes.[143] Additional revenues from video service can accelerate the deployment of fiber optics into a local loop as well as construction of telcos' broadband facilities.

In addition, LECs repeatedly make it clear that they intend for an IBN to be deployed and operated as part of their regulated common carrier network. Therefore, they claim there is no danger or risk of

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[140] *NCTA Comments*, p. 13.

[141] Comments of the United States Telephone Association, *Further Notice of Inquiry*, pp. 2-9 (hereinafter, *USTA Comments*).

[142] Comments of BellSouth Corporation, *Further Notice of Inquiry*, pp. 3-6.

[143] Comments of Southwestern Bell Corporation, *Further Notice of Inquiry*, pp. 9-13.

telco's discriminatory and anticompetitive behavior. They also maintain that repeal of the telco/cable cross-ownership ban does not inherently imply replacement of one monopoly with another by telcos' depriving cable operators of market shares. Rather, they claim, it will provide stimulation for accelerating deployment of an IBN and provision of new advanced broadband services to all American homes through greater competition.

Most Regional Bell Operating Companies (RBOCs) also ask the Commission to recommend that Congress transfer administration of the Modification of Final Judgement (MFJ), which prohibits information service by BOCs, from the Decree Court to the Commission itself.[144] In April 1990, the information service restriction was remanded by the U.S. Court of Appeal and currently has been under further review of the Decree Court.[145]

3.1.1.3 Interexchange carriers (IXCs)

As far as IXCs are concerned, it seems that no clear industry positions have been established yet to the telco/cable issues. While one IXC opposes LECs' participation in cable service for many of the same reasons held by cable companies,[146] the others have not made their positions clear, although some of them view provision of cable services by LECs as an opportunity to have an enhanced alternative access to local loops. The former's main concern lies in rate hikes of a variety of access services as a result of LECs' cross-subsidization between regulated basic transmission services and unregulated cable services.[147]

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[144] See particularly, ibid., pp. 15-18.

[145] United States v. Western Electric Company, Inc. et al., *Opinion*, 900 F. 2d 283 (U.S. App. April 3, 1990), (hereinafter, United States v. Western Electric Company).

[146] Comments of MCI Telecommunications Corporation, *Further Notice of Inquiry* (hereinafter, *MCI Comments*).

[147] Ibid., p. 6.

Two points should be noted. First, the objection of the one IXC might also stem from their fear of the impact that the ban's repeal could have on debates over lifting the line of business restrictions imposed on BOCs by the MFJ. Second, there appears to be a lot of support for nonapplicability of the cross-ownership ban to IXCs.[148] Although one IXC asserts that it does not have a "present interest in entering the cable programming business,"[149] if this point is to be made clear, IXCs will have the potential opportunity to vertically integrate themselves by alliance with or through the acquisition of cable systems, or other means – provided that state regulators would permit such activities.

3.1.1.4 Metropolitan area networks (MANs) and bypassers

MANs position themselves as a contributor to the creation of an IBN by calling for competition "by many," not "by two," hands.[150] To foster competition "by many" towards constructing an IBN, a MAN provider asks the Commission to mandate carrier-to-carrier interconnection to establish a "level playing field."[151]

For the elimination of the ban, MANs are taking a cautious approach and call for further consideration, particularly in terms of appropriate safeguards with regard to telcos' unregulated activities. Although it is not clear what impact an IBN of LECs would have on MANs at this time (since the exact concept of IBN is not clear), deployment of fiber with a large transmission capacity into local loops would likely pose a threat to MANs. At the same time, however, the existence of MANs is also a threat to LECs and gives them strategic incentives to go ahead

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[148] The cross-ownership ban applies to cable operations by any common carrier "in its telephone service area." The Cable Act of 1984, sec. 613(b)(1). The question is what "telephone service area" really means. The FCC is seeking comments in this regard in *Further Notice of Inquiry* (see paras. 68-70).

[149] *MCI Comments*, p. 6.

[150] Comments of Teleport Communications Groups, *Further Notice of Inquiry*, p. 2.

[151] Ibid., pp. 9-11.

with fiber deployment, particularly in large business districts, regardless of the outcome of the cross-ownership issue.

3.1.1.5 Broadcasters

Broadcasters are in a rather difficult position. With over 50 percent of TV households subscribing to cable TV, it is essential to broadcasters that their signals be carried by respective local cable systems. Since the courts struck down the FCC's "must carry" rules twice,[152] competition in the cable TV market may be welcome to them. On the other hand, full development of an IBN – however far into the future – might push broadcasters into the sole position of one of program supplier; their future might depend upon how they view their businesses.[153] Reportedly, the president of NCTA warned broadcasters about "a world where networks would use telcos – not affiliates – as their sole distribution source."[154] Perhaps for these reasons, broadcasters cautioned the Commission not to draw a hasty conclusion and asked it to consider fully the various implications of its decision; they also asked the Commission to investigate the issues from broader perspectives, such as the role of "free TV" in American society, and the possible impact of the ban's repeal on the entire structure of the mass media industry in the future.[155] In addition, broadcasters emphasize the importance of their future role as both programmers and over-the-air distributors of programming, since the broadcasting system they have developed has significant technical and economic advantages, such as portability and mass audience efficiencies, as compared to other media.

The National Association of Broadcasters (NAB) reportedly adopted "conceptual guidelines" that support only common carrier entry by telcos

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[152] See chapter 1, sec. 1.1.3.

[153] Pepper, pp. 84-86.

[154] *Broadcasting*, September 11, 1989, p. 38.

[155] See generally Comments of the National Association of Broadcasters, *Further Notice of Inquiry*.

and oppose telcos' programming content business.[156] NAB and the Association of Independent Television Stations (INTV) also asked Congress to impose certain common carrier obligations on cable operators.[157]

3.1.1.6 Program producers/studios/distributors

While producers criticize cable systems as "classic bottleneck[s]" in that "the cable operators totally control the flow of programming from producer to consumer,"[158] they are also wary of telcos' full involvement in the cable television business. Like others who oppose a total lift of the ban, producers fear that such action would merely replace cable monopoly with that of telcos, and they are concerned about the effectiveness of existing safeguards. They are also concerned about the future market's structure, since an IBN might upset "existing institutional arrangements in the video marketplace."[159]

3.1.2 Lawmakers and Regulators

3.1.2.1 Congress

Because the telco/cable cross-ownership ban is codified in the Cable Act of 1984, the elimination of the restrictions requires Congressional action. Congress sees establishment of a coherent national telecommunications policy as urgent and indispensable to strengthen international competitiveness of American industries and to bring benefits of the Information Age and new technologies to the public throughout the U.S. Accordingly, some committees of both the House and the Senate[160] are working hard on telecommunications issues ranging from

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[156] *Broadcasting*, June 26, 1989, p. 30.

[157] *Broadcasting*, September 25, 1989, pp. 28-29.

[158] Comments of Buena Vista Distribution, Inc., MGM/UA Communications Co., Orion Pictures Corporation, Paramount Pictures Corporation, Twentieth Century Fox Film Corporation, and Universal City Studios, Inc., *Further Notice of Inquiry*, p. 3.

[159] Pepper, p. 89.

[160] These committees are, for example, the House Telecommunications Subcommittee, the Senate Communications Subcommittee and its parent, the Senate Commerce Committee.

High Definition Television (HDTV) to violence in TV programs,[161] with growing attention and focus on the telco/cable issues and the MFJ line of business restrictions. It is, however, generally believed that Congress will take some time to reach an agreement on the telco/cable cross-ownership and revision of the MFJ because of the importance, complexity, and sensitivity of the issues involved.

3.1.2.2 Federal Communications Commission

Although the Commission tentatively concluded in its *Further Notice of Inquiry* that elimination of the cross-ownership ban would be of public interest, one commissioner expressed dissent with the conclusions.[162] With a newly-appointed chairman and some commissioners, the Commission has not made its position clear. It is certain, however, that the cross-ownership issue will remain one of the most important communications policy issues for the FCC. The Commission will continue to inquire into "an irreversible momentum" to a new video marketplace.[163]

The FCC recently launched two new proceedings concerning cable service, which are separate from the inquiry on the telco/cable issues. One is an inquiry – required by the Cable Act of 1984[164] – into cable rates and the overall situation of the cable TV marketplace.[165] The second is a rulemaking proceeding on standards of effective competition in the video distribution marketplace, which may result in rate reregulation on cable operators under price cap and a uniform accounting

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[161] For the Congressional agenda, see *Broadcasting*, August 14, 1988, pp. 31-32.

[162] Separate Statement of (former) Commissioner Patricia Diaz Dennis to *Further Notice of Inquiry*.

[163] "The 'irreversible momentum' of Al Sikes, Alfred C. Sikes Interview," *Broadcasting*, October 9, 1989, pp. 35-37.

[164] The Cable Act of 1984, sec. 623(h).

[165] *Telecommunications Report*, December 18, 1989, p. 26.

system.[166] The Commission's stance on the proceedings seems to be that reregulation "can provide some safeguard to the public" until competition arrives in the video delivery marketplace.[167] Implications of the inquiries for the telco/cable issues are not yet clear.

3.1.2.3 State regulators

While state regulators admit the necessity of FCC inquiry into the telco/cable issues, and generally agree with the benefits of telcos' entry into cable service listed in the *Further Notice of Inquiry*, they have not decided whether they would support elimination of the cross-ownership ban.[168] They believe that development of appropriate safeguards concerning LECs' participation in cable TV falls under the states' jurisdiction.[169] State regulators assert that the states can determine most appropriately when and how to allow telcos into cable TV service, what kind of safeguards are most adequate in each respective video distribution marketplace, and so on.[170] They strongly object to federal preemption over these issues.

If IBN and provision of advanced broadband services to the home are becoming more of a reality, jurisdictional problems will also get more complicated. At some time, complete reconsideration of jurisdictional divisions in the U.S. might become necessary.[171]

3.1.2.4 Cities/franchising authorities

Cities strongly support the entry of telephone companies into the cable arena. They view telcos' entry as one answer to problems they now

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[166] *Broadcasting*, January 15, 1990, pp. 55-56.

[167] Ibid., p. 55.

[168] Comments of the National Association of Regulatory Utility Commission, *Further Notice of Inquiry* (hereinafter, *NARUC Comments*).

[169] Comments of the Public Service Commission of the District of Columbia, *Further Notice of Inquiry*, p. 2.

[170] *NARUC Comments*, pp. 12-13.

[171] See Pepper, pp. 92-95.

face regarding cable television service, such as rate increase, poor signal and service quality, and limited program choices. Also, they believe these problems are caused by limited regulatory power of the cities, imposed by the Cable Act of 1984, and that it is necessary to preserve and strengthen local control over cable service through franchising, rate reregulations, and other regulatory measures.[172]

3.2 CABLE TELEVISION UNDER CROSS FIRE: HAS CABLE GROWN TOO MUCH?

3.2.1 Competitive Situation in the Local Video Distribution Marketplace

It cannot be denied that the cable television industry has greatly contributed to bringing "a diverse array of programming services into the majority of American homes" and that "cable operators and programmers have done more in less time than virtually any other segment of the telecommunications industries."[173] But as the industry and its influence on the society grow, so do complaints and criticisms against it. These provide some rationales for advocates of entry by telcos into cable TV. One criticism frequently heard is that cable TV is an unregulated de-facto monopoly and a bottleneck facility in the local video distribution marketplace. While it is extremely difficult to determine if this criticism is valid in terms of anti-trust laws (since it is very hard to define "relevant market" in the first place), it may be useful to review competitive positions of cable operators and alternative distribution technologies.

Table 3-1 provides a brief view of the overall scale of operations of cable companies. In 1989, cable reached 86 percent of U.S. TV households (TVHH), with 52 percent actually subscribing. Some industry observers forecast that cable will continue to show strong growth and by 1994 become available to 90 percent of TVHH, with an actual subscription

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[172] See, in general, Comments of the National League of Cities, *Further Notice of Inquiry*.

[173] *TCI Comments*, p. 3.

Table 3-1

Scale of Operations of Cable Operators and Local Exchange Carriers

Cable Operators		Local Exchange Carriers	
U.S. TV Households (TVHH)	**89.93 million**	**Total U.S. Households**	**92.6 million**
Basic Cable Households		**Telephone Households**	
Number of subscribers	46.37 million	Number of subscribers	85.7 million
As percent of TVHH	52%	As percent of U.S. households	92.5% *(Note 3)*
Homes passed by Basic Cable	77.60 million	**Total Annual LEC Revenues**	**$84.90 billion[4]**
As percent of TVHH	86%	**Total Regional Bell Operating Company Revenues** (in billions)	**$65.95**
Pay Cable Units		Ameritech	$9.11
Number of subscribers	37.82 million	Bell Atlantic	$9.73
As percent of Basic Cable	82% *(Note 1)*	Bell South	$11.81
		NYNEX	$11.11
Total Annual Cable Revenues	**$13.36 billion** *(Note 2)*	Pacific Telesis	$8.91
		Southwestern Bell	$7.20
		US West	$8.08 *(Note 5)*

Notes: [1]Estimates as of 4/30/89 by Paul Kagan Associates, Inc. Adapted from National Cable Television Association, *Cable Television Developments*, May 1989, p. 1.
[2]Estimate of 1988 revenue by Paul Kagan Associates, Inc. Adapted from *Marketing New Media*, No. 77, August 21, 1989, published in *Cable World*, August 21, 1989.
[3]Data as of November 1988. Adapted from the FCC, *Trends in Telephone Service*, February 15, 1989, p. 3.
[4]Total Operating Revenue of 1987. United States Telephone Association, *Telephone Statistics, 1988.*
[5]Total Operating Revenue of 1988. United States Telephone Association, *Holding Company Report, 1989.*

level of 63 to 65 percent.[174] Although total annual revenues of cable operators are significantly smaller when compared with those of LECs, with cable's revenue level slightly larger than annual operating revenues of each RBOCs, cable television is becoming an indispensable video medium to U.S. homes. In this regard, cable operators are getting public utility status.

[174] *Broadcasting*, October 30, 1989, p. 48.

Over-the-air TV programming (broadcasters calling themselves "free TV") is still viewed most frequently and widely in the U.S., although cable networks are gradually increasing their shares of viewers, particularly against broadcast networks.[175] As **Table 3-2** shows, more than 1.4 thousand TV stations are now on the air throughout the U.S. In most major cities, some 10 TV channels are available to local viewers.[176]

A question arises with regard to competition between broadcasters and cable operators. While local TV signals still constitute important parts of cable program packages, the broadcasters fear – since the ruling of unconstitutionality of "must carry" rules by the courts – that they may not be able to reach a significant portion of local viewers if their signals are not carried by local cable systems, despite the mandatory provision of A/B switches by cable operators.[177] On the contrary, if a cable system carries the local broadcast signals, the cable operator can internalize competition from the broadcasters within his domain. In this regard, it could be said that the broadcasters are competing with other programmers, not with the cable system.

In 1982, the FCC created a new service, Low-power Television Service (LPTV), and freed it from most regulations imposed on conventional broadcasters, except for statutory ones.[178] LPTV stations broadcast

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[175] In 1988, prime time share of three major TV networks dropped to about 66 percent from 91 percent in 1977. See *Cable TV Facts 1989*, Cable Television Advertising Bureau, Inc., 1989, p. 14.

[176] In case of Boston, Mass., nine TV stations are available: three VHF network affiliates, four UHF independents, and two PBS channels (one in VHF band, the other in UHF).

[177] With an A/B switch, a cable subscriber can receive broadcast signals off-the-air. The FCC's 1987 "must carry" rules, which stipulated provision of A/B switches by cable operators, were ruled unconstitutional in 1987, but the court ruled later that requirement of mandatory A/B switches was still in effect. See Century Communications Corp. v. FCC, 835 F. 2d 292 (D.C. Cir. 1987) and 837 F. 2d 517 (D.C. Cir. 1988).

[178] Low-power Television Service, CC Docket No. 78-253, *Report and Order*, 51 RR 2d 476 (1982).

Service	Number of TV Stations		
	On Air	Construction Permit	Total
Commercial VHF TV	547	21	568
Commercial UHF TV	538	205	740
Educational VHF TV	122	6	128
Educational UHF TV	220	25	245
Total TV	**1,427**	**257**	**1,681**
VHF LPTV	300	205	505
UHF LPTV	324	1,508	1,832
Total LPTV	**624**	**1,713**	**2,337**

Note: Data as of October 1989.
Source: *Broadcasting*, October 30, 1989, p. 15.

Homes with TV Sets and VCRs	
	Number of Homes (millions)
U.S. TV households (TVHH)	88,600
Color TV homes	85,000
As percent of TVHH	(95.9%)
Homes with two or more sets	53,500
As percent of TVHH	(60.4%)
Homes with VCRs	51,400
As percent of TVHH	(58.0%)

Source: 1988 estimates by A.C. Nielsen. Adapted from *International Television & Video Almanac, 1989* (New York: Quigley Publishing Co., 1989), p. 21a.

Other Video Services			
	Number of Subscribers (millions)		Percent Change
	1989	1990	1989-90
Backyard Dishes (number of dishes)	2.69	3.05	+21.7%
Backyard Pay TV Subscribers	0.85	1.23	+57.1%
SMATV Subscribers	0.78	0.85	+10.0%
MDS Subscribers	0.31	0.35	+41.0%
STV Subscribers	0.00	0.00	—

Note: Estimates as of Oct. 31, 1989, and Oct. 31, 1990.
Source: Paul Kagan Associates, Inc. Adapted from *Marketing New Media*, No. 79, Oct. 16, 1989. Published in *Cable World*, October 16, 1989.

DBS Applicants (as of March 1990)	
Applicant	Number of Channels
Hughes Communications	27
Advanced Communications	27
U.S. Satellite Broadcasting	8
Dominion Video	8
DBS Corp.	11
Continental Satellite	11
EchoStar	11
Direct Satellite	11
Tempo Satellite	11*
Sky Cable	108 (planned)
K Prime	32 (planned

*Channels reserved but not granted. Pending inquiry.
Source: FCC/Paul Kagan Associates, Inc., *Cable World*, October 16, 1989, p. 14; *Broadcasting*, February 26, 1990, pp. 27-31.

Table 3-2

Alternative Video Distribution Media

their programming in relatively small areas and usually provide local sports and other community-oriented programs as their main fare.[179] Reportedly, LPTV has started to prosper because emerging networks are supplying various shows to their TV stations.[180] The LPTVs' impact on the local video market has yet to be seen.

Backyard dishes, or Television Receive Only Earth Stations (TVRO), are estimated to be used by more than 2.5 million customers.[181] They are widely used in rural areas and receive popular cable programming such as Home Box Office (HBO) and "super stations."[182] However, TVRO has some competitive disadvantages. For example, the cost of a dish now averages $3,000.[183] Also, the size of a dish deters its use in major cities. And program distributors for TVRO are said to have difficulty obtaining certain popular programming, due to signal piracy and other problems. Given these disadvantages and the possible advent of high-power Direct Broadcast Satellite (DBS), the future growth of TVRO is uncertain.

No DBS is currently in service in the U.S., although the FCC has assigned eight slots of satellite to DBS applicants and reserved one more for a possible entrant.[184] **Table 3-2** shows planned DBS services in

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[179] LPTV signals reach as far as 15 to 25 miles, compared with 70 miles of full-power stations. For a concise description of the service, see Kranshow and Stern, pp. 94-95.

[180] *Wall Street Journal*, May 30, 1989, pp. B1 to B2.

[181] TVRO refers to an earth station with a 10- to 12-foot diameter antenna, which is used to receive low-power C band satellite feed. For details of the service, see Brenner et al., chapter 15.

[182] Use of TVROs in rural areas hardly needs proof. For example, if one drives out of Boston to sparsely populated areas in Maine or Vermont, numerous backyard dishes along the roadside can be seen.

[183] *Broadcasting*, July 17, 1989, p. 56.

[184] DBS refers to mid- or high-power Ku band broadcast satellite, as defined by the 1979 World Administrative Radio Conference (WARC-79). For the FCC's decision, see *Telecommunications Report*, August 7, 1989, pp. 17-19.

the U.S. Expectations for DBS services seem to be increasing in the U.S. (despite failure of United Communications, Inc., in the mid-1980s),[185] perhaps fueled by the growing hope for DBS in Europe and Japan, and the possible provision of High Definition TV (HDTV) by DBS. With its small antenna that boasts an 18-inch diameter and its nation-wide coverage, DBS services may become major video outlets some day.[186] One Multiple System Operator (MSO) of cable TV observed that DBS and cable might serve the same homes in the future, with DBS providing national programs and cable assigning its channel capacity to local and regional services.[187] The key for success of DBS is programming. In this regard, its future is uncertain.[188]

Satellite Master Antenna Television (SMATV) provides satellite-fed programming and over-the-air TV signals to residents of large private buildings or multi-unit dwellings.[189] Although the Cable Act of 1984 seems to exclude SMATV in general from its definition of cable systems,[190] disputes have occurred concerning whether or not a particular SMATV system is a cable system, due to the definition's limitation and ambiguity. Since a SMATV system is not required to obtain a franchise if it is not a cable system, a construction plan of SMATV usually evokes concerns of competing cable operators and even city

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[185] For the history and regulations of DBS in the U.S., see Brenner et al., chapter 15.

[186] If future DBS programming gains popularity, cable operators can attempt to carry it and thereby internalize the competition.

[187] *Cable World,* October 16, 1989, p. 1.

[188] For an overview of satellite use for broadcast and the current DBS market situation, see De Sonne, Marcia L., "Communications Satellites: Broadcast Industry Use, Impact and Future Prospects," *Many Roads Home: The New Electronic Pathways,* National Association of Broadcasters, 1988, pp. 85-113.

[189] For details of the service, see Brenner et al., pp. 13.1 to 13.3.

[190] The Cable Act of 1984, sec. 602(6)(B).

officials.[191] SMATV seems to be potentially competitive against cable systems in terms of construction cost and speed of establishment of a system. But it has disadvantages as well, such as limited channel capacity and lack of availability of programming. Perhaps the most unfavorable fact for the future of SMATV is that cable has already been made available to more than 86 percent of U.S. homes. SMATV may prevail better in a country like Japan, where cable television is still in its nascent stage and many people live in large multiple-unit dwellings.

Multipoint Distribution Service (MDS) or Multichannel MDS (MMDS), usually called wireless cable, provides video programming of up to 33 channels by use of microwaves.[192] Wireless cable has a potential advantage over conventional cable – lower cost of the service.[193] Due to characteristics of microwaves, its picture quality is also good. Although wireless cable operators used to regard their business as "complementary" to conventional cable, they now seem to be ready for head-to-head competition with incumbent cable systems.[194] They, too, have problems such as lack of proper financing, difficulty in obtaining popular programming at a low cost, and small channel capacity compared with that of conventional cable. Wireless cable currently has only a little more than 300 thousand customers, but with its low start-up cost and relatively short construction period, it may show a certain success in the 1990s.

The video cassette recorder (VCR) is undoubtedly one of the most successful video outlets of the 1980s. Shortly after their theatrical play, blockbuster movies can now be rented on video cassette, for $2 to

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[191] For competition between cable and SMATV operators, see Brenner et al., pp. 13.3 to 13.8, 13.15 to 13.22.

[192] Thirty-three channels are the sum of channels of MDS, MMDS, Instructional Television Fixed Service (ITFS) and Operational Fixed Service (OFS). For the systems and rather complicated regulations of these services, see Brenner et al., chapter 16.

[193] *Broadcasting*, September 18, 1989, pp. 62-63.

[194] Ibid.

$3 per day, from well over 30 thousand video rental shops. A typical shop stores some 2,500 titles and rents about 1,250 tapes per week on average.[195] In 1987, prerecorded tapes sold for an average of $17.41,[196] while sales and rentals of home videos amounted to $7.46 billion.[197] The popularity of VCRs and home videos is unquestionable, but their impact on the growth of other media, particularly on cable, is uncertain. A survey revealed that pay cable households possessed VCRs more often than basic cable and non-cable homes (the former 64 percent, the latter 48 percent).[198] Although available data and studies are far from conclusive, the relationship between cable and VCRs might be like that of people subscribing to a newspaper but also buying books and magazines at a bookstore. Just as people read newspapers delivered every day but sometimes buy magazines and books at a nearby bookstore, they may watch cable and TV programming every day but rent a video cassette only once or twice a week.

Alternative video distribution technologies exist that have both advantages and disadvantages over incumbent cable systems. Except for full-power TV stations and VCRs, their current customer bases are relatively small and their viability has yet to be proven. Their existence may be of more threat to possible entrants (telcos) into cable service than to incumbent cable operators with an established customer base and program supply. Regardless of whether or not cable is an unregulated monopoly, it is at least clear that cable TV is becoming a dominant medium in the local video marketplace. It is this status of cable TV that has evoked a number of concerns and voices calling for competition from telephone companies.

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[195] These data are from results of an American Video Association survey, reported in *1989 International Television and Video Almanac*, (New York: Quigley Publishing Co., 1989), p. 393.

[196] Ibid.

[197] Brotman, Stuart N., "Home Video," *Many Roads Home: The Electronic Pathways*, p. 131.

[198] The AGB Television Research Study, released March 1988, reported in *1989 International Television and Video Almanac*, p. 393.

3.2.2 Some Issues that May Affect Debate over Telco/Cable Cross-Ownership

3.2.2.1 Rate hike of cable service

Since October 1986, most cable operators have been freed from local rate regulations on basic cable service.[199] Basic service is defined as "any service tier which includes the retransmission of any broadcast television signals."[200] While it is true that cable rates have increased somewhat since then, several rate studies currently carried out are inconclusive as to whether the increase is excessive, and the result of monopolistic behavior of cable operators.[201] Cable operators assert that the increase is the adjustment of cable prices which had been restricted to an artificially low level before the Cable Act of 1984, and the number of available channels in a particular tier has significantly increased.[202] In spite of these arguments, growing concerns and complaints about cable rates are expressed in Congress. The concerns led to the introduction of several cable bills that call for rate reregulation and/or repeal of the telco/cable cross-ownership ban.[203]

3.2.2.2 "Must Carry"/channel positioning/compulsory license

Although previous "must carry" rules were ruled unconstitutional, local broadcasters have significant interest in their signals being carried by cable systems. Local broadcast signals are still indispensable parts of cable programming. However, as the number of cable networks increases and some local cable operators start up their

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[199] See chapter 1, sec. 1.1.3.

[200] 47 CFR sec. 76.5(ii).

[201] See, for example, *NTIA Report* (Appendix A), and the General Accounting Office's survey of cable rate, released August 3, 1989.

[202] *Broadcasting*, August 7, 1989, pp. 30-31.

[203] See, for example, S.833 introduced by senator Metzenbaum, which calls for reregulation of cable rates by redefining a market with effective competition.

own "local TV-like channels,"[204] broadcasters, particularly independent stations, grow ever more fearful about having their signals dropped from the cable systems. While broadcasters and cable companies continue negotiating to reach a compromise solution, the issue gets complicated by channel positioning and compulsory license disputes.

The channel positioning issue, in short, is about where to carry local TV within channel capacity of a cable system. Since programs positioned in lower channel numbers (such as 1 to 10 of VHF band) may attract more viewers than those on channel 60s, due to accessibility and other possible reasons,[205] and since many UHF stations are currently carried on VHF band, without certain rules broadcasters feel that their signals may be pushed away to "cable siberia" (channels on a very high frequency) by cable operators in favor of programming in which they have an interest. Many broadcasters also express their dissatisfaction with the compulsory license fee. They claim that without "must carry" rules, cable operators should pay fees determined through direct negotiations or other means, rather than a trivial compulsory license fee, if cable systems are to carry the broadcast signals.[206] The debate over these issues has become increasingly heated between broadcasters and cable operators, and Congress has started investigating the issues in conjunction with overall cable reregulation bills.[207] The issues are mutually related, and their outcome and the possible passage of a certain cable reregulation bill may affect the position of not only broadcasters but also that of Congress to telcos' entry into cable service.

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[204] For example, a few cable systems are now programming their own cable channels with syndicated products and local news in the same manner as independent TV stations. *Broadcasting*, July 31, 1989, pp. 23-24.

[205] In addition, some channels on higher frequencies of UHF band may need a converter to be viewed by cable subscribers.

