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CHALLENGING INTELSAT'S MONOPOLY

(CASE STUDY OF THE U.S. SEPARATE SATELLITE SYSTEMS IN 1983-86)

By

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ABSTRACT

CHALLENGING INTELSAT'S MONOPOLY
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International Satellite Organization (Intelsat) has played a vital role in international satellite communications. However, since the early '80s, Intelsat has been challenged by U.S. satellite systems which plan to provide international service. This challenge not only threatens to cut down Intelsat's profits but also raises serious policy problems. Through literature study, this thesis scrutinizes developments in 1983-1986 when the U.S. separate systems first emerged and caused heated debates in the United States and wide worries overseas. The U.S. government's position on the issue and Intelsat's response to the competition are analyzed in detail. The author claims that the U.S. policy of pleasing Intelsat while endorsing its competitors is a result of its economic and foreign relationship concerns. The author also argues that if Intelsat suffers from competition, then developing rather than developed countries would be the real victims.

To

Mom, Baohua and Lili

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INTRODUCTION

A FEW WORDS ABOUT SATELLITE AND INTELSAT

Before the satellite communications era, lack of reliable oceanic communications was a major obstacle to international airline transportation, banking and trade. Most countries depended on shortwave for international communications. But shortwave is subject to frequent interruptions by static. At times of intense sunspot activities, shortwave communications are impossible. Although there were a few transoceanic cables for telephone service, they were available only in the North Atlantic and Pacific Ocean regions and the largest of them only provided 36 telephone circuits. All this, however, began to change with the birth of artificial communications satellite.

The concept of communications satellite may be traced to October 1945 when a young British radio expert Arthur Clarke proposed in his article "Extraterrestrial Relays" that rocketry and microwave engineering be combined to position man-made satellites in stationary orbits around the earth to serve as relays for transmission from the earth. (1)

The first artificial satellite, Sputnik, was

successfully launched by the Soviet Union in 1957. But Sputnik was not what Clarke proposed. Clarke's communications satellite must be positioned 22,300 miles above the equator. The latitude enables a satellite to fly at an orbital rate of speed so that it seems stationary above the earth. This way, the satellite could beam back signals to the same areas of the terrestrial surface.

The world's first communications satellite, Score, was launched by the United States in 1958. In the early 1960s, the United States launched a series of experimental Syncom communications satellites. The first one, Syncom-I, was launched on February 14, 1963. On July 27 of the same year, Syncom-II with a capacity of 50 telephone lines or one television channel, was launched to orbit above the Atlantic Ocean. On August 23, 1963, U.S. President Kennedy talked with Nigerian Prime Minister Abu Bakr Blawy through Syncom-II. This marked the beginning of the satellite communications era. On August 19, 1964, Syncom-III was launched over the Pacific Ocean. Via this satellite, the Olympic Games was first broadcast live for the world.

The potential of communications satellites had been recognized before their commercial use was materialized. As early as 1959, the World Administrative Radio Conference (WARC) agreed that an extraordinary administrative radio conference would be held in 1963 to allocate frequencies for satellite communications. In 1961, the 16th Session of the United Nations adopted Resolution 1721 which includes

the following message: "... communications by means of satellite should be available to the nations of the world as soon as practical on a global and non-discriminatory basis..." In 1962, the United States Congress passed a Communications Satellite Act, which establishes a U.S. legislative mandate to set up a global commercial communications satellite system. Subsequently, countries in North America and West Europe plus Japan and Australia --- 17 countries in all, which represented more than 85% of the world's overseas international telecommunications services at the time --- held a series of first bilateral and then multilateral negotiations on creating what was called an International Telecommunications Satellite Consortium.

On August 20, 1964, an agreement on the establishment of Intelsat was signed into force by 14 of the 17 countries. Intelsat was defined to be a nonprofit cooperative of governments or representatives of governments. The member states invest in the "space segment" --- including satellites and associated ground control facilities --- in approximate proportion to their use of the system. The "earth segment," i.e., earth stations, are owned and operated by signatories or other entities.

The 1964 agreement, however, was an interim one. Negotiations on the definitive arrangements for Intelsat lasted about two years and were completed in 1971. Then

Intelsat changed its full name changed to International Telecommunications Satellite Organization. By the time the definitive agreement was signed, Intelsat had become a fully fledged international communications system. Each member nation of Intelsat assigns a telecommunications body as its signatory to the Intelsat Agreement and its representative to the organization. The United States assigns the Communications Satellite Corporation (Comsat) as its representive and signatory. (2) The ownership of Intelsat is shared by all the members. Each year, each nation's share of the ownership is adjusted in accordance to its amount of usage in the previous year. The United States has always been the largest shareholder. But its share has declined from about 60% in the 1960s to about 25% in the 1980s.

Intelsat's decision-making bodies are structured on three levels. The highest is the Assembly of Parties, which makes decisions concerning the basic policies of the organization. The bottom level is the executive, which takes care of Intelsat on a day-to-day basis and is headed by a director general. On the middle level is the Board of Governors, which monitors the executive and make recommendations to the assembly. A member nation's voting power at the Board of Governors is weighted according to its ownership share. Since the United States has the largest ownership share, it has the largest voting power in the board. But in the assembly, every member nation has an

equal voting power because each nation has only one vote.

Intelsat has been holding a monopolist position in the international telecommunications market. But in 1983 when some U.S. private ventures filed applications with the Federal Communications Commission for authority to construct and operate separate international satellite systems, for the first time Intelsat's monopoly was threatened. This led to heated debates and a series of actions in both the United States and Intelsat. Even some other countries were involved. The controversy maintained its momentum until some time in 1986 when Intelsat seemingly began to accept the emerging competition as a matter of life.

Those U.S. private ventures were not the first to attempt to establish separate systems. Before them, three regional separate systems were established. They are Eutelsat for Europe, Arabsat for the Mid-East, and Palapa for Indonesia and its neighboring countries. However, those separate systems did not cause much concern to Intelsat because they are on communication traffic routes where Intelsat's business is really small. In contrast, the U.S. separate systems planned to offer services on transmission routes across the northern Atlantic Ocean, where Intelsat has two thirds of its business (See Appendix I). Now Intelsat's monopoly over international satellite communication was being challenged.

Centering around the topic of challenge to Intelsat's

monopoly by the U.S. separate satellite systems, this thesis retraces the major occurrences in 1983-1986, examines those who played significant roles in those events, and makes some speculations on the cause of such challenge and its possible consequences.

The methods employed in this thesis are descriptive and historical. Events are described in as true as possible proportions and in their natural order, free from presumptions or hypotheses. Then, speculations are made based on the logic of those historical developments.

NOTES

(1) Clarke, Arthur C. "Extraterrestrial Relays," October 1945. Reprinted in 1965, Harper and Row, New York.

(2) Communication Satellite Corporation (Comsat) is a private corporation authorized by the U.S. Congress in 1962 to develop commercial satellite systems. It was officially incorporated in 1963, with one half of its stock sold to the public and the other half to private communication companies. Comsat is a founding member of Intelsat.

CHAPTER ONE

A STORY OF SUCCESS

Intelsat's history is a history of tremendous growth, constant expansion and successful development.

General Accomplishments

Intelsat launched its first satellite --- called Early Bird or Intelsat-I --- in April 1965. Early Bird was last used in June, 1969, for covering the Apollo moon flight. Since 1965, the Intelsat satellites have evolved through six generations. Meanwhile, the Intelsat traffic has grown from 75 full-time telephone circuits at the end of 1965 to about 35,000 circuits in 1984 ---- an increase of more than 450 times. The Early Bird could only connect two points on earth at one time, because it did not have multi-destinational access capacities. By comparison, in 1984, the Intelsat network connected more than 170 countries and territories.(1)

Intelsat's earth station designs have also grown from a single type of large and sophisticated earth station design to dozens of standards, which range from the large 30-meter standard "A" earth station to the 3.3-meter standard E-1 terminals and the 4.5-meter standard D-1 terminals. Intelsat plans to start a new service for electronic data broadcast which will use 0.65-meter terminals.

By 1985, in addition to 25 domestic systems, Intelsat had 15 satellites over the Atlantic, Pacific and Indian Oceans serving some 1,200 domestic and international earth stations, 1,500 international pathways, and 107 different geographic locations. (3) In late 1986, the Intelsat system provided 1,750 international pathways and serviced about 160 countries and territories. (4) Now, except for a number of separate regional and transborder satellite systems and the Soviet Intersputnik system which serves the Soviet Bloc countries, Intelsat holds a monopoly in providing international satellite transmission services, including transmission of telephone calls and television programming.

The most significant accomplishment of Intelsat is perhaps the continuous decrease of charges for its services. Thanks to the increasing traffic volume and the advanced technology employed, the Intelsat service rates have plummeted while the system's reliability has been consistently maintained at 99.9%. For example, when adjusted for inflation, the cost of Intelsat's international telephone circuit in 1984 decreased by a factor of almost 20 times, when compared to 1965. (5)

Membership Expansion

When Intelsat was established in 1964, it had 19 members. In 1986, its membership had expanded to 112.

Table 1. Intelsat Growth in Membership

Year	New Members	Total Membership
1964	19	19
1965	30	49
1966	6	55
1967	5	60
1968	3	63
1969	7	70
1970	7	77
1971	5	82
1972	1	83
1973	1	84
1974	4	88
1975	3	91
1976	3	94
1977	1	95
1978	6	101
1979	1	102
1980	3	105
1981	1	106
1982	1	107
1983	1	108
1984	1	109

Source: Telecommunication Journal, Jan. 1985, p.24.

Initially, Intelsat's membership consisted of developed countries. However, it experienced tremendous growth in developing countries during the early 1970s. Now, two thirds of Intelsat members are developing countries. They represent about one third of the total Intelsat investment. The top 20 investors include eight developing countries (Saudi Arabia, Brazil, Mexico, United Arab Emirates, Venezuela, Nigeria, Singapore, Argentina). Given that the international relationship is full of conflicts and tensions in the comtemporary world, it is

really rare that these developed countries and developing countries work peacefully side by side and cooperate so well in an international organization. In this sense, Intelsat is a good example showing that cooperation between the developed and developing countries is not only possible but also beneficial to both sides.

Table 2. 24 Top Investing Members of Intelsat (July 1984)

Investor	Share (%)	Rank
United States	23.08	1
United Kingdom	12.92	2
France	5.64	3
Japan	3.33	4
West Germany	3.30	5
Australia	3.24	6
Saudi Arabia	3.14	7
Brazil	3.04	8
Canada	2.98	9
Italy	2.15	10
Spain	1.99	11
Mexico	1.82	12
United Arab Emirates	1.74	13
Venezuela	1.42	14
Nigeria	1.33	15
Singapore	1.30	16
Switzerland	1.25	17
South Africa	1.17	18
Argentina	1.15	19
Netherlands	1.06	20

Source: Telecommunication Journal, Jan. 1985, p.25.

Technological Advances (6)

The impressive growth of Intelsat is, to a great extent, a result of its technological advances. In two and a half decades, Intelsat's satellites have become

increasingly sophisticated and powerful. For example, Intelsat-VI, launched in 1986, has operational communication capacities about 200 times that of Early Bird. When used exclusively for television, Intelsat-VI is able to transmit 200 video channels at the same time. When used exclusively for telephone, it may simultaneously transmit more than 100,000 channels with the use of digital voice processing and digital speech interpolation techniques. When used exclusively for data transmission, it can transmit 3.5 billion bits per second. That means the whole Encyclopedia Britannica could be transmitted in three seconds. (7)

Table 3. Brief Introduction to Intelsat Satellites

Satellite (Intelsat)	First Launch	Capacity (Voice Channels)	Bandwidth (MHz)	Design Life(Years)
I	1965	480	50	1.5
II	1966	480	130	3
III	1968	2,400	300	5
IV	1971	8,000	500	7
IV A	1975	12,000	800	7
V	1980	25,000	2,137	7
V A	1984	30,000	2,480	7
V B	1985	30,000	2,400	7
VI	1986/87	80,000	3,520	10

Sources: Telecommunication Journal, Jan. 1985, p.26.

Some of Intelsat' successes are milestones in the evolution of satellite technology.

(1) Early Bird: Geosynchronous deployment.

In 1965, despite the successful experiment with the Suncom-2 communications satellite, the use of an operational geosynchronous satellite was still a big question. There were concerns with the effect of time delay associated with the more than 70,000 kilometers of travel by signals from the earth to the satellite and from the satellite back to the earth. In addition, some people suggested that it would be more cost-effective to launch several small, low-cost, active mon-geosynchronous communications satellites all at one time into lower earth orbit. But the lower orbit deployment was objected because of fear of the periodic outages associated with such deployment. The lower orbit deployment plan was turned down also for another reason. Because earth stations for a lower-orbit satellite have to constantly track the satellite above, they are much more complicated than geosynchronous earth stations, whose antennas are stationary. The success of Early Bird demonstrated the feasibility of geosynchronous satellites for operational purpose.

(2) Intelsat-III: Stabilized satellite antennas.

Intelsat-III made history in 1968 when it proved the operational feasibility of satellite antennas which can be stabilized to point precisely to areas of the earth below. Since Intelsat-III, Intelsat has launched several operational and experimental satellites with various antennas all pointing constantly and precisely to key areas on the earth below.

(3) Satellite frequency re-use.

By the early or mid 1970s, more and more satellites were deployed into geosynchronous space orbit. It became increasingly important to make more effective use of geosynchronous orbit space and place satellites at tighter spacings. Intelsat has proved that the same frequency in the geosynchronous orbit could be used several times: the two-fold re-use in Intelsat-IV A, the four-fold re-use in Intelsat-V, and the six-fold re-use of the C-band (4 and 6 GHz) frequencies in Intelsat-IV. (8)

(4) Multipurpose Satellites.

The Intelsat-V and Intelsat-V A series of satellites prove the feasibility of cost-effective commercial operation of multipurpose satellites. These Intelsat satellites are capable of operating in three frequency bands of C-band (4-6 GHz) and Ku-band (11-14 GHz). They also provide different services, such as maritime services, fixed-satellite services, and high-powered business communications services to customer-premise earth terminals.

Intelsat Special Services

By 1985, Intelsat offered more than 100 different telecommunication services, including: telephony; voice plus data; low, medium, and high-speed data; telex; telegraph; facsimile; digital voice; maritime mobile services; audioconferencing; freeze-frame

videoconferencing; domestic leases; various qualities of radio broadcasting (including stereo); various qualities of video or television under a wide range of options (including more than 50 different service offerings); low-powered direct broadcast services; electronic printing and document distribution; submarine cable restoration; thin-route telephony; and data broadcasting to microterminals.

In addition, Intelsat offered those different services at different rates in response to customers' needs and budgetary restraints. Customers could buy the Intelsat services on full-time, part-time and occasional-use basis. They could pay peak and off-peak rates for occasional requirements. They could also receive fully guaranteed, partially protected, or preemptible services at different rates.

