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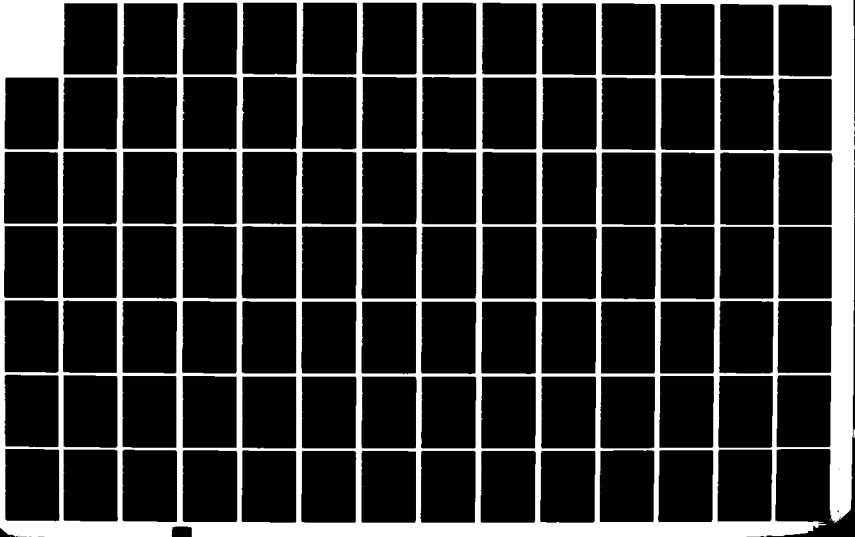

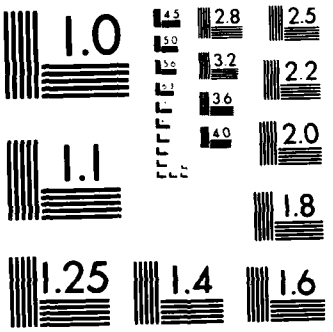

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The purpose of this thesis is to describe the concept of broadcasting from satellites directly to the viewer equipped with a small, inexpensive receiving antenna, and the evolution of this technology as a means of commercial broadcast. Emphasis is placed on the problems of developing a regulatory framework for direct broadcast satellite (DBS) by the FCC. The opposition of the existing broadcasters to the unregulated development of DBS is explored in light of the possible effect that DBS may have on the economic base, audience

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and advertising revenue of existing broadcasters.

The information of this study was obtained from government documents, legal journals, books and the popular press.

Two basic conclusions are drawn from this study: First, that the existing broadcasters have opposed the "marketplace" development of DBS, and second, that DBS does not pose as great a threat, at least in the near term, as the broadcasters fear.

Star On The Horizon: The Emergence of the Direct Broadcast Satellite in American Mass Communications

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STAR ON THE HORIZON: THE EMERGENCE OF THE DIRECT BROADCAST SATELLITE IN AMERICAN MASS COMMUNICATIONS

by

James Harold Thomas
B.S.J., University of Kansas, 1975

Submitted to the School of Journalism and Mass Communications and the Faculty of the Graduate School of the University of Kansas in partial fulfillment of the requirements for the degree of Master of Science.

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STAR ON THE HORIZON: THE EMERGENCE OF THE DIRECT BROADCAST SATELLITE IN AMERICAN MASS COMMUNICATIONS

James Harold Thomas, M.S.

University of Kansas, 1985

Adviser: Mike Kautsch

The purpose of this thesis is to describe the concept of broadcasting from satellites directly to the viewer equipped with a small, inexpensive receiving antenna, and the evolution of this technology as a means of commercial broadcast. Emphasis is placed on the problems of developing a regulatory framework for DBS by the Federal Communications Commission. The opposition of the existing broadcasters to the unregulated development of direct broadcast satellite (DBS) is explored in light of the possible effect that DBS may have on the economic base, audience, and advertising revenue of existing broadcasters.

The information for this study was obtained from government documents, legal journals, books and the popular press.

Two basic conclusions are drawn from this study: First, that the existing broadcasters have opposed the "marketplace" development of DBS, and second, that DBS does not pose as great a threat, at least in the near term, as the broaadcasters fear.

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CHAPTER ONE

INTRODUCTION

Our nation is the first to make the transition from an agricultural society through industrialization to an information society. The increasing emphasis on the production, storage and distribution of information is the major activity of this society. The direct broadcast satellite (DBS) could play a major role in the information distribution systems of the future.

In a few years, several million television homes may receive additional channels of *video programming* directly from a satellite, brought to them by a small dish antenna mounted on their rooves. Journalists, advertisers, and mass communications professionals look eagerly toward the opportunity to beam programming, advertising and other information directly into the consumer's home regardless of distance, geography or natural barriers.

The emergence of DBS constitutes a controversial development in modern communications technology. While the current satellite communications systems used by common carriers such as Western Union and American Telephone and Telegraph (AT&T) require large and

sophisticated earth stations for distribution of signals, the direct broadcast satellite can broadcast television or other data directly to the home. A single satellite can now cover an entire nation or even an entire sub-continent with a beam of programming to reach homes that up until now had little or no quality television reception.

Ever since the feasibility of this new technology became apparent, questions of how to regulate it and how to establish policy for its development have been debated. DBS is viewed by some experts as everything from a source of hope for universal knowledge, to a potential cause of breakdown of our current communications system. The anticipated effects of the DBS system on national and international audiences have given rise to debate by the United Nations and agencies of the U.S. government for the last two decades.

The issues debated are those that inevitably seem to arise in discussion of new and revolutionary communications means--freedom of speech, censorship, fairness, access, prior consent, commercialization, and the means, if any, to regulate the technology to provide for the greater good of mankind.

There are two schools of thought on the amount of control necessary to deal with an advancing technology

of this type. One school calls for totally unhampered development, free of all regulation and restrictions. Those supporting this mode of development feel that laws and policies should result from experience with the effects of innovation. The other school of thought asserts that a firm policy is important to guide technology.[1]

Purpose

In the last ten years, very few books have been written on the subject of domestic DBS development. Most of the material available today is found in government documents, legal journals, technical journals, and the popular press. Much of this documentation is written in technical terms and is difficult to read. The popular press, news magazines and trade publications, often give only a cursory treatment to DBS without offering interpretation of the effect DBS may have on existing broadcasters. This thesis gathers into one publication the current state of development of DBS and the possible effect of DBS on the domestic broadcasting industry and media regulation. It is hoped that this thesis will help future scholars who

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[1]Benno Signitzer, Regulation of Direct Broadcasting From Satellites (New York: Praeger, 1976), p. xi.

are doing research on this new and constantly evolving technology.

This thesis will deal with the development of the concept of direct broadcasting from satellites and the evolution of DBS as a means of commercial broadcast. These ideas will be studied in light of controversy over the subject of direct broadcast from space, and the efforts of the various international and domestic regulatory bodies in establishing a policy to guide this new technology. The various attempts at controlling the development of DBS by the broadcasting industry and government agencies will be explored in depth. This will include the process of developing the DBS regulatory framework by the Federal Communications Commission (FCC) and the opposition of the current commercial broadcasters to this form of regulation.

The economics of DBS technology will be explored to attempt to gauge their influence on the broadcasting industry.

Hypothesis

I propose to show that the existing television broadcasters have opposed DBS because it may become the dominant form of broadcasting in the United States, thus drastically altering the current economic base of the competitive broadcasting systems, and because DBS could

inflict substantial economic harm on the existing broadcasting industry by reducing audiences and advertising revenue.

I also propose that, in the near term, it is unlikely that DBS poses as great a threat as the existing broadcasters perceive.

Definition of Terms

EXISTING TELEVISION BROADCASTERS--The television networks, cable companies, affiliated local broadcast stations, and program production companies that currently produce and distribute television news, entertainment, commercial and informational programming through the air or over some type of electrical conductor in the United States through a system of affiliated broadcast stations and cable outlets. Examples of existing broadcasters are the National Broadcasting Company (NBC), The Columbia Broadcasting Company (CBS), the American Broadcasting Company (ABC), and Turner Broadcasting.

DIRECT BROADCAST SATELLITE--An orbiting space platform that transmits or re-transmits signals that are intended for reception by the general public.

SUBSTANTIAL ECONOMIC HARM--A decline in advertising revenue sufficient to produce reduced profits and

possibly non-profitable operations.

EXISTING BROADCAST INDUSTRY--Broadcast systems established under this country's system of free enterprise; advertiser, public, or subscription supported; available to anyone with the equipment to receive the broadcast signals; and regulated by the U.S. government in accordance with international law.

Method

Several kinds of sources were used for this research. To identify facts and issues about the development of DBS in the United States, I used background material, mostly books about satellite communications, legal journals, encyclopedias, and magazines. To trace the development of DBS, I used various government reports, FCC documents, United Nations documents, regulations, and case law. When official documents were not available concerning a point of development, secondary sources were used to fill in the gaps. Broadcasting magazine was relied on heavily because of the comprehensive coverage it provided on the development of DBS without going into extreme technical detail.

According to Dissertation Abstracts and Master's Abstracts, there has been little research on this

subject in the last few years. The research most closely related to this topic was completed in 1978.[2] Related works are concerned with the role of the United Nations in DBS development.[3]

The Concept of Satellite Communications

The idea of radio transmission through space was probably first mentioned in the novel Ralph 124C4+ (1911), by the pioneer science fiction writer Hugo Gernsback. However, the idea of a radio retransmission station in space was slow to develop.

In 1945, Arthur C. Clarke proposed the use of a manned space satellite equipped with transmitters and receivers as a relay station for radio communication between widely scattered points on the surface of the Earth.[4] Clarke proposed that the station should be positioned at an altitude of 22,300 miles, roughly over

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[2]Richard Taylor, "Satellite Direct Broadcasting: The Prospects for Development" (Ph.D. diss., Columbia University Teachers College, 1978)

[3]Kathryn Queency, "An Analysis of the Role of the United Nations in the Formulation of Principles Governing Direct Broadcast Satellites," (Ph.D. diss., Ohio University, 1975), Benno Signitzer, "The Ordering of the Direct Broadcast Satellite," (Ph.D. diss., Bowling Green State University, 1975).

[4]Arthur C. Clarke, "Extra-Terrestrial Relays," Wireless World, (October, 1945).

the equator, so that its period of revolution around the Earth would be the same as the rotation of the Earth. This geo-synchronous satellite, which would appear to an observer on the Earth to remain in the same position in the sky, would be powered by the use of solar power, either a steam engine operated by solar heat or photoelectric devices.

The American engineer J.R. Pierce examined various types of unmanned communications satellites in a 1945 talk, later published in 1955.[5] He analyzed passive devices, such as metallized balloons and large reflectors, that would reflect back to Earth any radio signal directed toward them. Pierce discussed a variety of different satellite orbit patterns including low orbits that would result in the satellite's passing over a portion of the earth's surface several times during a daily orbit cycle.

Both of these early papers in satellite communications showed that very low power outputs would suffice for space retransmission stations or relays.

Early Space Communications

One of the first experiments in attempting to

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[5]J.R. Pierce, Orbiting Radio Relays," Talk to Princeton, N.J. section of IRE, 14 October 1954; in Jet Populsion, 25 (1955), pp. 153-157.

broadcast to a wide area at a low cost from a non-terrestrial transmitter was conducted by Westinghouse and the Martin Aircraft Company in 1946. They mounted a television transmitter in an aircraft that circled at 30,000 feet. It was found that this form of broadcast, called "Stratovision," could cover a circle 50-200 miles across.[6] The FCC was interested in this idea, but dropped it when research indicated that more than twenty channels would be necessary for national coverage and that the instability of the aircraft may affect the principle of "Fair and equitable distribution of television facilities to the various communities" as promoted by the Communications Act of 1934.[7] Stratovision was revived in 1961 for educational television broadcasting in Indiana, Ohio, Illinois, Kentucky, Michigan, and Wisconsin on two UHF channels, but folded because of financial problems in 1968.[8]

In 1957 the Soviet Union shocked the world with its launch of SPUTNIK on October 6. This 184-pound satellite orbited the Earth every 96.2 minutes and started the space age.[9] With its loss of world leadership in

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[6]Christopher H. Sterling and John M Kittross, Stay Tuned (Belmont, Calif.: Wadsworth, 1978), p. 299.

[7]Ibid., p. 300. [8]Ibid., p. 389.

[9]Lloyd S. Musolf, Communications Satellites in Political Orbit (San Francisco: Chandler, 1958), p. 14.

space technology as a catalyst, the United States scrambled to launch its own satellite. EXPLORER I was launched by the United States on January 1, 1958.

The first experiment in satellite communications was the U.S. government's project SCORE(Signal Communication by Orbiting Relay Equipment), which launched a satellite on December 18, 1958. This satellite traveled in an elliptical orbit. It operated in both a real-time relay mode, in which the satellite immediately retransmitted messages it received, and a delayed-repeater mode, in which messages were taped and rebroadcast later. SCORE lasted for thirteen days and was destroyed after its batteries failed.