[206] *Broadcasting*, September 25, 1989, pp. 28-29.

[207] See, for example, *Broadcasting*, December 25, 1989, p. 19, 23.

3.2.2.3 Migration of sports from over-the-air TV to cable network

As cable networks grow and their viewers increase in number, some popular sport programs that previously had been broadcast by "free TVs" have begun moving to cable networks such as ESPN and regional sport networks.[208] Some critics say that cable TV is "siphoning" both professional and amateur sports from "free TV," leaving viewers without cable unable to watch their favorite sports. With revenues from both subscription and advertisement fees, cable networks and cable operators are gradually outbidding broadcasters, particularly independent stations, for a number of sports broadcast rights.[209]

While competition for programs gives producers and sports teams incentives to create, for instance, higher-quality movies and more exciting sports games by assuring appropriate and high prices for their products, it may give rise to bigger communications policy issues in the near future. The issue may not only be one of program migration between cable and TV networks; rather, it may also be a question of competitive policy in the local video delivery market. If a number of alternative technologies and competing outlets of the same technology bid for a limited number of programs such as sports games, will not the competition lead to soaring program prices and, in turn, to higher subscription fees? If popular programs are distributed among competing technologies and outlets, and if viewers want to watch those programs, should they subscribe to all video delivery media even – in the age of large transmission capacity? Should they end up with possibly two DBS antennae on their roofs and two cables hooked up to their television sets? Is this a benefit that the competition produces for the public?

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[208] For example, beginning in 1991 all New York Yankees baseball games will be carried by a cable channel. For which sports are now and will be carried by which broadcast and cable networks, see *MSO*, October 1989, pp. 10-30.

[209] *Broadcasting*, July 31, 1989, p. 40. See also *Broadcasting*, August 14, 1989, pp. 36-42.

3.2.3 Horizontal and Vertical Integration in the Cable Industry

The ongoing trend of horizontal and vertical integration in the cable industry is one major reason that gives rise to questions about the health of the current local video delivery marketplace, and the one behind many criticisms about cable, some of which are discussed above. **Figure** 3-1 provides a simple diagram of the current video distribution market structure in the U.S. The horizontal integration means concentration of ownership of cable systems which has created large Multiple System Operators (MSOs). When a cable operator buys out or obtains significant interest in cable networks under the heading of wholesaler (see **Figure** 3-1), what is currently called "vertical integration" occurs. As noted above, cable systems in the retail market carry the most weight, regardless of their representation in **Figure** 3-1.

Integration is not peculiar to the cable industry. It is a widely-spread common phenomenon in all industries in capitalistic countries. One typical example is, of course, the old Bell Systems. Its history is that of horizontal and vertical integration, and of its battles to preserve the integration; however, in case of the Bell Systems, vertical integration traditionally (before the break-up of AT&T) meant the integration of manufacturing as well as local and long distance services.[210] In the movie industry, direct control of theaters by a large film studio led to an anti-trust suit and separation of the theaters from the studio in the 1940s.[211] Integration raises the question whether an entity obtains excessive market power due to such integrations in its original and adjacent markets.

Table 3-3 summarizes the potential benefits and harms of horizontal and vertical integration in the cable industry to the video distribution marketplace, which were identified in a report by the National

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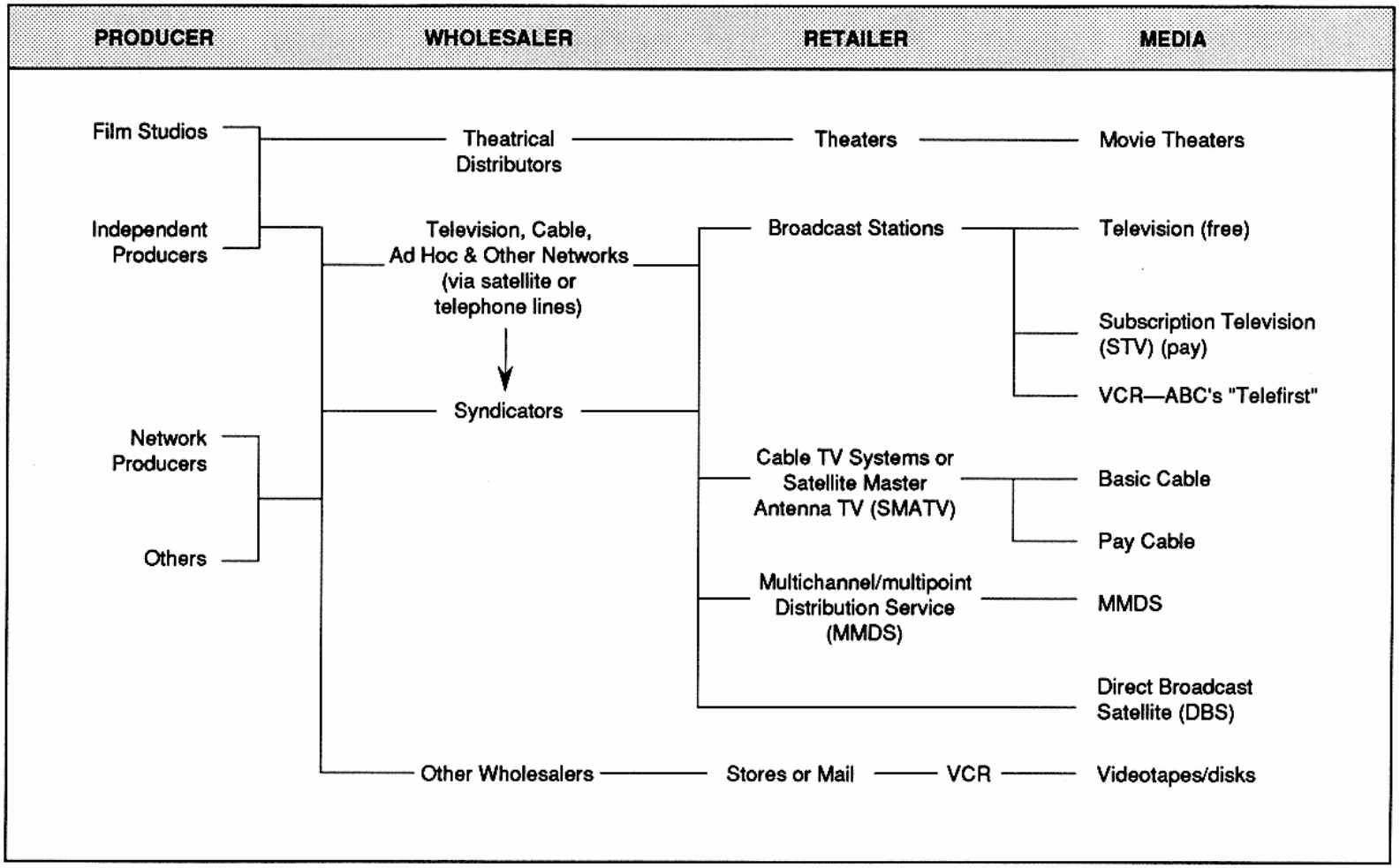
[210] For a concise history of the creation of the Bell systems, see Weinhaus, Carol L. and Anthony G. Oettinger, *Behind The Telephone Debates* (Norwood, N.J.: Ablex Publishing Corp., 1988), pp. 5-14.

[211] United States v. Paramount Pictures, Inc., 334 U.S. 131 (1948).



Source: Brenner, Daniel L. et al., *Cable Television and Other Nonbroadcast Video* (New York: Clark Boadman Co., 1989), pp. 6-104.

Figure 3-1

Video Distribution Media Flow Chart

Table 3-3

Potential Benefits and Costs of Horizontal/Vertical Integration in the Cable Industry

	Benefits	Cost (Demerits)
Horizontal Integration	**Economy of size** Lower fixed cost per subscriber Lower program purchase cost • If transferred to subscribers, lower cable rates Diversity of program sources for subscribers • If reduced costs and increased profits create new program sources and increased numbers of programs carried	**Monopsony power as a buyer of programming** Reduction in the number of program sources • If MSOs deny carriage, serious damage to cable programmers Prevention of entry by competing technologies and potential competitors • If MSOs use their influence on programmers to limit the supply of programs Rate imbalances among subscribers of small systems and large MSOs
Vertical Integration	Lower transaction cost of obtaining programs • If transferred to subscribers, lower cable rates Expansion of supply of programs • By helping networks financially and assuring carriage of their programs to increase viability and create new program sources Programs of higher quality • Through financial help and assurance of carriage	Reduction of program diversity • By refusing to carry competing programs Prevention of competitive entry from competing technologies and potential competitors • By denying competitors access to programming or by unfair treatment

Source: Summarized from National Telecommunications and Information Administration, *Video Program Distribution and Cable Television: Current Policy Issues and Recommendations*, NTIA Report 88-233, 1988, pp. 77-107.

Telecommunications and Information Administration (NTIA).[212] The report found no conclusive evidence for either actual benefits or damages.[213]

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[212] *NTIA Report*, pp. 77-107.

[213] Ibid.

As for concentration of ownership, the top 20 MSOs covered 73.3 percent of all cable subscribers in 1987, up from 61.5 percent in 1983.[214] This figure is not so far from BOCs' coverage over telephone subscribers – 79.1 percent of total access lines in 1987[215] – although those access lines are provided by only seven RBOCs. The number of subscribers of each MSO, however, is less than half those of respective RBOCs. For example, TCI, the nation's largest MSO, had some 4.4 million customers in 1989 as compared to well over 10 million access lines of each RBOC.[216] Apart from the comparison with the telephone industry, it seems true that large cable operators have an advantage or can excise their buying power when they purchased programming. For example, TCI purchased HBO at $.90 per subscriber, while a small cable operator paid $5 per customer in 1986.[217] There seems some cost justification for this price difference and consumer benefits involved, but the purchasing power of the MSOs raises some anticompetitive concerns. For example, the MSOs might use their influence to force cable networks not to supply their programming to competing technologies or cable systems. Should MSOs refuse carriage of a particular cable network, the network's viability may be threatened since the network could not reach a substantial portion of cable subscribers. While the evidence is inconclusive for either the benefits or disadvantages, these concerns led NTIA to call for an FCC inquiry into concentration of ownership in the cable industry.[218]

MSOs are also actively investing in programming. They currently have interest in 7 out of 9 national pay cable networks and 20 of 52 basic networks. Of the top 20 basic cable networks, 12 are associated with

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[214] Ibid., Attachment 2.

[215] United States Telephone Association, *Telephone Statistics 1988*, p. 2 (hereinafter, *Telephone Statistics 1988*).

[216] Paul Kagan Associates, Inc., reported in NCTA, *Cable Television Developments*, p. 10, and the United States Telephone Association, *Holding Company Report, 1989*.

[217] *NTIA Report*, p. 80.

[218] Ibid., p. 88.

cable operators.[219] These networks include popular programming such as HBO, the Movie Channel, and USA Network. MSOs are still actively purchasing popular cable networks.[220]

As **Table 3-3** (above) shows, vertical integration produces not only detriments but also many benefits. Despite the potential benefits and the fact that TV stations and networks have invested significantly more in programming, a number of criticisms are now directed to the vertical and horizontal integration by video distributors of competing technologies. Competing media expressed many complaints, especially about the difficulty they have and unfair treatment they face in obtaining popular programming. For example, TVRO providers complain that they have to pay up to 800 percent more than cable operators to obtain some popular programming.[221] Some MMDS operators say that they have difficulty competing with cable systems because they are not allowed to carry some cable networks.[222] Although the cable networks contend that these situations resulted from justifiable cost differences, concerns about signal piracy, and other considerations – rather than discrimination – one cable network admits that it is reluctant to supply its shows to "overbuilders," regardless of technology. If it provides the programming to two outlets in the same market, neither will promote the network.[223] The vertical integration may also give the cable operators incentives to drop some programming in favor of other services in which they have stakes.[224]

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[219] Ibid., pp. 89-90.

[220] For example, TCI announced its purchase of 50 percent stakes of Viacom's Showtime Network in October 1989. *Broadcasting*, October 23, 1989, pp. 40-41.

[221] *Broadcasting*, July 3, 1989, pp. 35-36.

[222] *Broadcasting*, September 18, 1989, pp. 62-65.

[223] Ibid.

[224] The president of INTV reportedly said that independent TV stations are being dropped from cable systems in favor of programming in which the operators have their interests. *Broadcasting*, June 26, 1989, p. 29.

Although it is inconclusive and uncertain whether discrimination exists due to integration and anticompetitive behavior in the cable industry, the dispute suggests two important communications policy issues concerning the future competitive broadband communications marketplace. The first is how to ensure equal access to distribution facilities by programmers and information providers. It is not a new issue but one faced by telcos for a long time, and it will emerge again in a new context. The second issue is about access to programming and information sources by owners of distribution facilities. In other words, there is danger that integration of conduit and content with significant market power might create two bottlenecks in the local broadband communications market, facility and content carried, in the near future.

3.2.4 Two-way Voice and Data Services by Cable Systems

One rationale to support telcos' entry into cable service is that no new non-video two-way communications services have been developed in general over the same facility for cable service, either by cable or telephone companies. While the telco/cable cross-ownership ban has served well to prevent telcos from establishing monopolistic positions over cable operators, it is argued that the ban has deterred the development of such new services due to lack of competition in the cable TV marketplace.[225] Cable operators contend that their offerings of such services have been continuously blocked by telcos' predatory use of state regulatory processes and substantial regulatory barriers imposed by state regulators.[226] They also argue that despite the obstacles, the cable industry has attempted to provide as many non-video services as possible.[227]

Three major questions are raised concerning regulations over cable's provision of non-video services. Is a cable operator that provides such

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[225] *Further Notice of Inquiry*, paras. 35-42.

[226] *NCTA Comments*, pp. 16-17.

[227] *TCI Comments*, pp. 9-11.

services a common carrier? Should such services be regulated under federal or state jurisdiction? What regulations should be applied to such services? The first question is becoming less important. Although the Cable Act of 1984 prevents common carrier regulations for cable service by cable operators,[228] the Act reserves the right of states to regulate intrastate non-cable services regardless of such services being offered on a common carrier or private contract basis.[229] For interstate services, owing to FCC competitive carrier proceedings, cable operators are most likely to be defined as non-dominant carriers and therefore virtually freed from most regulations.

The question of federal/state jurisdiction, particularly the Commission's authority to preempt state regulations, has frequently arisen because of the difficulty distinguishing between intra- and interstate services, and differences between the FCC's competitive policies and those of states' regulators. The most famous case is the 1985 Cox Cable decision of the Commission.[230] Cox Cable's subsidiary, Commline of Omaha, provided data transmission services over the institutional network portion of Cox's cable system and interconnected its network with interstate satellite and microwave carriers such as MCI. Nebraska Public Service Commission ordered Commline not to provide the services until it was granted a certificate of public necessity and convenience.[231] Cox Cable petitioned the FCC for a declaratory ruling that the Commission preempted or preempts the state and local regulations of all facilities that serve both interstate and intrastate communications services. In its 1985 decision, the Commission permitted Commline to provide the services without the state certificate and prohibited state authority over any intrastate communications services

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[228] The Cable Act of 1984, sec. 621(c).

[229] Ibid., sec. 621(d)(2).

[230] Cox Cable Communications, Inc., File No. CCB-DFD-83-1, *Memorandum Opinion, Declaratory Ruling, and Order*, 58 RR 2d 1235 (1985), (hereinafter, Cox Cable Decision).

[231] For details of the case and the discussion, see Brenner et al., pp. 11.10 to 11.12.

using facilities that also could be used for interstate services.[232] The Commission's rationale is that such regulations of the state would seriously impede development of interstate communications services by the use of cable facilities.

In September 1985, NARUC filed a petition to the D.C. Court of Appeals for the overturn of the Commission's decision. The case, however, became technically moot when Commline went out of business in 1986. The Commission subsequently voided the Cox Cable decision.[233]

In a case similar to Cox Cable, the FCC made an opposite ruling. In 1985, four cable companies in Colorado asked the FCC to preempt the state's requirement for certificate of public necessity and convenience. This time the Commission denied the petition on the ground that none of the cable companies was providing interstate services at the time of the petition, although the facilities had the capability.[234]

While the FCC's preemption may be useful to promote non-video services by cable operators if state and local barriers really exist, it does not offer a complete solution. It is essentially a case by case approach, and ambiguity always exists when making a distinction between intra- and interstate services. The essential question, then, is what regulations have been applied and which should be applied to such services?

Several records concerning state regulations show evidence to support cable's claim that regulatory barriers have impeded the provision of non-cable services by cable operators. For example, in the Colorado case above, state regulators required the cable companies to prove inadequacy of a telco's existing services in order to get the

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[232] Cox Cable Decision.

[233] Cox Cable Communications, Inc., File No. CCB-DFD-83-1, *Memorandum Opinion and Order,* 1 FCC Red 561 (1986).

[234] United Cable Television of Colorado Inc., File No. CCB-DFD-85-35, *Memorandum Opinion and Order,* 1 FCC Red 555 (1986).

certification. Such proof is probably very hard to acquire.[235] In New Mexico, the State Corporation Commission decided that a telephone company must be given first opportunity to provide telecommunications services before a competitor can enter the market. The tendency to turn first to an existing monopoly telephone company is common practice for many states.[236] Although many states have opened up intrastate interexchange services to competition,[237] state regulators seem in general reluctant to have competition where telco's local bottleneck facilities are involved. Theirs is a classic concern – bypass. If allowed, cable operators may wish to provide only profitable services such as those for large corporations and "creamskim" revenues from LECs. Although the bypass debate is beyond the scope of this paper, it can be said at least that the bypass concern should be properly addressed in case of cable provision of non-video services, since it is clear that "coaxial or fiber cable can provide an alternative to the public switched network and impose a true bypass threat."[238]

Some cable operators, if not many, currently provide non-video two-way communications services. For example, American Television and Communications (ATC) provides data services for banks and the local government in New York City. Business communications network of a bank in Oregon is provided by Rogers Cable Systems.[239] ATC also plans to add voice services to its New York City operation.[240]

It is still not certain whether the limited number of non-video offerings by cable companies result simply from regulatory difficulties,

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[235] Telecom Publishing Group, p. 13.

[236] Brenner et al., pp. 11.9 to 11.10.

[237] Shinoda, Satoshi, *Competition in Local Telecommunications Markets: The U.S. and Japan* (research draft), (Cambridge: Program on Information Resources Policy, Harvard Univ., 1989), p. 49.

[238] Brenner et al., p. 11.13.

[239] Ibid., p. 11.2.

[240] *Cable World,* July 3, 1989, p. 2.

or from the unwillingness of cable operators to provide such services, or from both. But the question is the other side of the coin in the debate over the telco/cable cross-ownership. If telcos are allowed to enter into the cable business with IBN or other integrated broadband and narrowband capability, cable operators eventually need to respond to this threat. Otherwise, they may be driven out of the marketplace, although such integration has yet to be proven successful. If the repeal of the cross-ownership ban is to be discussed in Congress, appropriate policy and regulatory provisions over non-video services of cable companies may also need to be addressed, since state authority over intrastate communications services is also statutory under the Communications Act of 1934.

3.3 TELEPHONE COMPANIES: AN OPPORTUNITY?

Repeal of the telco/cable cross-ownership restrictions might present telephone companies with the opportunity to expand into a new, profitable business and to quicken introduction of an Integrated Broadband Network (IBN). But to that end, the road is not smooth. This section presents an overview of issues and problems that telcos face concerning the ban and provision of broadband communications services to the home, some of which are deeply rooted in the heart of their telephone operations.

3.3.1 Some Issues that May Affect Debate over Telco/Cable Cross-ownership

3.3.1.1 The MFJ line of business restrictions

As described in chapter 1, even if the cross-ownership ban is lifted, BOCs, which serve about 79 percent of the nation's telephone access lines,[241] cannot enter into cable service except to take on a common carrier role, due to the information service ban imposed by the MFJ. The MFJ line of business restrictions prohibits entry of BOCs and their

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[241] *Telephone Statistics 1988*, p. 2.

affiliates into manufacturing, interexchange services (inter LATA), as well as the information service market.[242]

In his triennial review of the MFJ, Judge Greene ruled to retain the line of business ban, reaffirming the bottleneck power of the local operating companies:

> [T]he Regional Companies do retain that power over the local bottlenecks, and there is little "bypass" of their switches and circuits.
>
> The exchange monopoly of the Regional Companies has continued because it is a natural monopoly.[243]

The judge, however, allowed BOCs to provide what he called "gateway" services to information service providers, partly from concern about what he described as an underdeveloped U.S. information service market, as compared with that of France characterized by the success of "Teletel." The "gateway" decision permits BOCs to provide a series of necessary functions for information service provision such as data transmission, address translation, protocol conversion, billing arrangement, and introductory information content.[244]

Although there is no specific reference to video delivery services in the decision, it is commonly held that BOCs can provide video "gateway" for video programming distribution. BOCs are now in a position to be able to provide, in addition to traditional channel service (which is nothing more than private facility lease contract), services such as "video dial tone" to any video programmers seeking carriage of their

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[242] United States v. Western Electric Company, Inc. et al., Civil Action No. 82-0192 (1982), sec. II D.

[243] United States v. Western Electric, *Opinion*, 673 F. Supp. 525, 537 (D.C. Cir. 1987).

[244] Ibid., pp. 587-97.

programming – if technology permits and BOCs wish to construct and offer such facilities.[245]

Since the triennial review of the MFJ in 1987, the position of the decree court has not changed. In June 1989, Judge Greene rejected a waiver request for an "out-of-region" information service provision by three BOCs, concluding that nothing has changed since the review.[246] Judge Greene also decided that he would no longer require a report on market conditions and other changes for the purpose of reviewing the MFJ every three years.[247] This decision may call off the second triennial review scheduled in 1990. The U.S. Court of Appeal, however, in April 1990 reversed the ruling of the first triennial review of the MFJ on the information service restriction.[248] Accordingly, the Decree Court needs to look at the information service issue once again, and this may increase the chances that the information service restriction may be changed. But the outcome of the reconsideration is very difficult to predict at the moment.

In contrast to the decree court's position, an increasing number of voices are calling for relief from the restrictions, if not all three of them.[249] With a growing interest in the issue, Congress is debating the possibility of eliminating the restrictions and/or transferring

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[245] For the concept of "video dial tone," see *NTIA Report*, pp. 32-38.

[246] United States v. Western Electric, *Opinion* (June 13, 1989). The three BOCs are BellSouth, Bell Atlantic, and SouthWestern Bell.

[247] *Telephony*, July 24, 1989, p. 8. The MFJ originally required the Department of Justice (DOJ) to prepare a report for review of the MFJ every three years. The DOJ asked Judge Greene to delay the next report until after the U.S. Court of Appeals rules on challenges by RBOCs to the order of the first triennial review. The judge's decision came in response to a request by the RBOCs that he should set a specific date for the next review.

[248] United States v. Western Electric Company, Inc.

[249] For example, see Schwartz, Gail G. and Jeffrey H. Hoagg, "It's Time to Lift the Line of Business Restrictions," *Telematics*, May 1989, pp. 1-9.

authority of overseeing the MFJ from the court to the FCC. A bill that frees BOCs from the information service and manufacturing ban was introduced, although its passage is highly unlikely due to strong opposition from various parties within and outside Congress.[250] The main concern of Congress seems to be the possible adverse effects such restrictions may have on international competitiveness of the U.S. industries and economy.

There are also indications that LECs, both BOCs and other independents, are now facing growing competition in some of their marketplaces, particularly the market for large corporate users. The threats come from such diverse services as facility and service bypass, MAN, shared tenant services, private microwave, and cellular radio telephone.[251] It is, however, also true that "residential and small business users have few practical alternatives" to LECs' local exchange and access services,[252] and this is the market with which cable TV service is mainly concerned.

To say that the telephone company is a monopoly does not mean that no situation exists that would call for a lift of the restrictions. The core rationale for the line of business bans is an assumption that the monopoly entails a certain unknown level of power and incentives for BOCs to cross-subsidize their unregulated services from regulated monopoly services, and to discriminate against competitors for access to their monopoly facilities. These reasons are exactly the same as those for the telco/cable cross-ownership ban. The issues are, therefore, whether real incentives and power of such discrimination exist and, if

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[250] "Consumer Telecommunications Service Act," HR 2140 introduced by Congressmen Al Swift and Tom Tauke. See *Telecommunications Report*, May 1, 1989, pp. 1-3. For opposing views, see *Telecommunications Report*, July 31, 1989, pp. 17-20.

[251] See Shinoda, pp. 39-72.

[252] Huber, Peter, *The Geodesic Network: 1987 Report On Competition in the Telephone Industry*, U.S. Department of Justice, 1987, p. 2.23 (hereinafter, *Huber Report*).

so, whether appropriate safeguards are available against such anticompetitive behavior.

A problem of cross-subsidization does not arise directly from monopoly power, but from a "poisonous synergy between market power and rate of return regulation."[253] In the video context, the cross-subsidization to their cable service by LECs may adversely affect both competing cable operators and programmers seeking access to LECs' facilities. Concern about possible discriminatory provision of network access comes directly from monopolistic ownership of essential facilities. If network access is interpreted narrowly in video context, this is discrimination against competing video programmers and producers. If broadly interpreted, it includes discrimination against competing cable companies' access to poles and conduits.

Certain progress has been made toward safeguarding against such discrimination. This paper now turns to key issues concerning such safeguards, namely rate regulation and Open Network Architecture (ONA).

3.3.1.2 Rate regulation

Rates of local exchange telecommunications services have been determined traditionally by rate base rate of return (ROR) regulation. ROR regulation is an integral part of the overall scheme of regulations on monopoly local telephone companies – the scheme that involves certain rights and obligations of both LECs and their regulators. LECs not only ensure the provision of high-quality universal telephone services but also make them available on a non-discriminatory basis and at just and reasonable prices. In return, the regulators provide protection for LECs' monopoly in their service areas and ensure appropriate return on investment (ROI) – that is, profits.

The formula to determine the costs for ROR regulation is, in its simplest form, as follows:

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[253] Ibid., p. 2.24.

annual costs = annual expenses + annual ROR x total net investment

where annual expenses include operating expenses, depreciation expenses, and taxes.[254]

Although current views on ROR regulation naturally vary among various stakeholders,[255] it served well in general to achieve the goals of universal service, establishment of reliable advanced telecommunications networks by providing an opportunity for telcos to earn sufficient revenues to cover their costs, and overall protection against monopolistic abuses. On the other hand, ROR regulation has several drawbacks, such as high indirect cost caused by complexity of the regulatory processes as well as lack of incentives for efficiency.

Concerning cross-subsidization, ROR regulation gives rise to both incentives and means for telcos to engage in cross-subsidization. In the first place, since annual ROR must be authorized by the regulators and tends to be fixed over time, it gives regulated businesses incentives to expand into unregulated businesses to earn extra profits. Second, regulated companies have incentives and are able to shift costs of unregulated activities to those of the regulated services; the services of ROR regulation are by definition monopolistic, and the formula itself does not have any means to prevent such cross-subsidization. Even if strict cost allocation and separation rules are set, such as in current FCC rules,[256] given a large amount of joint costs and the complexity of the telephone industry's cost structure, danger of the cost shift always exists. By the same token, detection of the shift also tends to be very difficult. The cost separation rules themselves tend to be arbitrarily determined and need to be amended

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[254] Weinhaus and Oettinger, p. 36.

[255] For stakeholders' views, see Masoner, Jeffrey A., *Alternatives to Rate Base Rate of Return Regulation of Local Exchange Carriers: An Analysis of Stakeholder Positions* (research draft), (Cambridge: Program on Information Resources Policy, Harvard Univ., March 1989), pp. 58-108.

[256] See *Joint Cost Order*.

frequently in the face of rapidly changing technology. If telephone calls (regulated) and video programming of telcos (unregulated) some day could be carried on an integrated basis by a single wire to the home, ROR regulation may not be a proper choice.

As technological development and changing regulatory, social, and economic frameworks have increasingly blurred traditional boundaries between industries as well as the distinction between services, the applicability of ROR regulation to the emerging new telecommunications marketplace has begun to be questioned. In the late 1980s, a number of proposals were made for alternatives to ROR regulation such as social contract, price cap, and incentive regulation.[257] The FCC adopted a price cap to interstate services of AT&T and proposed to apply it to those of all LECs.[258] Some states implemented incentive regulations or price cap instead of ROR regulation,[259] and many others are considering at least some changes to ROR regulation. While a detailed discussion of the alternatives is beyond the scope of this paper, a brief look at the effect of price cap, as an example, over the cross-subsidization problem is necessary.