The basic category of Intelsat's services has been transmission of public-switched voice and data messages between countries, which, plus private leased lines for international service, brought in 75.5% of Intelsalt's total revenue in 1984. (9) In addition, Intelsat also provides Domestic Service primarily to meet the needs of developing countries; Vista service to meet the needs of countries and regions on thin-routes; and Intelsat Business Service primarily to meet the needs of industrialized countries.

Domestic Service Intelsat's domestic service leases its spare transponders for domestic communications. This service is particularly valuable to developing countries, which need satellite communications but cannot afford to have their own satellites for technological and/or financial reasons. The domestic service started in 1975. The length of lease was five years and the rate was $1 million per year. By 1979, 16 countries had leased Intelsat transponders for domestic use. (10)

In 1979, Intelsat decided to offer short-term lease of transponders for domestic communications. The length was three months and could be extended on a month-to-month base up to one year. For a global beam transponder, the rate was $450,000 for the first three months was $450,000 and $120,000 a month thereafter. The rate would be reduced proportionally for half- or quarter-transponder leases. This short-term lease is particularly good for television distribution of seasonal sporting events. But it is also welcomed by those who require short-term domestic satellite transmission of telephone, telegraph, telex, data or facsimile. (11)

Most Intelsat domestic leases are preemptible, i.e., when an international service needs additional capacity, the leased capacity for domestic service is taken back to support the international service. However, a customer may receive guaranteed availability of satellite capacity for domestic services at a price 100% higher than normal. (12)

According to a study by Future Systems Inc., "The Use of INTELSAT Transponders for Domestic Satellite Communications," about 1,000 Intelsat transponders or equivalent satellite capacities will be leased for domestic communications in the next 25 years (from 1978). (13)

Vista Service In December 1983, in order to improve communications for isolated, less developed areas, the Intelsat Board of Governors issued two new standards for earth stations for low-volume domestic or international traffic to guarantee that access by such terminals to Intelsat's spacecraft would readily available. The new standards, called Vista service, decreased the cost of Intelsat access and made it possible to transmit voice, low-speed data, text and facsimile to locations in the Pacific Basin, Africa, South America, Asia and Greenland which had no telecommunications capability.

The new standards are Standard D1 and Standard D2. Standard D1 requires 4.5-5.5 meter antennas and simpler earth station performance than other Intelsat standards. Such earth station initially costs $55,000-60,000 and decrease to about $30,000 when orders reach 100 in number. Standard D2 is the same as Intelsat's existing Standard B, with 11-meter antenna. The Standard D2 earth station is used as a Vista hub station for a network of smaller terminals.

The Vista transmission service is in a single channel

one each carrier with enhanced frequency modulation, but eventually digital signal transmission, modulation and processing techniques is used.

The Vista service is offered through the signatories to the Intelsat agreement. The service is be preempted unless a customer requests preemptible service at a 50% discount. (14)

Intelsat Business Service Intelsat Business Service (IBS) was introduced in Jan. 1983. It is fully digital and can operate with small earth stations that may be located near or on customer premises. The service was introduced to meet the market demand in the developed countries, where business firms want to bypass the local-switching networks to acquire faster and cheaper communications.

IBS has capacities ranging from 64-256 kilobits/second to 2 megabits/second. The 64-256 kilobits/second capacity could be used for digital voice, facsimile and low/medium-speed data transmission. The 2 megabits/second capacity is suitable for full color motion-video teleconferencing.

The IBS services include international videoconferencing; audio conferencing; digitally compressed voice service; and data transmission. A prominent feature of IBS is that it provides customer-premise services, that is, messages are directly transmitted from satellite to an antenna located on the customer's premises.

To accommodate the IBS, the Intelsat decided in late 1983

to modify its 13th through 15th Intelsat-V satellites for on-board circuit switching among all transponders and shaping of beams to cover North America, Europe, parts of the Mid-East and Africa. The modifications would allow for customer location earth stations, global interconnection and in-orbit circuit switching between C-band and Ku-band transponders.

Meanwhile, Intelsat also issued a series of earth station standards to accommodate the needs and resources of potential business customers. Intelsat's common earth station standards are: Standard A with 30-meter C-band antenna , Standard B with 11-meter C-band antenna, and Standard C with 14-meter Ku-band antenna. These three standards are in common use for country gateway earth stations. The new standards require much smaller antennas and therefore less cost.

The new Ku-band standards for customer premise earth stations include:

1. Standard E1 with a 3.5-meter antenna and nominal cost of $130,000;
2. Standard E2 with a 5.5-meter antenna and nominal cost of $190,000;
3. Standard E3 with an 8-meter antenna and nominal cost of $250,000.

The new C-band standards for customer premise earth stations include:

1. Standard F1 with a 5-meter antenna and nominal cost of $120,000;
2. Standard F2 with a 7-meter antenna and nominal cost of

$135,000;

3. Standard F3 with a 9-meter antenna and nominal cost of $300,000. (15)

The IBS services are offered in three arrangements: user gateway, urban gateway, and country gateway. While Standards A, B, C with large antennas are available in IBS, a user could, under the user arrangement, receive Ku-band service with antennas as small as 3.5 meters wide or C-band service with antennas as small as 5 meters wide.

When Intelsat initiated its IBS, it expected that the worldwide IBS demand would be 43.5 megabits/seconds in 1984-1985, and grow to at least 275 megabits by 1990. (16)

NOTES

(1) Telecommunication Journal, Jan. 1985, p.25.

(2) Ibid, p.31.

(3) Ibid, p.29.

(4) Johnson, Leland L., Issues in International Telecommunications. Santa Monica, Calif.: The Rand Corporation, 1987, P.1)

(5) Telecommunication Journal, Jan. 1985, pp.25-27.

(6) For the basic information about satellite communication technology, see James Martin's Communication Satellite Systems (1978) and Future Development in Telecommunications (1977), Prentice Hall, Englewood Cliffs, N.J.

(7) Telecommunication Journal, Jan. 1985, p.25.

(8) C-band is a frequency band commonly used for satellite communication. Anothter frequency band is Ku-band. The uplink frequency range of C-band is 5.9-6.4 GHz while the downlink 3.7-4.2 GHz. The uplink frequency range of Ku-band is 14-14.5 GHz and the downlink 11.7-12.2 GHz.

(9) Telecommunication Journal, Jan. 1985, p.23.

(10) Telecommunication Journal, Dec. 1979, p.752.

(11) Ibid.

(12) Aviation Week & Space Technology, Jan. 16, 1984, p.203

(13) Telecommunications Policy, Aug. 1978, p.448.

(14) Aviation Week & Space Technology, Jan. 16, 1984, p.203

(15) Ibid, Oct. 10, 1983, p.80.

(16) Ibid, p.81.

CHAPTER TWO

CHALLENGES TO INTELSAT'S MONOPOLY

In addition to technological advances, another major contributing factor to Intelsat's success is its monopoly in international satellite communications. This monopoly has enabled Intelsat to operate profitably by taking the full advantage of scale of economy. However, beginning in 1983, Intelsat was confronted with competition originated from the same country which masterminded its founding. In the United States, several private ventures wanted to share Intelsat's market by proposing to operate separate international satellite transmission systems. This seriously challenged Intelsat's monopoly.

Orion

The first challenge came on March 11, 1983, when Orion Satellite Corporation filed an application with the FCC for authority to construct, launch and operate a private international satellite system linking North America and Europe. Orion was owned by a group of cable television and earth station manufacturing executives along with the Centennial Fund, Ltd., a venture capital company in Denver, Colorado.

The new system would consist of two in-orbit satellites and one ground spare. The in-orbit satellites would be stationed in the mid-Atlantic region of the

geostationary orbit at 37.5 degrees and 50 degrees west longitude. Each of the two satellites would carry 22 transponders operating in the Ku-band and direct 36 MHz usable bandwidth spot beams to the eastern part of North America and the western part of Europe. Orion said: "With strengthened transmit and receive facilities, its is expected that communications may be possible as far east as Egypt and as far west as Houston, Tex." (1)

The projected cost of the Orion system was $215 million. The minimum life of the satellite was 7.5 years. Orion planned to use a commercially available satellite bus capable of launch on the McDonnell Douglas Delta vehicle. Launch dates were booked on the shuttle for December, 1986, and March, 1987.

Citing Article 1 of the Intelsat Agreement, which defines pubic telecommunications service as service available for use by the public, Orion said in its application: "Because the Orion system will not be used to provide any service, the system appears to be beyond the definitional framework of the Intelsat Agreement. Orion's application will, at most, be subject only to the technical coordination requirements of Article 14 of the Intelsat Agreement." (2)

Orion's system would not offer services to the public. Its transponder capacity would be either sold outright or leased over the life of the satellite to entities in the United States and Europe who would use such capacity to

meet their own telecommunications needs.

In its filing, Orion noted that FCC had recognized that satellite facilities available under long-term lease and that satellite ownership arrangements could include "private ownership and use" as well as "a division in the ownership of various system components."

Citing the Domestic Fixed-Satellite Transponder Sales decision, Orion argued that the FCC had found that transponder sales activity in the domestic satellite market "present a positive market development that will enhance the provision of satellite services to the public." Here transponder sales were seen to allow a satellite operator and a transponder purchaser to make tailored and flexible arrangements not possible under the more structured regimen of a tariffed service offering. Also, they enable users to make long term plans, permitting firm assurance as to supply as well as price, and permit the satellite operator to design a system to meet particular user needs.

Orion noted that although the foregoing benefits were presently available to domestic communications users, they were not available to international users. International users, Orion asserted, had the same (if not a greater) interest as domestic users in such features as design flexibility and long term price and supply assurance, but they were forced into the mold of traditional tariffed service offerings provided by the international carriers.

Orion believed the growth of international, especially

transatlantic, communications traffic, both past and projected, argued strongly in favor of an approach that will complement the tariffed offerings of the carriers by permitting users to own and operate their own transponder facilities. Orion claimed that the international carriers, with overriding obligations to provide public services, are not in an optimum position to provide the tailored capacity and operational flexibility which are the hallmark of private facilities and the prerequisite for development in a wide variety of telecommunications and telecommunications-dependent services. Private international facilities, Orion argued, provide a vital complement to the existing system of facilities which, appropriately and inevitably, are geared to public offerings.

Orion claimed to have contacted major business users on both sides the Atlantic, and received clear expressions of interest in its proposal. Potential purchasers of Orion's transponders would use that capacity, in conjunction with purchaser-controlled and -operated earth station uplinks and downlinks, to support their own unique services and operations, particularly video and high volume data traffic.

Citing the transborder satellite video services decision, Orion claimed the FCC found that nothing in the Communications Act of 1962 precluded the authorization of the use of domestic satellite facilities for transborder

international services. (3)

ISI

In August, 1983, International Satellite, Inc. filed an application with the FCC for a separate satellite to be located over the Atlantic Ocean. ISI proposed to sell at least half of its capacity and offer 15-30% as a tariff service similar to those of Intelsat common carrier customers. ISI proposed to launch two Ku-band satellites into geosynchronous orbit, one at 56 degree west longitude, and the other at 58 degree west longitude. A third satellite would be a ground spare. Each satellite would have two antenna beams, one a continental U.S. beam and the other covering Western Europe. The continental U.S. beam could reach as far west as Los Angeles while at the same time the Western European beam could reach as far east as the Adriatic coast of Italy. The space segment of the ISI system would cost an estimated $230 million. The satellites were expected to be used for 10 years. The earth stations, according to the ISI application, would be small-aperture customer-premise facilities.

ISI said in its filing with the FCC that it would primarily distribute video and audio programs to and from Europe and it expected that more than half of the system capacity would be sold right away. (4)

ISI claimed in its application: "International Satellite intends to develop a market which Intelsat has

not in the past served and cannot serve using its existing spacecraft or those under construction."

The ISI application acknowledged a need for economic coordination but sought to show that ISI's separate system would not harm Intelsat economically. ISI predicted that it would potentially divert 3.18% of Intelsat's total traffic. The largest contribution to the diversion---i.e., 1.55% --- would come from private-line service by dominant carriers. Private business network diversion would be 0.28%, and international television links 0.18%. (5)

The ISI's application said: "Any signatory contemplating a coordination under Article 14 need not consider harm to Intelsat based upon markets not served or services not provided by Intelsat or on facility or other plans that Intelsat reached maturity as an extremely strong and successful institution which no longer needs to be protected." The application calls Intelsat's plans to provide an international business service in Ku-band using customer-premise earth stations as a "relatively minor investment." (6)

The application said: "What Intelsat needed in its early, formative and uncertain days is no longer necessary, however much Intelsat itself may wish to perpetuate its unchallenged dominance." Referring to the declining dominance of the United States in Intelsat and the participation of other Intelsat members in other regional

networks, the application says: "In the changed environment of 1983, it is neither necessary nor wise for the U.S. government to continue its paternalistic policy toward Intelsat or to assume Intelsat will or should maintain the same monopolitistic posture in the future it has had in the past." (7)

CYGNUS

In March 1984, Cygnus Satellite Corporation requested the FCC for permission to construct, launch and operate a communications satellite system over the North Atlantic region.

The Cygnus system would consist of two state-of-the-art in-orbit satellites operating in the Ku-band. In addition, it would have an on-the-ground spare satellite. Each satellite would have 16 active transponders with 50 watts power output and 54 MHz usable bandwidth. Due to the high power output and gain of Cygnus' satellite, its signal would be received by extremely small and relatively inexpensive micro earth stations with antennas ranging from 0.8 to 2.0 meters. These earth stations could be used in connection with personal computers to transmit and receive data at rates up to 224,000 bits per second. These small earth stations could also be used to directly transmitting foreign video programming from satellites to residential homes. In addition, Cygnus's satellites would be compatible with larger earth stations, i.e., mini stations

with antennas ranging from 2.0 to 4.5 meters, and main stations with antennas large than 4.5 meters.

Cygnus said that the technical characteristics of its spacecraft allowed it to offer customers direct single-hop access to its satellite. In contrast, Cygnus said, existing international satellite systems only offered multi-hop, multi-carrier services, which are inefficient and expensive. Cygnus claimed that its customers would experience very affordable, end-to-end international telecommunications services and significant improvements in the technical characteristics of such services.

According to the Cygnus proposal, the first satellite would be located at 45 degrees west longitude, covering the vast majority of the major population and financial centers of the United States and Western Europe. The second satellite, to be located at 43 degrees west longitude, would also cover the vast majority population and financial centers of the United States and Western Europe.

The Cygnus system would offer its service to customers exclusively on a private, non-common carrier basis. It did not propose to make its transmission capacity available to public switched voice services. Cygnus proposed to sell its transponders or offer them to customers through long-term lease arrangements. It would selectively market its service to both U.S. and foreign customers, including video suppliers, distributors, and television networks; multi-national corporations; financial service companies; time-

critical information delivery services; international trading and freight distribution companies; and U.S. government agencies.