ECHO I, a one-hundred-foot diameter metallized Mylar balloon was launched an August 12, 1960. This satellite was placed in a low, circular orbit and was used as a passive reflector of radio signals. The communications tests, using very powerful earth station transmitters, were successful.[10] ECHO I stimulated a great deal of interest in the further development of satellites, especially the need for active satellite repeaters. As a result, AT&T built TELSTAR, and it was launched on July 10, 1962.

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[10]J.R. Pierce, The Beginnings of Satellite Communications (San Francisco: San Francisco Press, 1968), p. 19.

TELSTAR was the first satellite to transmit live television programs and telephone conversations across the Atlantic Ocean. This early active satellite allowed scientists to learn much about the effects of space particle radiation on the circuits and components of satellites. Because of damage done by particle radiation, TELSTAR was turned off on February 21, 1963.[11]

In 1962, Congress passed the Communications Satellite Act, after considerable debate, creating the Comsat Corporation and giving it a U.S. monopoly on international satellite communication. However, no specific provisions were made in the Act for providing domestic forms of satellite service.[12]

International communication required the participation of many nations so the International Telecommunications Satellite Consortium (Intelsat) was formed as an international joint venture in August 1964, when eleven nations signed agreements forming a global communications system. Comsat is the U.S. participant in Intelsat and serves as manager of the space segment

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[11]Ibid., p. 25.

[12]For an in-depth look at the controversy involved in the development of a domestic satellite policy, see Robert S. Magnant, Domestic Satellite: An FCC Giant Step (Boulder, Colo.: Westview Press, 1977).

of the global system. Earth stations in the system are owned and managed by member nations. Intelsat is responsible for the design, development, and maintenance of the space segment. Nations that are not members of Intelsat can obtain satellite service through Comsat General, a subsidiary of Comsat. Domestically, Comsat has become a marketing company for toll circuits on its satellites.[13]

The first successful synchronous satellite, SYNCOM II, was launched on July 26, 1963. The light weight of this satellite (eighty-six pounds), made its insertion into a synchronous orbit possible with the small booster rockets available at the time. The principle of geo-synchronous orbit, which allows a satellite to constantly serve a specific area of the earth, was adopted quickly after SYNCOM II. In great part, this was because the technology necessary was developed by an aircraft company (Hughes) as competition for the common carriers that had dominated the development of satellite technology up to that time.[14]

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[13]Pierce, Beginnings, p. 32.

[14]William G. Shepard, "The Competitive Margin in Communications," Technological Changes in Regulated Industries (Washington, D.C.: The Brookings Institute, 1971) pp. 105-106. By some estimates this occurred at least five years and hundreds of millions of dollars sooner than the carriers would have otherwise achieved it.

Exploiting the success of SYNCOM II, the United States launched INTELSAT I (EARLY BIRD) on April 6, 1965. This satellite was the first commercial international communication satellite, and the first project of the Communications Satellite Corporation (Comsat).[15] EARLY BIRD was capable of 240 two-way telephone conversations and one television channel.[16]

General Technical Characteristics

A typical communications satellite has a number of transponders, a combination transmitter and receiver, that relays a channel or channels of communications. Each of these transponders has a receiver tuned to a band of frequencies to receive the signal (uplink), and a frequency shifter to lower the received signal to the transmit (downlink) range of frequencies. There are also a power amplifier to produce an adequate amount of output (transmit) power and appropriate antennas. The number of transponders indicates the communication capacity of the satellite. Typically, one transponder can handle 1200 telephone voice signals or one

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[15]For more detailed discussion of Comsat and its role, see Martha J. Barnes, "The Role of the Communications Satellite Corporation in International and Domestic Satellite Communications Development" (M.A. Thesis, University of Kansas, 1970).

[16]Pierce, Beginnings, p. 33.

television signal. The bandwidth of a transponder is commonly 36 MHZ.

International radio regulations assign three major frequency bands for non-military satellite communication. Each band consists of a range of uplinks and downlinks at somewhat lower frequencies. The lower frequency is used for the downlink to minimize the signal degradation caused by rain and atmospheric conditions.

Direct broadcast satellites fall into three categories--high-power, medium-power, and low-power. In the United States these categories are also distinguished by the satellite transmission frequencies. High-power DBS uses the dedicated DBS band (12.2-12.7 GHZ); medium-power DBS the fixed satellite Ku band (11.7-12.2 GHZ); and low-power DBS, the fixed satellite C-band (4-6 GHZ). The C-band is the frequency band used by the common "backyard" dish antennas currently in use by some television households. The more transmit power the satellite has, the smaller the receiving dish can be. A high-power satellite will commonly have 200 watt transponders, requiring a dish antenna approximately one meter in diameter, and a medium-power satellite commonly has 25 to 40 watt transponders, requiring an antenna two meters in diameter.

To receive DBS signals, the consumer would need a dish antenna, a converter to make the incoming signal compatible with the consumer's television set, a descrambling device if the service required it, and some interconnecting hardware and cables.

Solar cells are the primary source of electrical power in communications satellites, although some experimental satellites and some Soviet satellites have used thermoelectric generators heated by radioisotopes. A synchronous satellite can be eclipsed by the Earth and lose its solar power for as long as seventy minutes and therefore must carry batteries to provide power during the eclipse.

The United States now has the greatest number of domestic satellites in the world. These satellites are operated by several companies including Comsat General, Western Union, AT&T, and Satellite Business Service (SBS).

CHAPTER TWO

THE RISE OF THE DIRECT BROADCAST SATELLITE

The idea of direct broadcasting from satellites is unlike that of other satellites in that the DBS broadcasts directly to a community or home antenna bringing programming directly into the home. A community receiver in this sense is one serving educational facilities, multiple dwellings. apartments, or a village. It is this reception directly into the home, bypassing networks and local stations, that makes DBS controversial.

By beaming programming directly from space to a home receiver, DBS overcomes traditional barriers to communications such as natural terrain obstacles and national borders. DBS bypasses the traditional control points, networks and local transmitters, used by governments to regulate broadcasting. Without these controls, many nations fear that DBS signals crossing international borders without prior consent may weaken national sovereignty and allow cultural or political intrusion by other countries. Satellite signals crossing national boundaries either

DBS would be in the public interest because more and better service could be provided to rural and remote areas of than ever before by utilizing DBS. These concepts were in keeping with the spirit of the Communications Act of 1934 that there be equitable distribution of communications services to all the states and communities, often referred to as "localism."

The first time that direct broadcasting from space was discussed in an international forum was during the Extraordinary Administrative Radio Conference (EARC) of 1963, held by the ITU, a branch of the United Nations. The purpose of this conference was to allocate frequency bands for satellite radio communications. The EARC also decided upon the first legal definition of broadcast satellite service (BSS) (known as DBS in the United States) by defining DBS as,

> A space service in which signals transmitted or retransmitted by reflection from an object in orbit around the Earth, are intended for direct reception by the general public.[1]

During this conference the United States and France offered contradictory proposals for DBS. The French wanted to prohibit any broadcast, be it radio or television from an object in space. The United States would permit experimental broadcast in technically

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[1]Eugene Pepin, "Space Law II," Impact of Science on Society, 21 (July-Sept., 1971), p. 243.

intentionally or unintentionally are known as "spillover."

Because DBS is a new technology, there is little experience to draw upon in determining how or how much to regulate it as a communications medium. All satellite communications require use of frequency spectrum and orbital slots. These are finite resources. How to equitably allocate these resources among the various countries always leads to debate at the international level.

International and domestic regulatory bodies have debated DBS regulatory issues for more than twenty years.

The United Nations first tackled the issue in 1963, by defining DBS. It was eleven more years before the ATS-6, an international experimental DBS, was launched. After debating DBS for more than a decade, the United Nations, through the International Telecommunications Union (ITU), approved conventional television DBS broadcast in 1977. Two years later the first U.S. company announced plans for a domestic DBS system. The announcement was met immediately by protests from the existing broadcasters. The Federal Communications Commission's (FCC) policy making process became the forum for the debate on DBS. In 1982, the FCC determined that

suited bands, those bands in which existing technologies and equipment would allow communications. The results of the conference were vague, the lack of proper definition of the technical characteristics of DBS and the failure to designate frequency bands helped create many of the problems the ITU would face in later years in attempting to guide the development of this new broadcast medium.

On September 21, 1965, Hughes Aircraft and the American Broadcasting Company (ABC) applied to the FCC for authorization to establish a satellite broadcasting service providing programming to affiliates over a wide geographic area. This was the first application by anyone to establish any kind of direct satellite broadcasting in the United States. This application was a surprise to the FCC. The application was denied without prejudice until the Commission could resolve certain issues of public policy and law that this unique request had presented.[2] Since the Commission has a statutory obligation to study new uses of the spectrum (47 USC Sec. 307 (g)), it issued a Notice of Inquiry on March 2, 1966, to determine whether nongovernment agencies can construct and operate communications satellite facilities for the purpose of meeting their

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[2] 2 FCC 2d 671, Letter to ABC, 66-215.

private or specialized domestic communications requirements.[3]

In 1968, the United Nations' Committee on the Peaceful Use of Outer Space (COPUOS) formed a working group to study DBS. This working group met several times from 1969 to 1975 and offered many suggestions on the technical, cultural, social, and legal implications of DBS.

In its first session, the working group considered the technical aspects of DBS and concluded that DBS to unaugmented home receivers would not be possible for the period 1970-85. However, it would be possible for DBS to reach community receivers in the early 1970s. Community reception using larger antennas and more complex equipment than individual reception is also included in the broadcasting-satellite service under ITU definition. (ITU Radio Regulation 84AP Spa2).

The second session of the group was held in July 1969, and considered the social, cultural and legal implications of DBS. This session concluded that DBS had substantial potential for benefit to all mankind. Also, that there was a need for bilateral, multilateral and regional cooperation to strengthen international agreements in this field. This session also pointed out that there was no international institution with the

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[3] 2 FCC 2d 668-70, Notice of Inquiry.

competence to take action in all the fields of DBS, so the working group recommended that the United Nations and COPUOS continue to coordinate activity and make suggestions on how to regulate DBS.

In May 1970, the working group met for its third session and found that DBS should be available for community reception in the near future. Using DBS for television transmission was seen as a great medium for improving education, especially in developing countries. The group also stated that effective DBS deployment would require large-scale international cooperation.

The fourth session of the working group was in June 1973, and the primary attention of the group focused on the legal and political problems of DBS. The group also sought increased international cooperation to make DBS available to all countries, especially to developing countries.

In March, 1974, the working group met for the fifth time and elaborated on the legal principles of DBS. The crucial questions of prior consent, spillover, and program content, remained unsolved. Moreover, the working group could not come to a decision as to its further activities.[4]

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[4]Benno Signitzer, Regulation of Direct Broadcast Satellites (New York: Praeger, 1976), pp. 34-55.

The World Administrative Radio Conference on Space Telecommunications (WARC-ST) of 1971, opened many new options for satellite communications. Allocations of frequency spectrum were made to accommodate anticipated communication satellite use through the 1970s. Specific bands of frequencies were designated for use by broadcasting satellites.

The primary frequencies allocated for DBS were in the 2500-2690 MHZ band. This band was limited to community antenna reception. The frequency range of 11.7-12.2 GHZ (11.7-12.5 GHZ in Region 1 (Eastern Hemisphere excluding Southeast Asia and Australia)) was allocated for worldwide use. Additionally, the range 22.5-23 GHZ was allocated for DBS in Region 3 (Southeast Asia and Australia).[5] The conference also adopted the following definition for broadcasting satellite service (DBS) as:

> A radiocommunication service in which signals transmitted or retransmitted by space stations are intended for direct reception by the general public. In the broadcasting satellite service, the term direct reception shall encompass both individual reception and community reception.[6]

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[5]U.N., Department of Political and Security Council Affairs, Space Activites and Resources (A/AC.105/100), 1972, p. 53.

[6]Ibid., p. 52.

DBS Becomes a Reality

Work on DBS began in 1974 with the launch of the ATS-6 satellite by NASA. ATS-6 carried several subsystems, two of which were for television. One of these television systems was a joint effort by the United States and India to study educational television direct broadcast. The other system was used by the United States for educational television tests by the Corporation for Public Broadcasting, the Veteran's Administration, and the Department of Health, Education and Welfare.[7]

ATS-6 transmitted at 2.6 GHZ with fifteen watts of output power. This required a nine-foot diameter dish antenna for the earth station. All of the broadcasts were made to receivers set up to display the programming to entire villages. No direct-to-home broadcasts were made. The satellite was used for educational, health and cultural broadcast to the Rocky Mountains, Alaska and Appalachia. The experiment proved successful. In June, 1975, the satellite was repositioned over India and loaned to that country for its use. India used ATS-6 for educational broadcast experiments.[8]

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[7]U.S., Congress, House, Committee on Government Operations, Direct Broadcast Satellite: International Representation and Domestic Regulation, H. Rept. 97-730, 97th Cong., 2d sess., 1982, p. 4.