Unlike ROR regulation, price cap regulation focuses only on the services' prices, not on their costs. Price cap sets a certain ceiling over the prices of services concerned; this ceiling is linked with a certain economic index such as the Consumer Price Index (CPI), which is adjusted by a productivity factor of the industry concerned. The simplest formula to determine price cap regulation is as follows:

ceiling of price increase(%) = CPI - X(%)

where X equals expected productivity gains.

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[257] For details of these alternatives, see Masoner.

[258] In the Matter of Policy and Rules Concerning Rate for Dominant Carriers, CC Docket No. 87-313, *Notice of Proposed Rulemaking*, 2 FCC Red 5208 (1987). Price cap regulation for AT&T services was implemented on July 1, 1989.

[259] Masoner, p. 262.

CPI can be other indexes that have some link with cost items outside the firm's control.

Although price cap regulation has both strengths and weaknesses,[260] it seems to have some clear advantages over ROR regulation with regard to cross-subsidization. Since the price of a service has a ceiling but no reference to a LEC's costs or rate base, any cost shift from its unregulated services "then flows directly to the LEC's bottom line."[261] The cross-subsidization squeezes away profits from the LEC's main business.

While price cap regulation seems workable to prevent cross-subsidization, it is also true that it does not completely eliminate the possibility of a cost shift. The caps will be set periodically based on a review of industry profits during the prior period, so they may not be correct when applied and could need further adjustment. It is very hard to accurately estimate expected productivity gains. Even if the actual productivity increase may exceed its estimate, in theory the price may be raised to the limit. Thus, in a certain situation, price cap regulation may produce some room for cross-subsidization. To address these concerns and to supplement other weaknesses, additional rules are being considered such as "automatic stabilizer" and "baskets" of services to which respective price ceilings are applied.[262]

If telcos are allowed to get into the cable business, and one day a single-fiber optic would distribute both regulated and unregulated services,[263] then serious consideration to alternative methods may be necessary. But rate regulation is the heart of regulations of the telephone industry and its operations. Some changes in the rate

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[260] Ibid., pp. 168-261.

[261] *Huber Report*, p. 2.24.

[262] "Price Cap Fact Sheet," *FCC News*, Report No. DC-1379, March 16, 1989.

[263] Such a distinction may disappear in the age of a fully-developed broadband network.

regulation affect a number of stakeholders and their stakes. Long and winding roads still lie ahead.

3.3.1.3 Open Network Architecture

Changes in rate regulation do not eliminate discriminatory provision of access to bottleneck facilities by their owners. "Non-structural safeguards" adopted in Computer Inquiry III Phase I Order (CI III Phase I Order)[264] is one product of the Commission's long-standing effort to clarify the ever-changing boundary between "data processing" and "communications services" and/or "basic services and enhanced services,"[265] and to ensure fair competition in the area of enhanced services between a monopoly owner of basic underlying transmission facilities and other enhanced service providers (ESPs).

In the CI III Phase I Order of May 1986, the Commission abolished structural separation requirements (structural safeguards) imposed on pre-divestiture AT&T by Computer Inquiry II (CI II),[266] and allowed BOCs and AT&T to offer enhanced services directly – provided they satisfy requirements of "non-structural safeguards." The Commission adopted five major requirements as "non-structural safeguards":

- Open Network Architecture (ONA)
- Comparably Efficient Interconnection (CEI)
- Accounting Rules of Cost Separation and Allocation
- Network Information Disclosure
- Restrictions on use of Customer Proprietary Network Information

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[264] In re Amendment of Section 64.702 of the Commission's Rules and Regulations (Third Computer Inquiry), etc., CC Docket No. 85-229, *Report and Order*, 60 Rad Reg 2d 603 (1986), (hereinafter, *CI III Phase I Order*).

[265] For a definition and an explanation of these terms, see Shukunami, pp. 21-28.

[266] In re Amendment of Section 64.702 of the Commission's Rules and Regulations (Second Computer Inquiry), FCC Docket No. 20828, *Final Decision*, 77 FCC 2d 384 (1980).

The first two requirements concern conditions on how basic services are provided, and CEI will be replaced by ONA when the FCC determines that the ONA plans have been fully implemented. The third one is to allocate joint and common cost between BOC's basic services (regulated) and enhanced services (unregulated). The last two are safeguards against abuse of information gained from the monopolistic position of BOCs.[267]

While the five major requirements are all indispensable parts of "non-structural safeguards," this paper will focus on ONA/CEI. They are the most fundamental conditions for prevention of discriminatory provision of network access and may significantly impact the development of future broadband networks.

CEI and ONA are not different in essence of their purposes and means. CEI is a case-by-case approach and an intermediary scheme to equalize the competitive position of BOCs relative to ESPs, and to ensure the prevention of discrimination with regard to access by BOCs; ONA is a formal plan to achieve the objectives of CI III.[268] The ONA conditions require, in essence, each BOC to

- Unbundle basic services,
- Purchase basic services used for its own enhanced services at unbundled tariffed rates,
- Ensure ESPs provision of basic services of the same technical characteristics as those used by itself,
- Provide ESPs with the same end-user accesses as those the BOC offers its own enhanced service customers, and
- Minimize transmission costs of ESPs.[269]

With regard to ONA, the Commission did not describe precise technological requirements. Rather, it specified only two points –

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[267] *CI III Phase I Order*.

[268] Shukunami, pp. 69-70.

[269] *CI III Phase I Order*, paras. 214-18.

unbundling of basic service elements (BSE) and application of CEI parameters[270] – and asked each BOC to submit its own ONA plan.

After some rounds of scrutiny on BOCs' ONA proposals, the Commission approved in most part the ONA plans submitted by BOCs in December 1988, although it ordered a number of modifications such as reconsideration of service classifications, increase of service menus, and unification of service names and functions among BOCs.[271] As of February 1990, the final decision is scheduled to come after examination of the modified plans submitted by BOCs by May 19, 1989, and comments to them; ONA will be implemented within a year of the final decision.

RBOCs developed a common ONA model in cooperation with Bell Communications Research to explain the unbundling of basic services. **Figure 3-2** shows an example of such an ONA model. According to this model, Basic Service Arrangements (BSAs) are basic switching and transmission services stipulated in tariffs, and ESPs can communicate with their customers by using BSA through the network of a BOC. ESPs have to purchase a certain BSA.[272] While the ONA model was examined, BSA was criticized by ESPs as an example of insufficient unbundling. Basic Service Elements (BSEs) are offerings of unbundled optional functions such as caller ID identification. They are necessary or useful functions when ESPs provide enhanced services to their users. In addition to BSAs and BSEs, the model also defines Complementary Network Services (CNSs) and Ancillary Network Services (ANSs) as supplements to BSAs and BSEs.[273]

Several comments seem to be appropriate about the implementation of ONA in video programming distribution and broadband service context.

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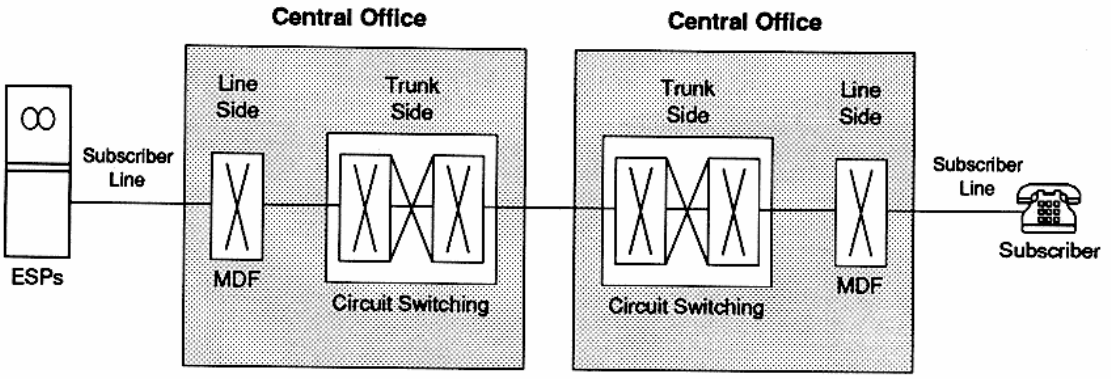
[270] *CI III Phase I Order*, paras. 214-18.

[271] Computer Inquiry III, *Memorandum Opinion and Order*, 4 FCC Red 1 (1989), (hereinafter, *Memorandum Opinion and Order*).

[272] Ibid., para. 56.

[273] Ibid., para. 57.



Basic Service Arrangement (BSA)

Access Line	Service/ Function	Transmission Usage
Option • Voice grade circuit capacity • Transmission interface	Option • Direction of calls (call origination only, incoming call only, etc.) • Line signal • Destination selection signalling • Network connection	Option • Call area (local call only, etc.)

Complementary Network Service (CNS)

- Local Exchange Service
- Custom Calling Service (abbreviated dialling, call waiting, etc.)

Basic Service Element (BSE)

- Calling number identification
- Call forwarding when busy
- Call forwarding when no answer
- Call forwarding based on number of ringing tones
- Remote control of call forwarding
- Message disk
- Single number service
- Line supervision
- Automatic hunting of group numbers
- Automatic distribution of incoming calls
- Call transfer of designated call
- Special ringing tone
- etc.

Source: *Kaigai Denkitsushin (Overseas Telecommunications Journal)*, Research Institute of Telecom-Policies and Economics, April 1989, p. 33.

Figure 3-2

An Example of ONA Model Composition of Voice Grade Circuit Switching (Line Side Connection)

First, it seems certain that the ONA concept is applicable to the video distribution market. Most enhanced services involve manipulation of

content and may be considered information services.[274] What is not certain is what specific requirements should be added or excluded in the broadband context.

Second, despite the applicability of ONA, its effectiveness has yet to be proven and depends upon actual implementation by BOCs. The failure to ensure fair competition in the enhanced service arena may kill a video opportunity for BOCs.

Third, it seems that the Commission originally intended ONA resulting in a fundamental reconfiguration of the basic underlying network and major changes of "the way in which [BOCs] use that network and make it available to others."[275] In other words, the Commission's goal was to seek a new network configuration in which CEI parameters are technologically engineered. But the Commission seems to have judged that implementing requirements such as collocation and control of partial network functions by ESPs may incur more costs and dangers (adverse effects on current basic network, and so on) than not doing so at the current technological level and overall situation of the telecommunications market.

As **Figure 3-2** shows, the current ONA plan – particularly BSA – is nothing more than a new form and rearrangement of existing services. In *Memorandum Opinion and Order,* instead of seeking such a goal, the Commission adopted procedures for BOCs to handle the ESPs' request for a new ONA capability.[276] But if BOCs are to provide video services on an integrated broadband basis, it opens up an opportunity to go for the original goal of the Commission, since establishment of an IBN involves not only rewiring of local loops but also the major reconfiguration of

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[274] Bruce, Robert R. et al., *The Telecom Mosaic: Assembling The New International Structure,* International Institute of Communications, London, U.K., 1988, p. 44.

[275] Ibid., p. 50. See also Shukunami, pp. 69-80.

[276] *Memorandum Opinion and Order,* para. 496.

the network and its elements such as switches, network intelligence, and signalling systems.

Fourth, application of ONA to video distribution services implies common carriage of video programming by BOCs. In contrast to the third point, in this situation it may not be appropriate to impose ONA and common carriage on BOCs from the beginning. There is one obvious difference between the cases of enhanced service and video delivery service: BOCs and other telcos are not dominant carriers in the video distribution marketplace. They simply do not have this capability at the moment.[277] Strict application of ONA and common carriage may, at least in the initial stage, incur significant cost and delay introduction of broadband facilities by telcos. From the future perspectives, however, given the tremendous cost required to establish an IBN, it seems a wise choice to open up the network to anybody and use the facilities as much as possible. ONA provision may be essential for this purpose.

Fifth, despite the Pole Attachment Act of 1978 and relevant FCC and state rules, there are still some complaints and disputes about equal access to poles and conduits.[278] If telcos are allowed to provide cable service, it may be appropriate to reconsider the issue from an ONA point of view and to enclose access to the poles and conduits within ONA/CEI parameters.

Sixth, there remains the question of ONA's applicability to non-BOC telcos. At the moment, ONA/CEI conditions are not imposed upon independents and operating companies of GTE.[279] The question depends on combinations of some issues such as are they required to provide common

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[277] Comments of SouthWestern Bell Corporation, *Further Notice of Inquiry*, pp. 26-27.

[278] For example, see *State Telephone Regulation Report*, September 21, 1989, pp. 9-11.

[279] Third Computer Inquiry, *Phase II Report and Order*, 2 FCC Red 3072 (1987).

carriage? how do they get into the video distribution market? and what is the balance between the benefits and costs incurred? If they are to introduce IBN, it may be a good choice for them to consider implementation of an ONA, at least in the future, by the same token as BOCs.

Finally, one future and necessarily hypothetical question remains: Will competition between telcos and cable operators eliminate the necessity of requirements such as ONA and common carriage? Also, should ONA and common carriage apply to cable operators in the future?

In summary, rate regulation and "non-structural safeguards," CEI/ONA and other requirements, are deeply rooted issues in telcos' current main business – common carriage of others' communications. The issues are not at all concluded and will continue into the foreseeable future. If telcos seek repeal of the telco/cable cross-ownership ban, and BOCs ask for elimination of the MFJ line of business restrictions, they will probably have to assume strict compliance to all the requirements currently imposed. It is quite uncertain whether such action really will benefit the future business of telephone companies.

3.3.2 Fiber-to-the-Home

3.3.2.1 Overview

Current public switched telephone network (PSTN), particularly its switches and local loops, does not have broadband capability. PSTN simply cannot carry a signal of full-motion video such as NTSC for either one- or two-way service.[280] Narrowband Integrated Services Digital Network (narrowband ISDN), which is now commercially available in several countries, perhaps sets technological limits of enhancement to current local loops. Although narrowband ISDN provides two 64kb/s B channels and one 16kb/s D channel over a single copper twisted pair (usually called 2B+D), such transmission capacity is far from that required for full-motion video or cable service. The usual TV signal,

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[280] Broadband service is roughly defined in this paper as service requiring the transmission speed or bandwidth necessary for transmission of full-motion video.

NTSC, requires a bandwidth of 6 MHz or transmission speed of about 50 Mb/s.

Rapid development of technologies such as fiber optics, broadband switching, and materials supporting high-speed processing has given rise to the possibility of breaking up this transmission bottleneck of telephone networks.[281] Such broadband technologies, or means for telcos to deliver video programming to the home, is collectively called "fiber-to-the-home"; it is a weapon for use by telcos to seek entry into the video programming distribution marketplace. Fibers have been aggressively deployed in the trunk plant and the feeder portion of the local loop (a line that runs from the central office to a remote terminal) in the telephone network. Only a "last mile" of the local loop (a line from the remote terminal to a user's premise) is still intact.

If paramount technological problems as well as details and costs of establishing telcos' broadband network are ignored, and the extremely complicated process of developing such a network is put into a simple sentence, one can say that when copper twisted pair cables of the "last mile" are replaced with optical fibers and broadband switches and necessary electronics such as optical network interface (ONI) devices are introduced, telephone companies will finally obtain the ability to provide broadband services to the home. LECs and other industry observers claim that LECs will be able to provide voice, data, and distributive video (current one-way cable service) as well as video-on-demand services over a single fiber. It should be noted, however, that although a fiber potentially has a far larger transmission capacity than a copper twisted pair and a coax cable, its capacity is limited by current technology. But together with broadband switching capability, the fiber makes it possible for users to access virtually an unlimited number of video program sources or other information providers. The

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[281] For a concise explanation of these technological developments, especially broadband switching, see Rice, Jim, "A Fiber Optic Broadband ISDN Network? It's Up to Congress," *Telephony*, February 20, 1989, pp. 32-40.

limit is, in this sense, the number of signals simultaneously transmitted over a single fiber.

A number of LECs, both BOCs and large independent telcos, have already started or have plans to conduct fiber-to-the-home field trials.[282] Although services provided in the trials range from only plain old telephone service (POTS) to on-demand-video with narrowband ISDN capability, all are intended to assess the technical feasibility, economy, performance, and problems of fiber-to-the-home. **Figure 3-3** illustrates one of the trials, conducted by Southern Bell Telephone Co. in Heathrow, Fla. The system provides POTS, narrowband ISDN, distributive video, and video-on-demand services. Reportedly, the system worked perfectly and the quality of videos was superb. It is also reported that the company is planning an HDTV demonstration in the system.[283]

The current important development concerning "fiber-to-the-home" is that the FCC granted section 214 approval to GTE's system in Cerritos, Calif., on the ground of "good cause waiver," even though the Commission found that the system was actually a case of telco/cable cross-ownership.[284] The Commission proposed in its *Further Notice of Inquiry* that "good cause waiver" should be granted for advanced integrated broadband facilities.[285]

Products of the first generation of Synchronous Optical Network Interface (SONET), which is a standard of optical interface for transmission rate above 45 Mb/s (DS 3 level), are already commercially

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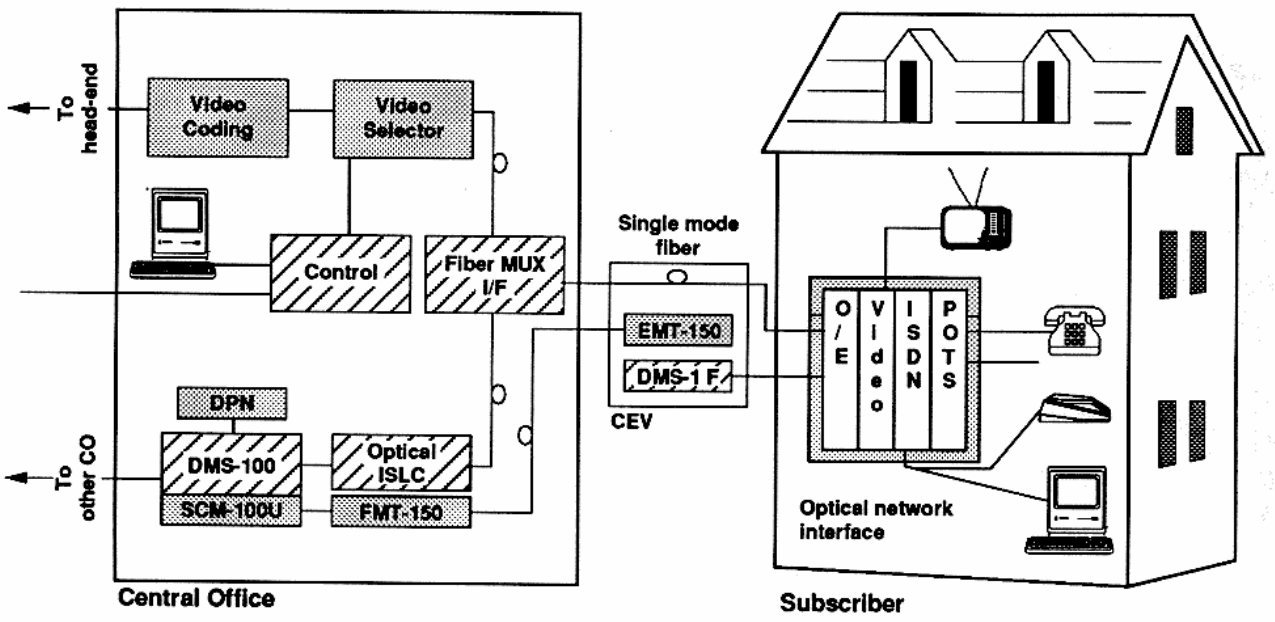
[282] For a partial list of fiber-to-the-home trials, see Bushaus, Dawn and Deborah Pheiffer, "Fiber to the Home: A Family Affair," *Telephony's Transmission Special*, November 1989, pp. 27-32.

[283] *Telephony*, July 24, 1989, p. 12.

[284] In the Application of General Telephone Company of California, File No. W-P-C-5927, DA 88-504, released April 12, 1988.

[285] *Further Notice of Inquiry*, paras. 57-61.



Source: Adapted from *Telephony*, July 24, 1989, p.12. Used by permission.

Figure 3-3

Heathrow – Fiber Access System

available.[286] In addition, R&D and even the standardization of somewhat future broadband technologies such as Asynchronous Transfer Mode (ATM), coherent light-wave transmission, optical switching, and so on are aggressively being conducted throughout the world. If these technologies became commercially available some day, it would open up the road towards a "true" broadband network, IBN, or Broadband ISDN in CCITT term, although "true" broadband network remains to be defined.[287]

Besides its future perspectives, fiber-to-the-home seems promising even short term as a telco's video delivery means, at least from a

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[286] O'Brien, Laura, "Carrier Support Brightens SONET's Future," *Telephony's Transmission Special*, November 1989, pp. 8-10.

[287] For a concise, non-technical explanation of the development of these technologies, see Shumate Jr., Paul W., "Optical Fibers Reach into Homes," *IEEE Spectrum*, February 1989, pp. 43-47.

technological point of view. But it also should be noted that it is still in its early stage of trial. A number of technical problems, from a simple problem such as power supply to the complex such as optimal network configuration, must be worked out. Moreover, its technical feasibility does not necessarily mean that it is economically viable. The most serious problem that LECs currently face is perhaps the cost of fiber-to-the-home, as is usually the case when introducing new technologies.

3.3.2.2 Economies of "fiber-to-the-home"

To bring fiber and telcos' broadband services to most American homes requires a substantial investment. LECs must install additional electronic apparatus and replace and/or upgrade a large number of local network facilities, which currently represent some 70 percent or more of the entire telephone network's cost. A number of studies have been conducted about costs and economies of fiber-to-the-home. Estimates of capital investment required for fiber-to-the-home vary from roughly $1500 to $15,000 per subscriber and $150 billion to $1.5 trillion as a total.[288] The wide range in the estimates reflects the difficulty in making many assumptions in the face of rapidly-changing technology, and perhaps some considerations of the interested parties. But most widely-used figures are between $1700 and $2000 per subscriber and about $200 billion for the total cost.[289] The crucial question, then, is whether installation of fiber into homes can pay for itself.

On one side, some estimates and arguments maintain that bringing fiber into homes will make sense in the very near future. For example, an economic study based on the provision of only POTS by fiber suggests that for new construction, costs of the fiber deployment will be lower than those of copper between 1992 and 1995, depending upon the fiber

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[288] Egan, Bruce L., "Capital Budgeting for Fiber," *Telecommunications*, May 1989, p. 55, 61.

[289] Ibid.

plant selected for deployment.[290] Based on the results of one fiber-to-the-home field trial, the study predicts that economic parity between fiber and copper will become possible soon if problems such as maintenance cost, testing, powering, and splicing are properly addressed.[291]

For telco delivery of broadband switched video services to the home, one forecast is that it may become a profitable business if LECs are allowed to participate fully in the video programming distribution business. It estimates that the total annual revenue stream of LECs may total between $35 billion and $80 billion, against $100 billion of the construction cost to reach 50 percent of U.S. households.[292] The revenue stream will come from end-user payments, transaction services for home shopping, home banking, and advertisement expenditures. End-user payments may amount to between $16 billion and $40 billion, where a typical customer will pay $75 per month – about twice what he spends today on video entertainment. Transaction fees would be between $5 billion and $15 billion, and revenues from advertisement would total between $14 billion and $25 billion, judging from the present trends of an increase in advertisement expenditures and the enhancement of effective advertisement through the possibility of narrowcasting.[293]

On the other end of the spectrum, some economists argue that switched video services by fiber-to-the-home does not make business sense, regardless of whether or not the cross-ownership ban is repealed.[294] A rough estimate shows that even if telcos could capture half of the total

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[290] Coleman, John D., *Southwestern Bell Trial Results*, Paper presented at Telecom Publishing Group, New Video Marketplace Seminar held in Atlanta, Ga., October 23-24, 1989, p. 2.

[291] Ibid., p. 3.

[292] Wenner, David L., "Are You Ready for Residential Broadband?" *Telephony*, May 22, 1989, pp. 84-103 (hereinafter, Wenner).

[293] Ibid., pp. 84-85.

[294] *State Telephone Regulation Report*, October 19, 1989, p. 1, 4-6.

cable TV revenues, the eventual gross rate of return on invested capital may be less than 5 percent, assuming a construction cost of $150 billion and total cable revenues of $14 billion in 1988 dollars.[295] This could be the result even if the prediction totally ignores operating expenses.

A detailed cost study based on three basic configurations of fiber local network – passive double star, active double star, and star (configuration B, D, and E of **Figure 3-4**, respectively) – concluded that switched video services would be very hard to make economic sense in either case, at least in the 1990s.[296] According to the research, additional revenue requirement for on-demand-video service over the top of revenues of conventional cable TV and telephone services would be significantly higher than realistic estimates of demand for the service, and could be too large to justify the investment. The result is the case in spite of favorable assumptions for telephone companies, such as the economic value of existing copper unaccounted for, and the passive response of cable operators.[297] Although the study says that the analysis is preliminary and requires examination on modified or alternative network architectures such as "fiber-to-the-curb" and bus configuration, telephone companies will face tough cost challenges.

The discussion is, and will be, inconclusive over economies of integration of voice, data, and video by telephone companies. This is more so if the following points are considered. First, technology always has been full of surprises. The analyses will dramatically change if some technological breakthroughs in, for example, wavelength division multiplexing, coherent light-wave transmission, and optical switches are made.

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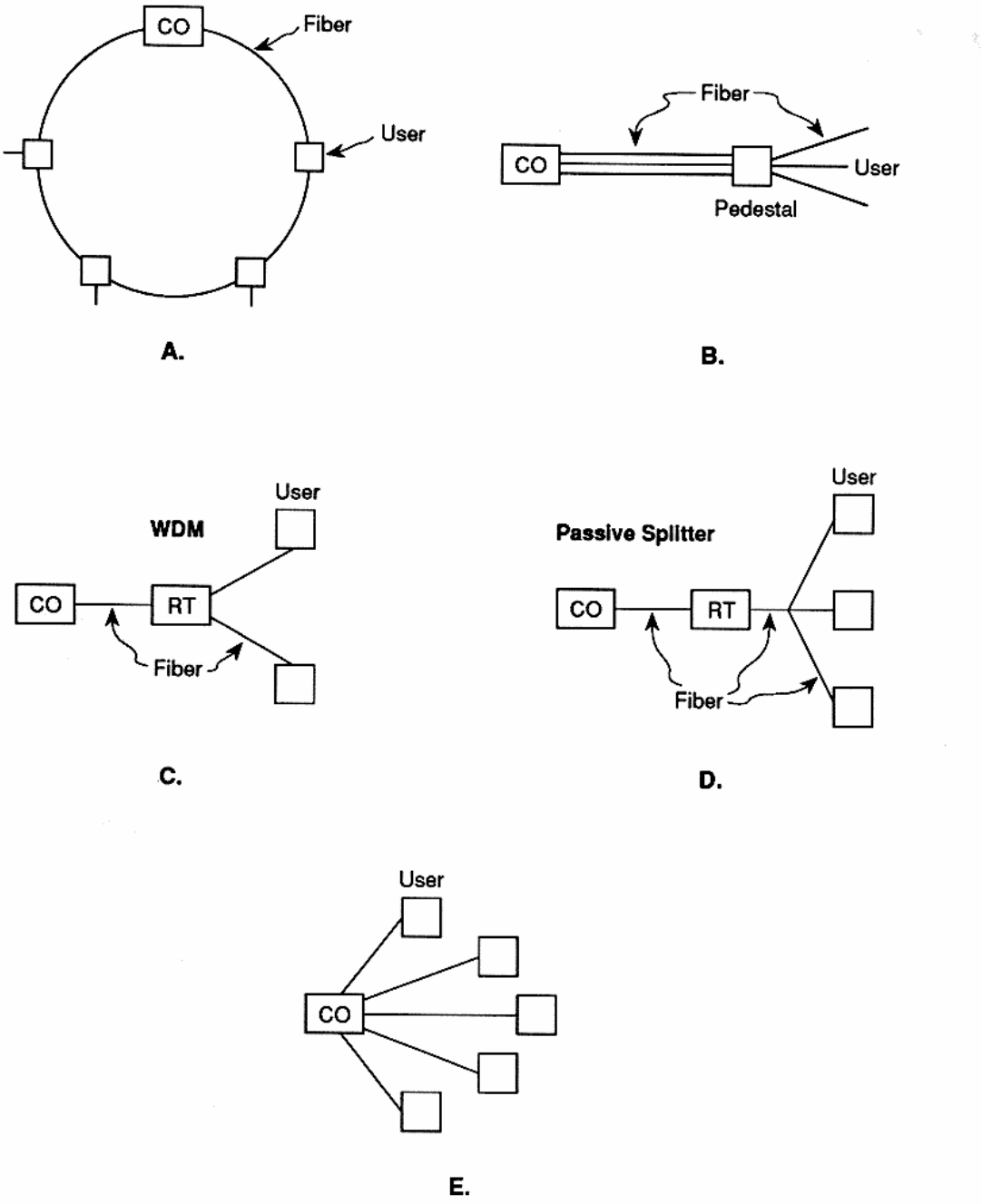
[295] McLaughlin, John F., *Making Money as a Telephone Company: Risks, Opportunities and Likely Failures*, Paper presented for the United States Telephone Association Capital Recovery Seminar, Program on Information Resources Policy, Harvard University, October 23, 1989.