Cygnus would provide advanced and innovative digital communications services, such as video conferencing, high-speed facsimile, computer-to-computer communications, remote printing, teletext, videotext, data collection and distribution services. It would also permit international direct-to-home broadcasting by distributing video programming from its satellites to small roof-top receivers.

The international transmission and distribution of video programming would be a major market Cygnus proposed to target. It would offer its services to movie studios, television networks, independent program distributors, program syndicates, special interest networks (e.g., sports, educational, religious programming), existing or new national or regional networks, and pay or subscription program suppliers.

Cygnus said that it had held discussions with potential video programming customers in United States and Europe and many of these companies had expressed considerable interests in the Cygnus proposal because of its broad coverage of the U.S. and Western European markets and also because of its high power output which permits international direct-to-home broadcast services.

Cygnus said that European market for satellite

distribution of television programming was expanding at an unprecedented rate but today's method for transmitting video programming from the United States to Europe was inefficient. Cygnus asserted that it would make it possible for the U.S. video programmers to syndicate programming to Western Europe on a cost-efficient and timely basis. Availability of U.S. programming would serve as an incentive for Western European countries to increase their cable penetration and the channel capacity of the existing cable systems. This, in turn, would stimulate Western European companies to purchase and distribute more U.S. programming.(8)

RCA AMERICOM

RCA's American Satellite Communications Corp. (Americom) filed an application with the FCC in April 1984 to modify antennas on six transponders on its domestic satellite, Satcom VI, to provide services to and from Europe and Africa. The potential services included video, teleconferencing, private leased lines and medium-speed data services. RCA estimated that the total cost of the modification would be about $700,000. The total cost of Satcom VI was to be about $80 million.

RCA said in its application that its proposal would serve the public interest by advancing the United States' procompetitive policy in the international satellite market. It contended that such competition would help

develop new services, increase the volume of existing services, create a market more responsive to the needs of customers, and stimulate the volume of traffic through the increase in facilities, variety of service offerings and reductions in price.

Concerning the proposed system's impact on Intelsat, RCA argued that its proposed system was technically compatible with the Intelsat system and would not cause any significant economic harm to Intelsat. RCA claimed that its use of a portion of one of its satellites for service between the United States and parts of Europe and Africa would have far less economic impact on Intelsat than those separate systems already approved by Intelsat, such as Eutelsat, Arabsat and Palapa. RCA said that even if its proposed separate system would have some revenue effect on Intelsat, there was no longer any reason to provide a totally protected status for Intelsat, especially in a market which accounted for such a small quantity of its revenues. (9)

PanAmSat

Pan American Satellite Corp., New York City, filed with the FCC for the approval of a one-satellite system on June 1, 1984. The satellite would have five C-band transponders to provide service between the U.S. and Peru, 13 C-band transponders for domestic service within Latin America, and six Ku-band transponders for communications

between the U.S. and Europe. PanAmsat was founded by the Spanish International Network, which provides Spanish-language television programming in the United States and exports some television programming to South America. It was reported that the Spanish International Network established PanAmsat because it was dissatisfied with the availability of Intelsat circuits between North and South America, and live feeds during prime time were not available.

PanAmsat contended that it could not be economically harmful to Intelsat because the services it proposed to perform were not offered by Intelsat when it received a conditional authorization from the FCC.

Different from other separate system applicants, PanAmsat won cooperation from a foreign government. In fact, the Peruvian government approached the U.S. government, asking for the United States to participate with Peru in seeking approval from Intelsat to provide international satellite links between the United States and Peru. At the same time, the Colombian government also showed interest in PanAmsat. Its communications and foreign affairs ministries formed a high level panel to study the feasibility of granting interconnection rights to PanAmsat for links between the United States and Colombia.

PanAmsat was the first and so far the only one of those controversial U.S. separate systems which has been approved by Intelsat. But the United States and Peru had

difficulty negotiating with Intelsat. At first, the U.S. and Peru insisted that only five of the satellite's transponders which would carry the U.S.-Peru traffic should be consulted with Intelsat. (10) But the Intelsat executive argued that all of the 24 transponders should be consulted. Another difference of opinion was the duration of the consultation. The U.S. and Peru wanted the result of the consultation to be valid for 10 years. But the Intelsat Board of Governors wanted to grant a five-year consultation. The U.S. argued that 10 years are closer to the typical life of a satellite. Finally, a compromise was reached by the end of 1986. The U.S. accepted the five-year consultation with the understanding that the Intelsat's Board of Governors at its meeting in March 1987 would consider extending consultations as a matter of policy to 10 years. The Intelsat Board of Governors, on its part, agreed only five transponders would be subject to formal consultation, but it required that the U.S. make sure that all the transponders of the satellite would operate according to the technical agreement reached between Intelsat and the U.S. (11)

Financial Satellite Corporation

In August 1985, the Financial Satellite Corporation headquartered in Washington D.C. and owned by four private individuals, filed an application at the FCC for authority to construct, launch and operate a private satellite

network in the Atlantic and Pacific Ocean regions. The FSC planned to place one satellite over the Pacific Ocean and another over the Atlantic Ocean, with a third one as a ground spare. The antenna beams from the two operational satellites would overlap in the southwestern United States to provide double-hop links on C-band frequencies between the Far East and Europe. The proposed system was estimated to require an initial capital investment of $240 million and a yearly operational cost of $7-8 million. The primary use of the proposed system would be data relay by financial institutions. (12)

Columbia Communications Corporation

The Columbia Communications Corporation initially planned to place two satellites in the geosynchronous orbit, one over the Atlantic Ocean and the other over the Pacific Ocean to cover the continental United States, Alaska, Hawaii, Puerto Rico, the Virgin Islands, Canada, Western Europe and Japan. The proposed network was considered especially good for high-speed data transmission and other services for stock exchanges and international banks.

However, before Columbia Communications had a chance to apply for the FCC's authority, the FCC stopped accepting applications for geosynchronous slots in the popular arc from 30-60 degrees West Longitude (over the Atlantic Ocean) because without the freeze, congestion of applications

would likely occur. To sidestep the freeze, Columbia Communications applied for authority for service over the Pacific Ocean. It planned to deploy one satellite and keep another on ground as a spare. Each satellite would have 44 Ku-band transponders and they would be sold or leased according to the U.S. policy. Then, Columbia Communications would rely on terrestrial transmission lines, oceanic cable and other satellites to link the eastern United States and Europe. (13)

Atlantic Satellites, Ltd.

Atlantic Satellites, Ltd. is a joint venture of the Hughes Communications, Inc. from the United States and an Irish importer and shipping line owner. Hughes Communications owns 80% of the partnership. The joint venture planned to but has not yet filed with the FCC for authority to develop a satellite network using a geosynchronous slot over the Atlantic Ocean which has been allocated to Ireland.

The proposed network would cost $400 million. It would consist of two Hughes Ku-band satellites, one to be operational and the other a ground spare. Each satellite would have 24 15-watt transponders for conventional telecommunications and five 100-watt channels for broadcasting of video programming direct to residential homes. Although Atlantic Satellites did not declare an intention to compete with Intelsat, it was in a position to

do so, because the Irish geosynchronous slot is ideal for trans-Atlantic links from Ireland to North America.

In September 1985, Atlantic Satellites was selected for negotiations by the Irish Communications Department from a group of competitors. Ireland is also a member of Intelsat. The Irish Telecommunications Board owned 0.13% of Intelsat in 1985. (14)

Pacific Satellite, Inc.

Pacific Satellite, Inc. planned to establish what was called a "Pacstar" network for service to nations on the Pacific rim. The network was designed to offer a hybrid C- and Ku-band service which was not available on Indonesia's Palapa network. Pacstar's services would include service from and to the western United States.

TRT Communications, Inc., an American company, is the principal owner of Pacific Satellite. Although development of the Pacstar network never went beyond the planning stage, Paupa New Guinea, which is an Intelsat member, expressed interest in Pacstar. (15)

NOTES

(1) Aviation Week & Space Technology, Mar. 21, 1983, p.28

(2) Ibid.

(3) For details of Orion's application, see the FCC document (FCC 85-402), released on Sept. 3, 1985.

(4) Aviation Week & Space Technology, Jun. 25, 1984, p.172

(5) Ibid, Sept. 5, 1983, p.76.

(6) Aviation Week & Space Technology, Sept. 5, 1983, p.76.

(7) Ibid, pp.73-76. For details of ISI's application, see the FCC document (FCC 85-400), released Sept. 3, 1985.

(8) For details of Cygnus's application, see the FCC document (FCC 85-403), released Sept. 3, 1985.

(9) For details of RCA's application, see the FCC document (FCC 85-401), released Sept. 3, 1985.

(10) According to the Intelsat Agreement, member nations must negotiate with and get approval from Intelsat before they deploy their separate international satellite systems. This process of negotiation is called consultation.

(11) Broadcasting, Dec. 15, 1986. For details of PanAmsat's application, see the FCC document (FCC 85-398), released Sept. 3, 1985.

(12) Aviation Week & Space Technology, Aug. 26, 1985, p.66

(13) Ibid, Apr. 14, 1986, p.127.

(14) Ibid.

(15) Ibid.

CHAPTER THREE

THE U.S. GOVERNMENT'S POSITION

Two U.S. government bodies were involved in the decision-making process concerning the U.S. international private satellite systems. One is the Administration (or the Executive Branch), particularly the State Department and the Department of Commerce. The other is the Federal Communications Commission.(1) The Administration makes policy recommendations and, through Comsat, deals with Intelsat on behalf of the United States. However, the Administration has no power to grant authority of separate systems. That power is in the hands of the FCC, which is responsible to the Congress. But the FCC does not directly do anything with Intelsat.

A. The Administration's Actions

In 1984, a Senior Interagency Group on International Communication and Information Policy was formed with Under Secretary of State Schneider and assistant secretary of commerce David Markey as co-chairmen to analyze the various issues caused by the application for new separate satellite systems.

Following the Senior Interagency Group's study, President Reagan and his staff in November 1984 determined that conditional competition in international satellite

communications market is in the United States' national interests. In a letter to the FCC chairman Mark Fowler, Secretary of State George Schultz and Secretary of Commerce Malcolm Baldrige explained those conditions. The letter says that separate systems should be permitted to offer the sale or lease of transponders for only service that is not interconnected with public switched message networks. The letter continues that FCC license grants should be conditioned also on foreign parties consulting with the U.S. to coordinate the separate systems with Intelsat "to ensure technical compatibility and to avoid significant economic harm." (2) The U.S. government believed that those two preconditions would protect the viability of Intelsat in face of competition from separate systems.

In 1986, the U.S. Administration expanded its endorsement of competition with Intelsat by allowing U.S. private international satellite systems to offer occasional-use television transmission. This decision was carried in a letter to the FCC chairman Mark Fowler from Diana Lady Dougan, coordinator and director of the State Department's Bureau of International Communications and Information Policy and Rodney L. Joyce, Acting Assistant Secretary of Commerce for Communications and Information. The letter says that contracts to satisfy television transmission needs may be allowed "as long as the acquired transmission capacity is not interconnected with public-switched message networks and any lease agreement as

distinguished from a sale to provide the capacity is long term." The letter declares that approval of such contracts "would be consistent with the President's determination." (3)

At a congressional hearing in February 1985, assistant secretary of Commerce for communications and information David Markey presented a detailed explanation why the U.S. government support private ventures to enter the international satellite communications market.

Technical Perspective

Markey argued that the separate systems would provide services Intelsat had yet to provide and therefore the U.S. customers could be better served with the entry of the separate systems into the market.

According to Markey, the services a given satellite system could efficiently offer and the cost of such service are determined by three factors: (4)

(1) The frequency range: Which of the three frequency bands ---- the standard "C-band" (4 and 6 GHz), the higher "Ku-band" (11-14 GHz) , or even higher "Ka-band" (20-30 GHz) ---- will be used by the satellite and earth stations to transmit signals?

(2) The size of the earth station: To use large and expensive earth stations or small and less costly ones? The higher the frequency range selected, the smaller the earth stations can usually be.

(3) The beam configuration: Will the satellite be able to concentrate its signals into a "spot beam" and therefore increase signal strength? When a satellite only "illuminates" a broad geographic region, it will have a relatively weak signal which can be affected by interference on the ground.

Markey said: "As a general rule, the higher the frequency and the more focused the beam, then the smaller the earth stations can be, and the more earth stations will be able to transmit to the satellite at the same time."

Markey said that satellites are designed differently for different uses, and the proposed separate satellite systems are different from the Intelsat system because their purposes are different. The Intelsat system was designed to provide "trunk route" or general-purpose services between a few major points with large earth stations. The separate systems, on the other hand, were designed for customized or special uses. So, they would use higher frequencies and high-powered or concentrated "spot" beams to interconnect a large number of small earth stations which are dispersed over a large area. This is "something Intelsat cannot easily accomplish with either its existing or planned spacecraft." Therefore, although the Intelsat's general-purpose satellites could provide good and cost-efficient service between a tiny number of "gateways," they are less efficient than the separate systems in providing direct access and direct service to

large numbers of individual customers located over a large area.

Special or customized service has a great deal of appealing to users. Users usually pay less if the satellite they use is designed to connect a large number of small earth stations than if the satellite is a general purpose one. Furthermore, with a customerized satellite, users could use smaller, less sophisticated, and less expensive earth stations. Since the size of such earth stations are small, they could be located as close as possible to both the sender and the receiver's premises. This will further reduce the terrestrial communications costs.

Markey admitted that "special features packages can be added to a general-purpose satellite before it is launched into orbit in order to get some of the advantages of a customized spacecraft. That, for example, is what Intelsat is proposing to do with its latest series of satellites."

However, Markey argued: "Given practical limitations on the size and overall power of the complete satellite platform, the more specialized features added to a general purpose satellite, the less efficiently that satellite will fulfill its primary function."

Economic Perspective

Economically, according to Markey, the U.S. government supports the separate systems in the hope of expanding its

international service trade.

Markey said that while the United States suffers heavy deficits in many traditional trade areas, it has enjoyed sustained growth and increasing surpluses in service trade areas. In 1983, the United States sold more than $41 billion worth of business services abroad with a trade surplus of about $6 billion. "Virtually all of our international service operations, moreover, depend heavily on international communications."

The trade in news, information and entertainment programming is an important area for the United States. The Motion Picture Association of America estimated that about $1.03 billion worth of U.S. TV programs and $500 million worth of video cassettes were sold abroad in 1984. The world's market demand for television, video cassette and other programming services continues to grow. In Europe, for example, the total demand for video programming by 1990 is expected to be 125,000 hours a year ---- about twice the annual total amount of TV programming sold in the United States now.

According to Markey, in the United States, "it is the rapid growth of the cable television industry that stimulated the expansion of the U.S. domestic satellite business. The new satellite system applicants seem to be anticipating a similar phenomenon in Europe to generate new demand."