[8]Signitzer, Regulation of DBS, p. 15.

The first high-power direct broadcast satellite was launched in January 1976, by Communications Technology Satellite (CTS), a joint U.S. and Canadian venture. This satellite broadcast in the 12 GHZ band and had a much more powerful (200 watt) transponder. With this satellite, the FCC tested low-cost small earth stations from two to five feet in diameter during January 1977. Excellent results were achieved under a variety of conditions with this satellite.[9]

In October 1976, the Soviets launched the EKRAN satellite for direct broadcast of television for entertainment and experiments in receiver technology. EKRAN I broadcast to Siberia and the northern regions of Russia in the 6 GHZ band, utilizing a 300 watt transponder.

Many other nations also began working on DBS systems and there emerged the potential for conflict over spectrum allocation and intentional or incidental delivery of programming over international boundaries. Under international radio regulations, however, every attempt is to be made by the broadcasting country to reduce to the maximum extent possible the radiation over the territory of another country unless there is a prior arrangement with that country.

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[9]"Direct Broadcast Satellite: Special Report," Broadcasting, 99 (September 15, 1980), p. 36.

The increasing interest in DBS led the ITU to hold a World Administrative Radio Conference (WARC) in 1977. During this conference, DBS was approved for conventional television broadcast in Africa, Europe and Asia. Even though Japan sought to have high definition television (HDTV)[10] authorized, the conference prohibited HDTV broadcast except for experimental purposes. The next year, Japan demonstrated direct broadcast of HDTV using their YURI satellite that was launched by NASA in April 1978. Canada also began DBS experiments in 1978 utilizing the ANIK-B satellite.[11]

Many countries, especially Western Europe, continued to develop plans for DBS systems under the agreements reached during WARC 1977. DBS development in the United States was delayed until the ITU met to approve DBS for the rest of the globe and decide frequency allocations at the next WARC, scheduled for 1979.

The WARC of 1979 opened the gates for development of DBS in the United States. At the conference, held by

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[10]HDTV-- A technical standard of television broadcast that uses a greater amount of scanning lines, usually over a thousand, than the current 525-line scan used in the United States. This results in greater picture clarity. However, the system requires a greater bandwidth, 45-50 MHZ, to pass the signal.

[11]"Special Report," Broadcasting, (September 15, 1980), p. 37.

the ITU, specific blocks of frequencies were authorized for use by DBS. These allocations were made for world-wide use by any DBS even though the specific requirements of Region 2, North and South America, were to be discussed in much greater detail at the regional conference scheduled for 1983. The 1979 WARC also authorized the governments of Region 2 to implement DBS prior to the 1983 conference, using the frequency bands allocated, with the understanding that the interim systems would have to conform to the requirements established at the 1983 conference.

After the 1979 WARC, the United States began planning for DBS utilizing the 12.3-12.7 GHZ band for downlinks, and 17.3-17.8 GHZ for uplinks.[12]

In August 1979, Comsat announced a plan to develop a domestic commercial DBS system. Comsat's plan for a national DBS system was to put several satellites in geostationary orbit. Sears, Roebuck and Company worked with Comsat on a joint venture for a DBS system until talks broke down the next year.

The National Association of Broadcasters (NAB) and ABC were opposed to Comsat's entry into the commercial broadcast arena. They filed petitions with the FCC stating that the Comsat Act of 1962 limited Comsat's

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[12]Ibid., p. 38.

activities to common carrier functions.[13]

In response to these fears, Joe Charyk, the President of Comsat said,

> We don't visualize that anything we are going to do is going to have any major impact on present broadcasting. What we hope to do is to provide the public with greater flexibility, greater choice, greater opportunity for a wider offering of services...And we think that basically is something to which the American public is entitled...[14]

In late 1979 and early 1980 the FCC conducted several studies on the questions and issues of DBS. A report by the network inquiry staff, "Direct Broadcast Satellite: Legal and Policy Options," predicted that within ten years, millions of homes would receive DBS worldwide regardless of American policy decisions. The NAB questioned the study on the grounds that it avoided the crucial question of exactly what role a DBS service would have in the national broadcast system. The NAB was flatly opposed to DBS and thought it an undesirable cause of disruptive social, political and economic impact. The National Broadcasting Company (NBC) also questioned the concept of DBS on the grounds it would become a national broadcasting system threatening the principle of local control and content in broadcasting.[15]

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[13]Ibid., p. 43. [14]Ibid., p. 50.

[15]"Direct Broadcast Satellite Missed the Point, Say NBC, NAB," Broadcasting, 99 (July 14, 1980), p. 57.

The FCC began consideration of domestic policies for DBS with a Notice of Inquiry, released October 29, 1980. This Notice asked for comment on two staff reports discussing DBS technical characteristics and appropriate regulatory policies. The Notice also requested comment on appropriate regulation of interim DBS systems approved before the Regional Administrative Radio Conference (RARC) for the Western Hemisphere, scheduled for 1983, that would finalize DBS frequencies and orbital slots.

The FCC requested comments on: the market for DBS delivered video programming, spectrum allocation and assignment, technology and technical standards, ownership and control restrictions, program content, equal opportunity and appropriate regulatory classification.[16] (For more discussion of these issues see Chapter 3).

The goals of the FCC in establishing domestic DBS policy were to insure the efficient use of the spectrum, to open new channels allowing opportunity for diversity of voices in order to further the goals of the First

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[16]FCC, Notice of Inquiry, "Inquiry Into the Development of of Regulatory Policy in Regard to Direct Broadcast Satellites for the Period Following the 1983 Regional Administrative Radio Conference," Federal Register 45, no. 214, November 3, 1980, 72719.

Amendment, and to satisfy the consumer's preferences for programming.[17]

The FCC had to make clear that any authorization or allocation for DBS service made at this time would be an interim measure because permanent service could not be authorized until frequencies and orbital position slots were confirmed at RARC '83.

The consequences of authorizing DBS were many and had to be weighed against the possible benefits. The United States already had more than one thousand allocated users of frequencies in the 12 GHZ band that would be used by DBS. The establishment of DBS as a priority over these terrestrial users would cause their shift to other bands or increase costs by their having to shield antennas and receivers from interference. The fixed terrestrial services that would be affected included mobile services, railroads, utilities, municipal governments, sheriff departments, public safety organizations and educational institutions. A priority for DBS would also affect the fixed satellite services and deplete the available spectrum.[18]

The major advantage of DBS would be that for the first time television would be available to anyone in

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[17]House Report 97-730, DBS, p. 14.

[18]Ibid., p. 15.

any location in the United States at a reasonable cost. DBS would also bring rural Americans closer to television parity with their urban counterparts.

DBS Development Takes Off

Comsat, and its subsidiary, Satellite Television Corporation (STC), on December 17, 1980, applied to the FCC for approval of a $700 million DBS system. STC hoped to reach an estimated five to seven million homes with two high-powered satellites operating in the 12.2-12.7 GHZ band. The application proposed three channel service for the Eastern time zone by 1984. One channel would offer a movie service, and the other channels would feature news, sports, educational, and children's programming. Future expansion of the system to service the entire country and enhancements such as closed captioning, stereo sound, and teletext were proposed in the application.[19]

In a survey by Arthur D. Little for Comsat, it was found that DBS would cause a loss of only four percent of local television audiences by local

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[19]FCC, Notice of Inquiry, "Inquiry Into the Development of Regulatory Policy in Regard To Direct Broadcast Satellites for the Period Following the 1983 Regional Administrative Conference; Order for Extending Time for Filing Comments and Reply Comments," Federal Register 45, no. 249, December 24, 1980, 85125.

television stations. However, a much greater impact would be felt by Multi-point Distributions Services (MDS) and Subscription Television Services (STV).

Throughout 1980 and 1981, many comments were filed with the FCC on the subject of DBS. Many broadcasters were afraid that an interim authorization prior to RARC '83 would establish standards that would be grandfathered and become de facto standards. Other organizations were concerned that DBS would violate the local broadcast policy of the Communications Act of 1934 by beaming programming directly to the viewer, bypassing the local broadcast station with its concern for local public issues and morals. There was also concern that DBS was not the most efficient use of the available frequency spectrum.[20]

On April 21, 1981, the FCC adopted a Notice of Proposed Rulemaking for the operation of DBS in the United States for the interim period prior to the Regional Administrative Radio Conference (RARC) of 1983. In this proposal, the FCC made the preliminary determination that authorization of DBS would serve in the public interest. The minimum amount of regulation consistent

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[20]FCC, Notice of Proposed Policy Statement and Rulemaking, "Inquiry Into the Development of Regulatory Policy in Regard to Interim Direct Broadcast Satellite Service," Federal Register 46, no. 108, June 5, 1981, 30124-38.

with statutory requirements and international agreements would be imposed. The table of frequencies was to be amended to accommodate DBS in the 12.2-12.7 GHZ band. The Commission also accepted for filing STC's application for DBS, and set a deadline for other applications and comments to be considered with the STC application.[21]

Before the deadline in July, many comments were received by the FCC. Consumer groups and minorities requested a congressional oversight of the FCC and wanted DBS regulated like a broadcast service, subject to the same equal opportunity, ascertainment, and fairness rules.[22]

The NAB was so opposed to the DBS rulemaking that it formed a committee to insure that DBS didn't get off the ground. The NAB felt that DBS might lead to the "destruction of the competitive terrestrial broadcast system as we know it today."[23]

By the July 16, 1981 deadline, the FCC had received thirteen applications. The FCC accepted the

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[21]Ibid.

[22]"Groups Ask for FCC Oversight on DBS," Broadcasting, 100 (May 4, 1981), p. 79.

[23]"DBS Queue Forming at FCC," Broadcasting, 101 (July 6, 1981), p. 30.

applications of nine of the DBS applicants on October 22, 1981. These were CBS, DBSC (Direct Broadcast Satellite Corporation), Graphic Scanning Corporations, RCA, Focus Broadcast Satellite Company, STC, USSB (United States Satellite Broadcasters), Video Satellite Systems, and Western Union. The Focus application was accepted only in part. Focus had proposed two alternatives: a proposal providing DBS programming utilizing Western Union's WESTAR satellite, and a proposal to build its own system. The latter part was found unacceptable. The FCC stated that the part proposed to use the WESTAR might propose significant legal and policy issues and might be better considered for licensing in another service than DBS. However, the application was accepted without prejudice. Applications by Advance, Inc., Home Broadcast TV Partners, National Christian Network, Satellite Development Trust and Unitel Corporation were not accepted primarily for failure to submit technical information needed to evaluate the proposals and also for failure to provide information for evaluation of the applicant's legal and financial qualifications.[24]

The DBS system applications led to several

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[24]FCC, "Eight Direct Broadcast Satellite Applications Accepted for Interim Processing." Federal Register 46, no. 213, November 4, 1981, 54796.

Congressional hearings in the later part of 1981. In September, the House Subcommittee on Government Information and Individual Rights held an oversight hearing into the FCC's regulation of DBS programming. The sub-committee was concerned that there would not be sufficient local input into programming to comply with local obscenity standards. Because DBS bypasses the local broadcast station or cable outlet and beams programming directly to the veiwer, there was concern that the programming would not reflect community standards of obscenity. In testimony, the chairman of the FCC, Mark Fowler, stated that the FCC rarely used the obscenity clause of the Communications Act because the broadcast of obscenity is illegal and that the issue was best handled in the courts.[25]

During hearings of the House Telecommunications Subcommittee in December, several corporations, interest groups, municipalities and railroads presented data on the adverse effect DBS would have on existing terrestrial users.[26] The then president of the NAB,

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[25]U.S. Congress, House, Subcommittee on Government Information and Individual Rights, Federal Communications Commission Oversight, 97th Cong., 1st sess., 1981, p. 37.

[26]U.S. Congress, House, Committee on Energy and Commerce, Satellite Communications/Direct Broadcast Satellite, 97th Cong., 1st sess., 1981, p. 140.

Vincent Wasilewski, had requested this oversight of the FCC's handling of DBS because of its "headlong rush to authorize a DBS system, its skewing of proper administrative procedures and its woefully inadequate evaluation of the public interest questions."[27]

Some individuals in the telecommunications industry felt the FCC's decision to go ahead with an interim DBS plan would hamper the United States' bargaining position at the RARC '83 because it would limit flexibility in the negotiations and give the impression that the United States was attempting to monopolize frequencies. The FCC and some of the DBS applicants felt that the decision would actually strengthen the U.S. position by identifying valid requirements and needs. The FCC received final comments on its DBS proceedings in January 1982, and prepared to vote on the issue.[28]

Furthering the controversy of the varied proposed uses of DBS, the Columbia Broadcasting System (CBS) proposed to beam one channel of digital high definition television (HDTV) to its affiliates for rebroadcast to subscribers equipped with HDTV sets. CBS felt that HDTV was an important technological development and must be

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[27]"Back and Forth on DBS," Broadcasting, 101 (December 21, 1981), p. 24.