[296] Johnson, Leland L. and David Reed, *Broadband Networks to The Home: The Role of Telephone Companies* (working draft), The Rand Corporation.

[297] Ibid., pp. 19-24.



CO: Central Office **RT:** Remote Terminal **WDM:** Wavelength Division Multiplexing

Source: A, B, C, and D: John C. McDonald, "The Regulatory Challenge of Broadband Technologies," *IEEE Communications Magazine*, January 1989, p. 72.

Figure 3-4

Alternative Designs for Fiber Connections

Second, the investment will not come at one time. Two hundred billion dollars will not be invested as a lump sum. The capital will be spread over a considerable length of time, perhaps 10 to 20 years. If telco decision makers are cautious, they will start the installation on a limited scale and in areas where financial and demand prediction is most favorable. Moreover, such a decision will be made in consideration of a number of strategic variables that LECs face. In this regard, even if the cross-ownership ban is not repealed, the widespread installation of fiber into the "last mile" of local loop in some business districts, if not to homes, may occur fairly soon. Facing growing competition in intra LATA services, LECs see fiber as a strategic necessity to remain competitive in the future. Having fiber in place as a large capacity, high-quality transmission medium, LECs would be ready to compete for and meet the future needs of large corporate customers.

Although cost studies of fiber-to-the-home may be inconclusive, the discussion is very important for telephone companies if they continue to seek entry into cable television service. If they fail to show enough economic viability of fiber-to-the-home, it will be very difficult to remove fears of cable operators and other critics about telcos' cross-subsidization. An underlying problem here is that residential demand for broadband services is not clear, except for entertainment videos, and no obvious "new" broadband services have been conceived yet. Although it is the typical "chicken and egg" situation, what new services and benefits telephone companies will bring to the general public remains an important question.

3.3.2.3 Power supply

To realize the dream of IBN, telephone companies still have to overcome a number of technical problems. One difficulty, however technologically primitive it may look, is how to supply power for a fiber optic system.[298] The question is important since it also raises a regulatory and policy issue. Because fiber optics cannot carry

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[298] For a concise explanation of the problem, see Becker, Dustin J., "Power Problems in the Fiber Loop," *Telephony*, January 15, 1990, pp. 46-51.

electrical power, unlike current copper telephone lines, an optical network interface (which converts optical into electrical signals) or more generally network channel terminating equipment (NCTE), and even a simple POTS phone in a house needs a separate power supply. Although PBX systems, key telephones, facsimile machines, and so on use commercial electrical power, should a residential customer supply commercial power and pay for his simple POTS phone himself? Should the cost of the power be unbundled in this case? Does this restriction limit locations of a phone and NCTE in a home?

In addition, NCTE is currently classified as unregulated customer's premises equipment (CPE). BOCs may not offer such equipment as part of their regulated basic services, except for equipment with certain multiplexing functions.[299] A network interface unit of a fiber optic system performs vital functions for the realization of communications. Should such a device be supplied by a customer and offered competitively? Or should it be part of basic service?[300]

Finally, in case of commercial power failure, provision of back-up batteries will be required. As a vital social system for public safety and emergency provision, simple POTS phones should work even during a blackout. But is a simple rechargeable battery built in a phoneset enough for this purpose? Who should supply them and be responsible for their maintenance, replacement, and routine checking? Despite this problem's simple appearance, the issue is big enough for serious consideration.[301]

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[299] Amendment of Part 68 of the Commission's Rules, CC Docket No. 81-216, *Third Notice of Proposed Rulemaking*, 94 FCC 2d 5 (1983).

[300] For a more detailed discussion, see Pepper, pp. 51-54.

[301] In the case of large-scale fiber optic installation into a building in Japan, Nippon Telegraph and Telephone Corp. (NTT) faced a more primitive problem. NTT could not find a space to install the batteries in the building!

3.3.3 Challenges and Opportunities for Broadband Services by Telephone Companies

Entry into the (residential) broadband service area may give telephone companies significant opportunities for their future development and expansion into new businesses. But construction of broadband networks requires a substantial investment, as described in section 3.3.2 above, and telcos must face and overcome a number of challenges.

One observer summarizes those challenges according to four categories of the roles LECs can perform in the broadband service marketplace: transporter, gateway, distributor, and fully-integrated provider (see **Figure 3-5**).[302] According to the classification, a transporter constructs and maintains a broadband network, and provides some supplementary services.[303] This is a function LECs now perform as providers of channel service.

As gateways, LECs provide video gateways and offer common carriage of video programming indiscriminately to others. In addition, LECs provide various supporting services to information providers, such as transaction, billing, arrangement of advertisement, and customer support services.[304] The service is basically the same as an extension of videotex gateways and audiotex services that many phone companies currently provide.

The role of distributor is the same as that of incumbent cable operators. LECs possess and control conduits as well as the content of information. If telephone companies expand into the production of video programming and information for data bases, and so on, they would become

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[302] Wenner. The discussion in this section basically follows classifications of Wenner. But observations and views of the author of this paper and other sources are also added.

[303] Ibid., pp. 86-88.

[304] Ibid., p. 88.

Functions Performed	Transporter	Gateway	Distributor	Fully Integrated Provider
• Transmission	✓	✓	✓	✓
• Customer billing and service		✓	✓	✓
• Customer marketing		✓	✓	✓
• Integration of content provider and advertiser activities		✓	✓	✓
• Ownership of content			✓	✓
• Development of content				✓
Challenges				
Legal/regulatory				
- MFJ			●	●
- 1984 Cable Act		◑	●	●
- Possible "must carry" provisions		◑	◑	◑
- Rate-of-return regulation	◑	◑	◑	◑
Competitive				
- Existing competitors	◑	●	●	●
- New entrants	○	◑	◑	◑
- Lock in content	○	●	●	●
Technology	◑	◑	◑	◑
Skill building	○	◑	●	●
Creation of infrastructure	◑	◑	◑	◑

Source: David L. Wenner, "Are You Ready for Residential Broadband?" Adapted from *Telephony,* May 22, 1989, p. 97. Used by permission.

● Major challenge

◑ Moderate challenge

○ Minor challenge

Figure 3-5

Broadband Roles and Challenges

fully-integrated providers.[305] MSOs are already moving into this direction through vertical integration and, to a large extent, broadcasters have performed this role for a long time.

To stay as a transporter involves no significant risks, except the would-be opportunity cost. As technology advances, perhaps the time will come when fiber optics reaches the home by telcos without repeal of the cross-ownership ban. A LEC may be able to improve their infrastructure without taking serious risks over time. On the other hand, construction of broadband facilities, at least for residential services, may be delayed significantly due to a lack of additional stimulations and incentives. LECs may miss an opportunity to capture their lion's share of the future broadband market.

The provision of video gateway and common carrier offerings of telcos' broadband facilities may lead to full utilization of such networks that telcos construct. It may stimulate the creative imagination of independent producers, distributors, artists, and even the general public, and offer any people and parties the opportunity to express their views and opinions. It may lead to the diversification of information sources, a long-standing policy goal of the FCC, and even now unimaginable new broadband services.

The most important advantage of the gateway approach is that it will fit perfectly into traditional roles of the common carrier. Although the question of cross-subsidization remains, the content-neutral approach seems most acceptable to various interested parties. LECs will be able to avoid a number of regulatory, legal, and social battles over the issue.

On the other side of the approach, telcos will have to face many challenges. First, as many LECs argue, they may not risk constructing broadband facilities without the assurance of 1) the availability and provision of video programming carried over their facilities, and 2)

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[305] Ibid., p. 88, 97.

additional revenues over those of POTS. Given the large amount of capital investment needed, this backdrop may be enough to discourage LECs' construction of the broadband network, if their roles are limited only to gateways.

Second, regulatory problems still remain. The requirement of franchise for cable service may destroy the whole concept of video gateway. Without some modifications to this requirement, LECs' incentives for video gateway will not be evoked.[306] Section 214 approval and other regulatory procedures are also troublesome. However, if telcos choose to limit their activities only to video gateways, they may receive significant support from various parties for such modifications.

The most formidable challenges will come from competitors, particularly from incumbent cable operators. Some economic studies discussed in section 3.3.2, above, suggest that implementation of fiber-to-the-home may not pay for itself, even if cable companies remain passive. But in reality, cable operators will not silently watch their stakes eaten up by others. Already, they have secure programming sources and the necessary expertise of video distribution services, and they may challenge telcos in the form of a price war. Furthermore, research shows that with the introduction of a fiber backbone network and some upgrading of their systems, cable operators may be able to provide video-on-demand service much cheaper than telcos.[307] Some cable companies have already started installation of fiber backbone.[308] Their tree and branch networks may not be fully suitable for two-way voice and high-quality data services, but improvement of the cable systems by fiber optics may preempt competition from telcos' video services.

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[306] See chapter 1, sec. 1.3.

[307] Reed, David P. and Marvin A. Sirbu, *Integrated Broadband Networks: The Role of the Cable Companies*, Paper presented at the 1989 Telecommunications Policy Research Conference, at Airlie House, Airlie Va., October 1-3, 1989.

[308] For example, see Woody, Wendell, "Fiber-Optic Product Evolution," *Communications Technology*, September 1989, pp. 24-25.

The threat of competition may come from interexchange carriers. Given fierce competition in the long distance telecommunications market and the equal access obligation of LECs, it may not be wise for IXCs to invest in local facilities at the moment and to vertically integrate themselves. But in the future, IXCs, including AT&T freed from the electronic publishing ban of the MFJ, may decide to install fiber optics to the most profitable customers and areas directly. They may form an alliance with incumbent cable operators. State regulators may allow such activities of IXCs in return for approval of LECs' new businesses.

Will the situation improve if LECs are allowed to become distributors or possibly fully-integrated providers by elimination of the cross-ownership ban and the MFJ information service ban over BOCs? Telcos will be able to start the construction with a firm perspective of program availability. Additional revenues from program distribution, advertisement, and transaction services may sufficiently cover the construction and the operation cost, and give proper incentives for the rapid development of new technologies by LECs. It may open up new horizons for LEC businesses.

On the coin's flip side, however, telcos will probably face more challenges in addition to those with the gateway approach. LECs do not have enough experience and expertise in the video distribution marketplace, much less with production of content. Such markets are already very competitive, and it will be costly and take LECs some time to gain necessary expertise in the marketplaces.

Some programmers vertically integrated with MSOs may refuse to supply proper programs to telephone companies. Such companies as that created by the Time/Warner merger will be formidable competitors of telcos.[309] Cable companies may finally make up their minds to compete fully in traditional monopoly local telephone services and other LEC telecommunications markets.

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[309] For the new company by the Time/Warner merger, see *Business Week*, August 7, 1989, pp. 24-25.

Telcos may be forced to strike a "must carry" agreement with broadcasters and offer free-of-charge transport for broadcast programming. LECs will also have trouble overcoming strong opposition from publishers to their entry into content businesses. In addition to current rules such as ONA, cost separation, and those governing poles and conduits, more regulations and strict compliance with them might be imposed. Considering the social implications that creating a huge company with control over both conduit and content may give rise to, it can be said that this road will not be easy at all.

Broadband services, particularly entertainment video delivery, sound attractive. Realization of fiber-to-the-home, IBN, or B-ISDN will certainly benefit the public and strengthen LECs' competitive edge. But towards that end, telephone companies will have to face and overcome a number of formidable challenges.

3.4 SUMMARY

Table 3-4 summarizes questions and issues with regard to telco/cable cross-ownership, mainly raised by the Commission's *Further Notice of Inquiry and Proposed Rulemaking*, and comments and reply comments to it. The commission found that most conditions for telco entry into cable services have been met, and that continuation of the ban would seriously harm the public interest, as compared with the cost incurred by the repeal.[310] The Commission tentatively concluded that greater participation in cable service by telcos would serve the public's interest.[311]

But the issues are extremely complicated. This is so because the matter is concerned not only with mere benefits or disadvantages of telcos' entry into cable service, but also with the fundamental structure of entire communications industries and marketplaces in the U.S., where various interests, regulations, and concerns specific to

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[310] *Further Notice of Inquiry*, paras. 10-56.

[311] Ibid., para. 94.

Table 3-4

Summary of Issues and Questions Concerning Telco/Cable Cross-Ownership

SHOULD THE TELCO/CABLE CROSS-OWNERSHIP BAN BE REPEALED?

Is the original rationale for the ban still valid?
- Prevention of domination of cable TV market by telco

Are the conditions for the repeal of the ban satisfied?
- Competitive condition for the local loop
- Equal access to poles and conduits
- Non-viability of cable TV service as a competitor for the local loop service
- Hindering of development of new services and technologies by the ban

Does the repeal bring greater benefits to the public?
- Greater efficiency by integration of cable and telephone service
- Greater programming choices, lower rates, greater responsiveness to customer needs
- Rapid development of new services and technologies

WHAT REGULATORY FRAMEWORK IS APPROPRIATE?

How should telcos participate in cable TV service?
- Modification of franchise and other procedural requirements without the repeal of the ban
- Prohibition of telcos simply buying out existing cable systems if the ban is repealed
- Imposition of common carriage obligation on telcos if the ban is repealed

What kinds of safeguards are necessary against possible anticompetitive behavior by telcos if the ban is repealed? Are the existing safeguards appropriate?
- Computer Inquiry III non-structured safeguard (ONA, network information disclosure, etc.)
- Rate regulation
- Cost separation and allocation rules
- Poles and conduits rules

ARE INTERIM MEASURES NECESSARY AND APPROPRIATE?

Good cause waiver
- Is construction of advanced and integrated systems appropriate for the good cause waiver?
- What standards for the good cause waiver are appropriate?

Modification of affiliation standards between cable and telcos

OTHER ISSUES

The MFJ information service ban

Federal/state/local jurisdictional issue
- Franchise requirements for common carriage of video programming and users of such services
- Regulations over voice and data services by cable operators

How should IXCs be treated with regard to the cross-ownership ban?

Constitutional issues
- First Amendment right of telcos
- First Amendment right of others

What impact will there be on broadcasters and other alternative technologies if the ban is repealed?
- Impact on "free TV"
- "Must carry", channel positioning, charges for carriage of broadcast signals, etc.

formerly separated industries, however blurred, directly cross over. The issues tend to become more difficult in the U.S. by existence of courts, federal/state/local regulators, and policy makers with different goals. These issues become even more complex through concern about the future international competitiveness of U.S. industries.

This chapter gave an overview of the current market and industry situations as well as some problems and issues underlying questions in Table 3-4, instead of directly addressing them. The cable industry is primarily a victim of its own success. There is no doubt about the contributions the cable industry has made to the American public. It has significantly promoted the increase of sources and diversity of social, educational, and political information as well as entertainment programming available to the public. But at the same time, it is now reaching a dominant position in the video distribution marketplace – a position of "necessity" somewhat similar to that of dominant carriers in the telephone industry. Due to this position and the would-be market power produced by it, vertical and horizontal integration of the cable industry, which in itself entails various benefits to the industry and the public, has now evoked concerns about the total control of information and programming flow by cable operators. With the emergence of alternative media and new technology, voices calling for competition are increasing, and the protection formerly given to the industry is about to slip away, just as telephone companies, particularly AT&T and BOCs, have been experiencing once they achieved universal, high-quality telephone services.

Technological development is about to open the door for telephone companies to obtain means to deliver video programming and other broadband services directly to the home. The situation is about to put telcos in the challenger's position for the first time in a long time. Regulatory developments such as "non-structural safeguards," new rate regulations, and accounting rules which were perhaps not originally intended for this end, now seem to help and ease telcos' participation in broadband services. Paradoxically enough, it looks like originally bothersome reregulations change LECs' position from defensive to

offensive towards the 1990s. The challenges telcos face, however, still seem overwhelmingly great. They would have to finance enormous capital investment without harming universal high-quality telephone services and ratepayers. As challengers, they may lack necessary expertise; further, they will face the uncertainty of programming availability and must overcome a number of technical difficulties.

As suggested in the beginning of this section, telco/cable issues are not concerned only with the battle between cable and telephone industries. **Table 3-4** implies more fundamental questions towards a broadband communications age. Accordingly, the controversies over telco/cable cross-ownership will be, perhaps, only the first of many battles to be fought in the 1990s among various players in the broadband communications marketplace. In such battles, each player will try to expand his business by crossing over traditional industry boundaries.

CHAPTER FOUR

ISSUES AND QUESTIONS CONCERNING CABLE TELEVISION AND TELEPHONE COMPANIES – JAPAN

4.1 OVERVIEW

4.1.1 Characteristics of Telco/Cable Issues in Japan

As in the U.S., attention in Japan is currently being directed to the Broadband Integrated Services Digital Network (B-ISDN) and to future broadband communications services to the home. There are also some debates over the relationship between cable television (cable TV) and telephone companies (telcos). Although the fundamental issues are the same in both countries – whether such an advanced broadband network will become feasible technically and economically in the near future, what benefits it will bring to the public, what communications policies and changes in current regulations will become necessary towards the age of broadband services to the home, and who should provide what services and perform what roles – notable differences exist in the way in which the issues are taken up, direction and openness of the debates, and specific problems now being discussed. This section highlights some characteristics of the current Japanese discussion about telco/cable and broadband service issues in comparison with those of the U.S.

First, as for telcos' entry into cable service, the debate in Japan focuses on common carrier transport of cable service by Nippon Telegraph and Telephone Corp. (NTT), rather than on NTT's entry as a cable operator (distributor of programming) or content provider. As described in chapter 2, NTT cannot provide either cable service or channel service at the moment. NTT made it clear that it had no intention to enter into the content business of cable TV since it had no expertise in such business.[312]

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[312] NTT remarks at a meeting of Yuseisho Tsushin to Hoso no Kyokai Ryoikiteki Service nikansuru Kenkyukai (The Study Group of the Ministry of Post and Telecommunications Concerning Services on the Boundary of Communications and Broadcasting), September 22, 1988.

Cable service by New Common Carriers (NCCs), both common carrier transport and cable programming services, has not been publicly debated yet, although at least one NCC currently is very active in cable TV businesses.[313] In this regard, the policy of the Ministry of Post and Telecommunications (MPT) is unclear since no official comments are made public concerning such activities.

Second, the public debates on future broadband communications services usually are made in a somewhat abstract context of the convergence of broadcasting and communications by way of common carrier facilities, rather than that of specific issues. The discussion tends to center around shortfalls of current laws and regulations ill-equipped to cope with future technological development, as well as how to maintain harmony among the regulations and the technological developments and assure a harmonious relationship among various interested parties, rather than how to establish a level playing field for competition or how to ensure the development of broadband services, increase of video outlets, and diversity of information sources through the competition. In other words, emphasis tends to be placed on *control over* rather than *competition among* actual and potential competitors in the video distribution marketplace.

Although numerous aspects of the convergence of broadcasting and communications over common carrier facilities can be discussed (for example, legal considerations about the definition and meaning of broadcasting and common carrier services, and the way in which the two can be separated now and in the future), this paper focuses on one core principle of broadcast services, the "software-hardware integration principle," which structurally separates broadcasting (including cable television) from common carrier services.[314] Breakdown of the principle resulting from the launch of commercial communications satellites gives

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[313] More specifically, it is the parent company of an NCC. See sec. 4.4.2.

[314] For a discussion of the "software-hardware integration principle," see chapter 2, sec. 2.2.

important implications to issues on common carrier transmission of cable service by NTT and debates on future broadband services to the home in Japan.

Third, NTT faces almost the same issues as Regional Bell Operating Companies (RBOCs) in the U.S. with regard to rate regulations, cross-subsidization, and Open Network Architecture (ONA). For example, the MPT declared that it would establish an Open Network Doctrine (OND), the Japanese version of ONA, particularly for ISDN services by NTT.[315] It seems, however, that concrete and detailed debates on the issues have not surfaced yet, and little information currently is available – at least officially, and in the context of broadband services.

This chapter refers to the issues of rate regulations, cross-subsidization, and OND regarding NTT only when necessary. Instead, section 4.4 of this paper outlines NTT's plans and some general problems it will face towards the construction of a broadband communications network.

Finally, an outstanding problem of Japan's cable industry is not the degree of its power, but its survival and development. Consequently, the price of cable service, vertical/horizontal integration in the cable industry, and some other problems that cable operators confront in the U.S. have not yet become serious issues in Japan. This chapter describes the current situation in Japan's video distribution market-place and the relationship between cable television and other outlets – most notably state-backed Direct Broadcast Satellite (DBS) – and attempts to provide insights on the possible effects that Japan's specific market conditions and policies could have on the development of a broadband network and communications services to the home.

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[315] *Nikkei Communications*, June 12, 1989, pp. 39-41.

4.1.2 Debate on Channel Service for Cable Television by NTT

4.1.2.1 The players

Due to the possibility that the fiber age is approaching, and given that some new services clearly represent the convergence of broadcasting and common carrier communications, debate has officially begun in Japan on whether NTT should be allowed to provide channel service for cable television.[316] The following opinions were voiced by major players who publicized their positions on the issue.

• The Ministry of Post and Telecommunications (MPT)

The MPT maintains that it will not allow NTT to provide channel service in the near future. According to the MPT, cable systems should be developed in close association with regional and local needs, the "software-hardware integration principle" should be maintained, and plural networks (that is, telephone and cable networks) should be located in a single region to overcome network vulnerability of the information age.[317] The MPT also claims that an all fiber based cable system is still too expensive, and that there is little need for such service at present.[318] Reportedly, the MPT is very cautious about cable systems being used merely as a means for the development of B-ISDN by NTT.[319]

Although there is a significant difference in the rate of penetration (and other situations) of cable TV between the U.S. and Japan, current MPT policy concerning the broadband network seems somewhat different from that of the Federal Communications Commission (FCC). The MPT's

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[316] Reportedly, NTT unofficially has kept asking the MPT for provision of channel service ever since its privatization.

[317] Comments of the MPT at Post and Telecommunications Committee of the Lower House of the Diet, September 16, 1987. Reported in *Denkitsushin to Hoso no Yugo (Convergence of Common Carrier Communications and Broadcasting)*, Research Institute of Telecom-Policies and Economics, March 1989, p. 43 (hereinafter, *RITE Report*).

[318] *Nikkei Communications*, May 22, 1989, pp. 82-85.

[319] Ibid., p. 83.

priority seems to be the establishment of a "second subscriber loop," rather than the rapid development of an advanced broadband network and provision of its new services to the home. Despite its current position, the MPT continuously appoints study groups to investigate the issue.

• **Nippon Telegraph and Telephone Corporation**

Although NTT made public its interest in channel service for cable TV, it is not actively pushing through its claim to get permission. Reportedly, NTT is concerned about being criticized by broadcasters, cable operators, regulators, the press, and other interested parties for putting its hands on a part of the broadcast services.[320] NTT seems very cautious about the repercussions on more urgent and important issues such as its divestiture.

NTT has one more weakness that restricts it from pursuing permission. Although NTT made it clear that it will not engage in editorial and content aspects of cable service, it currently provides information services including content origination in a number of other fields offered, both directly and through affiliates. For example, NTT has offered its own recorded message telephone services for a long time as an ancillary business to its main business activities.[321] NTT is engaged in content related businesses of CAPTAIN, Super CAPTAIN, and other enhanced and information services through its affiliates.[322] Therefore, NTT apparently cannot eliminate fears of broadcasters, the press, cable operators, and others about NTT's entry into the content side of the cable business and, more generally, broadcasting.

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[320] Ibid., p. 70.

[321] This is possible because NTT has not imposed an information service ban like that of the MFJ, although the NTT Law functions in some cases in the same manner as the MFJ's.

[322] CAPTAIN is a videotex service like the French Teletel. Super CAPTAIN is a kind of video-on-demand service for closed user groups.

NTT's basic argument, however, is that if it can provide channel service, it will contribute to easing the initial cost burden of cable operators and the rapid development of advanced cable systems through use of its state-of-the-art technology. NTT also publicized a plan for establishing B-ISDN and included cable TV as one service which B-ISDN would be able to provide.[323]

• **Cable Operators**

Cable operators oppose the provision of telecommunications facilities for cable TV by NTT. First, they claim that if it were allowed, NTT would likely dominate all the media used for services ranging from common carrier to broadcast, thereby hindering the healthy development of communications industries. Since Japanese cable TV is still in its infancy and struggling for survival and development, NTT's entry would seriously prevent the establishment of an independent and self-standing cable industry in Japan.[324] Second, because NTT possesses a number of telephone poles, it could discriminate against cable operators in giving them access to the poles.[325]

Third, cable companies argue that NTT has not made clear what contribution it intends to make to the cable industry. It is unclear what economies and services NTT will bring through its fiber cable systems.[326]

They also claim the necessity of certain regulations which stipulate that in order to make ISDN and CATV coexist, up until the year 2005, NTT

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[323] See section 4.4.1.1.

[324] *Nikkei Communications*, May 22, 1989, p. 83, and *Hoso Journal (Broadcast Journal)*, July 1989, p. 94.

[325] *Hoso Journal*, July 1989, p. 94. No official rules have been set for the use of poles and conduits of NTT and electric power companies by third parties yet. Cable companies are currently charged according to internal rules of the pole owners. But until now, no actual complaints have been made about discrimination.

[326] *Nikkei Communications*, May 22, 1989, p. 83, and *Hoso Journal (Broadcast Journal)*, July 1989, p. 94.

should not provide cable service over ISDN except for some specifically defined services, such as video services for large corporations.[327] In return, cable operators will limit their business activities to within their local service areas.[328] This argument of cable operators is probably moot. Once B-ISDN is offered as a common carrier service, NTT or anyone else cannot prevent someone from providing cable service and/or video-on-demand service to the home over B-ISDN; such prevention clearly violates one main common carrier principle, indiscriminate provision of access to communications services.

• **Commercial Broadcasters**

Broadcasters are seriously concerned about NTT introducing B-ISDN. They believe it could affect both their roles as broadcasters and their revenues enormously, and strongly impact every aspect of Japanese society. They claim that quasi-broadcast services (services on the boundary between broadcasting and common carrier communications) over B-ISDN should be introduced gradually and cautiously in consideration of their possible effect on the broadcast industry.[329]

It is unclear whether broadcasters actually oppose channel service of NTT for cable TV, which is currently being discussed somewhat separately from the establishment of B-ISDN.[330] They made it clear, however, that NTT should not be allowed to provide quasi-broadcast services (content origination) – either directly or through affiliates – which may become

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[327] ISDN here seems to mean B-ISDN.

[328] Comments of Japan CATV Association, *Interim Report on Future Structure of Telecommunications Industry*, p. 330.

[329] Comments of Japan Association of Commercial Broadcasters, ibid., p. 330.