Markey concluded: "From a national interest

standpoint, it is clearly desirable to have the communications service options these new satellite systems will offer. It should allow us both to export more programming and to develop the business and communications services markets in which American companies traditionally have done well."(5)

B. The FCC's Actions

In January 1985, the FCC released a notice of inquiry and proposed rulemaking soliciting public comments by February 14 and replies by March 7 on the proposed separate satellite systems which would compete with Intelsat.

In July 1985, the FCC granted RCA authority to modify six C-band transponders on Satcom-VI satellite at a cost of $700,000 to provide service from the United States to Europe and Africa; International Satellite Inc. to build a $230 million Ku-band network to link the United States and Western Europe; and Pan American Satellite Corporation to set up a system worth $198 million to serve Latin American countries with links to and from New York and Miami.

Very soon, the FCC extended its authorization to Orion Satellite Corporation and Cygnus Satellite Corporation to provide trans-Atlantic services.

However, the authorization is conditional. First, the authorization is limited to sale or long-term lease of satellite capacity for communications not interconnected

with the public-switched telephone network. Such communications include, for example, data, facsimile, video and teleconferencing transmission by large corporations.

Second, the authorization is conditional upon each licensee reaching a correspondence agreement with at least one overseas telecommunications authority. But it was reported that none of the applicants for separate systems had provided the FCC with any notification of an agreement with a foreign authority on the use of the proposed separate systems for service to that country.

Third, to be considered for final approval, the FCC required each licensee to submit to scrutiny by Intelsat to assure that the licensee would not do any significant economic harm to Intelsat.

These restrictions not only apply to the separate satellite system licensees but also to all resellers and users. The licensee has the responsibility to enforce the restrictions through any possible means, including signing contract with resellers and users. Otherwise, the licensee will run the risk of losing the license and suffering other unspecified sanctions. (6)

In a statement accompanying the conditional authorization, the FCC defended its decision as beneficial to the U.S. public interests and protective of Intelsat's viability. The statement says: "Today's limited injection of satellite facilities competition into international telecommunications should bring to the world some of the

dynamism that characterizes the U.S. domestic data processing and telecommunications sector... The U.S. public would be served because alternative systems provide currently unavailable service, technological innovation and service development, improve network efficiencies, reduce user costs, create new business and trade opportunities and contribute to greater cultural exchange." (7)

Referring to the viability of Intelsat, the statement says: "Application of the service restrictions to separate systems would provide reasonable assurance that Intelsat would not be significantly harmed economically. These restrictions would protect Intelsat's core revenues from international switched message services by prohibiting separate systems' interconnection with public switched networks." (8)

In early September 1985, the FCC issued a final order and report which spotlighted the issue of non-interconnection of separate systems with public-switched network. The order requires that all operating agreements between the separate systems and foreign authorities must specify the enforcement of the no-interconnect restriction and the technical means to block on-demand connections with the public-switched network through private branch exchanges (PBX) or similar automatic equipment. To ditect widespread violations of the interconnect restriction, the order also asks the AT&T to monitor traffic through its billing records and report decreases in the use of

international message telephone service.

The order explains why the FCC decided on these restrictive measures: "The imposition of the restriction on the Earth station owners will limit any necessary remedial action to a single Earth station owner/violator rather than revoking the license of the separate system operator, an action which could affect innocent parties. Given the significant investment at risk for any violation, it is in the self-interest of the separate system licensee to enforce strict adherence to the no-interconnect restriction."

The order suggests that the FCC was confident that illegal interconnection would not possibly become a serious problem. The order says: "We believe that any widespread violation, by either a separate system operator or resellers, would become evident because such violators would have to advertise illegal interconnect services or utilize some means to inform customers of their availability. These actions would draw attention to the activity, lead to competitor complaints and result in U.S. government or foreign authority investigations and sanctions. Furthermore, AT&T, as a competitor of the separate systems, will have an economic incentive to vigorously police potential violations." (9)

After its decision, however, the FCC found complaints from the competitors.

In November 1985, ABC, CBS and NBC jointly filed a

petition with the FCC. The petition asks the FCC to reconsider its conditional authorization that the separate systems may not operate as common carriers and must lease their capacity for minimum periods of one year. The petition says: "By extending these restrictions to television services, the commission has prevented separate satellite system operators or their customers from providing occasional television service and has, in effect, protected a substantial portion of Intelsat's television service business from any competition." (10)

At the same time, RCA Communications, ISI and PanAmsat also petitioned the FCC for the same action. In its filing, RCA asked the FCC to permit short-term occasional-use video service to be carried out on separate systems. The RCA filing says: "Prohibition of occasional-use video service on separate systems will deprive smaller video users of flexible, cheap alternative video offerings." RCA argued: "Intelsat has conceded that it has not met the demand for occasional-use video service in the past, and provision of such service by the separate systems will generate increased demand for these services, rather than diverting substantial existing traffic from Intelsat." ISI said in its separate filing: "The impracticality of the one-year minimum period is especially true in the video distribution market, whose product is not closely related to or substitutable for public switched services, is not generally sold on the basis of one-year leases, and whose

economics are incompatible with such a limitation." (11)

On the other hand, Comsat, which stood against the separate systems, urged the FCC to re-define the duration of the long-term lease from one year to five years. Comsat also criticized the FCC on another issue. The FCC's authorization permits separate systems to provide intercorporate communications and shared use of separate systems facilities with no minimum unit requirement. This was opposed by Comsat. In its filing with the FCC, Comsat said: "The restrictions actually imposed do not limit separate systems to point-to-point private lines; instead, they merely preclude interconnection with the public switched network and therefore would allow creation and interconnection of private switched networks, which are multipoint-to-multipoint. As a result, the report and order would permit substantial replication of the public switched network --- an outcome totally at odds with the goal of protecting Intelsat's core business." Comsat contended that the FCC "should limit separate systems to the 'customized' services contemplated by the executive branch." (12)

Meanwhile, foreign governments also put pressure on the FCC. By the time the FCC conditionally approved the separate systems, it had received 69 letters from signatories to Intelsat, claiming that the U.S. separate satellite system would undermine Intelsat's goal of providing reliable, low-cost service around the world. (For

the list of those signatories, see Appendix II.) Those countries argued that if the new systems siphon off business from Intelsat's most lucrative routes, charges for Intelsat's services would be driven up and that would force some Third World countries to withdraw from the organization. (13)

* * * *

In summary, the U.S. government's position is two fold: (1) maintaining Intelsat's monopoly in public switched services; (2) supporting separate systems but confining their services --- or their competition with Intelsat --- to long-term private transmissions.

NOTES

(1) The Federal Communication Commission, which was established by the Communication Act of 1934, is an independent regulatory body in the United States, which is directly responsible to the U.S. Congress and overseas domestic and foreign communications by radio, TV, wire and cable.

(2) Broadcasting, Dec. 17, 1984, p.68.

(3) Aviation Week & Space Technology, Mar. 17, 1986. p.45

(4) For the basic information about satellite communication technology, see James Martin's Communication Satellite Systems (1978) and Future Developments in Telecommunications (1977), Prentice Hall, Englewood Cliffs, N.J.

(5) For David Markey's testimony, see Foreign Policy Implications of Competition in Internatioinal Telecommunications: hearings before the Subcommittees on International Operations and on International Economic Policy and Trade of the Committee on Foreign Affairs, House of Representatives, 99th Congress, 1st Session, Feb. 19, 1985.

(6) For details of the FCC's decision on the separate systems, see the FCC document (FCC 85-399), released Sept. 3, 1985.

(7) Aviation Week & Space Technology, Aug. 26, 1985, pp.65-66.

(8) Ibid, p.66.

(9) For details of the FCC's order and report, see the FCC document (FCC 85-399), released Setp. 3, 1985.

(10) Broadcasting, Nov. 25, 1985, p.64.

(11) Ibid.

(12) Ibid.

(13) Fortune, Jan. 7, 1985, p.91.

CHAPTER FOUR

INTELSAT'S RESPONSE TO COMPETITION

A. Intelsat's Position

Intelsat's position on the issue of U.S. separate systems evolved from objection to compromise. At first, Intelsat's reaction was mild. Then, the objection was intensified by the increasing number of U.S. applicants for authority to operate separate international satellite systems. Finally, the strong objection ebbed as Intelsat seemingly began to accept competition and agreed to enter a competitive relationship with the separate systems.

Initial Reaction

Soon after Orion filed its application with the FCC for authority for a separate system in March 1983, the Intelsat Board of Governors passed a resolution in April, claiming that separate systems like Orion challenge the underlying purposes for which Intelsat was created. The resolution says: "The establishment of one or more competitive satellite systems diverting international transoceanic or other heavy route traffic from the Intelsat system would have a fundamental impact on the viability of a single global system and would entail serious financial consequences for all Intelsat users." (1)

Mounting Objection

Although Intelsat passed two disapproving resolutions on the subject of separate systems, both resolutions were relatively mild in tone and not specific in terms. The reason may be that in 1983 only one U.S. company (Orion) filed an application with FCC for authority to operate a separate system. However, later the number of such applicants increased, with Orion joined by ISI, RCA Cygnus and PanAmsat. Accordingly, Intelsat's objection intensified and seemed to reach a peak in Intelsat's director general Richard Colino's seven-step proposal guideline on coordination and his hinted threat to punish the United States if it turned a deaf ear to Intelsat's angry shouts.

At the April 1984 Intelsat Board of Governors meeting, despite the warning from the U.S. Department of State that the controversy over the separate systems was a domestic issue and Intelsat had no right to intervene, the conference participants, including Comsat representatives, unanimously passed a resolution which in effect calls the member nations to deny U.S. separate satellite systems any "correspondents" they need to operate. The resolution asks all the parties to "insure that their commitments to the Intelsat system ... continue to be fulfilled" and to "reaffirm the importance that all parties refrain from actions that would imperil the viability of the single global satellite system." It urges all the signatories to

refrain from entering into any arrangements which may lead to the establishment and subsequent use" of separate systems "to carry traffic to or from their respective countries." The resolution also expresses the members' "full support to the director general in his efforts to insure that the viability of the Intelsat single global system is not imperiled and that the Intelsat system provides the widest range of efficient and economic services." (2)

One of Colino's major efforts was to draft a guideline on tests for coordination. Traditionally, Intelsat handled coordinations on a case-by-case basis. But in order to streamline the process of reviewing the expected growing number of coordinations, the Board of Governors in 1982 directed the director general to develop specific guidelines. In 1984, Colino submitted to the board for approval a seven-step-test proposal guideline.

Step One: Does the competing system offer public international services? If not, the coordination will be approved. Otherwise, the next test will be applied.

Step Two: Can the proposed services be provided by Intelsat within the period of time for operation proposed by the competing system? If not, the coordination will be approved. Otherwise, the third test will be applied.

Step Three: Will any of the traffic being coordinated be carried by Intelsat if the separate system does not exist?

Step Four: How much traffic will the competing system divert from Intelsat? The diversion criterion will be set by the Board of Governors. If the competing system will divert more than what the board considers to be acceptable, the coordination would be disapproved. In the case of Eutelsat, the diversion criterion was set at 1% of Intelsat's total traffic; and for Arabsat, the criterion was 0.3%.

Step Five: How much cumulative economic harm will be inflicted upon Intelsat by a competing system and those that might be approved later over a period of 10 years? If the cumulative harm exceeds what the board deems to be acceptable, the coordination will not approved.

Step Six: What are the effects of the competing system on the Intelsat satellite loading in each region of operation? The coordination will be disapproved if the test fails.

Step Seven: Will the competition hinder Intelsat's ability to set up a direct link between any two of its members?

On the issue of traffic diversion, Colino commented: "A very low figure, lower than the 0.3% previously accepted, should be considered (as the diversion criterion). Even with a low figure of traffic diversion accepted for individual cases, the cumulative effect of many systems could become significant. Accordingly, the consideration of this effect cannot disregarded when

assessing traffic diversion."

Colino added that diversion of traffic that is not included in the data base but could clearly and easily be carried on the Intelsat system must also be considered in the coordination process and that may lead to a finding of significant economic harm.

Colino explained why the 10-year timeframe should be adopted for calculating cumulative economic harm. "The rationale for selecting a 10-year period is two fold. First, 10 years is the planning cycle upon which Intelsat planning and major procurement are based, and for which traffic forecasts are submitted at the global traffic meeting by the signatories and other users. Use of this same timeframe will ensure that Intelsat has the traffic data base necessary to accurately assess the cumulative impact of a particular proposed separate system. On the average, communications satellites have a 10-year design lifetime, and thus the accurate assessment of the implications for efficient loading of in-orbit capacity can be derived."

While submitting his seven-step proposal to the Board of Governors, Colino warned the United States that although a finding of economic harm is not legally binding on signatories, if a signatory refuses to accept such a finding, the Assembly of Parties may decide to consider that the signatory already has withdrawn from the organization. Colino said: "A member government that

follows a course of action that significantly impedes, frustrates or undermines the organization's ability to achieve its goals is disloyal to the principles of the organization to which it belongs and could be considered in breach of its general obligation to contribute to achieving the organization's object and purpose. The possibility of applying to an infringing party or signatory other remedies on the basis of international law remains available. The breach of an international obligation creates for the defaulting entity a new international obligation, namely, the duty to make reparation to the aggrieved entity. Reparations should, whenever possible, wipe out all of the consequences of the breach and reestablish the situation that would in all possibility have existed if the breach had not taken place." (3)

Colino's proposal was criticized by the United States. David Markey, assistant secretary of Commerce for communications and information and head of the U.S. National Telecommunications and Information Administration, said that Colino's proposal was contrary to the intent of the Intelsat agreement to allow alternative systems where there is no significant economic harm. He also criticized the lack of flexibility in Colino's proposal. Markey said: "They 's saying that any harm is unacceptable... and it doesn't look to us like they're willing to look at compromises." (4)

However, the U.S. Intelsat signatory, Comsat, stood on

Colino's side. Comsat's president Irving Goldstein dismissed Markey's comment that Colino's proposal would wipe out any possibilities of successful coordination. Goldstein said that all the previous successful coordinations could also be successful under Colino's proposal. (5)

Colino's proposal guideline was adopted the next year (1985) by the Intelsat Board of Governors.