[28]"All Over but the Voting on DBS," Broadcasting, 102 (February 1, 1982), p. 33.

developed at this time. The CBS proposal was opposed by the other applicants because of the inefficient use of the spectrum. HDTV requires a channel with a bandwidth twice that of conventional television, and as such, occupies twice as much of the available frequency spectrum. CBS also advocated that the FCC consider dedicating the entire DBS spectrum to HDTV to provide spectrum space for HDTV development. Many of the other applicants were afraid that the HDTV issue would become a giant "red herring" that would slow DBS development.[29]

In a unanimous vote, the FCC approved DBS interim service on June 23, 1982. In its Report and Order, the Commission said that it would consider looking at permanent regulation in about seven years. Licenses were issued for five years and did not specify any technical characteristics (except those required by the WARC of 1977), ownership or channel restrictions. Broad leeway was allowed for the type of service provided. Carriers that only rented space, like DBSC, would be subject to common carrier regulations. Others, like STC, that would function as broadcasters would be subject to broadcast regulations, including equal opportunity in employment and fairness policies. However, ownership

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[29]"Disagreement Over DBS," Broadcasting, 102 (April 12, 1982), p. 102.

and ascertainment rules would not apply. DBS was given priority over terrestrial operations, and such terrestrial operations must not interfere with DBS. On the subject of HDTV, the commission authorized high-definition transmissions but did not allocate any channels with a bandwidth sufficient for HDTV. This would force CBS and any other HDTV developers to somehow overcome this technical limitation, or use two or more of the currently authorized channels.[30]

CBS was displeased with this decision because it and the NAB had been proponents of allocating the entire DBS spectrum to HDTV development. Both of these organizations said that the FCC was stifling HDTV development and promoting the death of localism in broadcasting.[31]

The NAB requested a judicial review of the DBS Report and Order and deferment of all application processing until after the review. The NAB contested the FCC action authorizing DBS; the broadcasters also appealed the FCC grant of the DBS application filed by STC. The two actions were combined and provided the

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[30]FCC, Report and Order, "Development of Regulatory Policy in Regard to Direct Broadcast Satellites for the Period Following the 1983 Regional Administrative Radio Conference," Federal Register 47, no. 140, 31555-78.

[31]"FCC Opens the Skies to DBS," Broadcasting, 102 (June 28, 1982), p. 27,28.

first court test of FCC policies regarding DBS (NAB v. FCC, Case No. 82-1926 (D.C. Cir.) the case is still under appeal).

The Competition Builds

In August of 1982, United States Television Corporation (USTV) announced plans for direct-to-home medium-power satellite broadcasting in the 11.7-12.2 GHZ (Ku) band by the end of 1983. They planned to use channels on the ANIK C-2 satellite, which is a fixed common carrier satellite with low-power transponders. Initially, USTV proposed to broadcast four or five channels to each half of the United States, but would increase to six channels in 1984 when they procured transponders on the GTE satellite G-STAR, planned for launch in 1984. [32]

The FCC approved the USTV plan for a quasi-DBS service in September 1982, and also granted permission for STC to prepare for launching the first all-DBS satellite in 1985 or 1986. Later that month, Comsat contracted with RCA to construct two high-power DBS satellites for launch by STC in 1986. These satellites

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[32]"U.S. Satellite Announces Ku-Band," Broadcasting, 103 (August 16, 1982), p. 53.

were to have three transponders with an output of 200 watts each.[33]

In November, the FCC approved issue of construction permits to the seven other applicants. None of these permits gave launch or operational authority, nor did they include frequency assignments or orbital positions. Those matters were left for resolution until after the RARC scheduled for June 1983 in Geneva. The only applicant addressed that didn't make the cut was Focus Broadcasting Company because the Commission felt that its application was unnecessary as Focus only proposed to distribute its programming using the satellite capacity of other domestic or DBS licensees. All the applicants were instructed to proceed with construction plans with diligence. CBS was authorized to begin construction of its system to offer HDTV to terrestrial affiliates and directly to homes, but on the condition that it submit cost projections for its plans.[34] A total listing of all the licensee systems both interim and fully implemented is in Appendix One.

The quasi-DBS system proposed by USTV gained significant financial backing in February 1983 when

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[33]"Comsat Signs $113 Million Contract," Broadcasting, 103 (November 1, 1982), p. 24.

[34]"Where There Once Was One, Now There Are Many," Broadcasting, 103 (November 8, 1982), p. 40.

Prudential Insurance Company of America announced it had agreed to provide $45 million in capital. USTV also changed its name to United Satellite Communications Incorporated (USCI). USCI is headed by Nathaniel Kwit and backed by both Prudential and General Instrument. It leased five transponders on GTE's ANIK C-II satellite through the end of 1984. The USCI proposal is similar to standard DBS but does not use the new family of high-power satellites in the 12.2-12.7 GHZ band. Instead, it uses the lower-powered fixed satellites in the 11.7-12.2 GHZ band. By 1988, USCI proposed to be serving five million customers with five channels of programming for $15 to $20 a month.[35]

This proposed quasi-DBS system created many protests from competing DBS licensees. In response to the USCI competition, STC announced their own quasi-DBS system in May 1983. STC proposed to beam five channels to the Northeast using medium-power transponders on the SBS IV satellite in 1984. The STC plan called for full high-power national DBS service on its own satellite by 1986. The key to this proposal is the fielding of earth stations with 2-2.5 foot diameter dishes with broadband receivers that could easily be tuned to the

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[35]"Prudential Places a Bet on DBS," Broadcasting, 104 (February 7, 1983), p. 31.

fixed satellite frequencies as well as the higher DBS frequencies for full-power service.[36]

A new competitor entered the quasi-DBS field in June 1983 when Inter-American Satellite Television (IAST) announced its plans to capture the rural DBS television market of the United States by offering a five channel nationwide service utilizing the SBS III satellite. IAST is headed by William Kommers, but is principally owned (60 percent) by News America Publishing Co., which is a corporate venture of the Australian media baron Rupert Murdoch.[37]

The broadcast of programming directly to homes using fixed medium-power Ku-band satellites, 11.7-12.2 GHZ, was approved in June 1983, when the FCC amended its rules to make clear it was permitting this type of DBS. In amending its rules, the FCC noted that the WARC of 1979 had permitted direct-to-home broadcasting on fixed service satellites. The FCC also felt that the decision would not affect the bargaining position of the United States at the RARC for Region 2 that month.

In developing the U.S. proposals for the RARC, the Commission considered the following objectives:

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[36]"STC's Pre-emptive DBS Move," Broadcasting, 104 (May 23, 1983), p. 34.

[37]"IAST is the Latest Entry in the DBS Equation," Broadcasting, 104 (June 27, 1983), p.40.

--To obtain enough orbit/spectrum resource to meet the present stated demand for channels within the U.S.

--To provide adequate spectrum for both the Fixed-Satellite Service and the Broadcast-Satellite Service.

--To achieve sufficient flexibility in the plan so that future U.S. requirements can be met with minimum coordination with other countries.

--To obtain enough flexibility in the plan to allow implementation of interim systems of varying characteristics.

--to seek adoption of procedures that will permit modifications to the technical and operational characteristics of DBS systems in the future.

--To maintain the focus of the conference on the technical problems of the plan avoiding extraneous political issues.

--To achieve the above objectives in such a manner as to provide for the requirements of the other countries in Region 2.[38]

The RARC for Region 2 held in Geneva in June and July 1983, turned out to be a highly politicized affair and as a result, the delegates had great difficulty in coming to a consensus on the future regulation of DBS. The results of the conference were not ideal in the eyes of the United States' delegates but were acceptable and met all the needs presented at the conference. Canada and Mexico prevented the United States from receiving

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[38]FCC, Report and Order, "Preparations for the 1983 Region 2 Administrative Radio Conference of the ITU for the Planning of the Broadcast-Satellite Service in the 12 GHz Band and the Associated Uplinks," Federal Register 48, no. 83, April 28, 1983, 19212.

all the ideal orbital slots it sought. The U.S. delegation did secure eight orbital slots, five of which could serve the continental states, two could serve Alaska and Hawaii. The eighth and easternmost slot has a poor eclipse time and will go dark for as much as seventy-two minutes, making it a much less desirable orbital position. Each of the orbital slots was authorized the full 500 MHZ (12.2-12.7 GHZ), which will provide up to thirty-two television channels for each slot. Interim DBS systems were to be allowed twelve years if they did not cause more interference or require more protection from interference from the permanent systems.[39]

The United States did lose out in one area at the RARC. In a secret ballot, the conference approved a reduction of sixty percent for the transmit power level proposed by the United States. This power reduction resulted in the use of a slightly larger earth station dish antenna than already planned for. The main proponents of the power reduction were Canada and Brazil. They both feared the invasion of signals from

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[39]"Coming to Consensus in Geneva," Broadcasting, 105 (July 18, 1983), p. 24.

the U.S. and South American countries using high-power transponders.[40]

The overall success of the United States in securing orbital positions and frequencies at the regional conference sent the quasi-DBS competitors, USCI and IAST, scrambling to come up with attractive programming to initiate their services in hopes of capturing the market prior to the launch of the full-power DBS systems. By August 1983, IAST had secured an agreement for marketing and servicing earth stations with Universal Cooperatives Incorporated, a supplier to more than 6,000 farm cooperatives nationwide. USCI was still negotiating arrangements with independent telephone companies.[41]

Both of the quasi-DBS services planned to offer five-channel television service, a combination of pay and advertising supported programming distributed on a tier plan. Both of these services also hoped to initiate programming in late 1983.

USCI signed a four-year contract in August 1983, with Atlantic Satellite Communications to provide the mechanics of uplinking USCI's programming to ANIK C-II.

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[40]Ibid., p.25.

[41]"DBS Countdown," Broadcasting, 105 (August 1, 1983), p. 22.

The programming would consist of two 24-hour-a-day movie channels, similar to HBO, and three advertiser-supported cable networks, two of which would probably contain news and sports. Atlantic would prepare the movie channels from videotapes supplied by USCI and downlink the three advertiser-supported channels from existing C-band satellites, and uplink them along with the movie channels. [42]

All the DBS applicants had until January 7, 1984 to amend the technical aspects of their applications to make them conform to the agreements reached at the RARC for Region 2. The FCC deadline for original licensees to contract for construction was extended to July 17, 1984. According to the FCC the allocation of orbital slots was to be made on a first-come first-served basis. Orbital slot awards by company are in Appendix Two. The FCC also announced that it had received applications from three more companies for DBS authority--National Christian Network, Satellite Development Trust, and Satellite Syndicated Systems, Inc.[43]

In a voluntary effort to organize the DBS industry and to set voluntary technical standards, several system

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[42]"USCI Picks up Two Contractors," Broadcasting, 105 (Aug. 8, 1983), p. 69.

[43]"FCC Makes Ready to Award DBS Slots," Broadcasting, 105 (Oct. 10, 1983), p. 38.

operators, manufacturers, programmers and entrepreneurs formed the Direct Broadcast Satellite Association (DBSA). This fledgling association hopes to set voluntary technical standards that would permit the manufacture of compatible consumer equipment thereby bolstering the industry as a whole. In patterning itself after the NAB, the DBSA hopes to become a full-service organization that would become involved in legislative processes that would affect DBS and promote DBS among consumers. STC, as the industry leader, hopes to establish compatibility in DBS standards and equipment by having the rest of the applicants follow their lead. The FCC had also formed an Industry Advisory Committee on DBS to search for standards and compatibility.[44]

Commercial DBS Comes To America

In November 1983, USCI started quasi-DBS service from the medium-power Canadian ANIK C-II satellite and began providing service to thirty-three counties in central Indiana. As profits built, USCI would roll out the service over the next several months to eventually include twenty-six states in the Midwest and Northeast.

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[44]"DBSA Sends Out Call for Membership," Broadcasting, 105 (Oct. 31, 1983), p. 72.

To use the system, consumers must pay an installation fee of $300 and $39.95 per month. The exclusive supplier of the earth stations is General Instrument, one of USCI's partners. The system had 11,000 subscribers by April 1984, according to USA Today (April 9, 1984).

In November 1983, Rupert Murdoch announced that he had decided to look for a new satellite and delay the launch of his Skyband (IAST) DBS service. Harvey Schein, President of Skyband cited three reasons for the delay: The SBS III satellite was not powerful enough; programming proved elusive, and suitable earth stations were not readily available. Instead of the five channels originally proposed, Skyband now plans to procure all the transponders on one satellite and offer eight channels of nationwide service by focusing eight transponders on the eastern half of the country and eight on the western half.[45]

Home Box office shocked the DBS industry when it announced its efforts to bring together fellow cable programmers and cable operators to offer a low-power DBS service to millions of uncabled homes by 1984. The key to this service is the GALAXY I satellite, through which

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[45]"Murdoch Puts DBS on Hold," Broadcasting, 105 (Nov. 14, 1983), p. 76.