[330] The current NTT proposal is a conventional channel service – not B-ISDN – like that of U.S. telcos, although it is an all fiber based system.

possible over B-ISDN in the near future, and that NTT should serve only as a common carrier.[331]

• **The Press**

The press has asked the MPT for a strict definition of the scope of business activities in which NTT can engage, as well as a ban on NTT's entry into content origination businesses. The press believes that because NTT has a virtual monopoly of the telecommunications networks in Japan, if allowed, NTT's entry into the content business would seriously obstruct the free and healthy development of the information industry.[332]

4.1.2.2 Debate at an MPT study group

NTT's possible channel service for cable TV was discussed at a study group formed by the MPT. This group's purpose was to investigate the possible impacts on current regulations and industry structures caused by the convergence of common carrier communications and broadcasting. Table 4-1 shows the study group's findings about benefits and disadvantages of NTT's provision of channel service.

Some comments about these findings may be appropriate. First, as for the use of right of way, it is considerably easier for Type I telecommunications carriers than cable operators to obtain the permission. According to current regulations, relevant authorities are obligated to give permission to Type I telecommunications carriers when they ask for the use of right of way.[333] In fact, it is almost impossible for cable operators to get permission to install underground cables in centers of some major cities in Japan. Reportedly, numerous

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[331] Comments of Japan Association of Commercial Broadcasters, *Interim Report on Future Structure of Telecommunications Industry*, p. 330.

[332] Comments of Japan Press Association submitted for the Review on the Telecommunications Business Law by the Telecommunications Council, March 1988. Reported in *RITE Report*, p. 57.

[333] *Nikkei Communications*, April 10, 1989, p. 23.

Table 4-1

Merits and Demerits of Channel Service by NTT

Merits	Demerits
Incentives of cable operators for technological improvements are promoted by NTT's provision of large-capacity and high-quality circuit	High cost per subscriber
Reduction of initial investment of cable operators	It may be difficult for cable operators to expand their service areas at their own will
In case of NTT channel service, it is relatively easy to obtain rights of way when the cables are installed in underground conduits	Discrimination on access to NTT's poles
	NTT might dominate not only common carrier services but also broadcasting
	Weakening of localism of cable service

Source: Yuseisho Tsushin to Hoso no Kyokai Ryoikiteki Service nikansuru Kenkyukai (The Study Group of the MPT Concerning the Services on the Boundary of Communications and Broadcasting). Adapted from *Nikkei Communications*, April 10, 1989, p. 23, and June 12, 1989, p. 38.

cases exist where this obstacle virtually barred the establishment of cable systems in these areas. For this reason, there are some opinions that NTT should be permitted to provide the main trunk and distribution plants of a cable system in certain limited areas.[334]

Second, the study group found that the fiber-based system of NTT is expensive when compared with the conventional copper-based tree and branch CATV. However, NTT contends that the costs of fiber and optical devices are decreasing rapidly, and that the comparison is meaningless since it is based on current costs.[335]

Third, some suggest that perhaps only a few cable operators actually would like to use NTT's channel service. Since the depreciation period of a cable system is 10 years in Japan, cable operators can expect profit after this period. If they use the NTT service, they must keep

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[334] Ibid., p. 24.

[335] Ibid., p. 23. Note that the details of the cost calculation and NTT proposal have not been made public.

paying the same charges even after that period, since the service would be a tariffed common carrier service.[336]

Finally, it should be noted that unlike in the U.S., no arguments have been made at this study group concerning the possible integration of voice, data, and video over the same facilities, fiber-to-the-home, and Integrated Broadband Network (IBN) or B-ISDN. The study group strictly discussed channel service for cable TV; economy of integrated systems and possible new services by such systems have not been debated. Consequently, there has been little debate over whether NTT's entry into cable service would promote fiber installation into the subscriber loop and construction of B-ISDN. Also, the common carriage of video programming of some other video distributors has not become an issue. The issue remains NTT's channel service for a cable operator.

The study group did not formulate a conclusion or issue a report on this matter. Therefore, a newly-formed study group is continuing the debate.[337]

4.2 BREAKDOWN OF THE "SOFTWARE-HARDWARE INTEGRATION PRINCIPLE"

4.2.1 Amendments of the Broadcast Law

4.2.1.1 Background

The rationales for the "software-hardware integration principle" have been to assure broadcasters of their independence and freedom from censorship, ensure the stable provision of broadcast services, and regulate broadcast in a coherent manner which has an enormous influence on society.[338] While the principle has served well to develop a healthy

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[336] Ibid., p. 23.

[337] Kodoka Jidai wo Mukaeta CATV ni Kansuru Kondankai (The Study Group Concerning CATV in the Age of Its Advanced Technology) was formed by the MPT on August 30, 1989. The study period is expected to be about one year. *Hoso Journal*, October 1989, p. 72.

[338] See in general The MPT, Bureau of Broadcast Administration, *Hoso Seisaku no Tenbo, (Perspectives for Broadcast Policy)*, Tokyo, Japan, Denki Tushin Shinkokai, Inc., 1987, pp. 3-15 (hereinafter,

and thriving broadcast industry in Japan, it has begun to be seen generally as an obstacle to the introduction of certain new services as technological progress accelerates. The question became urgent with the approaching launch of Japan's first commercial communications satellites by two Type I satellite carriers. The satellites mainly use Ku band frequency, and their power ranges from 20 watts to 35. Their video signals can be received in Tokyo by an antenna with a minimum diameter of 1.2 meters.[339]

While program delivery to specific cable systems by way of the satellites was considered a part of common carrier communications services, and hence perfectly possible within the existing regulatory frameworks, some companies planned to provide radio (audio) and video programming directly to the public by use of common carrier services of the satellite Type I carriers – just like DBS, and backyard dishes and satellite master antenna television service (SMATV) in the U.S.[340] For example, a company called "Music Bird" intended to provide pulse code modulated (PCM) audio music services directly to the home.[341] These programmers do not have any control or responsibility over the satellite facilities. If the services are classified as broadcast services and if modifications are not made to the "software-hardware principle," then provision of these quasi-broadcast services would become a regulatory impossibility.

Perspectives for Broadcast Policy).

[339] Yuseisho Tsushin to Hoso no Kyokai Ryoikiteki Service nikansuru Kenkyukai (The Study Group of the MPT Concerning the Services on the Boundary of Communications and Broadcasting), *Interim Report*, February 10, 1989, pp. 2-3 (hereinafter, *Interim Report on the Boundary Services*).

[340] *Interim Report on the Boundary Services*, pp. 4-5.

[341] Six channel audio signals of "Music Bird" are said to be receivable by an antenna with a half-meter diameter. *Nikkei Communications*, April 10, 1989, pp. 28-29.

Facing imminent regulatory problems, the MPT formed a study group to find solutions to the issues.[342] The major issues discussed at the study group were whether such services should be allowed, whether they should be classified as broadcast services and, if so, how they should be regulated. Responses of the players involved were just as expected by observers. For example, conventional broadcasters and a future DBS provider either opposed the introduction of such services or claimed that if the services were allowed, they should be regulated as broadcast services. Satellite carriers and program providers contended that the services should be considered within common carrier communications, and that no content or other regulations of broadcast services should be applied.[343]

The issues are also not new in the U.S. A court voided part of the FCC's 1982 DBS order[344] and directed the FCC to consider imposing the Title III obligations on a customer/programmer of DBS.[345] Although the case is a common carrier lease of transponders by DBS licensees, the essential problems are the same in the U.S. and Japan. The court order has not yet been implemented, due to the subsequent failure of DBS in the U.S.[346] The similarity in the problems can be also found in the Commission's order concerning subscription video services. In its *Report and Order*, the Commission ruled the subscription services as non-broadcast services.[347] The Commission listed several factors it considered to determine whether a particular service qualifies as a non-

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[342] Yuseisho Tsushin to Hoso no Kyokai Ryoikiteki Service nikansuru Kenkyukai is the same study group that studied channel service for cable TV by NTT.

[343] *Interim Report on the Boundary Services*, p. 15.

[344] Direct Broadcast Satellite, FCC Docket No. 80-603, *Report and Order*, 90 FCC 2d 676 (1982).

[345] National Association of Broadcasters v. FCC, 740 F.2d 1190 (D.C. Cir. 1984).

[346] For details of the issue, see Brenner et al., pp. 15.10-15.12.

[347] Subscription Video, Gen. Docket No. 85-305, *Report and Order*, 2 FCC Red 1001 (1987).

broadcast service: whether special equipments are required to receive such services, whether the programs are scrambled, and whether a contractual relationship exists between the licensee and the subscriber.[348]

The *Interim Report* issued by the study group on February 10, 1989, recommended that the MPT seriously consider a regulatory framework that would allow the "software-hardware" separation of broadcasting.[349] However, at the same time it recommended that current basic regulatory frameworks which distinguish broadcast services from common carrier services should be maintained, and that quasi-broadcast services should be regulated as broadcast services if they are classified as such according to certain discerning criteria (discussed below).[350] The rationales for the recommendation are that such quasi-broadcast services use a scarce electro-magnetic spectrum and have the same influence on the public and society as conventional broadcast services; also, their impact on the existing broadcast industry as a whole should be considered seriously.[351] The study group determined that there is nothing different between conventional broadcast and new quasi-broadcast services.

An important question, then, is how to distinguish between services classified as broadcast and non-broadcast. Considering the current definition of broadcasting as "the transmission of radio communication[s] intended to be directly received by the general public,"[352] the study group concluded that the most important discerning criterion is the intent of service providers to transmit programming or

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[348] Ibid.

[349] *Interim Report on the Boundary Services*, pp. 17-18.

[350] Ibid., pp. 15-16.

[351] Ibid., p. 15-19. See also Comments of the MPT at Post and Telecommunications Committee of the Lower House of the Diet, May 25, 1989. Reported in *RITE Report*, p. 64.

[352] The Broadcast Law, article 2 (1).

communications to the general public.[353] To identify this intent, the study group listed five factors to be considered (as did the FCC for subscription services).[354]

The first factor is the strength of the tie between a service provider and his customers (people who receive the transmission). In other words, how closely are the programmer and customers related? Even if the service is encrypted and provided on the basis of subscription contract, the service is considered a broadcast if membership of the service is virtually open to the public.

The second factor is the content of communications. If the content of communications has nothing to do with the relationship between a service provider and his customers, then the service is classified as a broadcast.

The third and fourth factors are how secrecy of a particular communications is preserved and how receiving equipment of the communications is administered. These factors are secondary to the first two. Even if it is encrypted, a service is still classified as a broadcast if it is identified as such by the first and second criteria.

The last criterion is whether or not particular programming or information carries advertisement. This factor also seems secondary to the first and second.

It should be clear that these factors serve to expand rather than restrict the scope of services classified into the broadcast category, contrary to the subscription TV decision of the FCC. According to these discerning criteria, subscription TV, backyard dishes, SMATV, and other

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[353] *Interim Report on the Boundary Services*, pp. 6-7.

[354] Ibid., pp. 7-8.

services provided directly to the public by way of communications satellites are classified as broadcast services in Japan.[355]

4.2.1.2 The amendments and their possible effects

Given the recommendation of the study group, the MPT drafted amendments to the Broadcast Law and the Radio Law, which virtually institutionalize the "software-hardware" separation of broadcast services. **Figure** 4-1 shows the new regulatory structure for quasi-broadcast services via a communications satellite, which came into effect on October 1, 1989, after passage of the amendments at the Diet. The essential points of the amendments are as follow.

Providers of the quasi-broadcast services are classified into two categories: broadcasters responsible for satellite facilities (satellite broadcast carriers), and broadcasters responsible for programming (satellite broadcast programmers). A satellite broadcast carrier shall obtain a license from the MPT to provide common carriage of signals of satellite broadcast programmers.[356] The satellite carrier then has two licenses – one each as a satellite broadcast carrier and a Type I telecommunications carrier.

A satellite broadcast carrier shall be obligated to provide carriage services when required by satellite broadcast programmers as well as to submit tariffs to the MPT for such services.[357] The carrier is not responsible for programming delivered through its facilities.[358]

A satellite broadcast programmer shall obtain authorization of the MPT about his eligibility as a satellite programmer, as determined by

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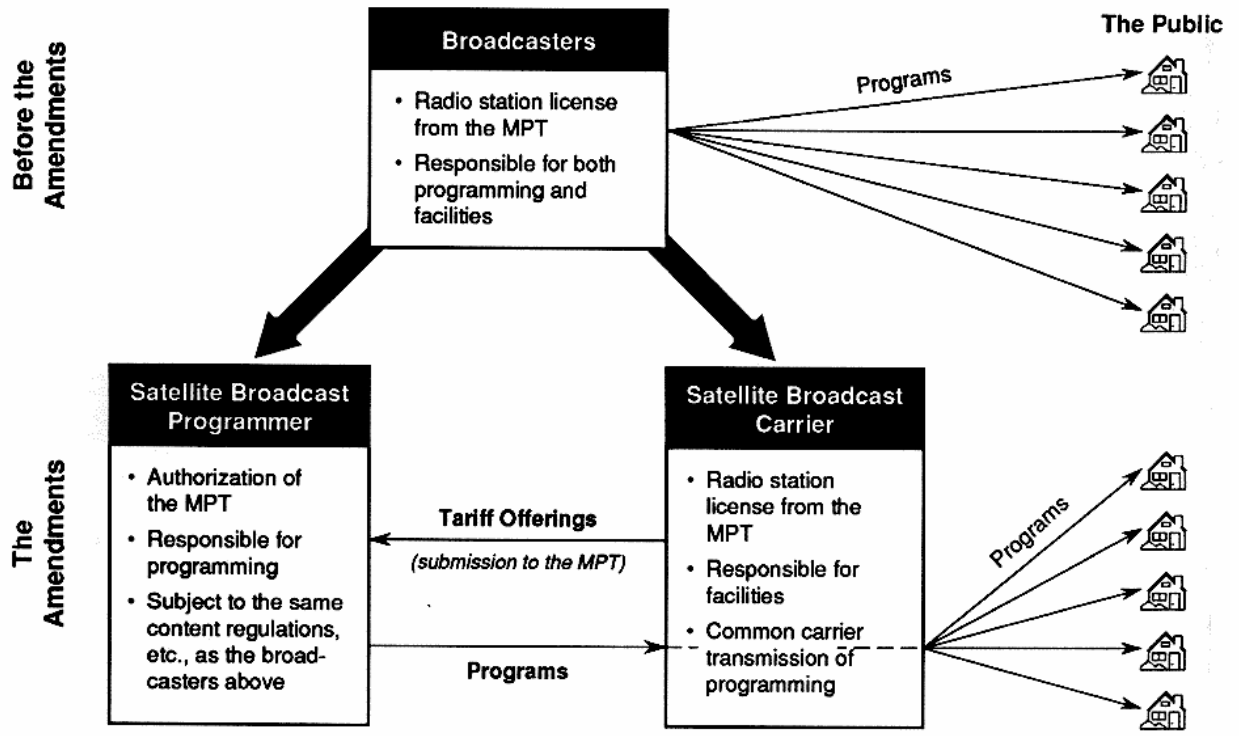
[355] Subscription TV of over-the-air transmission was previously ruled as a broadcast service. See the Broadcast Law, article 52, sec. 4.

[356] The Radio Law, article 5, sec. 4, and article 6. The Broadcast Law, article 2, sec. 1 (3) and sec. 3 (4).

[357] The Broadcast Law, article 52 (9) and (10).

[358] Ibid., article 52 (12).



Note: The amendments only apply to broadcast services via a communications satellite.

Figure 4-1

Amendments to the Broadcast Law

criteria set in the Broadcast Law and the Ordinance of the MPT. These criteria include consideration of the programmer's financial status, and exclusion of foreigners from ownership of satellite programmers.[359] Satellite programmers also shall be subject to the same content and other regulations as conventional broadcasters.[360]

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[359] Ibid., article 52 (13). The difference between permission and authorization of the MPT is unclear.

[360] Ibid., article 2, sec. 2 (1) and (2), and article 6.

Additional clarification seems necessary. The regulations over satellite broadcast programmers include the so-called "elimination of mass media concentration principle." In principle, it prohibits one company from 1) possessing more than two broadcast stations (TV and radio, respectively) throughout Japan, and 2) simultaneously owning a TV station, a radio station, and a newspaper in one service area.[361] This principle performs the same function as cross-ownership restrictions in the U.S. Accordingly, existing conventional broadcasters cannot become satellite broadcast programmers.

Also, it should be noted that broadcasters of DBS do not fall in the category of satellite broadcast programmers. They actually invest in DBS facilities and incur the cost of operations and maintenance of DBS. They are regulated as conventional over-the-air broadcasters. Although uncertain, it seems possible that over-the-air conventional broadcasters can become DBS broadcasters.[362]

A few comments about the amendments may be appropriate here. First, their application to NTT channel service for cable TV should be obvious. Although the MPT made clear its intention not to extend the amendments to terrestrial wired services for the time being,[363] the amendments easily can be applied to channel service for cable TV by NTT.

Second, passage of the amendments does not mean that services such as backyard dishes and SMATV will start soon in Japan. In its interim report, the study group recommended the gradual and cautious introduction of such services because they potentially could have a harmful impact on conventional broadcast services.[364] Given the recommendation, the MPT seems to take a cautious approach when it

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[361] The Ordinance of the MPT, *Hosokyoku no Kaisetsu no Konponteki Kijun (Fundamental Principles for Establishment of Broadcast Stations)*, article 9.

[362] See sec. 4.3.1.

[363] *Nikkei Communications*, May 22, 1989, p. 83.

[364] *Interim Report on the Boundary Services*, p. 20.

actually considers a particular authorization, and it may delay the introduction of certain services.[365] For this reason, it is commonly held that "Music Bird" certainly will be given first authorization, but direct video services may be subject to the gradual introduction policy.[366] Reportedly, eleven cable operators actually asked the MPT to exercise caution with the introduction of SMATV,[367] which could (in their opinion) seriously harm the development of CATV in Japan.[368]

The third point is closely related to the second. Users of the communications satellites may encounter serious inconveniences, and freedom of speech could be threatened. Although the study group identified criteria to distinguish between broadcast services and common carrier communications, the actual decision depends upon the sole judgment of the MPT. Even the criteria may be subject to considerable arbitrary interpretations.[369] Not only possible satellite broadcast programmers but also other users of the communications satellites may have to consult the MPT about their communications, such as its content and whether it's classified as a broadcast service. If this kind of regulation would be applied to communications over future broadband networks, a video shop that intends to provide video-on-demand service might be subject to the MPT's authorization. In this regard, the Japan Press Association (JPA) actually expressed its opposition to the amendments.[370]

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[365] Reportedly, the MPT would start receiving actual applications for authorization of satellite broadcast programmers from spring 1991, almost one-and-one-half years after passage of the ammendments. *Nihon Keizai Shinbun*, February 17, 1990, p. 8.

[366] *RITE Report*, p. 61.

[367] *Hoso Journal*, July 1989, p. 94.

[368] A video delivery system within a hotel is excluded from the CATV's definition (see The Cable Television Broadcast Law (the CATV Law), article 31).

[369] See, for example, "Interview of the President of the Space Communications Corp., Hiromune Miyagawa," *Nikkei Communications*, July 7, 1989, pp. 52-54.

[370] *Hoso Journal*, May 1989, p. 15.

In sum, although a new regulatory framework has been passed – which classifies as broadcast those services on the boundary between communications and broadcasting, and allows certain "software-hardware" separation for such quasi-broadcast services – it seems to take a little more time to see how the amendments actually will be implemented by the MPT and what kind of new services will begin to be provided.

4.2.2 NTT's "Off-talk Communications Service"

Figure 4-2 shows the service features and system configuration of "Off-talk Communications Service," which NTT began offering in August 1988. The service was developed to use an ordinary telephone access line as much as possible; currently, it is used for only some ten minutes per day.[371] In short, the "Off-talk Communications Service" provides one-way audio information such as music, phonetic information, and so on (up to four channels) over an ordinary telephone access line from an information center when the line is not used for a telephone call. A customer's radio cassette recorder, a stereo set, or speakers can be connected to the service; when there is an incoming call or a customer wants to place a telephone call, the service automatically switches to normal telephone service.[372]

NTT provides only an ordinary telephone access line, "off-talk communications" equipment that lies adjacent to a local switch in a telephone office, and leased circuits (central circuits) that connect an information center to "off-talk communications" equipment on a tariffed basis. Facilities of an information center and equipment on a customer's premises are provided by information providers (IPs) or others – not by NTT.[373]

Customers pay a flat monthly charge of 500 yen and installation charges to NTT. The rate is very low since the marginal cost of

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[371] *NTT Business*, August 1988, pp. 64-65.

[372] Ibid., pp. 66-67.

[373] *RITE Report*, p. 8.

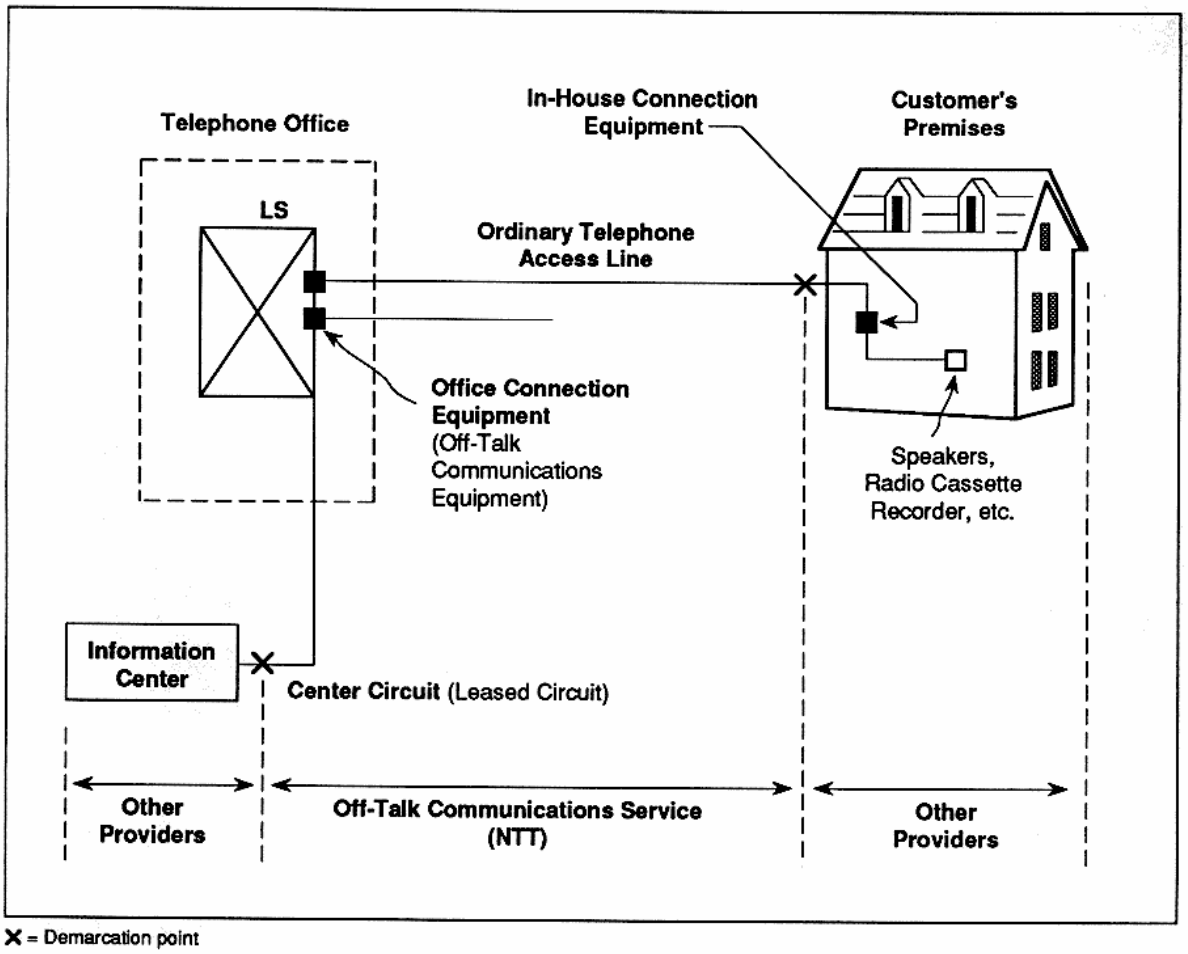

Figure 4-2

NTT's Off-Talk Communications Service: System Configuration

providing the service is close to zero. They also pay charges (usually flat monthly charges) for information provided by IPs according to their contracts. IPs or other "off-talk communications" business companies incur the cost of central circuits leased from NTT; they pay a flat monthly charge to NTT of 60 yen per customer for using its "off-talk communications" equipment.[374]

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[374] *NTT Business*, August 1988, pp. 66-67.

It should be clear that the service has obvious similarities with channel service for cable TV by NTT and video delivery over IBN or B-ISDN. If an ordinary copper telephone line is replaced by a fiber optic which is then connected to a TV set at a residential home, the service will become "fiber-to-the-home," with which U.S. telephone companies are currently experimenting. It should also be noted that "off-talk" is obviously a broadcast service, as defined by criteria specified in the previous section. IPs surely do not want to limit the membership of customers, which is currently not restricted.

It is unclear why the MPT ever approved the service in light of the "software-hardware integration principle." When introduced, the service was supposed to replace old, obsolete rural communications facilities which have been used mainly to simultaneously give farmers information about weather conditions and other agricultural concerns. However, it seems to be spreading to major cities. The service has been offered in a major city since July 1989, providing music and news channels (urban "off-talk" service).[375] Also, one non-NTT company was established in August 1989 to provide this urban "off-talk" service in Tokyo.[376]

NTT itself does not participate in the content and information center businesses of the service. But its affiliate seems to engage in such businesses. In February 1989, NTT established a subsidiary with other non-NTT companies; this subsidiary plans to develop and supply not only equipment for information centers and customer premises but also content of information and programming.[377] It is unclear whether this strategy is appropriate if NTT wants to obtain permission for channel service for cable TV, and ultimately to develop future broadband networks.

The "Off-talk Communications Service" is another clear example of the breakdown of the "software-hardware integration principle." Convergence

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[375] *RITE Report*, p. 8.

[376] *Nikkei Communications*, July 24, 1989.

[377] *NTT Business*, March 1989, pp. 36-37.

of broadcast and common carrier communications has already begun in the MPT-approved common carrier service arena.

4.2.3 Can the "Software-Hardware Integration Principle" Be Sustained?

As shown above, the "software-hardware integration principle" of broadcast services has already begun to break down. In fact, such changes are taking place on a much larger scale. **Figure 4-3** outlines the movement towards the convergence of broadcasting and common carrier communications, in terms of network services.