Signs of Compromise

By late 1986, however, Intelsat seemed to modify its attitude toward the emerging separate systems from the United States. At a briefing on the 69th Intelsat Board of Governors' meeting in December 1986, a U.S. State Department official said that there were signs that Intelsat recognizes that the world is changing and that Intelsat must change with it. (6)

At its 69th meeting, the Intelsat Board of Governors recommended the Assembly of Parties approve the coordination of PanAmsat. This is the board's first favorable recommendation on the coordination of a U.S. separate system that would compete with Intelsat. After the conference, when asked whether Intelsat would continue to be as resistant to separate systems as it had been perceived to be under the former director general Richard Colino, the acting Intelsat director general John Hampton said: "I won't say we won't do things proper to the

protection of Intelsat. We'll do what we judge to be in the best interest of Intelsat. But we have to recognize reality and recognize the aspirations of member countries." He added later that the aim would be "to try to meet the needs of both sides." (7)

Hampton also stressed that Intelsat's policy would continue to " be competitive ---- to provide the best service for the best price, and to deliver what the market wants." (8)

Meanwhile, Comsat, U.S. signatory to Intelsat, seemed changing its position too. For some time, Comsat reportedly did not favor the introduction of separate systems. Being the largest shareholder of Intelsat, Comsat's interests are certainly tied with those of Intelsat. Immediately after Orion applied for authority of a separate system, Comsat filed with the FCC, requesting disapproval of Orion's application. After the FCC conditionally approved the applications for separate systems, Comsat urged the FCC to make the conditions harsher. Comsat's president, Irving Goldstein, once even described the benefit of introducing competition to international satellite communications as trivial. He even claimed that even if the separate systems could make the services on some routes cheaper, the difference seen by the end users would be only a few cents for each international telephone call because the satellite link accounts for a small part of the total cost. (9)

However, Comsat behaved differently in the summer of 1986 when the U.S. pushed the Intelsat board of governors for approval of the PanAmSat proposal. It was reported that "Comsat was widely perceived to be performing as a dedicated and effective partisan in the U.S. cause." (10)

Ambassador Diana Lady Dougan, U.S. coordinator and head of the State Department Bureau of International Communications and Information Policy, commented on the change of Comsat's behavior this way: "Instead of fighting competition," Comsat came to realize that "it was the wave of the future. Dougan said that this shift of attitude is significant in its impact on Intelsat, because Comsat "is the largest single stockholder, and it is looked to (by other Intelsat members) as a weathervane in how it views the world." (11)

Coincidentally, Intelsat's director general Richard Colino, who was known for his stiff opposition to the separate systems, was fired from his Intelsat office at the 69th Board of Governors meeting on charges of illegal financial transactions. (12) It may be tempting to attribute Intelsat's changed position to the sudden dismissal of Colino. However, as the journal "Broadcasting" points out, "Style is important, and Hampton is not the combative type, as was Colino. But changes were becoming evident even under Colino. Indeed, he was still very much in charge when the (Intelsat) executive staff recommended that the board approve the

U.S.-Peru proposal for consultation on the PanAmSat system." (13) The real reason for Intelsat's changed position may be its realization that competition is inevitable in the '80s.

B: Improving Competitiveness

While Intelsat responded to competition with words, it also took actions to improve its competitiveness by reducing its rates, improving existing services, and providing new services, most of which would also be offered by the separate systems.

June 1984

The Intelsat's Board of Governors approved in June 1984 new video services for different rates to attract international television and cable operators who are also prospective customers of emerging separate satellite systems.

The new services include five different categories of international video service at rates that vary with the degree of assurance that the service would be available at all times to the customers. The lowest rate would be charged for preemptible service. The satellite providing such preemptible service is not used for primary or major high-density traffic but is positioned to service a specific geographic area. The highest rate would be

charged for non-preemptible service primary or major high-density satellites where there is adequate backup capacity to ensure continuity of the service. In addition, countries that want to lease Intelsat transponders for domestic use would also be able to select one of the same five service categories with corresponding rates.

In order to encourage the use of Intelsat's new video services, the Intelsat's board also decided that the member countries could install additional receive-only earth stations without additional cost. According to Intelsat's then director general, Richard Colino, such earth stations, coupled with the power bandwidth available on the new Intelsat satellites, would permit "quasi-direct broadcast satellite" service to community antennas as small as two meters. (14)

Intelsat's Board of Governors also took anther two measures to improve the organization's competitiveness. One was to offer reduced prices during off-peak hours. Before then, there had been no discount for off-peak use of Intelsat services. The other measure was to improve the Intelsat Business Service. The IBS originally offered circuits for digital voice and medium-speed data transfer with bandwidths ranging from 64 to 256 kilobits/second and bulk-rate bit streams up to 2 megabits/second. But such bandwidth was not adequate for transmission of video-conferencing. Now the Intelsat board decided to extend the bandwidth of IBS to run from 64 kilobits/second to 8.5

megabits/second. The 8.5 megabits/second bandwidth is suitable for video-conferencing.

August 1985

After the FCC conditionally approved separate satellite systems in August 1985, the Intelsat Board of Governors established two additional service categories of domestic service: (1) sale of transponders and (2) fully protected long-term leases for domestic services, either cancellable and non-cancellable. Before that date, the Intelsat domestic service allowed for five-year leases of transponder capacity. However, with the two new service categories, in addition to the five-year leases, users may buy or lease transponders for the life of the hardware. At the same time, users enjoy priority right for access to Intelsat's satellites and for restoration of service in the event of outage. Intelsat identified 190 transponders on Intelsat-V satellites to be potentially available for sale or planned long-term lease in 1985-1990. According to Intelsat's then director general, Richard Colino, 21 countries had expressed interest in the new service and the new services could increase Intelsat's revenue by 5-8%. (15)

December 1985

At its December 1985 meeting, the Intelsat Board of Governors took a measure to fight the U.S. separate systems

on their own turf. It decided to modify the Intelsat-V A F13 and F15 satellites so that they could cover the entire continental United States with twice the power of the original design. After the modification, the power of the Ku-band transponders on the two satellites would increase from 10 watts to 20 watts. As a result, the maximum radiated power would increase to 43 dbw. This power is sufficient for coverage of North American because the full coverage of continental United States and populated Canada needs only 39 dbw. The increased power not only enlarges the coverage of North America but also allow for broad connectivity from inland U.S. locations to Europe. It was expected that the increased power would speed up the adoption of smaller earth stations with access to the Intelsat Business Service. It could also offer broader coverage for other international services in voice, data and television transmission.

June 1986

At its 67th Board of Governors meeting in Rio de Janeiro in June 1986, Intelsat took a number of actions to improve service to customers:

(1) The board authorized in principle the provision of an enhanced version of the Intelsat Business Service. The new service, called Super IBS, provides a lower error bit rate and higher channel availability standard than basic IBS and therefore provide Integrated Services Digital

Network service quality that some business customers require.

(2) The board also approved a new Super Vista Service that was designed to improve the economy of low-traffic terminals in developing countries and those on thin routes. The new service allowed for more efficient use of its space segment and the resulting lower charges to end users. It would consist of Intelsat's existing Vista service and a Demand Assigned Multiple Access system which provides both international and domestic services.

(3) The board approved in principle further expansion of services to small earth stations, as a first step to allow small and lower-cost earth stations such as Standard E-2 (Ku-band, 5.5 meters) and F-2 (C-band, 7.5-8 meters) to carry high quality fixed bit rate digital traffic over Intermediate Data Rate carriers compatible with the evolving Integrated Service Digital Network (ISDN) service. (16)

December 1986

The 69th Intelsat Board of Governors' meeting in December 1986 took further actions to sharpen the Intelsat's competitiveness.

(1) The board decided to introduce digital bearer channel rates for time division multiple access or intermediate date rate service. A bearer channel is a satellite half-circuit used with circuit multiplication

equipment to achieve use of two or more times the conventional channel capacity ordinarily derived. Comsat saw the bearer channel as a way to strengthen Intelsat's ability to compete with oceanic optical fiber cable, and therefore had long urged its introduction.

(2) The board decided to cut prices substantially for both digital and analog services. This was the 13th time in Intelsat's 22-year history to reduce rates for basic telephone and data services. The board also reduced prices for the C-band domestic transponders, though slightly increasing prices for Ku-band transponders, which were in short supply.

(3) The board authorized regional transponder video distribution through transponders that members have leased or purchased. This service was limited primarily to th e incidental spill-over of domestic television programs and data networks across national boundaries. (16)

NOTES

(1) Aviation Week & Space Technology, May 2, 1983.

(2) Ibid, Jun. 25, 1984, p.171.

(3) For Richard Colino' seven-step proposal guideline, his comments on the guideline and his warning to the United States, see Aviation Week & Space Technology, Oct. 1, 1984, pp.141-143.

(4) Aviation Week & Space Technology, Oct. 1, 1984, p.143.

(5) Ibid.

(6) Broadcasting, Dec. 22, 1986, p.76.

(7) Ibid.

(8) Ibid.

(9) Aviation Week & Space Technology, Oct. 1, 1984, p.143.

(10) Broadcasting, Dec. 22, 1986, p.77.

(11) Ibid.

(12) Richard Colino, together with two brokers, pleaded guilty in July 1987 to charges that they participated in scheme to obtain $4.8 million in connection with rigging construction and financing contracts for Intelsat's new headquarters. In September 1987, Colino was sentenced to six-year imprisonment.

(13) Broadcasting, Dec. 22, 1986, p.76.

(14) Aviation Week & Space Technology, Jul. 2, 1984, p.24

(15) Ibid, Sept. 30, 1985.

(16) Broadcasting, Jun. 30, 1986, p.57.

(17) Ibid, Dec. 22, 1986, p.76.

CHAPTER FIVE

ISSUES UNDER DEBATE

Two issues received heated debates as the U.S. private ventures were trying to enter the international satellite transmission market. One issue concerns whether the separate systems would cause Intelsat any significant economic harm. The other issue is about making the existing Intelsat pricing structure more flexible. The first issue determines whether the separate systems should be allowed to operate, while the second issue could greatly influence the way Intelsat responds to the competition by the separate systems.

A. Issue of Economic Harm

Article 14(D) of the intergovernmental agreement which created Intelsat in 1964 stipulates that no signatories would establish or use communication satellite systems that would cause "significant economic harm to the global system of Intelsat." This provision is a fundamental guarantee of the economic viability of Intelsat. It also contributed to the establishment of Intelsat's dominance in the international telecommunications business. According to this provision, all the member nations which prepare to launch their own satellites for cross-border transmission, must first consult with Intelsat for economic coordination,

that is, to make sure that the new systems would do significant economic harm to the international consortium.

Nobody ever questioned whether it is still wise to hang on to Article 14(D) in the 1980s. Opponents of the U.S. separate systems frequently used this provision to attack the separate systems. Four of the seven-step guideline for coordination test (see Chapter Three) involve tests on economic harm. The U.S. government also pledged to continue to stand by this provision. President Reagan's determination indicates that the United States is obliged to guarantee the viability of Intelsat, while FCC chairman Mark S. Fowler declared that a final authorization of a separate system would depend on its successful coordination with Intelsat under the provisions of the Intelsat Agreement's Article 14(D). (1) Even the applicants for authority to establish separate systems emphasized that their new systems would not cause any significant economic harm to Intelsat.

The issues are whether the separate systems could cause significant harm to Intelsat and how much harm should be considered to be significant.

A-1. Separate Systems Harmful? (Arguments from Opponents' Side)

The opponents of the separate systems insisted that the separate systems threaten the viability of Intelsat. Immediately after Orion's application was filed, both the Intelsat Board of Governors claimed in a resolution that

any separate system that divert transoceanic and other heavily used routes from the Intelsat system "would have a fundamental impact on the viability of a single global system." (see Chapter Three) At the same time, Comsat made similar statement in its filing with the FCC. The arguments by the opponents boil down to two points. First, Intelsat heavily depends on its special services for surplus revenue to subsidize thin-traffic routes, but the separate systems would definitely take customers away from Intelsat's special services. Second, the separate systems would by various means make inroads in the basic service or the public-switched service, which supplies 80% of Intelsat's total revenue.

Hinchman's Report In 1984, a telecommunications consulting firm, Walter Hinchman Associates, completed a research project on the impact of the separate systems on Intelsat. The research report, which is entitled "The Economics of International Satellite Communications," claims that separate satellite systems would do substantial economic harm to Intelsat.

According the report, about one half of Intelsat's capacity is not utilized as a result of Intelsat's obligation to replace primary and major path satellites with better ones long before the older ones become too old to operate. The report says that Intelsat is operating or has under construction enough capacity to meet not only its anticipated requirements but also the maximum demand for

trans-Atlantic services. The report indicates that Intelsat's "residual" capacity plays a very important role in keeping the charges for basic telephone and telegraph services at a low level. The report says that Intelsat uses its residual capacity to meet the special needs of its members and for such special services Intelsat charges higher prices. Therefore, the residual capacity generates for Intelsat additional revenues "substantially in excess" of the costs involved. Then, Intelsat uses those excess revenues from special services to subsidize its basic service.

Hinchman's report says that although all the applicants for separate systems indicate they will not offer the basic service, they would definitely compete with Intelsat in the special service. The report argues that to retain its customers from turning away to the separate systems, Intelsat would reprice its charges on special service on the basis of relevant cost, and that means lower prices for special service. Consequently, the basic service would get less or no more subsidy from the special service and its price has to be increased. The report points out that the basic service constitutes the largest part of Intelsat's business and all the Intelsat's users depend on it for such basic service.

In addition, the report suspects that the separate systems would sooner or later compete with Intelsat in the

area of basic service. The report says that "both ISI and Orion apparently anticipate, or at least hope, that demand for the services they propose to offer will be significantly greater than that forecast by Intelsat --- or that they will be able to divert some of the growing demand for basic telephone and telegraph communications to their respective services."

Based on the Intelsat demand forecasts, the report projects that in 1986-1987 when Intelsat forecasts a demand of 14 transponders, Orion and ISI would divert sufficient traffic from Intelsat to cause 4.3% - 4.9% increase in the Intelsat's average use costs. If that forecast demand doubles, the cost increase would be 8.6% - 9.8%. If Orion and ISI capture more traffic, "Intelsat's annual costs per utilized transponder would be as much as 35.6% higher in 1987 and 31.7% higher in 1988." (2)

Comsat's Filing Hinchman's suspicion that the separate systems would some day compete with Intelsat in basic service was shared by Comsat. In 1985, Comsat filed with the FCC, claiming that the capacities of the competing separate systems far surpass the market demand. According to a study commissioned by Comsat, the market for customerized international corporate networks between the United States and West Europe would be 32-40 transponders in 1990. Comsat said in its filing that Orion would offer 36 transponders; ISI 72 transponders; Cygnus 48 transponders; and RCA Amercom 6 transponders. (3)

is so high that once separate systems begin to operate, they would move into the areas prohibited by the Administration's policy. Therefore, more specific rules are required. The filing says: "Separate systems will have both the economic incentives to blur the public/private distinction and the technical means to do so. A non-interconnection condition therefore will not, by itself, be sufficient."

The specific measures recommended by Comsat include:

(1) Space segment facilities be sold or leased only to users and not resellers who intend to provide communications services to others either directly or through resale or shared use;

(2) Connection of the facilities to any device such as a private branch exchange (PBX) should be prohibited unless the user certifies in writing that the device is incapable of interconnecting the service with the public network on either the U.S. or the foreign end;

(3) Sales to users should be not less than five years and not smaller than the equivalent of one half an 18-MHz. transponder. (4)

A-2. Separate Systems Harmful? (Arguments from Proponents' Side)

The proponents of the separate systems defended the new systems on two grounds. Firstly, they argued the separate systems would compete with Intelsat only in customerized, special services, which are merely a

secondary financial source for Intelsat. Intelsat's major source of revenue is the basic service. Therefore, so long as the separate systems stay away from the market of the basic service, any significant economic harm to Intelsat is impossible. This opinion was explicitly aired by the applicants of the separate systems, and shared by the U.S. government. Secondly, the proponents --- the U.S. government in particular --- claimed that illegal entry by the separate systems in the basic service market is out of the question.