HBO and many other cable programmers distribute their programming. The satellite is powerful enough to deliver good pictures utilizing small dishes, four to six feet in diameter, and cheap enough to install at homes. All of the signals will be scrambled. Under HBO's plan, consumers would have to buy their dishes for between $750 and $1000 and pay a subscription fee of less than $40. By moving to the GALAXY, and scrambling their programming, the pay cable networks not only open up yet another DBS option, but put an end to the interception of their programming by thousands of backyard earth stations.[46]

Direct Broadcast Satellite Corp. (DBSC) finally gained "credibility" in the industry when it reached an agreement with Ford Aerospace & Communications Corp. on a $240 million contract to build two high-power direct broadcast satellites by 1987. DBSC intends to be a common-carrier DBS operator, leasing its transponders to national and regional programmers. Each of the new satellites will have six transponders capable of serving half of the continental U.S., and three groups of four transponders, capable of serving regional or metropolitan areas with spot beams. The contract

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[46]"HBO Mobilizing Cable Industry to Jump into DBS," Broadcasting, 105 (Nov. 21, 1983), p. 28.

specifies the satellites are to be launched by the Eurospace Arianne rocket.[47]

STC was the first licensee to meet the FCC's "due diligence" construction contract test and was awarded permission in May 1984 to construct and launch two satellites to provide six channels of programming to the eastern half of the United States. The company had also requested authority to launch a satellite to cover the western half of the country but the FCC determined that STC had not come far enough along in its plans for that satellite. All of the first round DBS licensees had to demonstrate "due diligence" by the July 17, 1984 deadline or their conditional constructions permits would expire. [48]

In June, CBS announced that it would drop out of the DBS business. CBS said that it was not ready to make a commitment to a business for which expenditures could quickly run into hundreds of millions of dollars. This announcement sent shock waves through the fledgling DBS industry. CBS's decision left STC in a quandary because STC had been negotiating with CBS to form a joint

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[47]Ibid., p. 29.

[48]"STC Moves Step Closer to DBS Reality," Broadcasting, 106 (May 14, 1984), p. 39,40.

DBS venture and had been looking for a third partner.[49]

As the July 17, 1984 deadline for due diligence approached, the economic realities of putting a full-scale high-power DBS system into service began to erode the number of licensees. Of the eight original licensees, only four--STC, Dominion, DBSC, and USSB--appeared to moving in a timely manner towards meeting the deadline by ordering satellites and making the attendant financial commitments. CBS, RCA, and Western Union decided to let the deadline pass without contracting for satellites and will allow their permits to expire. RCA drastically modified its original proposal to make it less costly and hoped to be considered with the second round of applicants. Graphic Scanning was trying to work out a satellite contract in order to meet the deadline.

After the FCC allocates channels to all the original licensees that prove due diligence and figures out how many channels are left it will begin processing a second round of applicants. The second round applicants are Satellite, Syndicated Systems, Satellite Development Trust, National Christian Network, Advanced Communications Corp., Hughes Communications Galaxy Inc.,

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[49]"CBS Drops Out of Running for DBS," Broadcasting, 107 (July 2, 1984), p. 38.

National Exchange Inc., and Space Communications Services.[50]

SUMMARY

Communications technology has matured rapidly in the last two decades. Satellites and earth stations have become common forms of information interchange. This has allowed satellite-to-home broadcasting to become a reality. The concept of broadcasting from space directly to an individual's home has given rise to many cultural, philosophical, and regulatory debates both internationally and domestically.

The Federal Communications Commission created the regulatory framework for DBS in June 1982. Of thirteen companies that applied, only eight were authorized by the FCC to build high-powered satellites capable of beaming television and other types of information to home earth stations with dishes as a small as two feet in diameter.

In setting the high-power DBS rules, the FCC gave the applicants broad leeway in determining what type of service they would offer and how they would be

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[50]"Thinning Rank of DBS Pioneers Heads for July 17," Broadcasting, 107 (July 16, 1984), p. 30,31.

regulated. DBS operators who broadcast programming would be subject to broadcast rules; operators who offered common-carrier type services would be subject to common-carrier type regulation. The FCC did not impose any technical or ownership restrictions except those required by international agreement.

So far, only four of the applicants, STC, Dominion Video Satellite, DBSC, USSB, have passed the FCC's test for due diligence and are proceeding with their plans to offer programming aimed mainly at the estimated 20 to 30 million homes that are expected never to be wired for cable. But, the market may shrink by the time that the high-powered satellites get into orbit. Direct broadcast became a reality on November 15, 1983 when United Satellite Communications Inc. (USCI) began marketing medium-power DBS service in central Indiana. USCI's service area now covers Indiana, Illinois, Ohio, Virginia, Pennsylvania, and Maryland. The company intends to be marketing to the satellite's entire coverage area by the end of 1984.

HBO plans to be in the direct broadcast business by 1985. The company plans to market a scrambled DBS equipment package through a system of cable retailers. In areas where there are no cable retailers, HBO would authorize dealers. The programming will be provided by

HBO, and broadcast using the GALAXY satellite, which is currently used by cable television companies to distribute rpogramming to cable outlets.

By August of 1984, The high-power DBS applicants' proposals for service are as follows:

STC plans to offer five channels of service to the Northeast United States in 1985, utilizing specially modified transponders on the SBS IV satellite. After RCA Astro-Electronics finishes the two high-power three-transponder satellites in 1986, STC will launch them into the same orbital slot and provide six channels of programming to the Eastern United States.

USSB, a subsidiary of Hubbard Broadcasting, has contracted with RCA to build two six-transponder satellites that will allow USSB to begin providing six channels of programming with digital stereo sound to the entire country in 1988 or 1989. USSB's programming would be supported by a combination of subscription and advertising.

Dominion Video Satellite has signed a contract with Hughes Aircraft Co. for constructions of two satellites that will allow the transmission of six channels of programming to the nation. Dominion plans to offer one of its channels to a group of religious broadcasters including Jerry Falwell, Robert Schuler, Jimmy Swaggert,

and Jim Bakker. Dominion hopes that promotion of the service by these religious men will form a solid core of subscribers upon which Dominion can build its other services.

Direct Broadcast Satellite Co. (DBSC) plans to launch two high-power six-transponder satellites, each to broadcast six channels to half the country. In addition, each satellite will have spot beams capable of delivering four channels to three discrete areas in each satellites service area. These satellites are to be constructed by Ford Aerospace and Communications Corp.

Graphic Scanning hopes to provide two channels of national service.

Direct broadcast satellite service is now on the brink of possibly expanding into one of the most important methods of broadcasting that the world has ever seen. Its unique ability to provide programming to anyone, regardless of location, will do much to further the policy of equal distribution of broadcasting to every locality. However, many questions and challenges face the managers and regulators of this new technology. These subjects will be addressed in the following chapter.

CHAPTER THREE

ISSUES IN DEVELOPMENT AND USE

Direct broadcast satellite systems and their development have been hotly debated by the United Nations and other international organizations since at least 1963. As in the evolution of any new communications medium, DBS raises many questions of principle and economics that many nations hold dear, and just as adamantly differ in their interpretations. Broadcasting from space to any point on the face of the Earth can be accomplished through a technology that is oblivious to borders, terrain and national sovereignty. This is a great source of concern for many nations. However, it is this ability to overcome physical barriers that gives DBS its primary advantage of providing broadcast service to anyone, regardless of whether they live in the mountains, rural areas, or in the city. Satellites are also very flexible communications means that allow service over multiple routes through a central facility, as opposed to the single route capability of most terrestrial systems. The satellite's ability to serve large areas of the surface of the Earth and provide

connections between points independent of distance considerations results in a relatively low cost per link.

International Issues

The legal basis for communications utilizing space vehicles is found in the charter of the United Nations, the United Nation's "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies" (known as the Outer Space Treaty of 1967), and various regulations of the ITU. The Space Treaty of 1967 specifically stated that satellite communications should only be used

> for the benefit and in the interest of all countries, irrespective of their degree of economic or scientific development....in accordance with international law, including the Charter of the United Nations, in the interest of maintaining peace and security and promoting international cooperation and understanding.[1]

DBS is a new technology that combines features from four different areas: space technology, radio communication, broadcasting, and information activities. Formerly, these areas had been addressed independently and not in accordance with each other. Their combination has added an increased demand for a well planned

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[1]Eugen Pepin, "Space law II," Impact of Science on Society, 21 (July-Sept., 1971), p. 247.

and coordinated approach to satellite broadcasting. Regulatory efforts in the development of DBS face a problem. The concept of DBS as a space activity is based on generally agreed upon principles, but on little experience. The concept of DBS as a broadcast activity is based on vast experience with little or no agreement. This problem accounts for some of the difficulties that surround the DBS debate.[2]

There are three main issues of international debate over the development of DBS: spectrum allocation, spillover, and prior consent. Allocation of the frequency spectrum is handled by the ITU as an agency of the United Nations. The ITU considers spectrum issues at world and regional conferences. Two schools of thought frequently surface in these conferences over the basis for spectrum allocation. Some nations believe that allocations should be made on a first-come first-served basis. Other nations, including the United States, favor the allocation of spectrum on a priority basis and oppose the first-come basis as an ineffective use of the available spectrum and orbital positions.[3]

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[2]Benno signitzer, Regulation of Direct Broadcasting From Satellites, (New York: Praeger, 1976), p.85.

[3]U.S., Congress, House, Committee on Government Operations, Direct Broadcast Satellites: International Representation and Domestic Regulation, H. Rept. 97-730, 97th Cong., 2d sess., 1982, p. 6.

During the EARC of 1963 a recommendation was adopted recognizing

> ...that all Members and Associate Members of the [International Telecommunications] Union have an interest in and right to an equitable and rational use of frequency bands allocated for space communications.[4]

Ten years later the founding document of the ITU was amended to reflect that the ITU would recognize that frequencies and geosynchronous orbital slots are limited natural resources which should be effectively and economically used to ensure equitable access by all countries, according to their needs and the technical means at their disposal, within the provisions of radio regulations.[5]

However, these regulations and resolutions only apply to nations that adhere to regulation by the ITU. Any totally international regulation of DBS will require an agreement by all nations to allow access to DBS on an equitable and reasonable basis. The resolution of this problem will require a great amount of international cooperation.[6]

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[4]U.N., International Telecommunications Union, From Semaphore to Satellite, (Geneva: ITU, 1965), p. 301.

[5]U.N., Department of Political and Security Council Affairs, Space Activities and Resources, (A/AC.105/100), 1972, add. 2, p. 12.

[6]Pepin, "Space Law," p. 248.

Spillover is defined as intentional or coincidental transmission into neighboring countries or regions to the broadcasting organization. In addressing the issue of spillover, the ITU in the 1971 WARC for Space Telecommunications, adopted a regulation directed at controlling the spillover of broadcast satellites. Radio regulation 428 states:

> In devising the characteristics of a space station in the Broadcasting Satellite Service [DBS], all technical means available shall be used to reduce, to the maximum extent practicable, the radiation over the territory of other countries unless an agreement has been previously reached with such countries.[7]

While spillover from the United States' satellites will probably be prohibited by the affected country, spillover into the United States will probably be allowed. This lack of prior restraint will not be the result of international regulation, but rather the First Amendment doctrines that prohibit regulation of program content and support the free flow of information. As a result, some American viewers may be watching Canadian or Cuban programs in the future.

The principle of free flow of information leads into the third issue--prior consent. Many debates in international organizations have centered on the issue of prior consent versus free flow of information. The

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[7]U.N., Space Activities, p. 248.

prior consent concept would allow receiving nations to regulate and control content of all broadcast services available to its citizens, except in unpreventable spillover situations. Canada favors the idea of prior consent because of its concerns over the impact of U.S. program influence. Dr. Oswald H. Ganley of Harvard University described the Canadian concern:

> The Canadian government views communications and information resources as being very important to its economy, and the influx of non-Canadian (Mostly American) content in publishing, broadcasting and film products is seen as a serious threat to a unified sense of Canadian identity.[8]

In the United Nations, COPUOS has debated the issue of prior consent and the irreconcilable approaches to speech and communications of the United States and other nations. The United States, Japan, and Germany favor free flow of information based on the principle of freedom of expression, whereas other nations such as France, Argentina and the Soviets tend to favor protecting the security of state sovereignty through control of broadcasting. Many of the sovereignty arguments are championed by the Soviets, who have also aligned themselves with the Third World nations on this subject. They believe that the U.S. position doesn't take into account the cultural and political considerations of

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[8]As quoted in House Report 97-730, DBS, p. 8.

countries to determine the character of their domestic television service.

Domestic Issues

Besides having to wrangle with these international issues, the FCC has had to address several domestic challenges in the development of DBS systems:

Is DBS in the public interest?

What will be the effects on the idea of "localism" in broadcasting?

Does the commission have the legal basis to regulate this new technology?

What will be the market?

How will spectrum space be allocated?

How will the systems be regulated?

Will there be a need for technical standards?

Should there be access, fairness, and equal opportunity rules as in current broadcasting?