In addition to the two examples above, a number of cases exemplify the convergence from the common carrier's viewpoint. Used by a fashion company, NTT's Super CAPTAIN provides not only a video-on-demand service but also a service to deliver video information about the latest clothing fashions simultaneously to all member shops according to a pre-determined schedule.[378] Although the current system uses analog-leased circuits and the membership is rather limited, such simultaneous delivery takes the service one step closer to the broadcast arena (see **Figure 4-3**).[379] An application was even suggested for paging services: distribute certain kinds of information, such as stock and bond prices, to pagers with display capability, which can show simple texts.[380]

As for convergence from the broadcast perspective, possible candidates are Teletext Service, TV Audio Multiplex Service, and FM Audio Multiplex Service[381] (by use of multiplex techniques and sub-carrier of carrier waves). Now available in Japan, these services are

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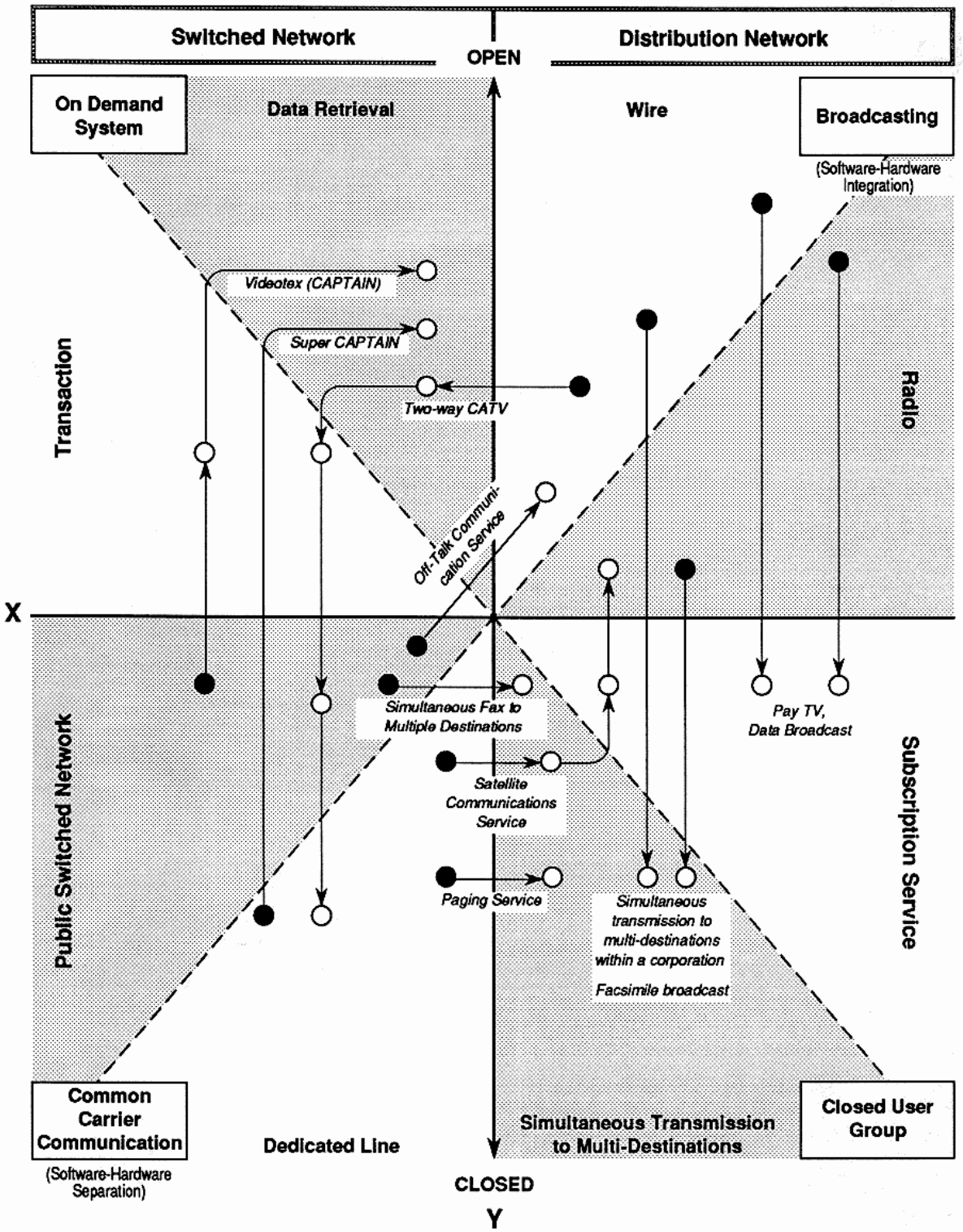
[378] *RITE Report*, p. 9.

[379] For a discussion on the system's configuration and a general explanation of Super CAPTAIN, see Shoji, Kimiaki et al., "Great Progress in New Visual Communication Systems: Hi-CAPTAIN, VRS, C&DS," *NTT Review* 1, no. 3 (September 1989): 52-54.

[380] *Nikkei Communications*, February 27, 1989, p. 33.

[381] The latter two services provide a second audio channel with a program. For example, viewers can watch a TV program and listen to the Japanese text or an English translation.



Source: Adapted from *Denki Tsushin to Hoso no Yugo* (*Convergence of Common Carrier Communications and Broadcasting*), Denki Tsushin Seisaku Kenkyujyo (Research Institute of Telecom-Policies and Economics), March 1989, p. 39.

Figure 4-3

Convergence of Broadcasting and Common Carrier Communications in Japan: Convergence in Terms of Network Services

provided by broadcasters themselves. But if a broadcaster leases the capacity to a third party, and if the third party uses the leased capacity for its own information delivery with or without encryption, then this arrangement comes very close to common carrier services[382] (see facsimile broadcast, etc. in **Figure 4-3**). Or at least the "software-hardware integration principle" would break down from the broadcast side. Some arguments maintain that these services should be allowed if quasi-broadcast services by way of communications satellites, such as backyard dishes and SMATV, are to be permitted by the amendments to the Broadcast Law, explained above.[383]

Moreover, the study group of the MPT on DBS service suggests that it may be inevitable to consider "software-hardware" separation for Broadcast Satellite 4 (BS-4), which is scheduled to be launched in 1997.[384] In its report, the study group recommended that it would be appropriate to establish a third-party company that owns BS-4 and lease the channels to actual broadcasters so that internationally allocated (scarce) 8 channels may become available to as many broadcasters and new services as possible. The report even suggests time sharing of a channel or transponder.[385]

In the U.S., these convergences already had been pointed out in the 1970s. From a wider and deeper analysis of electronic technology, communications and information industries, as well as print and publishing industries, a report noted as early as in 1972 that historic

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[382] *RITE Report*, p. 10.

[383] *Nikkei Communication*, February 27, 1989, p. 33.

[384] Eisei Hoso no Shyorai Tenbo nikansuru Kenkyukai (The Study Group of the MPT Concerning Future Perspectives of Direct Broadcast Satellite Service), *Eisei Hoso no Shyorai Tenbo, (Future Perspectives of Direct Broadcast Service)*, February 1989, pp. 27-33 (hereinafter, *Report on DBS*).

[385] Ibid., pp. 21-22, 27-31.

barriers were being altered or eliminated between the industries by major social, economic, and technological factors.[386]

The process is taking place gradually. The piecemeal approach of the MPT (applying "software-hardware" separation only to quasi-broadcast services by way of communications satellites) may be appropriate at the moment. But a look at the progress of fiber-to-the-home experiments in the U.S. and new service developments in Japan indicates that the complete breakdown of the "software-hardware integration principle" and the resulting entire reorganization of current regulatory structures for communications industries could come sooner than previously imagined. It also seems necessary to stress that discussion on future broadband services to the home likely will take place in the rather abstract context of "convergence of modes," at least officially and publicly in Japan, rather than in that of particular issues.

4.3 CABLE TELEVISION: STRUGGLE FOR SURVIVAL AND DEVELOPMENT

4.3.1 Current Status of the Video Distribution Marketplace in Japan

4.3.1.1 Cable television

As described briefly in chapter 2, Japan's cable television industry is still in its infancy. **Table 4-2** supplements the discussion of the status of Japan's cable TV industry.

As of December 31, 1988, cable systems with more than 500 subscribers account for only 1.8 percent of the total systems in Japan. Such systems average only 2,046 customers. Only 58 cable systems have more than 5,000 subscribers, and 18 of the 58 have more than 10,000.[387] Although there is an indication that the number of subscribers to the larger systems has increased rapidly in recent years, and that the new entry of the so-called "urban type CATV" continues with an average of 20

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[386] Program on Information Technologies and Public Policy, *A Perspective on the Nation's Information Resources: The Scope of the Program, 1972-1973* (Cambridge, Mass.: Harvard University, 1974), p. 3.

[387] *Hoso Journal*, July 1989, pp. 54-56.

Scale of Operation			
Cable Companies[1]		**NTT[3]**	
Number of cable systems		**Number of telephone access lines** (millions)	50.3
Total	**45,190**		
Systems with over 500 subs	826	**Number of leased circuits** (thousands)	
As percent of total	1.8%	**Total**	**752.1**
Other systems	44,364	Conventional	746.8
As percent of total	98.2%	High Speed Digital (64 Kb/s-6Mb/s)	5.3
Number of subscribers			
Total	**5,774,868**	**Number of mobile service subscribers** (thousands)	
Percent of households receiving NHK	17.6%	Cellular Telephone	240
Systems with over 500 subscribers	1,689,629	Pagers	2,800
As percent of total	29.3%		
Average number of subscribers per cable system		**Number of digital data exchange service access lines** (thousands)	
Total	**128**	Packet switching	121.3
Systems with over 500 subscribers	2,046	Circuit switching	0.8
Others	92	**Number of narrowband ISDN access lines**	1,198
Annual revenue estimates[2] (¥ billions)		**Annual Revenues (fiscal 1988)[3]** (¥ billions)	
1996	¥616	Total operation	¥5,841.9
2001	¥1,051	Telephone operaton	¥4,622.7

Sources: [1]The Ministry of Post and Telecommunications, as of December 31, 1988. Adapted from *Hoso Journal* (*Broadcast Journal*), July 1989, pp. 54-59.
[2]Estimates of the Ministry of Post and Telecommunications. Adapted from *CATV Gyosei '88* [*CATV Administration '88*] (Tokyo: Gyosei Co., 1988), pp. 175-76.
[3]NTT data, as of March 31. Adapted from *NTT Annual Report, 1989.*

Number of Cable Systems Classified by the Services Provided
(Systems with More Than 500 Subscribers)

Services	1984	1985	1986	1987	1988
TV retransmission only	404	452	525	577	651
TV retransmission and other programs	75	94	107	131	174
Other programs only	5	4	1	1	1
Total number of systems	**484**	**550**	**633**	**709**	**826**

Source: The Ministry of Post and Telecommunications, *Hoso Journal* (*Broadcast Journal*), July 1989, p. 55.

Cable Companies' Annual Revenues
(54 Cable Companies)

Annual Revenues (¥ millions)	Number of Cable Companies
Fewer than 10	5
10 - 30	13
30 - 50	10
50 - 80	12
80 - 100	4
100 - 500	7
500 - 1,000	1
More than 1,000	2
Total number of companies	**54**

Source: The Ministry of Post and Telecommunications, *Information Communication Almanac '89*, Tokyo, Japan, Jyoho Tsusin Sogo Kenkujo (InfoCom Research Inc., 1988), p. 459.

Table 4-2

Scale of Operation of Cable Companies and NTT in Japan

to 30 new systems per year,[388] Japan's cable TV industry is not yet substantially established.

These new "urban type" cable systems use the conventional tree and branch system configuration, and some installed fiber optics in their main trunk and some parts of distribution plants.[389] Despite high hopes for new advanced broadband services by these "urban type CATVs," only one cable system, Lake City Cablevision (LCV),[390] provides certain non-cable two-way services. As a Type I telecommunications carrier, LCV currently provides leased circuit services, telemetry service for water supply, a video support system for medical care, and other services.[391] But the majority of new "urban type" systems seem to be taking a practical approach and are focusing on conventional cable service. Reportedly, a current and urgent target of typical "urban type" cable operators is to obtain 10,000 to 15,000 subscribers within 3 to 5 years and reach a break-even point.[392]

No comprehensive data are available for the current overall revenue stream of cable companies in Japan. But even the most optimistic estimates indicate that their 1996 total annual revenues will be about one-tenth that of NTT's 1988 total revenues, and their 2001 total will be less than one-fifth (see **Table 4-2**).

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[388] *Hoso Journal*, December 1989, pp. 27-30.

[389] *Daiishu Denkitsushin Jigyosha no Gazo Setsubi Teikyo nikansuru Chyosa Hokokusho, (Research on Provision of Video Communications Facilities by Type I Telecommunications Carrier)*, Denki Tsushin Sogo Kenkyujyo (Research Institute of Telecommunications), March 1986, pp. 81-93.

[390] LCV is located in the Nagano prefecture, which is about three hours by train from Tokyo. Many large cable systems have developed in the Nagano prefecture since the 1970s, driven by the residents' demand for distant signal importation from TV stations in Tokyo.

[391] For services of LCV, see *CATV Gyosei '88*, pp. 58-64.

[392] *Nihon Keizai Shinbun*, October 17, 1989, p. 29.

If we look at the cable services provided, another problem is revealed. Only 174 systems with more than 500 subscribers provide cable channels in addition to TV retransmission service. Although this figure reflects to some extent that cable networks are relatively new in Japan, it could be said that not only smaller systems but also many existing larger systems need to be upgraded considerably to accommodate new cable networks opened up by the "space cable network."

As emphasized in chapter 2, Japan's cable TV industry is still perceived as having a public and welfare nature. This fact becomes more obvious if we look at **Figure 4-4**. More than 65 percent of the larger systems do not collect any contract charges, and in more than 50 percent of the systems the monthly basic rate is zero. These statistics, combined with the findings in **Figure 2-1** (chapter 2), clearly show the public and welfare characteristics of Japan's cable industry.

On the contrary, if there are certain charges, they tend to be more expensive than those of the U.S. Particularly, contract and installation charges in Japan are very expensive. A survey of subscribers to a typical "urban type CATV," Bunkyo Cable Network (BCN) in Tokyo (commonly regarded as the most successful urban CATV, with about 10,000 customers and 15 retransmission channels and 13 cable channels[393]) reveals that a substantial number of subscribers complained about the high charges of BCN (see **Figure 4-4**). Especially, contract and installation charges, and rates for pay cable of BCN seem very expensive compared to those in the U.S.

In this respect, the MPT made public its intention to regulate rates of "urban type CATVs" by requiring the MPT's permission for their tariffs.[394] The details of the measure have not been revealed yet. It is uncertain whether such regulations will serve to increase the number

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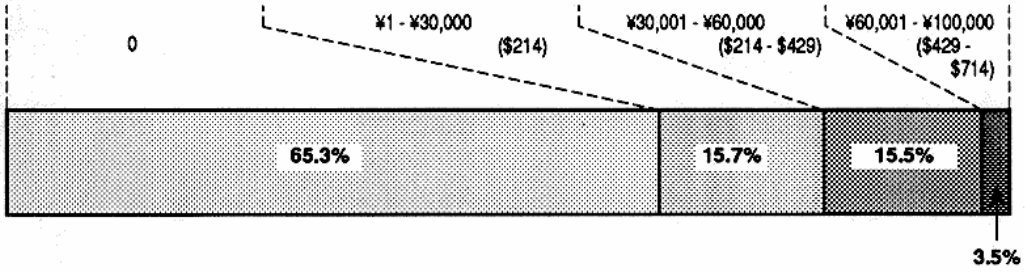
[393] Yamamoto, Satoru, "Shyoki Donyukatei niokeru Toshigata CATV no Chyosa Kenkyu" ("Research on Urban Type CATV of Its Introduction Stage"), *Hoso Journal*, September 1989, pp. 64-69.

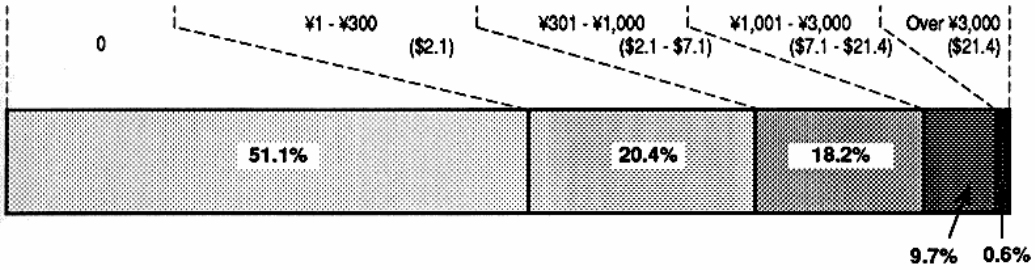
[394] *Nihon Keizai Shinbun*, November 30, 1989, p. 5.

Rates of Cable Services with More Than 500 Subscribers

CONTRACT CHARGE — 709 Systems



MONTHLY RATE — 709 Systems



$ = ¥140

Source: The Ministry of Post and Telecommunications, as of December 31, 1987. Adapted from *Information Communication Almanac '89* (Tokyo: Jyoho Tsusin Soyo Kenkyujo [InfoCom Research Inc.] 1988), p. 458.

Survey Results of Rates of Bunkyo Cable Network Inc.: Answers of BCN Subscribers

BASIC RATES

Survey Question Responses	Basic Monthly Rate		Contract Charge		Installation Charge	
	No. of Samples	%	No. of Samples	%	No. of Samples	%
Appropriate	81	54%	79	53%	74	50%
Expensive	64	43%	57	38%	38	25%
Cheap	4	3%	13	9%	37	25%

- Basic Monthly Rate = ¥3,000 ($21.4)
- Contract Charge = ¥50,000 ($357)
- Installation Charge = ¥30,000 ($214)

PAY CABLE

Survey Question Responses	Star Channel (Movies)		CNN	
	No. of Samples	%	No. of Samples	%
Appropriate	52	35%	57	38%
Expensive	95	64%	88	59%
Cheap	4	1%	4	3%

- Star Channel = ¥2,500/month ($17.9)
- CNN = ¥1,500/month ($10.7)

Source: Satoru Yamamoto, "Shyoki Donyukyatei niokeru Toshigata CATV no Chyosa kenkyu" ("Research on Urban Type CATV at Its Introduction Stage"), *Hoso Journal (Broadcast Journal)*, September 1989, pp. 64-69.

Figure 4-4

Rates of Cable Services in Japan

of cable subscribers; the rates (particularly contract and installation charges) seem to reflect Japan's high price level of goods and services and the very high cost of land, as well as the resulting heavy burden of the initial investment necessary to establish a cable system. If the rates are suppressed substantially below the actual cost (calculated with the practical demand estimate), as in the U.S. before 1984, many "urban type CATVs" in Japan might be out of business before they can attract a substantial number of customers.

As for the vertical and horizontal integration of Japan's cable industry, the MPT also expressed to cable operators its intention to apply the "elimination of mass media concentration principle," which is currently applicable to broadcasters.[395] However, the concentration of the cable industry has not yet become an issue in Japan. The actual measures of the principle's application have not been disclosed. It is difficult to determine accurately who owns how many cable systems and who provides the programs, since no comprehensive studies on this matter have been conducted. Yet, a look at the ownership of some urban cable systems reveals certain characteristics. Apparently, many parent companies of "urban type CATVs" are existing large companies such as railroads, media, electric power utilities, trading, construction, and even broadcast companies. Some of these companies have shares in many cable systems,[396] but they do not have significant control over the systems' operation. The large companies hold relatively small portions of shares of a cable system and seem to spread risks among themselves, given the nascent status of Japan's cable TV industry.

Although there are not any comprehensive data, it also seems that some of the large parent companies of the cable systems invest in emerging cable networks. If it would ever arise in Japan, the issue of vertical integration would be the one concerning the parent companies –

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[395] Ibid.

[396] See in general *Hoso Journal*, July 1989, pp. 44-51, and December 1989, pp. 32-47.

not the issue concerning the integration of cable programmers by cable operators.

As of November 1989, 19 cable networks have already started or made plans to provide programming to cable systems by way of satellites.[397] The programmers generally face four major problems or dilemmas: the small market size of cable TV, the high cost of satellite use, programmers' need to keep their rates for program delivery low, and programmers' difficulty to attract advertisement.[398] In short, they face the typical chicken and egg situation. They also face a lack of attractive programming. Japan's production capacity of movies and other programs seems rather small compared with the number of outlets planned, and popular sports events are limited. It is highly unlikely that the popular sports games will move from broadcast TVs to cable networks in the foreseeable future. In this regard, a number of American programs have been introduced,[399] but it is uncertain whether the flood of foreign programs contributes to the increase in cable subscribers. If the survey results of BCN (see **Figure** 4-4) can be generalized, pay cable networks may encounter considerable difficulty in attracting Japanese viewers.

In sum, the fact that many parent companies are large corporations contributes somewhat to the financial stability of "urban type CATVs." Even so, in general Japan's cable industry appears to be struggling for its survival and development. The struggle will likely continue, at least into the foreseeable future.

4.3.1.2 Over-the-air TV stations

As in the U.S., over-the-air TV stations are by far the most successful video outlets in Japan. As of March 31, 1988, in addition to

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[397] *Nihon Keizai Shinbun*, November 6, 1989, p. 38, and November 29, 1989, p. 10.

[398] Yamamoto, p. 69.

[399] Reportedly, MTV will start a cable network in Japan. *Nihon Keizai Shinbun*, November 29, 1989, p. 10.

two channels of Nihon Hoso Kyokai (NHK), Japan has 103 commercial television broadcast companies.[400] However, the number of available TV outlets throughout regions of Japan are highly unbalanced. While five or six commercial TV channels are available in 13 prefectures, ten prefectures have only two commercial channels on the air in addition to two channels operated by NHK.[401] Addressing this problem, the MPT is actively allocating TV frequencies to these areas, and it intends to make available at least four commercial TV stations throughout Japan.[402] Many new TV stations are expected to come into service in these areas within two or three years.

Although Japan has slightly fewer TV outlets in major cities and perhaps in some rural areas than the U.S., it is uncertain whether this fact could help the development of cable TV. Some argue that TV stations are trying hard to eliminate areas with poor signal reception by setting up a number of small retransmitters near those areas and, unlike in the U.S., immediate need of CATV does not exist. They also contend that since Japan has seven major networks (two of NHK and five commercial), all of which are broadcasting brand new programs every day for almost twenty-four hours,[403] viewers in many regions already receive enough programs.[404]

A few interesting features of the Japanese broadcast industry should be noted here. One is the power and influence of the so-called five commercial "key" stations located in Tokyo. Despite the existence of the "elimination of mass media concentration principle," the key stations all formed networks by certain association agreement, just like

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[400] *Information Communications Almanac '89* (Tokyo: Jyoho Tsushin Sogo Kenkyujyo [InfoCom Research, Inc.], 1988), p. 429.

[401] *Perspectives for Broadcast Policy*, p. 52.

[402] The Ordinance of the Ministry of Post and Telecommunications, *Hoso Fukyu Kihon Keikaku (Basic Plans Regarding Development of Broadcast Services)*, 1988.

[403] There are no "rerun" periods in Japan's broadcast industry.

[404] See in general *Hoso Journal*, April 1989, pp. 44-71.

three major networks in the U.S.[405] Although the networks were initially formed to exchange and co-produce national news programs, most programs in local stations are actually provided by the key stations.[406] The influence of these key stations apparently is more significant than that of the networks in the U.S., because in Japan the cost of program production is high, advertisers prefer to have national spots, and the majority of TV performers reside in Tokyo.[407] Consequently, Japan has only six independent stations.[408]

Facing the coming age of DBS and satellite broadcast programmers, one key broadcaster emphasized the necessity to produce more local programs for their survival. He also predicts the future of broadcasters will be in the production side of programming, although his company continues to operate a TV station.[409]

Another characteristic is that all five key stations are more or less affiliated with large national newspapers.[410] This is possible because the "mass media principle" only prohibits control of a TV station, a radio station, and a newspaper at the same time.[411] In fact, the

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[405] These networks are Nippon News Network (NTV as its "key" station), Japan News Network (TBS), Fuji Network System (Fuji), All-Nippon News Network (TV Asahi), and TV Tokyo Network (TV Tokyo). See the *International Handbook of Broadcasting Systems*, p. 181.

[406] Ibid., p. 180.

[407] Ibid., pp. 180-81.

[408] *Perspectives for Broadcast Policy*, p. 52.

[409] Kinumura, Kazuo, "Kinmirai no Denpa Media nitsuite" ("Consideration of Radiowave Media in the Near Future"), *Hoso Journal*, November 1989, p. 65.

[410] The affiliations are NTV with *Yomiuri Shinbun*, TBS with *Mainichi Shinbun*, Fuji TV with *Sankei Shinbun*, TV Asahi with *Asahi Shinbun*, and TV Tokyo with *Nihon Keizai Shinbun*. See the *International Handbook of Broadcasting Systems*, pp. 181-83.

[411] The Ordinance of the Ministry of Post and Telecommunications, *Hosokyoku Kaisetsu no Konponteki Kijun (Fundamental Principles for Establishment of Broadcast Stations)*, article 6.

networks use the names of their affiliated newspapers on most of their news programs.

As noted above, broadcasters also invest in cable systems. Given these facts about the concentration of mass media in Japan, some question why only NTT should be entirely prohibited from entering into the mass media business. At least they don't foresee any problems if NTT were allowed to provide channel service for cable TV.[412]

In any case, the influence and power through the association with major broadcasters and major national newspapers cannot be ignored when one considers Japan's policies for the future broadband communications marketplace.

4.3.1.3 Direct broadcast satellite

Japan's DBS service began in May 1984 when state-owned public broadcaster NHK started to provide one DBS channel by way of Broadcast Satellite 2 (BS-2). At that time, NHK broadcast some of the same programs as those of its over-the-air channels by way of the satellite to eliminate areas (mainly isolated remote islands) where off-the-air signal reception was extremely difficult or impossible. Since then, NHK has extended DBS service by starting two-channel service in July 1987, and switching one of its channels to all original programs for DBS in June 1989.[413] Also, since August 1, 1989, NHK started collecting reception fees – 930 yen per month for color reception of DBS – just as it has done for its over-the-air channels since its start up.[414]

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[412] *Denki Tsushin Hosei no Shyomondai (Issues regarding Telecommunications Regulations)*, Denki Tsushin Seisaku Sogo Kenkyujo (Research Institute of Telecom-Policies and Economics), March 1988, p. 72.

[413] Information Communications Almanac, pp. 405-07, and *Hoso Journal*, August 1989, p. 78.

[414] *Nihon Keizai Shinbun*, July 31, 1989, p. 34. An interesting question is how NHK can find households receiving DBS. As a state-owned public broadcaster, NHK cannot scramble its programming. Employees of NHK reportedly must venture into towns to find DBS dishes.

As for the highly-publicized development of High Definition TV (HDTV) in Japan, in June 1989 NHK began a one hour per day experimental broadcast of HDTV programming through BS-2.[415]

The number of households receiving DBS reached about 1.9 million as of November 30, 1989.[416] Despite the introduction of reception fees for NHK DBS services, the demand for DBS still seems very strong in Japan. Reportedly, the supply of DBS equipment (DBS dish and tuner) cannot meet the demand.[417] NHK estimates that the number of DBS households will reach 7.3 million in 1995.[418]

BS-3 and BS-4 are scheduled to be launched in 1990 and 1997, respectively (see **Figure 4-5**). One commercial DBS broadcaster, Japan Satellite Broadcast (JSB), plans to start its DBS services in November 1990 by way of BS-3, in addition to two channels of NHK.[419] One BS-3b transponder, which is a backup satellite of BS-3a, is planned to be used for HDTV broadcast. Since only one transponder is allocated for HDTV, it will be leased to any broadcaster who wants to provide HDTV broadcast service through time sharing or other arrangements.[420] Specific usage of eight channels of BS-4 has not been determined yet.

Several comments may be appropriate concerning Japan's DBS program. First, Japan's DBS is by any means a heavily state-backed program. The state incurred 40 percent of BS-2's cost, and 32 percent of BS-3's.[421] The study group of the MPT on DBS also recommended that the state should

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[415] *Hoso Journal*, April 1989, p. 18.

[416] *Nihon Keizai Shinbun*, December 29, 1989, p. 20.

[417] Ibid.

[418] *Nihon Keizai Shinbun*, July 31, 1989, p. 34.

[419] Shiroishi, Shyoji, "Minkan Eisei Hoso ga Start no Toshi" ("The Year for Commencement of Commercial DBS Service") *Hoso Journal*, January 1990, pp. 30-31.

[420] *Report on DBS*, p. 8.

[421] Ibid., p. 9.