Hatfield's Report In November 1984, a telecommunications consulting firm, Dale N. Hatfield Associates, released a research report which rejects the notion that Orion's offer of trans-North Atlantic service would economically hurt Intelsat. The study argues that Intelsat's major business is public switched gateway-to-gateway service but that is not what Orion intends to do. Orion intends to provide private premises-to-premises service, which is possible only recently because of advances in satellite communications. The study argues that this is a new market distinct from Intelsat's traditional market and has so far been largely ignored by Intelsat. The study suggests that either at present or in the future the entry of separate systems into this new market is not likely to leave any economically adverse effect on Intelsat ---- because its traditional market has been growing very fast in the past two decades and "will continue to grow at a rapid rate" to

keep its hands full. (5)

Schneider's Comments In 1985, under secretary of state William Schneider, Jr. told the House Energy and Commerce subcommittee on telecommunications, consumer protection and finance: "The Executive Branch criteria are safeguards designed to limit the economic impact of any new American systems on Intelsat." He asserted that new separate systems "should not be prejudged by their nationality or the market they intend to serve."

Schneider rejected the assertion that it is not possible to prohibit connection to the public-switched networks. He said: "While it is certainly possible that some leakage into the networks may occur, experience with the federal government's FTS system and other Wats services indicate that the amount will not be significant. Widespread cheating is, in our view, neither probable nor inherently undetectable. To give up the advantages of competition on the off-chance that some one might cheat would not, in my view, be either prudent or productive." (6)

A-3. How Much Harm to Be Significant?

The Intelsat Assembly of Parties has never numerically defined the concept of "significant economic harm" in the Intelsat Agreement. This ambiguity opens door to arbitrariness. In fact, when the October 1985 Intelsat Assembly of Parties conference closed, Intelsat approved

economic coordination of 152 separate systems. (7) But no uniform criterion was used for these approvals. Rather, significant economic harm was interpreted on a case by case basis. In the case of Eutelsat, diversion of 1% of what otherwise would be Intelsat's traffic was accepted as insignificant. In the case of Arabsat, diversion of 0.3% was accepted as insignificant. (8) The first U.S. separate system approved by Intelsat, PanAmSat, would divert an estimated 0.9% of the Intelsat total traffic. (9)

This definitional ambiguity was well illustrated in Comsat's 1985 filing with the FCC. The filing says: "The negotiating history of the Intelsat agreement indicates that 'significant' harm must be more than trivial but need not be 'substantial.' This does not translate into a specific numerical threshold, but it is clear that economic harm could well be significant event without threatening the viability of Intelsat or calling into question Intelsat's ability to provide certain services." (10)

However, Intelsat director general, Richard R. Colino, made an attempt to quantify the concept of significant economic harm. He once recommended to the Intelsat board of directors that a threshold even lower then 0.3% should be considered as the diversion criterion. (11) His recommendation was not approved.

While the uncertainty over the evaluation of an individual separate system's impact on Intelsat's economic well-being remained unsolved, another controversy---

largely between the United States and Intelsat --- cropped up. The controversy centered around what was called the cumulative economic impact of separate systems on Intelsat.

The 1985 Assembly of Parties adopted a proposal by Jordan on whether a proposed separate system could cause significant economic harm to Intelsat. The proposal requires the assembly to consider the cumulative impact on Intelsat of one or more systems proposed "by a party or parties... over an appropriate period of time." However, the United States, together with Britain and Papua New Guinea, disassociated themselves from the proposal. The U.S. was object to prescribed guidelines, arguing that a case-by-case approach had worked well. The U.S. was said to feel that the proposal not only may be interpreted differently by different countries but also implies a finite universe. The U.S. government argued that the universe is expanding and quantifying the cumulative effect of additional separate systems is "difficult if not impossible." (12)

The battle over the issue of cumulative impact continued when the Intelsat Board of Governor held its 69th meeting in December 1986. At the meeting, the Intelsat executive proposed that 10% cumulative diversion of business would be the maximum economic impact of separate systems on Intelsat. But the board took no action on the proposal. A U.S. State Department official was reported to comment that in an atmosphere infused with talk of an

Intelsat changing to meet changed conditions, a 10% cap seemed to be regarded as 'passe.'" (13)

B. Issue of Average Pricing

Intelsat's service charges for the space segment, or utilization charges, depend on various factors such as the service application (voice, video or data transmission), the technology employed (frequency-division multiple access of time-division multiple access), usage patterns (full-time, part-time or occasional), earth station types and antenna sizes. However, the utilization charge for the same type of utilization is the same throughout the world. This average pricing structure was established by the Article 5(D) of the Intelsat Agreement which stipulates that the same service should be charged for the same price no matter where the communication takes place.

The average pricing structure does not seem to be based on economic rationality because each unit of utilization of Intelsat's space segment is not the same around the world. Since the cost of the space segment remains constant for users anywhere in the world, the unit cost of the utilization of the space segment varies in negative proportions with the frequency of use of each satellite. In another word, the heavier the traffic on a satellite, the lower unit cost. For Intelsat, the routes with heaviest traffic are those crossing the northern

Atlantic Ocean between North America and Western Europe, the most developed regions of the world. Traffic is thin on the routes over the Pacific and Indian Ocean regions, where most developing countries are located. In 1983, for example, the number of Intelsat channels used for trans-Atlantic transmission was about 42,000; whereas for the Indian and Pacific Oceans, the figures were around 15,000 and close to 10,000 respectively. (14) This uneven distribution of utilized channels means uneven distribution of unit costs. Obviously, the unit cost of the trans-Atlantic routes is much lower than that of the trans-Indian Ocean or trans-Pacific routes.

B-1. Debates among Administrators and Politicians

Intelsat tried to use the average pricing as a shield to protect itself from the competing separate systems. It contended that developing countries have received subsidy through the global averaging of prices; and such subsidy could be eroded by competition from separate systems. Intelsat argued that as the separate systems take some portions of business from Intelsat's lucrative trans-Atlantic routes, Intelsat would have less revenue from its trans-Atlantic routes to subsidize the thin routes. Consequently, it would be forced to its utilization charges, leaving a bigger financial burden on developing countries. (15)

The U.S. government took the same position. It

objected to any proposal of amending the Article 5(D) of the Intelsat Agreement, maintaining that Intelsat has sufficient pricing flexibility under the Intelsat Agreement and no amendment is needed. The U.S. government also warned that change of the average pricing structure would lead to greater financial burden on developing countries.

While such arguments were derived largely from political and foreign policy considerations, there were people in both the United States and Intelsat who gave counter-arguments based on economics rather than politics. These people advocated a flexible or cost-based pricing structure in place of the average pricing structure.

In a letter to Secretary of State George Schultz late 1984, Secretary of Commerce Malcolm Baldrige said that artificially inflated prices on busy routes could induce "inefficient entry by new systems" and that Intelsat should have the flexibility to meeting competition, "as long as the prices it charges cover its costs." (16)

Inside the U.S. Capitol, there also were some attempts to revise the Intelsat's average pricing structure. The U.S. House of Representatives in May 1985 adopted an amendment to the Fiscal 1986 State Department authorization bill. One amendment provision requires that the United States urge signatories to the Intelsat Agreement to adopt route by route pricing flexibility instead of the global average pricing which has been in force. The provision demands that such flexibility must be in place before any

separate systems are authorized. (17) The call for change of the Intelsat's pricing structure was echoed in the Senate. However, the U.S. Congress added some conditions: the change would apply only in "exceptional circumstances" and would be "cost-based," with " adequate documentation" of that basis made available. (18)

The change from average to flexible pricing structure was also advocated by Intelsat's director general Richard Colino, who proposed to the October 1985 Intelsat Assembly of Parties that the average pricing must be changed to be more flexible so that Intelsat could successfully compete with the new separate systems.

Even a few developing countries favored a flexible pricing structure. Before the October 1985 Intelsat Assembly of Parties conference, there developing countries put two proposals on the conference agenda, calling for modification of the Intelsat pricing structure. One proposal was made by Colombia and the other by Cameroon and Tanzania. But Colombia requested the assembly to permit pricing deviations only "when the space segment is used for transmission of programs of a high humanitarian and social content, in particular for the purpose of promoting education in developing countries." On the other hand, the proposal by Cameroon and Tanzania asked for drastic changes. It requested the assembly to consider eliminating the existing average pricing structure and replace it with what was called "utilization charge" on the basis of a

number of factors, including the ocean region areas, satellites, and time and priority of access involved. The proposal also requested the Intelsat Board of Governors to establish same-rate charges for each type of space segment use, except when the board determines "it is in the best interest of Intelsat to deviate from this charging principle, including, but not limit to, instances where this necessary to meet competition in various ocean region or traffic routes." (19)

However, at the October 1985 Assembly of Parties conference, proposals on flexible pricing was put aside. The assembly adopted a resolution that calls such action "premature" and deferred further consideration until the next Assembly of Parties regular conference. According to a U.S. State Department briefing, more than 30 parties spoke against the amending of the average pricing structure. The journal "Broadcasting" reports: "While the State Department briefing left some reporters with the impression that the issue was deferred because of a lack of enthusiasm for changing the present system," an Intelsat official explains that the parties felt action on pricing systems would be premature because no separate systems that would compete with Intelsat are ready to enter the coordination with Intelsat. (20)

B-2. Debates among Consultants

Like in the debates over the issue of significant economic harm, the two consulting firms ---- Dale N. Hatfield Associates and Walter Hinchman Associates---- were once again divided over the issue of average pricing.

In 1983, Hatfield reported after completing a research project for Orion that if Intelsat pricing results in any subsidy, the subsidy goes from the poorer, thin-route Pacific and Indian Ocean regions to the richer, busier Atlantic region. (21)

In 1984, Hinchman did a counterstudy for Intelsat. The research claims that it is not possible to quantify such subsidies; but the net flow of subsidies is from the richer to the poorer regions. (22)

Then, Hatfield did a second research project, which was dated Nov. 27, 1984 and released in January 1985. The Hatfield report boils down to one point: subsidy is more than a myth created by Intelsat.

The report first questions the very existence of such a subsidy. It says that Intelsat has failed to prove that such subsidy exists and the Hatfield study suggests it does not. Then, the report argues that even the subsidy is a fact, the beneficiaries may not be qualified to receive the subsidy. The report claims that those who may be subsidized as they are on the "thin routes,' including the Pacific region, are wealthy nations and their possessions like the United States' Guam. The report continues that

even among poorer nations who deserve a subsidy, the end-users in those nations may be "multinational corporations and high income households that do not deserve a subsidy."

Finally, the report dismisses the whole issue of subsidy as trivial. It claims that the benefit of subsidy to the developing countries is "negligible" because Intelsat's charge makes up more than 10% of the end-to-end cost of international communications for those countries. (23)

NOTES

(1) Aviation Week & Space Technology, Apr. 15, 1985, p.75.

(2) Broadcasting, Jun. 4, 1984.

(3) Aviation Week & Space Technology, Apr. 15, 1985, p.75.

(4) Ibid.

(5) Broadcasting, Feb. 4, 1985, p.82.

(6) Aviation Week & Space Technology, Apr. 15, 1985, p.77.

(7) Broadcasting, Oct. 14, 1985.

(8) Aviation Week & Space Technology, Apr. 15, 1985, p.76.

(9) Broadcasting, Dec. 22, 1986, p.76.

(10) Aviation Week & Space Technology, Apr. 15, 1985, p.76.

(11) Aviation Week & Space Technology, Oct. 1, 1984, p.139.

(12) Broadcasting, Oct. 14, 1985.

(13) Ibid, Dec. 22, 1986, p.76.

(14) Telecommunication Journal, Jan. 1985, p.27.

(15) Broadcasting, Feb. 4, 1985, p.82.

(16) Ibid, Dec. 17, 1984, p.68.

(17) Aviation Week & Space Technology, May 13, 1985, p.17.

(18) Broadcasting, Oct. 14, 1985.

(19) Ibid, Jul, 29, 1985, pp.49-50.

(20) Ibid, Oct. 14, 1985.

(21) Ibid, Sept. 12, 1983.

(22) Ibid, Jun. 4, 1984.

(23) Ibid, Feb. 4, 1985, p.82.

CHAPTER SIX

DISCUSSION

A. Analysis of U.S. Government's Position

The U.S. government's position on the issue of the separate satellite systems signifies a change of its attitude toward satellite communications. In the 1960s, when Intelsat was established, the U.S. government's overall telecommunications policy was in favor of monopoly. Internationally, it advocated a single international satellite system. In the 1970s, however, it gradually shifted its position toward favoring competition. The goal of this shift is to let telecommunications services---- domestic and international ---- be a free market to businesses and customers. Indeed, the growing information technologies are opening a new large market for the United States. In the early 1980s, the U.S. business sector spent about $30 billion a year on electronic communications and is expected to spend $190 billion by 1990. (1) But the old regulatory shackles hindered the expansion of the new telecommunications market; and consequently the U.S. government, the Reagan Administration in particular, took the initiative to smash those artificial shackles through what is called "deregulation." The emergence of the U.S. separate satellite systems is a direct result of this deregulation.

But the deregulatory action embodied in the FCC's decision on the separate satellite systems is not a thorough one. Rather, it is a compromise between economic considerations and foreign policy concerns. It is not a good bargain for the United States to give a free hand to the separate satellite systems at the cost of offending all the developing countries and even some developed countries. Eventually, the U.S. government overcame this policy dilemma by endorsing the separate systems but at the same putting harsh conditions on its endorsement.

A-1. Why the U.S. Government Endorses the Separate Satellite Systems?

Following the deregulation of the U.S. domestic telecommunications industry, which culminated in the breakup of AT&T, the U.S. government began to gradually deregulate its international telecommunications industry in the late 1970s. Before the deregulation, the U.S. international transmission business was segmented into voice/record (non-record), domestic/overseas and wholesale/retail dichotomies. The overseas transmission links consisted of oceanic cables and satellite systems. They connected with domestic transmission networks in designated cities called gateways. For regulatory convenience, the telecommunications services were classified in two major categories of voice and record (for example, telex, facsimile and data transmission) services. The whole international telecommunications

services were offered on the wholesale and retail levels. For overseas transmission, the wholesale business was monopolized by AT&T and Comsat. AT&T was granted de facto monopoly over the oceanic cable transmission lines while Comsat was designated by a congressional act to monopolize the overseas satellite systems. Both AT&T and Comsat were defined as common carriers. Being common carriers, they must sell their transmission capacity on a wholesale basis to other communications companies, which played the role of retailers selling services to end-users. AT&T and Comsat provided both voice and record transmission services over the overseas links. Over the domestic transmission links, AT&T was also allowed to offer voice service to end users. Therefore, AT&T engaged in domestic as well as international transmission business. It was a retailer in voice (telephone) services and a wholesaler in both voice and record services. Comsat, on the other hand, was only a wholesaler in international satellite services. That meant that messages carried by Comsat had to go through AT&T or other retailer channels before reaching end users. Before the deregulation, there was one voice service retailer (AT&T) and six record service retailers, which are also called international record carriers (IRCs) (2) Of the six IRCs, three dominated the international record service market for years with a combined share of more than 95% of the whole market. (3) AS a voice service retailer, AT&T could sell its service to end-users. But the IRCs'

activities were confined to five gateway cities where IRCs switched messages between domestic and international links. (4) Outside the gateway cities, the IRCs' services had to travel through the domestic transmission links monopolized by Western Union before they could reach the end users.