Public Interest

In determining whether DBS service would be in the public interest, the FCC primarily had to consider whether this new technology would provide service in the spirit of the Communications Act of 1934. The fundamental objective of the Communications Act is to make telecommunications service available "to all the people

of the United States" (47 USC 151). Additionally, the Act requires the "equitable distribution of ...service" among the states and communities (47 USC 307(b)).

Despite the wide availability of television in this country there are still millions of people who live in areas where they receive three or fewer over-the-air television channels. To these people additional channels of programming have enormous value. But, because of their location, satellite service will offer these people perhaps the only new source of television programming (with the exception of video tapes, discs, and low-power television).[9]

In comments to the FCC, some of the opponents of DBS, including NBC, ANPA, and the United Church of Christ (UCC), stated that the service to rural areas is the only service not provided by other systems and this would justify no more than spot beams to serve those areas. Some said there were better ways of providing this service than high-cost DBS systems and that DBS duplicates services already available.

The proponents of DBS stated to the commission that

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[9]FCC, Report and Order, "Development of Regulatory Policy in Regard to Direct Broadcast Satellites for the Period Following the 1983 Regional Administrative Radio Conference," Federal Register 47, no. 140, July 21, 1980, 31557. Hereafter referred to as Report and Order.

DBS has the

> ...unique ability to provide video services to rural and remote areas that are underserved by existing television services, ...offer the public several new channels of television programming, thus increasing competition and diversity,...and it will further the national objectives of maintaining U.S. preeminence in satellite communications and enhancing the prospects for economic growth.[12]

The FCC decided that DBS would give these rural and remote households access for the first time "to a level of television service taken for granted in the rest of the nation."[11]

The courts and the FCC have affirmed the importance of expanding the quantity of available outlets for expression by promoting the development of new methods of media delivery. The courts have held that there "is a paramount public interest in fostering competition and diversification of program sources as quickly as possible."[12]

Even in areas of the country, such as urban areas, where there already exist a number of television channels, there is a great demand for additional channels. This is demonstrated by the high prices for which television stations are sold in those areas, and the success of new media such as cable television, STV

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[10]Ibid. [11]Ibid.

[12]Fourth Report and Order, 15 FCC 2d 466, 536 (1968) (STV service).

(subscription television), and MDS (multipoint distribution service). In fact, according to the FCC, "the total benefits of DBS service may in fact be greater in urban areas than in rural areas because of the larger number of people who would receive additional service."[13]

The FCC also considered whether DBS would be able to offer programming better suited to viewers' tastes. As the number of television channels increases, the Commission stated, it is reasonable to expect that programming choices would increase as programmers compete for audiences and advertising revenues. With new outlets available, programmers would have an incentive to tailor their programming aiming it at smaller more specialized audiences. Such "narrowcasting" is already occurring in radio and cable television.[14]

The amount and quality of programming now available seem to be constrained by both the limited amount of advertising revenue to support it and the few outlets where programs can be shown. Subscription "narrowcast" television makes it possible for viewers with specific interests to select and support the type of programming they prefer. DBS is particularly suited to

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[13]Report and Order, 31557.

[14]Ibid., 31558.

"narrowcasting" because it allows programming to reach viewers with special interests who may be small in number and scattered over the entire nation.[15]

The FCC is bound by regulation to "study new uses for radio, provide for experimental uses of frequencies, and generally encourage the larger and more effective use of radio in the public interest." (47 USC 303 (g)). DBS is not only innovative itself, but can serve as a vehicle for the introduction of other technological advances such as HDTV, stereophonic sound, teletext, and dual-language sound tracks.[16]

Although DBS may initially be a pure entertainment medium, the potential exists for increasing specialization and use as an educational tool, transmission of medical data, and similar services. Opponents of DBS insisted that all of these benefits could be provided by other services but the Commission strongly disagreed.

> We believe that authorization of DBS service would not only make possible more channels of television service throughout the country, but could result in a major qualitative improvement in the service available and in the responsiveness of television to viewers' preferences. As a consequence, its potential benefits to the American people would be very great.[17]

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[15]Ibid. [16]Ibid., 31558. [17]Ibid.

Legal Authority to Authorize Nonlocal Service

Some opponents to DBS stated that there was a question of whether the Commission had the legal authority to establish a nonlocal broadcast service. These opponents included ABC, NAB, and affiliates of the networks. They based their argument on Section 307(b) of the Communications Act which provides that the commission must insure:

> distribution of licenses, frequencies, hours of operation, and of power among the several States and communities to provide a fair, and efficient, and equitable distribution of radio service to each of the same.

They stated that DBS would bypass local stations, and would not provide broadcasting outlets to local communities.[18]

Other commentors, such as STC, DBSC, and the Joint Council on Educational Telecommunications (JCET), stated that DBS would be the most equitable medium for television service because it would provide service to all areas of the country. Some commentors also stated that Section 307(b) does not require local assignment of frequencies, only the equitable distribution of service.

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[18]Ibid., 31559.

The FCC determined that it had broad discretion in selecting the means of implementing the statutory directive to insure fair, efficient, and equitable service in the United States, and to regulate in a manner not "inconsistent with the Act of Law" (47 USC 154 (i), 303 (r)).[19]

Therefore, the FCC decided that the policy of localism underlying radio and television regulation "was adopted by Commission choice, not by statutory command."[20] The FCC further decided that the provisions of Section 303(g) of the Communications Act to "encourage the larger and more effective use of radio," required them to authorize the technology offered by DBS to improve service to underserved areas of the nation.[21]

Influence on Localism

A major issue that the FCC had to deal with in the DBS proceedings was whether DBS as a national or regional system would operate on a level that would emphasize the needs of local communities. Many people feared that DBS would erode the audiences and revenues

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[19] See also, US v. Store Broadcasting Company, 351 US 192, 203 (1956), FCC v. Pottsville Broadcasting Company, 309 US 134 (1940).

[20] Report and Order, 31559.

[21] Ibid.

of local broadcasters, which would in turn cause them to reduce the amount or quality of locally produced and public service programming.

Some argued that an advertiser-supported DBS system would compete directly with existing terrestrial broadcasters for audiences and revenues, and subscription DBS services would directly compete in bidding for premium programming with subscription television services. They also feared that DBS would attract viewers away from existing broadcasters, and since the audiences that pay services attract are more affluent than average, there would be a tremendous impact on advertising revenues and on the fund-raising of public television stations.[22]

A report prepared by the FCC's Network Inquiry Special Staff stated that:

> [T]he underlying economics of television assure the dominance of nationwide distribution methods. Once a program is produced for viewing in one city, showing it elsewhere involves only the additional costs of distribution. It is unthinkable that television could be a largely localized industry any more than could book or magazine publishing.[23]

This report also stated that DBS would represent a type of networking without affiliates. Localism has never really been defined and the exact goals of FCC policy on

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[22]Ibid., 31560.

[23]FCC, Network Inquiry Special Staff, New Television Networks: Entry, Jurisdiction, Ownership and Regulation (Final Report), 1980, p. I-139.

localism are obscure. Sometimes localism has been identified with the notion that individual choice should determine content of programming in the community. At other times localism had been used to designate "a policy that values the identity of community rather than the notion of individual choice."[24]

The FCC does not require a station to air a minimum number of locally produced hours. In practice, the networks and syndication of programming have removed program production and control of scheduling from local stations. The allocation of frequencies to many small communities lie idle therefore limiting the number of stations and artificially maintaining profits of stations in large cities.[25]

The Commission relied solely on three reports in determining the the scale of market penetration of DBS and its affect on local broadcasting. The first of these studies was an econometric study by the National Cable Television Association. The study found that the effect of penetration by cable into local broadcast markets was negligible. This study only measured the effect of cable systems, and not the effect on local broadcasters

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[24]Ibid., p. I-471.

[25]Ibid., p. I-39.

of a new telecommunications system, such as DBS.[26]

The second study was a non-quantitative assessment, conducted for the NAB, of the projected effect of pay-DBS systems on local advertiser supported broadcasters. This study found that DBS posed less of a threat to current broadcast systems than does cable programming.

> A successful Comsat venture would at most accelerate the penetration of pay TV...where cable or STV is not yet available. We do not expect this to cause serious economic harm to the network or local stations in the near term. and the long term effects of cable growth are perhaps a more real threat. As a multi-channel technology, cable has the potential to so fragment the national viewing audience that a major shift in the structure of the industry could occur. Our preliminary analysis indicates that Comsat DBS proposal does not pose as serious a challenge.[27]

However, this study dealt only with pay DBS systems, and did not consider advertiser-supported DBS. Since DBS will probably operate in both modes, this study failed to grasp the entire potential effect upon local and national broadcasters.

The third study, conducted for STC, used an econometric analysis to project the effect of

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[26]National Cable Television Association, "Inquiry into the Economic Relationship Between Television Broadcasting and Cable Television," (cited in Interim Notice, 86 FCC 2d 719, 738 (1981)).

[27]Berge Ayvazian, Melville Blake, David Cantor, "Direct Broadcast Satellites: Preliminary Assessment of Prospects and Policy issues," Kalba Bowen Associates, September 22, 1980, p. 23.

audience diversion by pay-DBS away from local broadcasting. This study predicted that a DBS system would cause less than a third of the audience diversion estimated for cable in earlier studies. This study had several flaws. First, it was based on a pay-DBS model, second it was based on a systems of only three channels of programming, and third the data itself may have been unreliable. The FCC stated that this report "must be used with caution, in part because of the possibility of large statistical errors."[28]

The FCC is only required to consider the economic effect of a new technology on existing broadcasters when there is strong evidence that a significant reduction in service to the public will result. This view was upheld by the Supreme Court interpreting the Communications Act in the Sanders Brothers case.

> Plainly it is not the purpose of the Act to protect a licensee against competition but to protect the public. Congress intended to leave competition in the business of broadcasting where it found it, to permit a licensee who was not interfering electrically with other broadcasters to survive or succumb according to his ability to make his programs attractive to the public.[29]

Federal law allows marketplace forces to determine what consumers receive from producers in general. The

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[28]Report and Order, 31561.

[29]FCC v. Sanders Bros. Radio Station, 309 US 470, 475 (1940).

Sherman Anti-Trust Act (15 USC 1(1976)) prohibits any activity that tends to restrain trade. This concept is applied to telecommunications by the Clayton Anti-trust Act (15 USC 12 (1976)) which grants the FCC authority to enforce compliance with certain sections of that act.

The FCC concluded that it had little hard evidence showing DBS would have a harmful effect on the audiences and revenues of local broadcast stations. There was some evidence to support the idea that DBS would provide strong competition for STV and MDS systems. The FCC also determined that any claims "regarding DBS' possible adverse effects on supply of programming to conventional broadcasters must be deemed speculative."[30] The FCC stated that they should not refuse to authorize a potentially valuable new service "solely on the basis of speculative allegations concerning possible reductions in service from other sources."[31]

Spectrum Allocation and Sharing

Unlike conventional television broadcasting, VHF and UHF, DBS uses super-high frequency bands. Currently, the high-power DBS satellites will use 12.2-

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[30]Report and Order, 31562. [31]Ibid.

12.7 GHZ for downlinks (satellite to earth) and the 17 GHZ band for uplinks (earth to satellite). Other bands that have been allocated for DBS are 22.5-23 GHZ, 40.5-42.5 GHZ, and 84-86 GHZ.[32] These bands have been allocated internationally for Region 2 by the ITU and are the only ones that can be used for DBS. The bands above 17 GHZ are unusable at this time because they are technologically unsuitable. The 17 GHZ band is largely unused but the 12 GHZ band is currently being used by approximately 1900 private microwave systems in the terrestrial fixed service (FS). These systems provide private, industrial, transportation, and safety (PITS) services and are used for example, by local governments, banks, newspapers, utilities, and universities.[33]

It is apparent that FS and DBS cannot exist in the same locality on the same frequencies because of mutual interference.

Perhaps the most difficult task faced by the FCC in deciding on authorizing DBS service was the resolution of the conflict over spectrum space between FS and DBS.

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[32]H. Akima, U.S. Dept. of Commerce, National Telecommunications and Information Administration (NTIA), "Broadcasting Satellite and Fixed Satellite Service Considerations After the 1979 World Administrative Radio conference," April, 1981, p. 4.

[33]Report and Order, 31564.

In order to accommodate DBS, the FCC had to make provisions for the existing FS operators. Some of these operators would be forced to change frequencies or move to other frequency bands. The Commission recognized that there would be high costs associated with moving terrestrial 12 GHZ operations to another band.