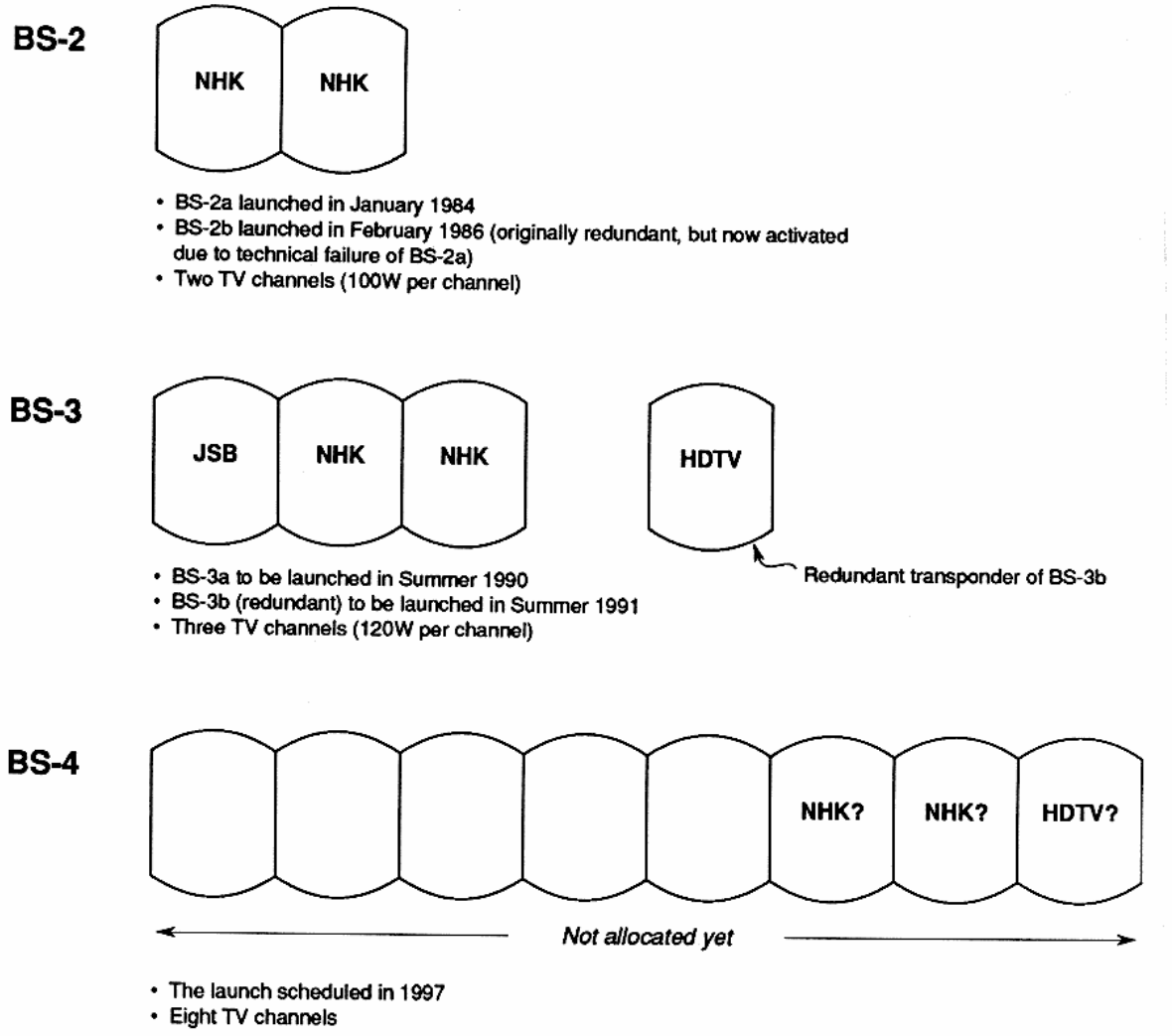

Figure 4-5

Japan's DBS Schedule

invest in a third-party owner of BS-4.[422] If one considers that NHK is a state-owned broadcaster, the portion of the state involvement further increases. Although this kind of support from the state seems to be unanimously accepted by various interested parties, the heavy

[422] Ibid., p. 30.

involvement of the state tends to generate communications policies which emphasize the harmonious development of various video outlets, rather than fair competition among them. Remember here that cable television is also heavily backed by the MPT with the introduction of various promotional measures (see chapter 2). In fact, the report of the MPT study group on DBS listed the harmonious relationship between DBS and over-the-air broadcast services as the most important policy issue and recommended that development of DBS should be promoted without yielding a significant impact on the existing order of the broadcast industry.[423]

The second point is closely related to the first. It is commonly believed that certain market segmentation between over-the-air broadcast and DBS service and quasi-broadcast services by way of communications satellites will be made by certain regulations, an unspoken agreement, or other means to preserve the harmonious development of Japan's broadcast industry, although the report on DBS did not recommend such arrangements specifically. The arrangement is said to be that broadcast from space should be pay services or subscription services, while over-the-air broadcast services continue to be supported by advertisement.[424] In fact JSB, a commercial DBS provider of BS-3, is planning pay TV service for 70 to 80 percent of its total air time.[425]

Although such an arrangement may be appropriate even from the marketing viewpoint of DBS broadcasters, if imposed by regulations or other measures, it may have significantly adverse effects on commercial DBS broadcasters and satellite broadcast programmers. Apart from constitutional questions of such measures, the arrangement may severely limit the number of new entries of DBS and satellite broadcast programmers. One satellite broadcast programmer, "Music Bird," reportedly said that if advertisement is allowed, its subscription fee

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[423] Ibid., pp. 17-19.

[424] Kinumura, pp. 63-65.

[425] Shiroishi, p. 30.

could be significantly lowered – or even free – making it easier to attract a number of subscribers.[426]

Third, the relationship between DBS and cable TV has an interesting twist: it seems that they mutually contribute to each other's development at the moment. Although somewhat old, one set of data suggests that 64 percent of DBS households received the service over cable systems as of March 31, 1988.[427] The survey result of BCN described above also shows that BCN subscribers listed DBS viewing as their primary reason for subscribing.[428] Also, cable operators reportedly were strongly opposed to the introduction of a reception fee for NHK DBS service since the fee could curb the increase of cable subscribers.[429]

The question is how long can this harmonious relationship continue? As far as DBS is concerned, if cable TV would develop significantly (for instance, to the current level of the U.S.) by the time BS-4 is introduced, DBS broadcasters would face competition among not 15 TV channels (two NHK over-the-air channels + five commercial networks + eight BS-4 channels), but among 15 TV channels *plus* many cable networks. Although DBS seems to have an advantage over cable networks through its national coverage and it is highly unlikely that cable will reach the current U.S. level by 1997, the question still remains interesting.[430]

Fourth, in relation to DBS, there are some concerns about mass media concentration in the broadcast industry. Conventional commercial broadcasters already possess 19 percent interest of JSB.[431] The report

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[426] *Nikkei Communications*, April 10, 1989, p. 29.

[427] *Information Communications Almanac '89*, p. 462.

[428] Yamamoto, p. 66.

[429] *Hoso Journal*, March 1989, pp. 64-67.

[430] For effects of DBS on the cable industry, see sec. 4.3.2.

[431] Kinumura, p. 63.

of the study group on DBS did not specifically exclude participation of conventional broadcasters in BS-4.[432] Some key TV stations actually plan to obtain at least one channel of BS-4.[433] NHK currently has four TV channels (two over-the-air and two DBS channels) and perhaps will attempt to retain them in the age of BS-4.

While the participation of conventional broadcasters may be necessary (due to lack of programming) to fill out all eight channels of BS-4 and to use their expertise in DBS services, substantial participation could restrict the diversification of information outlets. Given the close relationship between broadcasters and newspapers, and if NHK continues to maintain four channels in the age of BS-4, then it might be necessary to give serious consideration to recommendations of the study group on DBS, such as time sharing of BS-4 channels, in order to diversify information sources.

Finally, what impact will HDTV via BS-3 and BS-4 have on the video distribution marketplace in Japan? Although this question is beyond the scope of this paper, it should be noted that considerable doubts are expressed about the widespread introduction of HDTV in the 1990s, even in Japan.[434]

DBS will perhaps continue its steady growth for the time being. However, a question arises concerning the heavy involvement of the state in the DBS project. One might need to consider the possible effects that such state participation could have on overall communications policies in the age of the rapid increase of video outlets driven by technological development. In this regard, it seems that the MPT takes a policy to preserve the harmonious development of various video outlets, rather than leave the outcome to competition by establishing level playing fields.

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[432] *Report on DBS*, p. 23.

[433] Kinumura, p. 65.

[434] See for example, Kinumura, p. 67.

4.3.1.4 Other video outlets

The video cassette recorder (VCR) is also (or perhaps we should say naturally) very popular in Japan as in the U.S. Research shows that as of November 1988, 68.8 percent of Japanese individuals over thirteen years of age possess a VCR.[435] Although reliable data are not available, it is said that over 10,000 video rental shops exist throughout Japan.[436] These shops rent a video cassette at rates ranging from 300 yen ($2.10) to 500 yen ($3.60) per day.[437] As in the U.S., video cassette rental is now a thriving business in Japan. Sales of pre-recorded video cassettes (sales + rental) reportedly amounted to about 60 billion yen ($428 million) in the first half of 1989. Also, some 44 billion yen ($314 million) was spent on video disks during the same period.[438]

The popularity of VCRs and video cassette rental may be an obstacle for the development of cable television in Japan. Unlike in the U.S., the take-off phase of cable TV in Japan has come after the majority of households had purchased a VCR and people had became familiar with video cassette rental. In this regard, movie channels of cable networks, particularly pay channels, may not be attractive to Japanese consumers. Perhaps key to the success of cable TV in Japan will be the development of as much attractive non-movie programming as possible.

As explained in section 4.2.1, above, regulations made backyard dishes and SMATV for hotels possible, although not necessarily allowed, in Japan. SMATV seems particularly attractive to hotels and large apartments in heavily congested major cities, where the cost to construct a cable system is very high and establishing a cable system

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[435] NHK data, reported in *Hoso Journal*, April 1989, p. 86.

[436] The author of this paper had membership to four video rental shops in Tokyo.

[437] According to the experience of the author, it is sometimes possible to rent a cassette for as little as 100 yen ($0.70) per day.

[438] Data of Japan Video Association, reported in *Hoso Journal*, October 1989, p. 80.

itself is sometimes impossible. Although it is uncertain whether backyard dishes have significant market opportunities in Japan, they can give an additional marketing opportunity to nascent cable networks.

As also described in section 4.2.1, simply because regulations state that these services are possible does not mean they will be permitted soon in Japan, even if they are planned. Given the harmonious development policy for the video distribution marketplace, it may take some time for the services to be actually introduced. In fact, the MPT reportedly asked manufacturers not to sell receiving equipment for video signals of communications satellites to individual residential homes.[439]

Japan does not currently plan to introduce Low-power TV Service and wireless cable in Japan. Judging from the current frequency allocation plan and the policy of harmony of the MPT, such services probably will not be allowed in the foreseeable future.[440]

4.3.2 Visions and Problems for the Future of Cable Television in Japan

As pointed out in chapters 2 and 4, the Japanese communications policy for cable TV seems to prompt cable systems to develop a "second [or first?] subscriber loop" of the broadband age. The MPT clearly states as a basic policy for cable TV that it is fundamental for cable operators to establish cable systems and networks by themselves.[441]

Such a policy or vision becomes clearer by looking at **Figure 4-6**, which outlines possible new services of future cable systems depicted by the MPT. It should be noted that two-way services for a third party are particularly similar to or almost the same as new advanced services that telephone companies can currently imagine providing over their future

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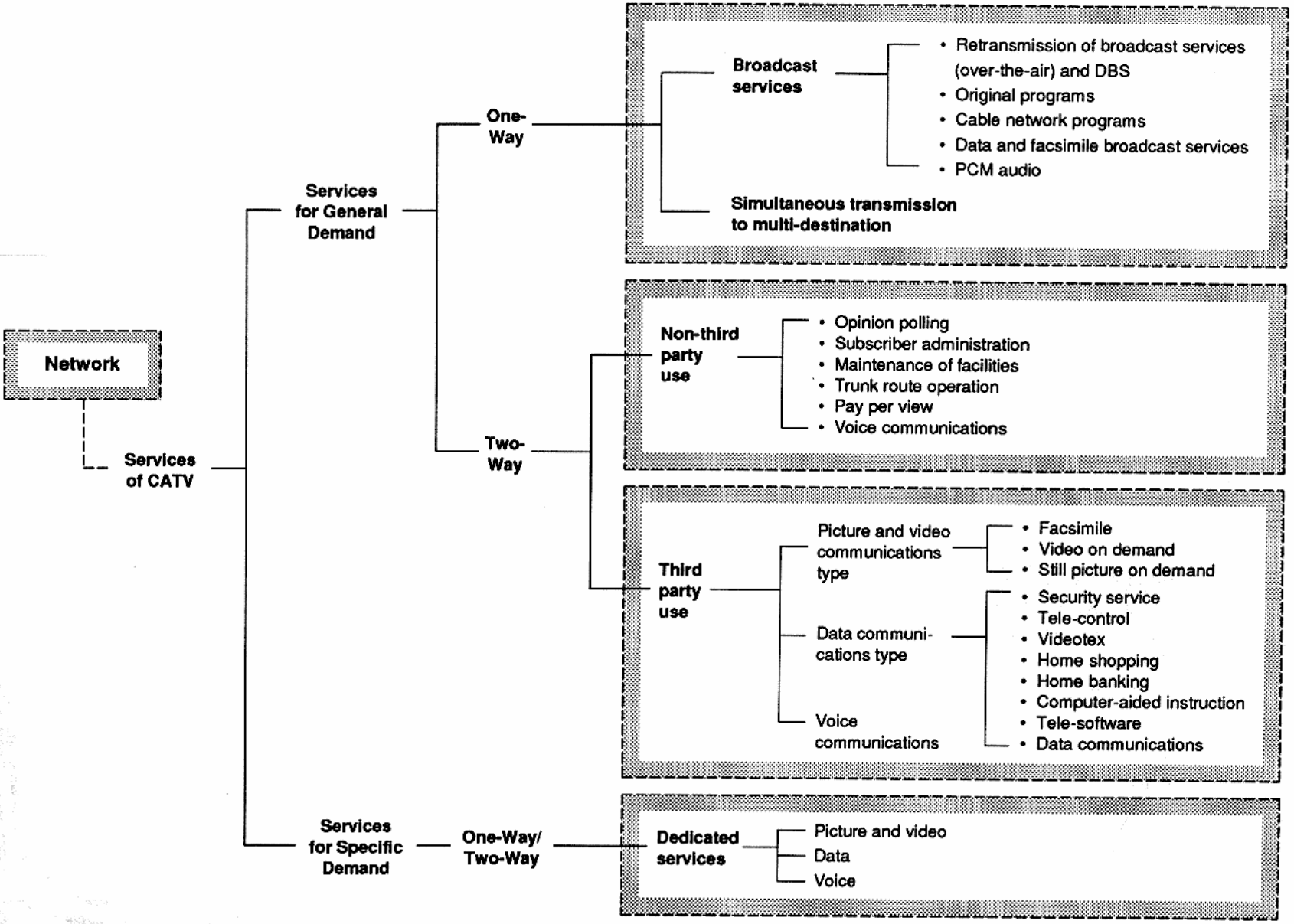
[439] *Nihon Keizai Shinbun*, January 18, 1990, p. 11; January 24, 1990, p. 13; and January 26, 1990, p. 11.

[440] See, for example, The Ordinance of the Ministry of the Post and Telecommunications, *Hosoyo Shyuhasu Shiyo Keikaku (The Plan for the Use of Frequencies for Broadcast Services)*, 1988.

[441] *CATV Gyosei '88*, p. 5.



Source: The Ministry of Post and Telecommunications, Bureau of Broadcast Administration, *CATV Gyosei '88 [CATV Administration '88]* (Tokyo: Gyosei Co., 1988), p. 3.

Figure 4-6

New Services of CATV in Japan

A simple question here is whether the Japanese cable industry can really grow to the level corresponding to the visions depicted until the late 1990s or early 2000s. Some problems faced by Japan's cable industry (described above) are the public and welfare status of numerous existing cable systems, and the high price of services of "urban type CATVs." Some of these problems will be discussed here in the context of realization of the visions (that is, the second subscriber loops).

First, a serious obstacle could hinder the upgrade of existing cable systems. In addition to the upgrade's high cost, the question arises: Who should incur the cost?[446] As previously explained, most Japanese cable systems still have a public and welfare nature. More than half of the subscribers to existing systems do not pay for their cable services. It would be very difficult to obtain their consent for the upgrade and then ask them to start paying relatively expensive fees. If these visions are to be realized, then the simple upgrade of the cable systems will not be the only costs that subscribers must incur.

Second, even the majority of "urban type CATVs" are taking a practical approach by focusing on conventional cable services, as described above. It seems highly unlikely that these cable systems will engage in a significant amount of investment to provide the new services (particularly two-way) by the early or even mid-1990s. Moreover, it is uncertain whether operators of the "urban type CATVs" possess the necessary expertise to provide advanced two-way communications services. The operators and most of the parent companies appear to lack the practical experience needed to run two-way systems.

Third, the effect of DBS on the development of cable should not be neglected. If cable could pass through most homes in Japan by 1997, the scheduled launch of the BS-4, cable operators probably would be able to internalize competition from DBS, as in the U.S. Then the problem will shift to the shoulders of DBS broadcasters.[447] If it is not the case,

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[446] See *CATV Gyosei '88*, pp. 160-62.

[447] See DBS explanation in sec. 4.3.1.

then the development and expansion of cable could come to a halt in 1997. Many households could choose to receive eight channels of DBS by setting up a DBS dish. With seven channels of over-the-air TV, they could enjoy fifteen channels without cable. The price of DBS equipment is already almost the same as the initial subscription payment (installation and contract charges) of an "urban type" cable system, and it probably will be much cheaper in 1997. In contrast, the high price of land in Japan could prevent cable systems from lowering their prices, even by 1997. But the most unfortunate factor affecting Japanese cable TV is that it started up simultaneously with a number of other new video outlets, and now it must grow in spite of their competition.

It seems important to keep following the growth of Japan's cable industry as well as that of DBS when considering the future residential broadband service marketplace in Japan. The current harmonious development policy of various video outlets and the possible provision of B-ISDN services by telcos most likely will be affected by not only how but also how much they will grow and what status they will achieve in the video distribution marketplace throughout the 1990s.

4.4 TELEPHONE COMPANIES: STRATEGY TOWARDS BROADBAND COMMUNICATIONS SERVICES TO THE HOME

> *We waited 25 years after Alexander H. Reeves' proposal of the PCM principle before a PCM transmission system was developed for commercial use by transistors. How will technical historians in the future record the research and development of the broadband ISDN? The key is in the progress in optoelectronics.*[448]

4.4.1 NTT

4.4.1.1 ISDN development plan of NTT

NTT's strategy towards broadband communications services to the home is closely related to its ISDN development plan. Following the introduction of public narrowband ISDN services – INS-Net 64, basic rate

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[448] Toda, Iwao, "Innovations in Telecommunications towards the 21st Century," *NTT Review* 1, no. 3 (September 1989): 14.

services (2B+D), introduced in April 1988; and INS-Net 1500, primary rate services (23B+D, H0 (384 Kb/s, mH0+nB+D), H11 (1.5 Mb/s /D)) introduced in July 1989[449] – NTT disclosed its technology development plan towards realization of B-ISDN, which is summarized in **Figure 4-7**. According to the plan, B-ISDN will become possible in the latter half of the 1990s and cable programming will be able to be delivered over B-ISDN (see **Figure 4-7**). But it should be stressed that this is a plan to develop technologies necessary for the realization of B-ISDN, and not a plan to introduce the actual broadband services. The plan does not say that broadband services will start being provided to residential homes by the late 1990s.[450]

NTT listed three key technologies for the introduction of B-ISDN, on which it is actively conducting research and development[451]: Asynchronous Transfer Mode (ATM), coherent lightwave communications, and optical subscriber loops. ATM is being developed aggressively by NTT in Japan, as it is in other countries, because it has the potential to deal efficiently with "multi-media communications," that is, an efficient technology for the transparency of networks.[452] NTT hopes to offer ATM public network services by 1995.[453]

As for coherent lightwave technology, NTT has not disclosed a target date for its introduction into NTT's networks. However, the company

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[449] For NTT narrowband ISDN services, see Chiba, Masato, "Ramping Up to Fullscale INS-Net Service," and Inoue, Osamu, "New INS-Net '89 Service Features with Expanded Applications," *NTT Review* 1, no. 2 (July 1989): 15-23 and 24-34, respectively. As of October 31, 1989, 3,321 access lines of INS-Net 64 and 53 of INS-Net 1500 are used by a total of 616 customers. *Nikkei Computer,* December 4, 1989, p. 115.

[450] Yamaguchi, Haruo, "Views on Future Telecommunications Services and Technologies," *NTT Review* 1, no. 1 (May 1989), pp. 6-15.

[451] Toda, pp. 9-11.

[452] Ibid.

[453] Yamaguchi, p. 10.

stresses the necessity of this technology towards the development of B-ISDN, especially its long-haul networks.[454]

Of the three technologies, optical subscriber loop is the most relevant to the purpose of this paper. In 1984, NTT first introduced optical fibers into subscriber loops in the form of overlaying conventional copper loops. But these fibers have been deployed mainly for high-speed digital leased circuit services (up to 6Mb/s), video transmission leased circuit services, and INS-Net 1500 (that is, services for large business corporations); basic configurations of the loops have not changed.[455] The situation has been similar to that in the U.S., where fibers have been used for T1 circuits and other services such as bypass for large business users.

NTT, however, announced that it will start gradually replacing (not overlaying) conventional copper loops by fiber optic subscriber networks, which have a different configuration from the conventional star-type network. The new loops will use only a single mode (SM) optical fiber and feature a loop configuration of the physical network. Their design also allows them to unify switched lines and leased circuits, as well as to have a higher capability of operation, administration, and maintenance.[456] The new optical loops are planned to be introduced gradually in major urban areas where metallic cables and underground facilities are congested and deteriorating.[457] It should be noted here that the NTT optical loops have the same problems concerning power supply, batteries, and other difficulties as do the telcos' in the U.S.

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[454] Toda, p. 11.

[455] Takashima, Seiji, "Introduction of Fiber Optic Subscriber Networks," *Japan Telecommunications Review* 30, no. 4 (October 1988): 4.

[456] For the details, see ibid., pp. 5-10.

[457] In major cities in Japan, conduits are so congested that new installation of metallic cables is becoming impossible, making telcos unable to cope with the demand increase.

Another concern is whether the plan is justified in terms of cost and performance. NTT admitted that fiber optic subscriber loops currently cost ten times more than existing copper loops.[458] Due in part to these high costs, NTT probably will not engage in fiber-to-the-home in the 1990s; instead, NTT will offer "fiber-to-the-office" as the first step of its strategy towards realizing nationwide B-ISDN.[459] For fiber-to-the-office, NTT plans to integrate plain old telephone service (POTS), leased circuits, and narrowband ISDN (basic rate) over a single SM fiber (integrated access to switched and dedicated network); by the mid-1990s, NTT hopes to market this integrated service to large business users with heavy use of telecommunications services.[460] This integration may help to justify the current high cost of fiber, at least as a service for large business corporations. The highly-publicized purchase of Synchronous Optical Network Interface (SONET) based fiber systems from AT&T over the next few years is perhaps a part of this strategy.[461]

The reason for NTT to take this step before fiber-to-the-home becomes more obvious when we look at the tariff of INS-Net 1500, which is supposed to reflect the current fiber and high-speed switching costs. As an option of ISDN primary rate services, INS-Net 1500 provides public 1.5 Mb/s circuit switching service by laying an optical fiber directly to a subscriber's premises. As **Table 4-3** shows, in addition to an expensive monthly basic charge, the communications charge also seems very expensive. An hour-long local communication of 1.5 Mb/s circuit switching service costs a user 4,320 yen (about $31). These concerns seem to be pushing fiber-to-the-home further into Japan's future.

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[458] Toda, p. 10.

[459] For example, see Shimoda, Hisao, "Ima Kanyusha Network ga Kawaru" ("Changing Subscriber Network"), *NTT Gijutsu Journal (NTT Technology Journal)* 1, no. 6 (September 1989): 4-8.

[460] Takashima, p. 7.

[461] See in general Miura, Hidetoshi, "New Synchronous Transmission Network Design Philosophy," and Maki, Kazumitsu, "Synchronous Digital Transmission Systems with NNI," *NTT Review* 1, no. 3 (September 1989): 66-70 and 71-76, respectively.

Table 4-3

Charges of INS-NET 1500 Services

At Initial Service Startup		Circuit Use Charge (monthly)	Communications Charges		
Contract fee	Facilities Installation Charge		Speech/Audio Mode	Digital Mode	
				64 kb/s	384 kb/s, 1.5 Mb/s
800 yen (per contracted circuit)	102,000 yen (per contracted circuit)	45,000 yen (per contracted circuit)	Same as for analog subscriber telephone	Same as for INS-Net 64 (speech/audio mode)	(see table below)

		Unit Charge	Within Same Toll Area	Neighboring Toll Area	Up to 30km	Up to 60km	Up to 100km	Up to 160km	Up to 320km	Over 320km
Communications Charge	384 kb/s	30 yen	90 sec	45 sec	45 sec	15 sec	8 sec	7 sec	6.5 sec	6 sec
	1.5 Mb/s	60 yen	50 sec	25 sec	25 sec	9 sec	7 sec	6 sec	5 sec	4.5 sec

Notes: There is also a monthly high-speed service surcharge (for 384 kb/s and 1.5 Mb/s service) of 2,000 yen per contracted circuit. Details regarding installation charges and the like are documented in the service agreement.

Source: Chiba, Masato, "Ramping up to Fullscale INS-Net Service," *NTT Review* 1, no. 2 (July 1989), p. 19.

In fact, NTT made it public that it would start a fiber-to-the-home project in the year 2000 and complete it (fiber installation to all homes throughout Japan) by 2015, with a total cost between 25 trillion yen ($180 billion) and 30 trillion yen ($210 billion).[462] It seems that fiber-to-the-home will not come to Japan in the 1990s. In light of problems currently facing NTT (briefly discussed below), the company's approach may be practical and inevitable.

4.4.1.2 Problems of NTT concerning early provision of broadband communications services to the home

As shown above, although NTT is actively preparing for future B-ISDN and provision of broadband services to the home, it seems unlikely that NTT will engage in the massive deployment of fiber optics directly to

[462] *Nikkei Computer*, December 4, 1989, p. 151.

residential homes in the 1990s. NTT currently faces some problems that may prevent it from advancing in that direction.

First, despite the early introduction of commercial narrowband ISDN, it is often pointed out that progress of digitization of NTT networks is very slow and far behind that of telephone companies in other developed countries.[463] As **Figure 4-8** shows, digitization of NTT's local switches was only 15 percent as of March 31, 1988, compared with an average 28 percent for Bell Operating Companies as of July 1988.[464] As for interexchange trunk routes, while three major interexchange carriers in the U.S. had already completed their digitization,[465] NTT planned to achieve only 65 percent by March 1990. It is also pointed out that despite the introduction of competition into the telecommunications marketplace, the slow progress of NTT digitization prevents fair competition between NTT and long distance NCCs because a number of NTT's old switches cannot send callers' IDs to NCCs' switches. Some argue further that Japanese consumers can enjoy neither the variety of new (telephone) services made possible by digitization nor the lower rates made possible by a more efficient system.[466]

NTT originally scheduled to complete digitization of its networks by 1999[467] because of its already debt-heavy financial situation.[468] But facing growing criticism, and perhaps as a counter measure against the discussion about NTT's divestiture, NTT announced that it would achieve 100 percent digitization of its trunk routes by March 1996 and of its

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[463] *Interim Report on Future Structure of Telecommunications Industry*, p. 234.

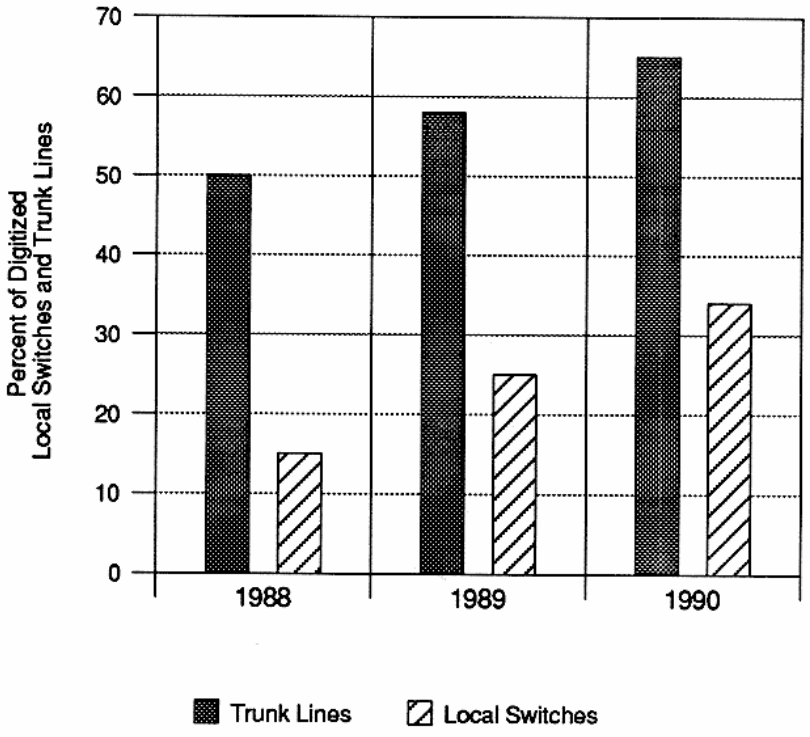
[464] *Nikkei Communications*, July 24, 1989, p. 62.