The approach by the FCC to deregulate the U.S. international telecommunications industry was to break the long-time monopolistic structure of the industry by introducing competing ventures into the once-monopolized markets. The FCC argued that "the most beneficial and comprehensive method of addressing the international regulatory issues raised in these areas is to focus on the problematic market structure of the industry, as opposed to availing ourselves of other regulatory tools, such as formal rate-making proceedings." (5)

Along this line of structural reform, the FCC in 1979 made a series of important decisions on deregulation. It authorized AT&T to provide dataphone (a type of data transmission service) or similar services to overseas points on a permissive or secondary basis. (6) The FCC argued that the introduction of dataphone service will benefit consumers by attracting competition in the international record service market. (7) At the same time, the FCC authorized the IRCs to carry voice traffic on the same permissive or secondary basis. (8)

The FCC also decided to open additional 21 cities as gateway cities for IRCs. (9) In a related decision, it

allowed IRCs to connect all their transmission links with one another and to connect their telex links with domestic telex networks for international services. (10) In addition, the FCC authorized Western Union to offer international record services through Mexico and Canada. (11)

Later, the FCC issued a few notices to elaborate its plan on further deregulation of international telecommunications. In an October 1980 notice, the FCC stated it would be in the public interest to permit AT&T to provide record services on a primary basis (12). In another notice, the FCC even talked about breaking up Comsat's monopoly over U.S. international satellite communications. (13)

The conditional authorization of the U.S. separate satellite systems signifies a further removal of the regulatory hurdles for the U.S. international record service industry. In this sense, the authorization is a big victory for the U.S. government in its battle for deregulation. By selling or leasing transmission capacities directly to customers in the United States and Europe, private ventures could build up direct transmission links between end users on both sides of the Atlantic. Such links no longer need to go through the Comsat satellite network or AT&T oceanic cables. Within the United States, neither do such links need first to enter the gateway cities, then to pass through IRCs and finally

to join the domestic transmission networks. Now, international record services can really be much simpler. All that is needed is just a antenna dish on the roof or in the backyard of each customer's office building, with the separate systems' satellites orbiting 23,000 miles above. In this way, all the previous regulatory distinctions between wholesale and retail, and between domestic and overseas services are wiped out.

This deregulatory victory could lead to great economic benefits for customers. To illustrate such benefits, U.S. Under Secretary of State William Schneider, Jr. once compared the prices charged for the highly regulated and monopolized satellite services between the United States and Europe with the prices charged for the deregulated and competitive U.S. domestic satellite services. He said that the video transmission from New York to London using U.S. carriers, Intelsat and British Telecom would cost a minimum of $2,700 per hour; but the same service over a comparable distance within the United States would cost only $790 per hour. Similarly, the cheapest international private line service between New York and London was sold for about $3,700 a month, while comparable service between New York and Los Angeles on a domestic satellite would cost $1,150 a month. (14)

Underlying all these deregulatory actions is the hope of letting more private ventures enter the telecommunications market to provide cheaper and better

services so that the U.S. economy can make another leap forward by taking advantage of new information technologies. Undoubtedly, the FCC's decision on the separate satellite systems is a significant step toward realizing that goal.

A-2. Why the U.S. Government Sets Limits on the Separate Systems?

The U.S. government did not let the separate satellite systems go too far, however. It restricted their business to customized services so that they could not offer any services related to public switched transmission. The U.S. government explained that it did so with an intention to protect Intelsat's traditional market from any competition. It stressed that so long as the public switched services, which bring Intelsat three quarters of its revenues, continue to be monopolized by Intelsat, there would be no problem with the economic viability of this international organization. Obviously, while the U.S. government enthusiastically pursued its cause of deregulation, it did not want to offend the overwhelming majority of the Intelsat member nations, particularly developing countries, because the price of such offense would be too high to the United States.

Intelsat has been a great diplomatic success for the United States. In the 1960s, although satellite technology was just in its infant stage and only a small number of developed countries had access to it, it demonstrated an

enormous potential for the improvement of communications in the large number of developing countries. At that time, there were two new-born international satellite systems ---- Intelsat backed by the United States and Intersputnik by the Soviet Union. Those were the days of the Cold War. The two superpowers, while racing for a lead in satellite technology, were competing with each other to win over the developing countries, many of which had just obtained nationhood. To allow easy entry and participation in Intelsat, its founders, headed by the United States, put aside a higher than normal percentage of Intelsat's initial investment share for non-member countries who might wish to join at a later date. According to the Intelsat arrangements, shares of the Intelsat investment held by member nations must be proportional to their shares of the world's satellite traffic. When Intelsat was founded, the non-member nations represented only 15% of the world's satellite traffic but they were left with a 17% of the total investment share, 2% higher than that which they were entitled to. Intelsat's other strategy to win and keep the loyalty of developing countries was its average pricing structure. By charging the same prices for the same services throughout the globe, Intelsat was able to subsidize the thin-traffic routes with excessive revenues from the heavy-traffic routes, and therefore offer cheap prices to developing countries, most of them located on thin-traffic routes. Through these strategies, Intelsat

has attracted almost all the developing countries into its membership. The United States has definitely won over the Soviet Union in this battle of international relations.

The importance of Intelsat to the United States was fully recognized by the U.S. government. It repeatedly rejected the proposal to change Intelsat's average pricing structure, arguing that change would increase the financial burden on developing countries. In a 1984 report, the Senior Interagency Group on International Communication and Information Policy ---- which was established to study the issue of the separate satellite systems and included representatives from the State Department and Department of Commerce ---- claimed that Intelsat served the interests of the United States as well as those of the world. The report explained how much the United States had benefited from Intelsat for its relations with the developing countries. The report said that, in addition to facilitating the U.S. business expansion through creating a large market for the U.S. space-related industries,
Intelsat had well reflected through its average pricing structure the political interest of western countries in assuring communication with the developed and developing countries; it retained the loyalty of virtually all countries against the efforts of the Intersputnik to acquire members outside the Soviet bloc; and it offered countries lacking their own domestic satellites access to satellite communications, which eased the intensity of the

demand for guaranteed access to the geostationary orbit, a demand which has been frequently raised by developing countries but rejected by the United States. (15)

The U.S. government certainly did not want to ruin all this diplomatic fruit it gained after almost two decades of effort. If it let the separate satellite systems make inroads in the public-switched transmission business and to therefore shrink Intelsat's major revenue source, the consequences would be that the prices of Intelsat services would be driven up, the costs of satellite communications would increase substantially for developing countries, the relationship between the United States and developing countries in Intelsat would become sour, and some countries might even withdraw from the organization. The strong opposition to the U.S. separate satellite systems was well demonstrated in a joint proposal presented by 21 developing countries at the February 1985 Assembly of Parties. The proposal called for all Intelsat member nations to boycott any interconnection discussions with private ventures planning to launch international satellites. It also asked the U.S. government to reconsider its endorsement of the separate satellite systems. (16)

An unlimited endorsement of the U.S. separate systems could not only hurt the developing countries but also make many developed countries unhappy. First, those countries do not want to see their relationship with the developing countries worsened as a result of the competition from the

U.S. separate systems. Second, those countries have invested a great deal in Intelsat and their interests in space communications are tied to Intelsat. Up to 1984, Intelsat's 108 member nations had committed to expending $200 billion to expand Intelsat's capacity through the late 1990s. (17) The majority of this investment will come from the developed countries, including the United States. Separate satellite systems, if unrestrained, are likely to have a great negative effect on the return of this huge capital to the investors. This financial concern is at least a partial explanation of why some developed countries joining developing countries writing to the FCC to show their dislike of the separate systems, and why even the United State's representative to Intelsat, Comsat, was unhappy with the whole concept of competition for Intelsat.

B. Evaluation of Impacts on Intelsat

To evaluate the impact of the U.S. separate systems on Intelsat, it is necessary first to ascertain whether or not such private systems could be constructed, stay in operation and compete with Intelsat. If not, then their impact on Intelsat is more psychological than real. If the private systems will operate and take customers from Intelsat, Intelsat's financial status will be seriously threatened. The developing countries in the organization will probably suffer most. but no matter whether the

competition from the U.S. separate systems is real or symbolic, Intelsat has to realize that it is now in a new era and it has to take new strategies.

B-1. A Real or Phantom Challenge?

At least in the foreseeable future, the challenge to Intelsat from the U.S. separate satellite systems may not be a real one. Here the key is how the Western European countries respond to the U.S. separate systems.

An international telecommunication channel is always owned by entities from two or more countries. Take the example of a cable from the American eastern coast to Britain. The American side would own half of the cable and the British the other half. In the case of satellite, a complete link includes a satellite and two ground receivers (i.e., earth stations). The satellite may be owned by one or more entities from a single country like the U.S. separate systems, or the satellite may be owned by a group of entities from different countries such as Intelsat. But the earth stations must be owned by one or more entities from the country of the earth station's location. A satellite channel could never operate if its outgoing message could not find an earth station for reception. This is a problem for the U.S. separate satellite systems. To a great extent, the success of these separate systems depend on whether they are accepted by entities in Western Europe who control the other ends of the trans-Atlantic

satellite communication channels.

In almost all countries, telecommunications have been controlled by their governments under various justifications. The government delegates its power of control to one organization, usually a governmental agency like Post, Telephone and Telegraph Administration (PTT). PTTs enjoy an authorized monopoly over both domestic and international telecommunications. This used to be true in the United States but is still true in Western Europe except in Britain. Britain has also started to deregulate its telecommunications industry but has not gone as far as the United States. It has cautiously injected a small amount of competition into the domestic telecommunications but still keeps overseas telecommunications under monopoly. Therefore, the U.S. separate satellite systems, when they come to the negotiation table, face a group of monopolizers.

For these monopolizers, international telecommunication services are a major source of profits. They charge customers of international services much higher than the actual costs. Then they use the excessive profits to subsidize the less profitable domestic public-switched telecommunication services, particularly services in less populated areas such as rural areas. For instance, if a German makes a call from Bonn to Sydney and his call travels through Intelsat's links, generally only 10% of the price he has paid would go to Intelsat although his call

completes most of its journey along Intelsat's links. The other 90% is shared by the German and Australian PTT's. This 90% of the price much more than offsets the costs incurred to both PTT's. The big margin then becomes profit, which will usually be used to subsidize domestic telecommunications services. If the PTTs in Western Europe permit business firms in their countries to set up private antenna dishes connected to the U.S. separate satellite systems, that permission simply means a willingness to give up an important source of profits. This is not likely to happen unless the Western European governments take actions like those in the United States to change the structure of their telecommunications service industries.

B-2. Possible Impacts on Intelsat

What is likely to happen to Intelsat if in Western Europe the U.S. separate satellite systems can not find any customers or not enough customers to make their ventures worthwhile because of lack of cooperation from local PTTs? The threat to Intelsat from the U.S. separate systems would be a phantom, but this phantom threat might have a positive side-effect on Intelsat. For Intelsat may be shocked to a realization that it no longer can depend comfortably upon its monopolist position and it has to sharpen its competitiveness. That would be translated into benefits to Intelsat's users. There is a consensus that the proposed U.S. separate systems have pushed Intelsat to

improve its services. One example is the Intelsat Business Service (IBS). The journal "Aviation Week & Space Technology" reported in 1984: "Although the new Intelsat Business Service was announced barely six months after Orion filed its proposal with the FCC, plans for IBS had been developed in the fall of 1982, and briefly reported in Intelsat's annual report published in mid-1983. However, Orion's action undoubtedly speeded the introduction of IBS." (18)

Serious problems will arise if the U.S. separate satellite systems find ground receivers in Western Europe and begin to operate there on a regular basis. Satellite communication is an industry where economy of scale is crucial. Once a communication satellite starts to operate, the increase in the amount of its use runs far ahead of the increase in the cost associated with the increased use. So, the more traffic a satellite carries, the more profitable the satellite becomes; and vice versa. The global scope of Intelsat's business and its average pricing structure combine to put Intelsat at a competitive disadvantage to the U.S. separate systems. Intelsat operates on a global scale, offering services to both thin-traffic and heavy-traffic regions. Operations in thin-traffic regions like the Pacific and Indian Ocean regions are much less profitable than operations in heavy-traffic regions like northern Atlantic region. Economic laws would determine that the prices for service in heavy-traffic

regions should be lower than those in thin-traffic regions. But Intelsat's average pricing structure levels off this price difference. As a result, customers in the heavy-traffic region are charged above the normal price. The U.S. separate systems, on the other hand, only operate in the lucrative northern Atlantic region. They have no thin-traffic regions to subsidize. Therefore, they can price their services lower than Intelsat's charges for similar services. Consequently, customers would be drawn away from Intelsat to patronize the separate systems.

There are two arguments defending the separate systems. One argument asserts that the separate systems do not compete with Intelsat in its traditional public-switched services; and so long as Intelsat continues to monopolize those service, it can not suffer any significant economic harm from competition. The U.S. government and the separate systems all share this opinion. But this argument is true only under the assumption that Intelsat stops growing. If it wants to grow (it certainly will), it has to expand its business in non-public-switched services. In fact, for the decades to come, non-public-switched telecommunications will be a rapidly expanding market. Intelsat intends to penetrate this market. An evidence is the introduction and development of Intelsat Business Service. At present, non-public-switched services account for about a quarter of Intelsat's revenues; but they may become a more and more important financial source

for Intelsat as the market demand for non-public-switched services increases. So, although the guarantee of Intelsat's monopoly over the public-switched services can ensure Intelsat's economic viability today, in the long run such guarantee may not be sufficient to support Intelsat's growth. In order to grow, Intelsat has to expand its business in non-public-switched services. Whether Intelsat is entitled to monopoly over the non-public-switched services is open to debate; but one thing is certain, that is, the entry of the separate systems into non-public-switched services will result in a smaller market share for Intelsat.