Many opponents of DBS use of the 12 GHZ band stated to the FCC that no DBS service should be authorized until adequate replacement spectrum for FS operators was provided. They stated that the higher bands authorized for FS (18 and 23 GHZ) were not adequate because adequate equipment did not exist for use in these bands. In testimony before a Senate subcommittee in 1981, George Tice, director of communications for Los Angeles County said that the policy of the FCC to allocate the entire 12 GHZ band to DBS was

> ...totally inconsistent with the provisions of 47 USC 151, wherein the Commission is charged by Congress for regulating the radio spectrum: 'So as to make available a rapid, efficient wire and radio communication service, with adequate facilities at reasonable charges for the purposes of national defense, and for the purpose of promoting safety of life and property through the use of wire and radio communications.[34]

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[34]U.S., Congress, House, Committee on Energy and Commerce, Satellite Communications/Direct Broadcast Satellites, Hearing before the Subcommittee on Telecommunications, Consumer Protection and Finance, 97th Cong., 1st sess., 1981, p. 140.

Many of the opponents of DBS felt that the DBS owners should reimburse the FS operators for any costs associated with moving to another band and that DBS operators should be responsible for any interference they receive from existing terrestrial users.[35]

DBS proponents said they agreed that replacement spectrum should be found for FS operations but that DBS should not be delayed until this process was complete because of the long lead time and expense required for construction and launch of a DBS system. This lead time would be adequate to facilitate any movement to other bands by existing terrestrial users. DBS supporters disagreed on how long FS operators should be allowed to remain in the 12 GHZ band, they also disagreed on whether there should be any reimbursement of relocation expenses suffered by the FS operators. However, all the DBS proponents agreed that if DBS was to be successful, at least some of the FS operators would have to move to another band.[36]

The FCC decided to dedicate the entire 12.2-12.7 GHZ band to DBS, but cushioned the impact of this decision on FS operators by giving DBS and FS co-equal status in the band until 1988. During this period FS

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[35]Report and Order, 31562,63.

[36]Ibid., 31563,64.

operators would not be required to protect DBS reception from interference. Thus, if a DBS operator chose to begin service before this time he would be responsible for working out arrangements with existing terrestrial FS operators, but this does not mean that the Commission would require the DBS licensee to pay the cost of relocation, although he may have a strong incentive to do so. Terrestrial operators licensed after that time will be required to prevent any harmful interference with DBS systems. By allowing this transition period with co-equal status for DBS and FS there will be an opportunity to allow the introduction of DBS while minimizing the costs to the existing terrestrial users.[37]

The Dilemma of Regulatory Frameworks

In terms of overall telecommunications policy, the most significant part of the FCC's action on DBS may have been the decision to proceed with only the minimum regulatory restrictions on the service. The FCC's trend has been toward deregulation in the last several years, but DBS will be the first new service to be deregulated from its inception.

The FCC faced a tough decision when considering how

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[37]Ibid., 31562, 66.

to regulate DBS. The traditional way of thinking of broadcasters would have to change. With DBS, the television broadcaster would not necessarily produce the programming and own and operate the transmitter and studio like existing broadcasters do. DBS operators can be conduits for programming produced by others, thus taking on some characteristics of a common-carrier. The options were many--Should there be any regulation, and, if so, how much? What should be the classification of service, an existing one or a new one? Will too much regulation stifle the progress of new technology?

If the FCC decided on strict government regulation, it had to face the probability of enormous costs associated with regulation, the administrative burdens on firms that must obtain approvals for their action, delays in changing the service to meet changes in consumer demand, and delays in bringing a new technology to the market place. Historically, over-regulation has led to the above problems. For example, the FCC regulation of UHF television and FM radio created artificial scarcities, inflated prices and kept the public from enjoying the fruits of new technologies. Government regulation forces the regulated firms to meet the preferences of the regulators and not the preferences of the consumer. Decision-making is left in

the hands of administrative agencies that are removed from the flow of the markets and the technologies they regulate. However, if a competitive marketplace regulatory structure was adopted there would be incentive to produce the goods and services the consumer wanted, and produce them efficiently. Service charges and prices would reflect the actual cost of production and if the consumer did not like what he saw he could switch to another product.[38]

The FCC's regulatory approach to DBS was proposed by two staff reports. In particlular, the report by the agency's Office of Plans and Policy (OPP) recommended a hands-off approach, with minimum regulation only to prevent interference and comply with international treaties.[39]

Historically, communications law has categorized services into two forms for regulation: common-carrier and broadcast. Common carrier rules prevent a carrier from charging prices in excess of costs, providing poor quality service, or being discriminatory in providing

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[38]Charles D. Ferris, "Direct Broadcast Satellites: A Piece of the Video Puzzle," Federal Communications law Journal, 33, no. 2 (Spring 1981), pp. 169, 170.

[39]FCC, Office of Plans and Policy, Policies for Regulation of Direct Broadcast Satellites (1980); FCC, Office of Science and Technology, Technical Aspects Related to Direct Braodcast Satellites (1980). (cited in Report and Order, 31556).

service. Common carriers provide a conduit for messages but are not allowed to influence content.

Broadcasters are given wide latitude to determine the content of their programming and, with a few exceptions, are not required to provide access to their stations by others. Under the broadcasting model a broadcaster is a public trustee with the responsibility to provide sevices needed by the community. This eventually led to the procedure of ascertainment to determine community needs.[40]

Charles Ferris, former chairman of the FCC (1977-1981), has said that ascertainment for DBS is pointless because DBS is a national or regional system, and that attempts to control the content of broadcast messages may impose on broadcasting's freedom of speech under the First Amendment. He said that with the large number of channels that will soon be available, the rationale for such limitations will be diminished.[41]

Communications by satellite contain elements of both the common-carrier and broadcast models of regulation, so their classification is not so mechanical. The courts have held that there is a solid line between these two classifications and a

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[40]Report and Order, 31569.

[41]Ferris, "DBS," p. 181.

communications medium must be classified as one or the other, but not a mixture of both.[42] Congress declared in Section 3(h) of the Communications Act (47 USC 3(h)) that no broadcaster shall "be deemed a common carrier."

Another regulatory option available to the FCC was that DBS could conceiveably be regulated under the doctrine of ancillary jurisdiction, which has been developing for the last two decades. The jurisdiction is ancillary to "the effective performance of the Commission various responsibilities for the regulation of television broadcasting..."[43] In Southwestern Cable the Supreme court maintained that FCC jurisdiction is not limited to entities explicitly mentioned in the Communicaitons Act. In Midwest Video the Supreme Court held that the FCC had exceeded its statutory authority under the "reasonable ancillary" standard in promulgating rules requiring access to cable systems. This decision relied heavily on the preservation of editorial discretion in the licensee. It would cover

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[42]See FCC V. Midwest Video Corp., 440 US 689, 701 (1979); CBS v. Democratic National Committee, 412 US 94 (1973).

[43]U.S. v. Southwestern Cable Co., 392 US 157, 178 (1968).

DBS only if the system were classified as either a broadcaster or ancillary to it.[44]

Several of the organizations, including ABC, UAW, and UCC, presenting comments to the FCC opposed the agency's plan of minimal regulation on DBS systems. They stated that the Commission was abdicating its responsibility to protect the public.[45]

Other commentors supported the Commission's regulatory approach. STC stated that minimal regulation would facilitate the service's development, provide data and experience necessary for sound regulatory decisions, and permit flexibility to develop policies tailored to DBS. STC further stated that the proposed flexible regulatory plan would permit marketplace forces to satisfy consumer needs and advance other public interest needs. DBSC joined STC in requesting that the FCC postpone establishing any permanent regulatory policies until it had obatined adequate experience on which to base its conclusions.[46]

The Commission was convinced that it was in the

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[44] Midwest Video at 689.

[45] Report and Order, 31567.

[46] Ibid., 31568.

public interest to impose the minimum regulation necessary for DBS.

> ...we will allow operators the flexibility to experiment with service offerings to find those that the public needs and wants, and to experiment with technical and organizational characteristics. Imposing minimal regulation will also allow us to make better informed decisions about permanent regulatory policy.[47]

The FCC decided that placing constraints on DBS without sufficient information might reduce the disirability of the service to the public and increase the DBS licensees' risks and costs. This would in turn reduce their ability to attract venture capital and might prevent the initiation of DBS systems.

Nothing in the comments submitted by various organizations persuaded the FCC to abandon its proposal to pursue a flexible regulatory approach for the operation of DBS systems. The Commission declined to require DBS systems to operate under a particlular service classification before the development and experimental period had run its course. The FCC stated that the imposition of an

> ...a <u>priori</u> classification would determine the nature of the service at the outset and thus would largely foreclose the possibility of gathering valuable experimental data.[48]

The FCC decided that certain principles would guide

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[47]Ibid. [48]Ibid.

its decisions on classification. If a licensee provided direct-to-home service and retained control over the programming, the service would be considered a broadcast service and the broadcasting provisions of Title III would apply. This classification would also apply to services that would be provided on a subscription basis. If the licensee chose to operate as as common carrier, offering transmission services to anyone, then the provisions of Title II of the Communications Act would apply. The FCC could see no reason why a DBS operator could not function as a broadcaster on some channels and a common carrier on others. Th FCC also had to consider whether any restrictions should be placed on the programmer-customers of common carrier DBS operators. The agency stated that it believed that Congress probably did not intend customers of common carrier operators to be licensed and regulated as broadcasters.[49]

The FCC reserved the right to impose additional constraints at a future time, but for the most part believed that none would be necessary.

The Commission concluded that it would not require applicants to meet any particular regulatory structure, and would allow DBS operators to experiment

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[49]Ibid., 31569.

with service offerings and methods of financing to find those that would be most beneficial to the public. They also concluded that the market for video information may be highly competitive and as a consequence

> diversity of programming is likely to be available without Commission intervention, and individual operators will be constrained by competition to provide programming the public wants at prices reflecting those production costs.[50]

Ownership

Some of the organizations submitting comments to the FCC, including CBS and NBC, stated that it would be discriminatory to allow multiple and cross-ownership of DBS systems while restrictions exist on ownership of broadcasting stations. Others stated that DBS would not develop if restrictions were placed on who could own systems or how many channels could be owned.

The FCC stated that ownership restrictions were unnecessary for the experimental period, because satellite service does not render the increasing returns to scale that would lead to domination of the market by a single owner. The threat of concentration of control by cross ownership with other media was considered nill by the FCC because of the large number of options that in most cases would remain available.[51]

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[50]Ibid., 31567. [51]Ibid., 31570.

The Commission decided not to impose any ownership restrictions or controls.

Access

Some organizations, including the UAW and the UCC, stated that the FCC should reserve DBS channels for specific purposes, such as education. Others advocated that certain groups, such as minorities or non-profit organizations, be given special access or reduced rates.

The FCC stated that the public interest would not be served by subjecting entrepreneurs to restrictions that may seriously hamper their efforts to initiate DBS service. In the opinion of the FCC, the competition of the marketplace would provide sufficient incentives to respond to the informational needs of the consumer. Therefore, the FCC decided not to impose any access restrictions on DBS operators functioning as broadcasters and only those reguired by Title II of the Communications Act on common carrier DBS operators.[52]

Equal Employment Opportunity

The FCC did decide to impose the same equal employment opportunity requirements on DBS operators functioning as broadcasters that conventional broadcasters

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[52]Ibid.

are subject to. This decision was made to preclude any lasting effect on the representativeness of the workforce in the DBS industry. The Commission stated that the requirements would not place any undue burden on the DBS operators or restrict their ability to develop the technology.[53]

Technical Standards

From the beginning of the process for considering DBS technology, the FCC has not imposed any technical standards for equipment compatibility. The Commission has left the determination of equipment configuration to the forces of the marketplace. Many of the DBS parties feared that by not establishing technical standards, the FCC was allowing the first of the DBS operators to establish de facto technical standards. Others stated that the FCC should establish common receiver standards so that receiving equipment could receive all available DBS signals, thus reducing the risks involved in intiating DBS service and encouraging investments.

Commentors with an opposing veiw stated that the FCC should maintain the maximum technical flexibility so as not to stifle technical innovation and development of this growing service.

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[53]Ibid., 31571.

The FCC decided that by not specifying technical standards, DBS operators would be allowed to offer new services in response to advances in technology or changes in consumer tastes. The Commission stated,

> We believe that by allowing DBS operators to implement a variety of technical configurations, the Commission will provide entrepreneurs tha best possible opportunity to provide the services most valued by viewers.[54]

Market Economics

The economic opportunities presented by the manufacture, distribution, installation, service and billing of DBS services and equipment are tremendous. Entirely new markets are developing for earth stations, antennas, converters, and their service. The United States' share in this market is estimated at $2 billion per year for the first few years.

Most of the companies that hope to offer DBS services are aiming their services at the estimated thirty million homes that are not connected to cable. This market is expected to decrease to twenty million by 1990.[55]

Nathaniel Kwit, CEO of USCI, assesses the

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[54] Ibid.

[55] Kirsten Beck, "DBS: Mining for a Market," View, 5 (June 1984), p. 45.

marketplace this way:

> If we take the 20 million figure and estimate that USCI will get roughly 13 to 14 percent of homes not passed by cable in our footprint, we come up with approximately 2.5 million. So at a penetration rate of one-third to one-quarter that of cable, we can expect to get 2.5 million subscribers.[56]

If you add to this figure the subscribers who are "video junkies" and will take any additional video service available there is potential for an even greater market.