[465] Ibid., p. 62.

[466] Ibid., pp. 62-68.

[467] *Interim Report on Future Structure of Telecommunications Industry*, p. 93.

[468] As of March 1989, current liabilities of NTT amounts to about 1.7 trillion yen ($13 billion) and the long term debt is 3.7 trillion yen ($45 billion). *NTT Annual Report 1989*, p. 39.



Source: NTT data, adapted from the Telecommunications Council, Kongo no Denki Tsushin Sangyo no Arikata, Chyukan Toshin *(Interim Report on the Future Structure of the Telecommunications Industry)*, October 2, 1989, p. 93.

Figure 4-8

Digitization of NTT Network

local switches by the end of 1999 by continuing investment of some 1.7 trillion yen ($13 billion) every year.[469] While some of this investment will help establish certain bases for future B-ISDN, such as completing the digitization of trunk routes and deploying fiber optics into a certain portion of subscriber loops in some major urban business districts, switches (especially local switches) installed by this investment cannot be used for broadband services. Such switches simply have not been developed. Even if NTT is allowed to carry cable programming, it seems too risky for NTT to engage in the fiber-to-the-

[469] *Nikkei Communications*, October 1989, pp. 56-57.

home project by adding further investment to an already controversial 1.7 trillion yen in this situation. In fact, even within NTT a number of people reportedly are worried about the deterioration of the financial health of NTT possibly caused by this massive investment.[470] It is also reported that the MPT will instruct NTT to further accelerate this digitization schedule.[471]

Second, competitive pressure from NCCs is mounting rapidly. Three interexchange NCCs increased their telephone revenues almost 2.5 times during the first six months of fiscal 1989 (from April to September) as compared with the same period of the previous year, and all three companies recorded significant profits within three years after they started telephone exchange services. However, NTT's telephone revenues decreased by 0.3 percent for the first time since the company was established in 1953; operating profits went down by almost 8 percent during the same period.[472] Even though NTT could manage to increase its total profits (through cost reduction, financial operations, and other measures) and market share of the NCCs is still small (about 4.1 percent),[473] the company began to feel growing pressure from the competition in the interexchange telephone service marketplace.

At the same time, customer dissatisfaction with NTT's telecommunications services is growing high. A number of users complained that despite the introduction of competition, telephone long distance rates have not gone down sufficiently, that service quality is deteriorating, and that not many new telephone services such as bulk discounts, virtual private network, and 900 services have been introduced.[474]

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[470] Ibid., p. 57.

[471] *Nihon Keizai Shinbun*, December 30, 1989, p. 3.

[472] *Nikkei Communications*, December 18, 1989, p. 69.

[473] Ibid.

[474] *Nikkei Communications*, July 24, 1989, pp. 46-51.

Facing this competitive pressure and customer dissatisfaction, on December 1, 1989, NTT made public a large-scale rate reduction and a new service introduction package that includes, for example, a midnight rate discount for local telephone calls, a bulk discount service for its "Free Dial Service" (similar to the 800 service in the U.S.), and some new digital leased circuit services.[475] NTT's problems here are that price elasticity of demand for its telephone services has not been large enough to cover a rate reduction in the past,[476] and delay of digitization prevents NTT from introducing new services quickly. Moreover, many areas in Japan remain where telephone subscribers cannot receive itemized bills. The delay of this service in turn bars the provision of various bulk discount services such as "Reach-out America" and "WATS," which give customers a number of rate options and to which most customers' demands are directed.[477]

Keeping this situation in mind, it seems unacceptable to the customers that NTT will engage in fiber-to-the-home, at least in the early 1990s, since the broadband demand remains uncertain. Remember that even demand for cable services in Japan has not been proven.

Third, the price of NTT shares has gone down to almost one-third of its peak price; it continues to be in a slump, affected mostly by the issue of NTT's divestiture.[478] The Ministry of Finance decided not to sell NTT shares to the public in 1989 (the fourth year of the selling) due to the low share price. Since the general public comprises the majority of the shareholders, a number of their angry reactions have been widely publicized. It is urgent that NTT maintain its current

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[475] *Nikkei Communications*, December 18, 1989, p. 69-71. See also *Nikkei Communications*, October 16, 1989, pp. 56-58.

[476] *Interim Report on Future Structure of Telecommunications Industry*, p. 301. Although the report used values of elasticity in the U.S., the values of Japan usually are believed to be lower than those in the U.S.

[477] *Nikkei Communications*, December 18, 1989, pp. 72-73.

[478] See *Nihon Keizai Shinbun*, January 5, 1990, p. 20; January 6, 1990, p. 14; and January 11, 1990, p. 10.

level of profits and keep the share price from going down any further. It seems difficult for NTT to make a risky decision for the time being.

Fourth, regulatory progress concerning NTT's operations does not seem to favor the early provision of broadband services to the home by NTT. As mentioned before, NTT cannot provide even channel service for cable TV now. Detailed cost separation and allocation rules have not been established yet in Japan. The MPT and NTT have not been able to reach agreement even on a method of cost separation between local and long distance telephone services. While NTT claims that the current local rate does not cover the cost and that local services are making large deficits, the MPT contends that the local services would make a profit if NTT would change its cost separation method.[479] Pressured from the MPT and public criticism, NTT actually included a midnight discount of its local rate in the rate reduction package mentioned above.[480] Since this issue is closely related to the possible NTT divestiture, early settlement of the dispute seems unlikely. Without this basic agreement, then, there is no base for discussion on cost and price of broadband services.

Discussion on Open Network Architecture (ONA) in Japan is also in its nascent stage. Although the MPT declared that an Open Network Doctrine (OND) would be established, a long wait appears certain before clear ideas of OND will be agreed upon by various players.[481] Because NTT and its affiliates have involved themselves in certain content businesses, progress in OND also seems to have some influence over the early provision of broadband services by NTT.[482]

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[479] *Nikkei Communications*, May 1, 1989, pp. 31-32.

[480] *Nikkei Communications*, December 18, 1989, pp. 69-71. In addition to the cost separation issue, the rate reduction of local services is generally not in NTT's favor because it automatically lowers rates of NCCs due to a current arrangement between NTT and NCCs. See Shinoda, pp. 10-15.

[481] See for example, *Nikkei Communications*, June 12, 1989, pp. 39-41 and November 6, 1989, pp. 45-46.

[482] See sec. 4.1.2.1.

Fifth, the *Interim Report on Future Structure of Telecommunications Industry in Japan* (issued by the Telecommunications Council of the MPT at October 2, 1989) recommended that (narrowband) ISDN should be a communications infrastructure of the 1990s, and that the services should cover all regions in Japan since NTT is a "common treasure of all Japanese people."[483] In the face of uncertain demand, lack of applications and customer premises equipment (CPEs), and the high price of CPEs, NTT took a careful approach to expand the service areas by the policy that it would provide the services where a certain level of demand could be firmly predicted[484]; however, given the recommendations and facing an unexpected demand increase, mainly produced by the low monthly charges, NTT announced that it would make the narrowband ISDN services available to anyone throughout Japan by the end of March 1996.[485] NTT's strategy seems to have changed; in the 1990s, the narrowband basic ISDN service (2B+D) will be actively sold to the home as a two-line telephone service. Although it does not use optical fibers, this service will contribute to the preparation for future broadband services from both a technical and marketing viewpoint.

Finally, the issue of NTT's divestiture is still lingering. The interim report of the Telecommunications Council recommended to consider breaking up NTT's long distance operations from local operations to promote fair competition and further activate competition in the telecommunications marketplace.[486] Although in its final report issued in March 1990, the Telecommunications Council actually recommended that in 1995 NTT should be divided into two companies – a long distance and a

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[483] *Interim Report on Future Structure of Telecommunications Industry*, pp. 148-49, 190. The phrase "common treasure of all Japanese people" is often used to make NTT management assume various obligations in addition to statutory ones. But note this inconsistency. If NTT is a "common treasure" of the Japanese people, why was NTT privatized in the first place?

[484] See *Nikkei Communications*, April 10, 1989, pp. 62-70.

[485] *Nikkei Communications*, October 10, 1989, pp. 56-57.

[486] *Interim Report on Future Structure of Telecommunications Industry*, pp. 185-276.

local company,[487] the Japanese government decided to freeze the recommendations for five years and reconsider the issue of NTT divestiture after that period. Consequently, the issue and its related problems remain unresolved and NTT continues to face the same regulatory and management instability as it did before March 1990.[488] Until the issue is resolved and certain regulatory and management stability is achieved, massive investment in local loops for fiber-to-the-home – which will incur large cost to local services and drastically change the balance between local and long distance operations – seems unlikely.

Because of these problems, it seems inevitable that NTT will postpone its plans for fiber-to-the-home in the 1990s (see section 4.4.1.1). This delay may become fortunate for NTT, since it allows the company to build a certain basis for future broadband services, and to install fibers in the 1990s wherever justified by the cost – without a massive deployment of fibers to the home.

4.4.2 Other Telephone Companies

Tokyo Electric Power Company (TEPC) is a parent company of Tokyo Tsushin Network (TTNet), in which it has about 35 percent share. A regional Type I telecommunications carrier, TTNet currently provides local telecommunications services over its own facilities (that is, its own local loops) as well as interexchange services in Tokyo and eight prefectures of the Kanto region, all of which compete against NTT.[489] In addition, TEPC invests in two international Type I telecommunications carriers, a cellular radio company, a Type II carrier, and other telecommunications-related businesses.[490]

TEPC has also engaged in the construction of cable systems for a long time where electric power lines made TV signal reception difficult. It

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[487] *Nihon Keizai Shinbun*, March 2, 1990, p. 1.

[488] *Nihon Keizai Shinbun*, March 31, 1990, p. 3.

[489] *Information Communications Almanac 1989*, pp. 264-70.

[490] *Nikkei Communications*, February 6, 1989, p. 31.

recently has become very active in "urban type CATVs"; the company has already invested in six such businesses, with shares ranging from 4 percent to 12 percent.[491] If made in the U.S., this TEPC investment would violate the telco/cable cross-ownership ban;[492] however, it is allowed in Japan because no regulations prohibit TEPC from owning cable systems (see chapter 2).

TEPC made public the following reasons for why it owns shares in cable companies: to prevent troubles to TEPC-owned poles where cables are attached, to strengthen its relationship with the regions, and to search for ways to use fully cable systems constructed for clear reception of TV signals.[493] It is reported, however, that TEPC's real motive behind its active participation in the cable business is to give powerful support to TTNet, which would like to construct a broadband network before NTT.[494] TTNet made it public that it was heading for the construction of such a network that is based on fiber optics; when the network is completed, TTNet would be able to compete fully against NTT.[495] Thus, "telco TV" already has been in progress in Japan, and it clearly involves long-term strategy of an NCC against its dominant competitor.

Although relatively unknown, TEPC is aggressively conducting research and development in optical communications, switching, and other telecommunications technologies. The level of its technology is regarded as very high and advanced. TEPC introduced an internal broadband network by using its own technology and fiber network (total length of 5,600 kilometers), which TEPC has laid down for its main

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[491] Ibid.

[492] 47 CFR, sec. 63.54, note 1 (b).

[493] *Nikkei Communications*, May 22, 1989, pp. 70-71.

[494] Ibid.

[495] *Nikkei Communications*, February 6, 1989, p. 32.

business – electric power supply.[496] Connecting TEPC's headquarters, regional branch offices, research laboratories, and other offices, the network can be used as CATV, a 32 Mb/s broadband circuit switching network, as well as a conventional telephone and data network.[497]

A question arises about TEPC's participation in the cable business. Although its participation in the cable business is acknowledged, why are no official inquiries or discussions on this matter under way – while NTT is not even allowed to provide channel service? This matter has not been on the agenda for current discussions on NTT channel service. Although cable participation by NCCs seems possible in terms of regulations, the issue may surface as competition between NTT and NCCs increases and broadband technologies further progress in the 1990s.

Other NCCs have not yet made public their interest in cable systems.

4.5 SUMMARY

The cable industry in Japan is struggling for its survival and future development. Although the number of new entries of "urban type CATVs" is increasing, their average number of subscribers per such system is still very small (as compared with those in the U.S.) and their viability remains to be proven. Also, many existing cable systems need upgrading to accommodate the multi-channel services made possible by "space cable net"; however, the persisting public and welfare nature of these systems may become a serious obstacle for such an upgrade. Finally, an increase in the number of video outlets, particularly DBS, may prevent the growth of cable television in the 1990s.

Despite visions of future CATV depicted by policy makers, the majority of "urban type CATVs" are taking practical approaches by focusing on conventional cable service; their goal is to reach a break-even point within three to five years. Therefore, it seems unlikely

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[496] *Nikkei Communications*, January 16, 1989, pp. 62-66.

[497] Ibid.

that a number of cable operators will start providing new advanced two-way services over their systems in the 1990s.

As for telephone companies, NTT, a dominant carrier, cannot provide even channel service for cable operators at the moment. Although actively working on narrowband ISDN and B-ISDN, NTT probably will postpone plans for fiber-to-the-home in the 1990s, due to a number of problems that the company currently faces. Instead, NTT will focus on strengthening its telephone services and expanding its narrowband ISDN services, while laying down certain bases for future broadband services. NTT's involvement in information services (including content origination) may become an obstacle to, rather than an asset for, its future B-ISDN deployment.

The parent company of an NCC is actively participating in the cable business and already has some shares of several "urban type CATVs." This investment is part of the company's long-term strategy to support its affiliate telephone company in order to compete fully against NTT in the future broadband service marketplace.

Although fiber-to-the-home may not be realized in Japan in the 1990s, the regulations that have drawn a clear line between common carrier and broadcast services have begun to break down rapidly. The harmonious development policy for various video outlets, which tends to attempt to control the video distribution marketplace rather than establish fair playing fields, may face serious challenges in the face of the growing number of video outlets and rapid progress of broadband technologies in the 1990s. Although it appears that advanced broadband services will not become available to the home in Japan either by telephone companies or cable companies in the 1990s, pressure will continue to build up to instigate major changes in current regulatory frameworks and communications policies throughout the new decade.

CHAPTER FIVE

FIVE ALTERNATIVE PATTERNS OF TELCO/CABLE REGULATIONS

There is little doubt about video media becoming an ever-increasing dominant means of expressing and delivering information in our society. Following the widespread use of video cassette recorders (VCRs) in residential homes, camcorders (home video cameras) are now becoming popular in both the U.S. and Japan, owing to a rapid reduction in their size and price. It could be said that we are approaching the age when people observe: "[The] video camera is today what the pen was in the 17th century."[498]

In this situation, regardless of whether "fiber-to-the-home" or Integrated Broadband Network (IBN) will be realized in the 1990s, video transmission and delivery likely will pose not only the telco/cable issues but also a number of other important issues and questions in the 1990s to policy makers, regulators, and industry players in various contexts. This chapter provides a classification of possible regulatory approaches to the entry of telephone companies (telcos) into cable television as a summary and conclusion of the telco/cable issues that mark the first stage of this "great competitive upheaval" of the 1990s.

Table 5-1 shows five possible regulatory approaches classified by the three important factors that define the scope of telcos' entry into cable television. The table was produced by two observers of the industries.[499]

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[498] Comments of Sirbu, Marvin A. and David P. Reed, In the Matter of Telephone Company – Cable Television Cross-Ownership Rules, *Further Notice of Inquiry and Notice of Proposed Rulemaking*, CC Docket No. 87-266, released September 22, 1988, p. 1 (hereinafter, Sirbu and Reed).

[499] Ibid., p. 6. The subsequent explanations of the figure basically follow those of Sirbu and Reed, but some observations and views of the author of this paper are added when necessary and appropriate.

Table 5-1

Classification of Regulatory Approaches

	Cable Services Transport	Common Carrier Obligation (Video)	Video Programmer with Content Control
Cable Model	Yes	Limited (leased access rules)	Yes
Current Carrier Prohibitions	If requested by franchise holder	No	No
Carrier Banned from Content	Yes	Yes	No
Carrier under Structural Separations	Yes	Yes	Separate subsidiary
Carrier under ONA and Joint Cost Rules	Yes	Yes	Yes

Source: Comments of Sirbu, Marbin A. and Reed, David P., In the Matter of Telephone Company-Cable Television Cross-Ownership Rules, CC Docket No. 87-266, *Further Notice of Inquiry and Notice of Proposed Rulemaking*, released September 22, 1988, p. 6.

The first row represents current cable regulations with cable operators' control over video content and mandatory, although very limited, provision of leased access channels. As illustrated in Table 5-1, a barrier between common carrier obligations and a video programmer with content control means that cable operators do not have control over content of the leased channels. This cable model can apply in general to current cable regulations in Japan as well as in the U.S. In the U.S., Telcos' cable entry into their telephone service areas under this model might pose a serious competitive threat to incumbent cable companies and contribute to cable operators' improving their customer services. But at the same time, given the current level of technologies, it may not ensure that the telcos will construct advanced integrated broadband systems even if they are banned from simply buying out existing cable systems. Moreover, as some argue, it may end up with a monopoly of control over both content and conduit. This fear is perhaps stronger in Japan, where cable TV is still in its infancy. It seems there are some doubts about these scenarios, but if we take into

account the current situation illustrated in previous chapters,[500] regardless of whether these observations are right or wrong, this is the most unlikely regulatory approach in both the U.S. and Japan.

The current U.S. telco situation is shown in the second row, where telephone companies can provide channel service to franchised cable operators. But in Japan, common carriers, at least NTT, currently are not allowed to provide even channel service. If this model is maintained in the U.S., new advanced broadband services, if any, may not be available to the home relatively soon. Congress may pass a cable reregulation bill to lessen the growing dissatisfaction of cable subscribers with cable rates and services.[501] In Japan, in consideration of the current position that cable companies are taking, it seems unlikely that a number of cable operators will use channel service provided by NTT, even if NTT is permitted to do so. Maintaining the current regulatory models in both countries, however, may not mean that nothing will change. There may be other means by which telcos could provide advanced broadband services to the home even under these models, such as NTT's current strategy for establishment of B-ISDN,[502] although it may take a relatively long time for realization of the services.

The third row shows a similar approach to "video dial tone," which the National Telecommunications and Information Administration recommended in its report concerning the video distribution marketplace.[503] In the U.S., although this regulatory approach does not need either repeal or modification of the statutory telco/cable cross-ownership ban or the information service restriction of the Modification of Final Judgement (MFJ) imposed on Bell Operating Companies (BOCs), "Yes" entered in the cable service transport column in **Table 5-1** means

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[500] See chapter 3, sec. 3.1 and chapter 4, sec. 4.1.

[501] See *Broadcasting*, November 20, 1989, pp. 27-30.

[502] See chapter 4, sec. 4.4.1.

[503] *NTIA Report*, pp. 32-60.

that this regulatory scheme requires abolition of the franchise requirement of cable service or other video service providers. In the case of Japan, "Yes" means abolition of the "software-hardware integration principle" of broadcast services. Or, "Yes" requires at least amendments to the definition of "cable service" in both countries.[504] As shown in chapters 1 and 2,[505] without these regulatory changes, video service providers cannot use telcos' video transport facilities – without obtaining franchise in the U.S. and perhaps not at all in Japan – even if the facilities are offered indiscriminately to anyone at just and reasonable rates.

Assuming that "video gateway" is a regulatory possibility by analogy with "videotext gateway,"[506] and given common carrier obligations, it probably will be the most feasible and acceptable way to most players as the model for telcos' participation in the video distribution and other broadband communications service marketplaces in the U.S. In Japan, it may take some time to abolish the "software-hardware integration principle" officially, but it seems that the principle will become unsustainable rapidly as technologies further progress.[507] Japan's NTT seems to be pursuing this direction by establishing some foundations for future broadband services in the 1990s.

However, U.S. telcos argue that this approach has a problem: Can telcos really start constructing advanced broadband facilities in the early 1990s without assurance of the availability of some video programming and of revenues as video programmers? Facing large costs and investments necessary for "fiber-to-the-home," telcos may lose their incentives if they are strictly prohibited from content business. In

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[504] See the Cable Act of 1984, secs. 602 (5), 621 (b), and the CATV Law (Japan), article 2 (1).

[505] See chapter 1, sec. 1.3 and chapter 2, sec. 2.3.

[506] See chapter 3, sec. 3.3.1.1.

[507] See chapter 4, sec. 4.2.

the U.S., abolition of the cable franchise requirement itself may not be so easy in the face of strong opposition by franchising authorities.

By eliminating the telco/cable cross-ownership ban as well as the restriction that the MFJ imposed on BOCs' information service provision, the fourth approach allows telcos to participate in the programming side of cable business – but only through fully-separated subsidiaries. Although this approach offers somewhat stronger safeguards (as compared to the fifth approach, explained below) against telcos' anticompetitive behavior, some fears are still voiced that telcos possibly could achieve a superior position over competing video programmers. For example, information concerning subscribers (their viewing habits and patterns) is very important from the video programmers' marketing viewpoint; it allows them efficient advertisement arrangements, the most effective scheduling of their video programs, and other marketing measures to promote their services. But telcos, as transporters of video programming as well as video programmers, would have a clear advantage to obtain and use such information over competing video programmers.[508] It would be very difficult to detect telcos' unfair use of such information, even under a regime of strictest structural separation.

Theoretically, NTT can take this approach even under current regulations since Japan does not have a ban like the U.S. telco/cable cross-ownership ban. Also, NTT in general has freedom of investment, and its affiliates are not subject to most restrictions specifically imposed on NTT.[509] But because NTT and its affiliates are currently participating in certain content businesses and there are no explicit rules concerning the relationship between NTT and its affiliates, NTT seems to have difficulty following this direction. As shown in chapter 4,[510] this situation fuels concerns of broadcasters, the press, regulators, and other players about NTT's participation in the video

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[508] Sirbu and Reed, p. 7.

[509] See chapter 2, secs. 2.2. and 2.3.

[510] See chapter 4, secs. 4.1. and 4.4.

programming business – in spite of NTT's announcement that it will not enter into content business in the video distribution marketplace. Given these concerns and worries as well as the MPT's policy to establish cable systems as "second subscriber loops," it is unlikely that the MPT will allow NTT subsidiaries to provide cable service in the foreseeable future, even if such an application actually is filed.

The fifth approach allows telcos both transport of video programming and direct entry into content business under the regime of Open Network Architecture (ONA) and Joint Cost Separation and Allocation rules. The success of this approach solely depends upon the yet unproven effectiveness of ONA and the other accompanying rules, as well as the Joint Cost rules against danger of cross-subsidization and discrimination by telcos. In Japan, these rules have yet to be developed. Possible changes in current rate of return regulation applied to local exchange carriers (LECs) in the U.S. and NTT in Japan[511] are also closely related to effectiveness of the safeguards against telcos' cross-subsidization. As we have seen in chapter 3,[512] numerous voices are questioning the effectiveness of ONA and the Joint Cost rules as safeguards even in the U.S. Moreover, it is uncertain whether the participation in content business can really help telephone companies to move towards provision of broadband services to the home; in such a market, different types of expertise and corporate cultures are required for success, the market condition is already very competitive, and telcos probably will have to make many compromises with various players.[513]

As perhaps it is already clear, the classification is simple but it poses difficult choices to the players of this game. The issues become even more complicated if we consider what changes in the current regulations and policies applied to cable operators would be necessary if telcos' entry into the video distribution marketplace were promoted

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[511] Rates of NTT telecommunications services are also regulated by rate of return regulation similar to that in the U.S.

[512] See chapter 3, sec. 3.1.

[513] See chapter 3, sec. 3.3.3.

by one of these approaches. For example, in the U.S., what regulatory changes are required to allow and promote cable operators to participate fully in the provision of two-way data and voice services over their cable facilities? How can such changes be achieved when many of the related regulations are under the jurisdiction of states? In Japan, given the cable industry's nascent status, how can a level playing field between NTT and cable operators be established?

Finally, it may be necessary to stress again that the current telco/cable controversy is only the first of many battles in the video distribution marketplace expected throughout the 1990s. Fighting these battles will be not only conventional players in telecommunications industries such as telcos, cable operators, broadcasters, and regulators, but also a number of new players such as Direct Broadcast Satellite (DBS) service providers, wireless cable operators, and even owners of video cassette rental shops.

Currently, it is difficult to predict winners and losers and which regulatory approach actually will be taken to achieve an age of broadband communications services to the home.[514] But one thing seems clear: fundamental and underlying issues for the battles of the 1990s seem the same as those in the past. As we have seen in the telco/cable issues, in the battles of the 1990s, a number of long-standing fundamental issues in communications industries – equal access to facilities and information, cross-subsidization between regulated and unregulated businesses, universal service, possibility of competition in local loops, and regulations over rate of services – some of which we thought had already been solved, seem to reappear with a different outlook, with a number of new players, and in a new context. Thus, the 1990s' "great competitive upheaval" may follow the same old plot of the same old story of the communications industries.

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[514] At least one winner in the 1990s seems clear. In the face of a growing number of video outlets, companies involved in the production side of video programs, such as producers and studios, will come out ahead if they distance themselves from the battles in the distribution marketplace.

ACRONYMS

ANS	Ancillary Network Service
ATC	American Television and Communications, Inc.
ATM	Asynchronous Transfer Mode
B-ISDN	Broadband Integrated Services Digital Network
BCN	Bunkyo Cable Network, Inc.
BOC	Bell Operating Company
BS	Broadcast Satellite
BSA	Basic Service Arrangement
BSE	Basic Service Element
CATV	Community Antenna Television
CATV Law	Cable Television Broadcast Law
CEI	comparably efficient interconnection
CI II	Computer Inquiry II
CI III	Computer Inquiry III
CNS	Complementary Network Service
CPE	customer's premises equipment
CPI	Consumer Price Index
DBS	Direct Broadcast Satellite
ESP	enhanced service provider
FCC	Federal Communications Commission
HBO	Home Box Office
HDTV	High Definition Television
IBN	Integrated Broadband Network
INTV	Association of Independent Television Stations
IP	information provider
ISDN	Integrated Services Digital Network
IXC	interexchange carrier
JSB	Japan Satellite Broadcast Corp.
KDD	Kokusai Denshin Denwa Kabushiki Kaisha
KDD Law	Kokusai Denshin Denwa Kabushiki Kaisha Law
LCV	Lake City Cablevision, Inc.
LEC	local exchange carrier
LPTV	Low-power Television Service
MAN	Metropolitan Area Network
MDS	Multipoint Distribution System
MFJ	Modification of Final Judgment
MMDS	Multichannel Multipoint Distribution System
MPT	Ministry of Post and Telecommunications
MSO	multiple system operator

NAB	National Association of Broadcasters
NARUC	National Association of Regulatory Utility Commissioners
NCC	New Common Carrier
NCTA	National Cable Television Association
NCTE	network channel terminating equipment
NHK	Nihon Hoso Kyokai
NTIA	National Telecommunications and Information Administration
NTT	Nippon Telegraph and Telephone Corp.
NTT Law	Nippon Telegraph and Telephone Corp. Law
NTTPC	Nippon Telegraph and Telephone Public Corp.
ONA	Open Network Architecture
OND	Open Network Doctrine
ONI	optical network interface
PCM	pulse code modulation
POTS	plain old telephone service
PSTN	Public Switched Telephone Network
PT Law	Public Telecommunications Law
RBOC	Regional Bell Operating Company
ROI	return on investment
ROR	rate base/rate of return
SMATV	Satellite Master Antenna Television
SONET	Synchronous Optical Network Interface
TB Law	Telecommunications Business Law
TCI	Tele-Communications, Inc.
TEPC	Tokyo Electric Power Co.
TTNet	Tokyo Tsushi Network, Inc.
TVHH	television household
TVRO	Television Receive Only Earth Station
USTA	United States Telephone Association
UHF	ultra high frequency
VAN	value-added network service provider
VCR	video cassette recorder
VHF	very high frequency