Another argument used to defend the separate systems is that they do not take much away from Intelsat. This argument is true only for the time being. Right now, there are only a few proposals for constructing and operating separate satellite systems, and these systems are small compared with the Intelsat system. In the long run, this argument may not hold. First, the separate systems may expand and grow. Second, more separate systems may enter the market. When these two factors are considered, the separate systems could leave a substantial long-term economic effect on Intelsat.

B-3. Victims

If the separate satellite systems someday do a significant economic harm to Intelsat, there will likely be

two groups of victims.

One group includes users of the domestic public-switched telecommunication services in developed countries. These services have long been subsidized by the international services. Separate systems would lead to the popularization of private antenna dishes pointing to the satellites of the separate systems. With the proliferation of private antenna dishes, many customers of the international services ---- large business firms in particular ---- will bypass the PTTs and therefore reduce PTTs' revenues. With less money in hand, the PTT's will find themselves unable to subsidize the domestic services to the same extent as they would if the by-pass did not exist. As a result, the charges for domestic services will likely rise.

The other group of victims are the developing countries who subscribe to the Intelsat services. If Intelsat wants to successfully compete with the separate systems, it has to give up the average pricing structure and charge for services in the heavy-traffic regions on a cost basis. Intelsat's charge for heavy-traffic regions would then drop below what it would be when the average pricing structure is followed. Consequently, the thin-traffic regions would get less subsidy and the prices charged for those regions would be driven up. Since most developing countries are located in the thin-traffic regions, they would have to choose either to pay more for the same service or reduce their use of the service.

In a further analysis, only the developing countries are the real victims. In the developed countries, although users of the domestic public-switched services may pay more than before for the same services, users of the by-pass links may do just the opposite. So, on the national level, the losses and gains balance off, or perhaps gains may exceed losses. But the situation is different in the developing countries. Their national economy is not so developed that the widespread use of customized international telecommunications service is possible. For the most part the developing countries only need Intelsat's public-switched services. Therefore, if Intelsat raises its service charges, the developing countries would suffer a net loss.

C. Conclusion: Intelsat in a New Era

In the heat of the debates over the U.S. separate satellite systems, Intelsat's former director general Richard Colino asserted: "Private sector competition in telecommunications is an alien concept to the rest of the world. The overwhelming majority of our members are against competition." (19) But by the end of 1986, Colino's successor, acting director general John Hampton, admitted that Intelsat would accept competition. (20)

This shift of attitude symbolizes Intelsat's farewell to an old era, which was characterized by Intelsat's monopoly over international satellite communication. In

that era, satellite communication was considered the single most powerful, but not yet matured, communication means. So, monopoly appeared to be the optimal way to utilize the satellite technology on a global scale. This has been proved true by Intelsat's past success. But circumstances gradually changed in the 1970s and thereafter. Satellite technology matured, roof antennas on customers' premises became possible, and users began to ask for customized services. A single satellite system seemed unable to satisfy such diverse market demands. Consequently, the old idea of a single global satellite system began to lose support, and competition arrived.

In the new era, Intelsat has had to learn to live with competition. Like it or not, competition is now here. Even if there were no proposals for separate satellite systems, that would make no difference, because other competitors are knocking at Intelsat's door too. They are the trans-Atlantic optical fiber cables, which is scheduled for service in 1988, and a similar cable across the Pacific, which is still in planning stages. One research report suggests that Intelsat's real competitors are not the U.S. separate systems but the transoceanic optical fiber cables, which are at least equally powerful in transmission capacity. (21)

Today, Intelsat still holds monopoly over the public-switched services, but it must compete with the separate systems in other markets. One consequence of this

competition is that customers in developed countries may be offered better, more diversified services. However, this competition may not have the same positive impact on the developing countries. Rather, it may hurt them. This is a dilemma posed by the new era for Intelsat. In the past two decades, Intelsat well served the interests of both developed and developing countries. How to continue to do so under today's new circumstances is a question waiting to be answered by Intelsat and its members.

(1) Business Week, Apr. 6, 1981.

(2) These international record carriers are RCA Globcom, ITT Worldcom, Western Union International, TRT Telecom, FTCC and US-Liberia Radio.

(3) These three dominant IRCs are RCA Globcom, ITT Worldcom and Western Union International.

(4) These five gateway cities are New York, Washington D.C., Miami, New Orleans and San Francisco.

(5) See the FCC's document (FCC 79-844), p.6.

(6) Service on a permissive or secondary basis means that customers may use the facilities in a way that they find operationally acceptable, but the service provider (here the AT&T) may not build facilities which are designed to be most efficiently used to carry this "secondary" service.

(7) See the FCC's document (FCC 79-842).

(8) See the FCC's document (FCC 79-843).

(9) See the FCC's document (FCC 79-841).

(10) See the FCC's document (FCC 79-844).

(11) See the FCC's document (FCC 79-845).

(12) See the FCC's document (FCC 80-632).

(13) See the FCC's documents (FCC 80-634, FCC 80-588).

(14) Aviation Week & Space Technology, Apr. 15, 1985, p.77

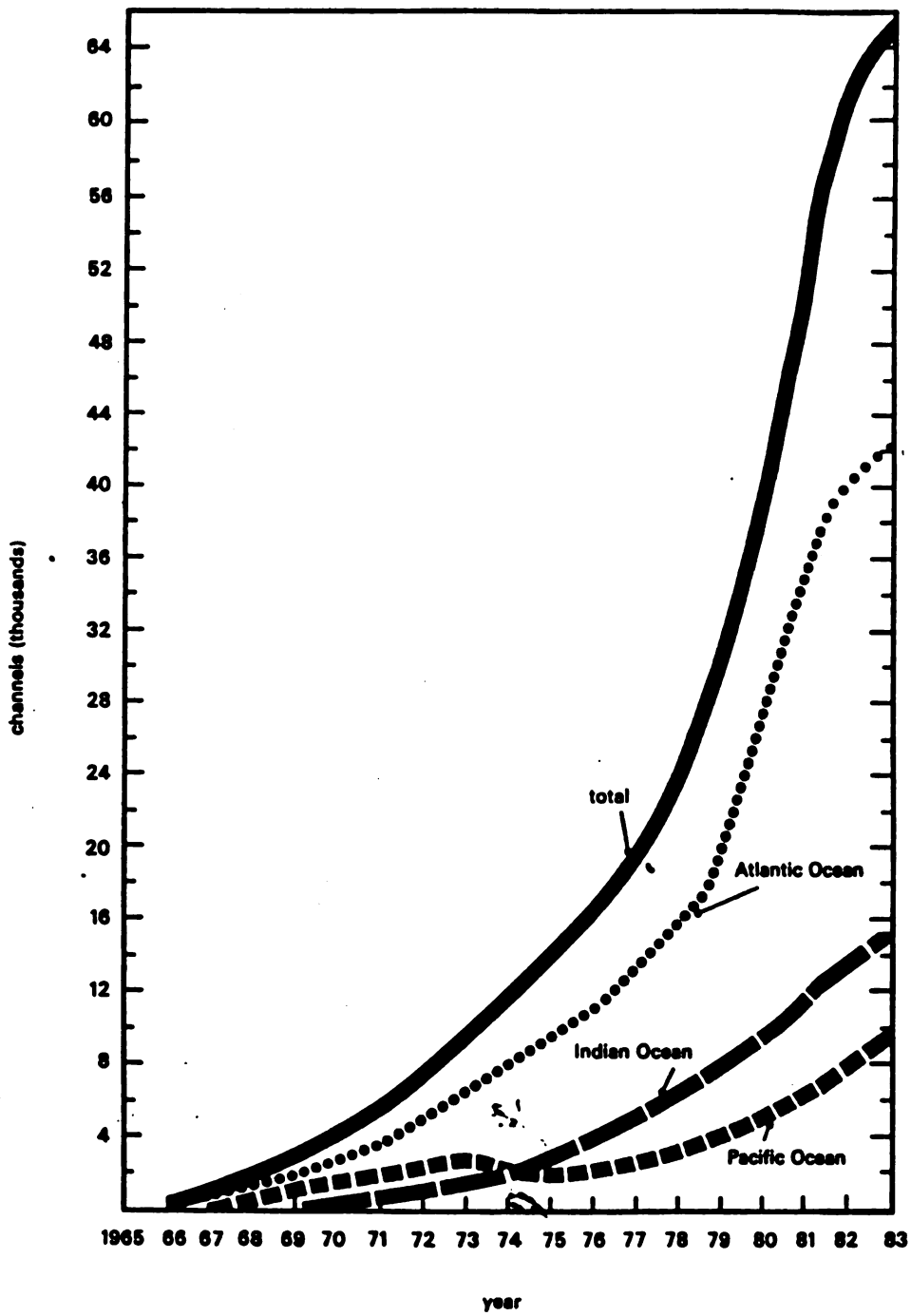
(15) Broadcasting, Dec. 17, 1984, p.72.

(16) Aviation Week & Space Technology, Feb. 11, 1985, p.29. The proposal was made by the following 21 Intelsat nations: Barbados, Burkina Faso (formerly Upper Volta), Cameroon, Chad, China, Congo, Dominican Republic, Egypt, Fiji, Gabon, Jordan, Madagascar, Niger, Nigeria, Senegal, Sri Lanka, Tanzania, Uganda, Vietnam, Yugoslavia and Zambia. The proposal however failed to win an approval from the Assembly of Parties.

APPENDICES

APPENDIX A

GROWTH IN INTELSAT TRAFFIC (1965-1983)



Source: Telecommunication Journal, January 1985, p.27.

APPENDIX B

FOREIGN LETTERS OF CONCERN TO THE FCC

1. Department of Foreign Affairs. Director General, Republic of South Africa, December 10, 1984.
2. Ministry of Communications Post & Telecommunications Division, Bangladesh, December 17, 1984.
3. Pakistan Telegraph & Telephone, December 19, 1984.
4. State Minister of Transport and Communications - Democratic Republic of the Sudan, Hassan I. Bashir, January 3, 1985.
5. Office of Director - General; Brig. Masoor, Pakistan Telegraph & Telephone, January 7, 1985.
6. National Administrator of Telecommunications; Miguel C Guares, January 7, 1985.
7. CPRM Telecom International, Portugal, January 30, 1985.
8. Trinidad & Tobago Telecomm. Co. Ltd., West Indies, January 25, 1985.
9. Phillipine Communications Satellite Corp, Phillipines, January 23, 1985.
10. Dominican Republic CODETEL - Santo Domingo, January 28, 1985.
11. Telecommunications Authority Cyprus, January 28, 1985.
12. Ministere Des Postes & Telecommunications, Republique Du TCHAD, Chad, September 11, 1984.
13. Amman/Telecommunications Corporation, Jordan, September 13, 1984.
14. Gentel, Paris TLX, J. Grisier, France, October 22, 1984.
15. Hellenic Telecommunications Organization S.A., G. Douroudakis, Greece, October 30, 1984.
16. NICATELSAT, Nicaraqua, October 31, 1984.
17. Telespazio, Italy, November 13, 1984.
18. Nigerian External Telecommunications, Ltd., Nigeria, November 14, 1984.
19. Ministry of P&T, Beirut, Lebanon, Joseph Hachem, November 16, 1985.
20. Mohammad Shabid Ismail, Jordan, November 20, 1984.
21. Irish Telecommunications Board, T.J. Byrne's, CEO, Ireland, December 4, 1984.
22. Socialist Republic of Vietnam; Director General of Telecommunications Department, December 4, 1984.
23. Post & Telegraph Department, Director General, Bangkok Thailand, December 5, 1984.
24. Barbados Telecommunications Ltd., Barbados, April 20, 1984.
25. Hellenic Telecommunications Org. S.A. [OTE S.A.], April 20, 1984.
26. Ministerio de Communicaiones, Colombia, April 23, 1984.
27. Swedish Telecommunications Administration, Sweden, May 25, 1984.
28. General Directorate of Posts and Telegraphs. Denmark. May 25, 1984.
29. Netherlands Postal and Telecommunications Services, Netherlands, May 25, 1984.
30. Minister for Foreign Affairs and Trade, New Guinea, May 31, 1984.
31. Compantria Portuguesa Radio Marconi (CPRM), Portugal, May 31, 1984.
32. Hustituto Ecuatoriano de Telecommunicaciones. Ecuador, May 31, 1984.
33. Ministry of Posts and Telecommunications, W. Germany, June 18, 1984.

34. Departement des P.T.T., Zaire. June 26, 1984.
35. Trinidad & Tobago External Telecommunications Co., Ltd. [TEXTEL], June 27, 1984.
36. Telecommunications Internationales de la Cote D'Ivorie [Intelci].
37. Administration Marocaine des Postes el Telecommunications, Morocco, June 23, 1984.
38. Korea Telecommunications Agency re Resolution. S. Korea, August 6, 1984.
39. Ethiopian Telecommunications Authority, Ethiopia, August 28, 1984.
40. Telecommunications Inernationales Du Mali, Mali, September 4, 1984.
41. Compania Telefonica Nacional de Espana, Spain, March 6, 1984.
42. Ministry of Communications, United Arab Emirates, March 6. 1984.
43. Madagascar, March 6, 1984.
44. Regie des Telegraphes et des Telephones de Belgrique, Belgium, March 8, 1984.
45. Korea Telecommunication Authority, South Korea, March 12, 1984.
46. Telecommunications Department, Malaysia, March 12, 1984.
47. Philippine Communications Satellite Corporation, March 12, 1984.
48. Establishment General des Telecommunication, Syria, March 12, 1984.
49. Empresa Brasileira de Telecomunicacoes S.A. Brazil, March 12, 1984.
50. Norwegian Telecommunications Adriun, Norway. March 12, 1984.
51. International Telecommunications of Cameroon, Cameroon, March 14, 1984.
52. Entel (Empresa Nacional de Telecommunicaciones del Peru, March 14, 1984.
53. General Directorate of Swiss PTT, Switzerland, March 20, 1984.
54. Cypress Telecommunications Authority, Cyprus, March 20, 1984.
55. Empresa Nacional de Telecommunicaciones S.A., Chile, March 20, 1984.
56. Compania Domicana de Telefonos, Dominican Republic, March 20, 1984.
57. Telesengal, Senegal, March 20, 1984.
58. Ecuadorian Institute of Telecommunications, Ecuador, March 20, 1984.
59. Overseas Telecommunications Commission (OTC), Australia, March 21, 1984
60. Ministry of PTT, Conference & Int. Orgn. Dept., Saudi Arabia, March 28, 1984.
61. Telecommunications O'Haiti SAM, Haiti, April 9, 1984.
62. Secretariat of State. Vatican. April 9, 1984.
63. Postes et des Telegraphes, Austria, April 11, 1984.
64. Posts and Telecommunications Corp., Tanzania, April 11, 1984.
65. Overseas Telecommunication Service, Sri Lanka, April 11, 1984.
66. General Directorate of Posts and Telecommunications, Finland, April 11, 1984.
67. Kokusai Denshin Denwa Co., Ltd. [KDD], Japan, April 11, 1984.
68. General Directorate of Posts and Telecommunications, Iceland, April 17, 1985.
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