David Lamb, director of LINK Resources' new electronic media program, states that Kwit's estimate is over optimistic because it does not take into account competing video entertainment options, such as VCR ownership and MDS, that would reduce DBS's potential market of subscribers. When these factors are taken into consideration the market shrinks from twenty million to about nine million.[57]

In a research report for the NAB, a study group explored the economic possibilities of a model DBS service similar to the STC proposal, and found that a DBS venture could generate post-tax returns of thirty percent.[58] STC is reportedly thinking of a total $1 billion investment in DBS that will create 15-23,000 jobs. STC's parent corporation, Comsat, has already

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[56]Ibid. [57]Ibid.

[58]Ayvazian, Blake, Cantor, DBS, p. ii.

invested over $60 million in the project. [59] General Instrument, USCI's partner in a medium-power DBS venture, expects to sell 3.75 million earth stations and gain as much as $1.5 billion in revenues and $300 million in operating profits.[60]

Programming is a major area of cost for a DBS system. The costs to obtain programming have been estimated to be between 14 percent and 40 percent of the monthly subscriber fee.[61]

The Hollywood producers of programming that would flow through the transponders of a DBS are taking a "wait and see" attitude on the subject. Robert Klingensmith, senior vice president for video distribution at Paramount Pictures' said the "DBS would probably remain a small side-market to cable...you're only talking about reaching people who can't get cable, which is becoming increasingly small."[62] An opposing view is held by Gene Giaquinto, president of Universal

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[59]Chris Bullock and Bron Rek, "Direct Broadcast Television Satellites: U.S. Goes Into Business While Others Experiment," Interavia, 38 (Feb., 1983), p. 155.

[60]John Conney, "Cable TV's Costly Trip To The Big Cities," Fortune 107 (April 18, 1983), p. 92.

[61]Kim Degnan and Paul Bortz, "The Hidden Costs of DBS," Satellite Communications, (April 1982), pp. 42,43.

[62]As quoted in, "Hollywood Takes a Cautious Approach to DBS," View, 5 (June 1984), p. 46.

Pay television and MCA Home Video, who said he believes that DBS has a "potentially enormous revenue stream" that would enjoy the advantage of less competition from other pay television sources.[63]

The DBS industry is a capital intensive undertaking. The competitive forces of the marketplace may force many DBS entrepreneurs to succumb for lack of capital. Comsat estimates that it will need about five million subscribers to break even. Wall Street appears to be skeptical of DBS and feels that the early lead by USCI into the medium-power DBS market will give it a tremendous advantage over the competition. Neal Goldman of Shearson/American Express says, "My feeling is that there will be only room for two, possibly three companies in the market, and one of them will be USCI."[64]

Summary

In deciding to use the minimum possible regulation to control the development of a new technology, DBS, the FCC stepped off in a bold new direction. The FCC has often been criticized in the past for being adverse to new technologies. The accommodating nature of its

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[63] Ibid.

[64] As quoted in, "United Satellite's Remarkable Coup," Dun's Business Month, 121 (Feb. 1983), p. 53.

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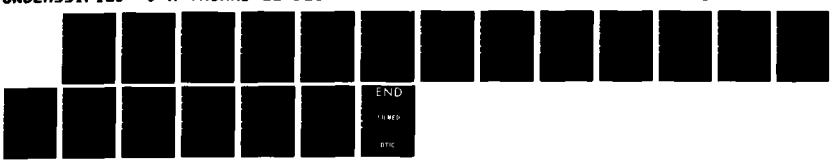

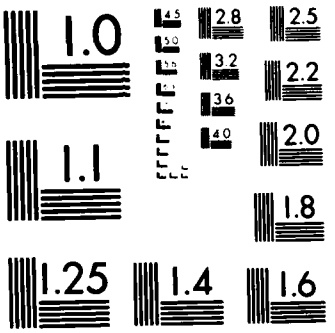

approach to DBS seems to belie that criticism. The Commission seems determined to encourage the expeditious development of this new technology in the environment of a free marketplace. The public interest was determined to be best served by this approach. The service that DBS would provide to rural and isolated veiwers, and the opening of a new channel of communication overcame the possible negative impact on local broadcasters. The effect on existing users of the 12GHZ band was minimized by an interim co-equal status that would allow a smoother transiton of existing terrestrial users of the spectrum to move to other bands. This had to be done to accommodate DBS in internationally approved frequencies without stifling its development. These decisions reflect the view of the FCC that some interuption of existing services may be necessary to develop new telecommunications technologies when they are determined to be in the public interest. The FCC has decided to let the forces of the marketplace determine the resolution of many factors. Among these were the type of services to be offered and the regulatory framework that the services would fall under. DBS will face a saturated market and will encounter stiff competition from other video media such as MDS, STV, and videotape. This competition will

ensure that DBS prices and services respond to consumer demand. Print media and other video sources will provide alternative sources for political and public service type material.

The FCC was concerned that the imposition of additional regulations would hamper the development of DBS in an industry that is characterized by low marginal profits and high risks. The burden of additional regulation might deter entrepreneurs from developing this new technology.

Finally, the FCC allowed DBS to develop without significant regulation despite the uncertainty about the eventual market effect on DBS. This will allow the FCC to accumulate a base of experience upon which to base any future action concerning permanent regulation. Many of the assumptions underlying conventional broadcasting were invalid for DBS. With an ever-increasing number of channels, broadcasters will maximize profits by programming for small, specialized groups therefore capturing the entire group, rather than splitting the middle-of-the-road audience several ways.

CHAPTER FOUR

CONCLUSIONS

DBS has the potential to provide greatly improved service to remote areas, and additional channels of service throughout the country, programming that offers more variety and that is better suited to viewer's tastes, technically innovative services, and expanded non-entertainment services.

The existing broadcasters have continually opposed the rapid and deregulated development of DBS. The NAB formed a committee to try to stifle DBS development. Opponents of DBS called for Congressional oversight and judicial review of the FCC's policy on DBS. Existing broadcasters used the inquiry process of the FCC to oppose DBS, and to oppose the FCC's authority to establish a mass information medium that did not originate from a local broadcast outlet. On several occasions the broadcasters tried to use the concept of "localism" as an instrument of influence in the FCC's policy making process. In the past, the FCC had been the most effective shield the existing broadcasters had against the effects of new technologies.

The regulatory policies of the FCC over the last few years have shown an unprecedented responsiveness to the proponents of deregulation. This spirit is carried over into the decisions that are guiding the development of DBS. In allowing the marketplace to determine the future of DBS, the FCC is taking the stand that a few years of real-world experience will be worth many years of paper proceedings in fully understanding this new technology and its ramifications. It is indeed wise that the FCC is not locking itself into a specific technical standard, as it has in the past, in dealing with new technologies. In allowing the public and the industry to decide what will be the standard, the FCC is not restricting competition nor binding itself to a decision that may have to be overturned at a future date.

The threat of loss of local control over the values and standards of community television reception will probably not be threatened as long as the current terrestrial systems of broadcasting remain viable. Adequate media outlets exist to provide a wide diversity of views on public issues and to provide the consumer the ability to select the quality of programming he or she desires.

The existing broadcasters have shown that they

fear that DBS will become such an efficient and appealing medium that it will draw viewers from the existing broadcast media and destroy the existing competitive broadcast system. Commercial DBS will probably provide some direct competition for existing commercial networks for audiences. Subscription DBS may grow to the financial status that it will be able to out-bid other services for premier programming and draw away audiences. In addition, DBS offers advertisers another medium to target their message to increasingly specialized audiences, offering more cost-effectiveness in reaching potential customers than national network advertising.

If the networks get into the DBS business and market programming directly to the consumer, bypassing the local affiliate station, the local station will lose a source of revenue and national advertising income. This will reduce the local station's ability to provide local news and public affairs programming. If any network wishes to deliver a purely national or regional message, commercial DBS will eventually be the technology of choice. Anthony Hoffman, director of corporate finance for Cralin & Co., says,

> In today's technology, the affiliates are an anachronism. And, over the long term, that [DBS] is where the networks are going. As I see it, the networks will profess to their dying day that they

> fully intend to maintain the network relationship forever with their affiliates, but on the other hand, behind the scenes, they are laying plans to get involved in ad-supported DBS.[1]

In the near term, the commercially supported broadcasters will not suffer greatly due to DBS. The target markets of the DBS liscensees are the rural television households that receive only one or two commercial television channels and will probably never receive cable. This leaves vast urban and suburban markets as the domain of the existing broadcasters. People will not rush en-masse to pay for a premium subscription service as long as "free" commercial broadcasting is available. However, the subscription type services for distribution of television to non-cable television households, such as MDS and STV, will probably feel a great effect and intense competition. Cable systems may actually benefit from DBS by receiving the programs and offering them on the cable to their subscribers.

The full implementation of DBS systems will require huge amounts of capital, but will also result in of a large and lucrative supporting market. The large investment required to make DBS a profitable venture will probably limit the systems, at least initally, to

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[1]As quoted in Kirsten Beck, "DBS: Mining For a Market," 5 View (June, 1984), p. 47.

those provided by two or three large companies. All of the licensees currently competing in the industry will not survive. Mergers, acquisitions, and take-over by large conglomerates will reduce the competition to those few with enough capital to absorb long-term losses in making DBS systems successful. It will be more than a year before it will possible to guage the profitability of DBS.

DBS has to face the possibility of future political and regulatory opposition. There are many interests involved in a new technology of this type. These interests will all have to be reconciled if the medium is to develop successfully.

If history is any indication, the financing always surfaces to support a new means of reaching the public without squeezing out any of the existing media. As it was when television itself emerged, more advertising money became available for television, and radio did not disappear. FCC Commisssioner James H. Quello supports this position.

> I realize that predicting the effects of any new technology upon an existing service is historically fraught with peril. Radio broadcasting was once believed by many to be doomed because of the advent of television broadcasting. Of course, radio broadcasting has not only survived but it continues to prosper. Radio programming was changed as a result of the introduction of telvision service. I would expect that, over time, the programming of local television stations will

> also change as a result of the new video distribution technologies including direct satellite-to-home broadcasting. Local television broadcasters are likely to be faced with problems of adaptation similar to those faced by radio broadcasters thirty years ago. I am confident that they will meet that challenge.[2]

The Future of DBS

The future of direct broadcast from space is only to be imagined. A fully integrated system of high-power satellites, broadcasting to small earth stations, could serve many facets of the emerging information explosion. Not only can these satellites broadcast television signals, but the possibilities for data transmission, linking corporate computers, are enormous. These private networks of information processing would be immune to the restrictions of terrain obstacles and terrestrial communications, and as such would generate stiff competition for the present common carriers.

DBS systems could also be used by the government in its ever increasing propaganda program. Satellite transmissions, which are very difficult to jam, could beam programming into the highly censored communist countries, much in the manner that Voice of America, and Radio Free Europe do now. These satellite broadcasts

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[2]90 FCC 2d 676, 729 (1982).

would be extremely difficult for the target country to counter.

Many hypothetical systems have been explored and some project that the future of satellites operating in the 20-30 GHZ band could offer systems capable of more than 100 million digital circuits. Such systems far surpass any present need, but future telecommunications may require that such systems be developed.[3]

At the beginning of the communications satellite age, J.R. Pierce made a statement that is appropriate for the place in time that we now face with the dawning of direct broadcast from space:

> The future is more complicated than the past. We are at the end of one brief era and at the beginning of another. What the future can bring is immeasurably good. Surely, what it will bring must be far beyond what we have now. It is only reasonable to expect that we shall make mistakes comparable to or greater than the truly outstanding mistakes we have made in the past. But our accomplishments will be greater too.[4]

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[3]Robert S. Magnant, Domestic Satellites: An FCC Giant Step (Boulder: Westview Press, 1979), p. 53.

[4]J.R. Pierce, The Beginnings of Satellite Communications (San Francisco: San Francisco Press, 1968), p. 36.

APPENDIX ONE

FIRST ROUND LICENSEES,

WHAT THEIR PLANS ARE.

CBS:

The initial phase of CBS's proposal consists of one satellite and one in-orbit spare to serve the Eastern time zone with three channels. The first channel would be used to provide advertiser-supported high-definition television programming to affiliated stations for terrestrial retransmission and directly to homes outside the service area of the affiliates. The second HDTV channel would distribute pay programming to cable systems and homes and the third channel would offer other subscriber supported services, including satellite-to-theater distribution and closed circuit transmissions for business and other uses. Its fully operational national system would consist of four satellites, one serving each time zone and one spare.

DBSC:

DBSC's proposal calls for three satellites (and one in-orbit spare) serving the continental United States with six primary television channels for three service areas. The system also would provide movable spot coverage to two smaller areas within each service zone, with up to four additional TV channels provided by each spot beam its satellite capacity would be leased on a common carrier basis.

Graphic Scanning:

The initial phase of Graphic Scanning's proposal calls for one satellite serving the Western half of the nation with two channels of subscription TV and such auxiliary services as teletext. The full system would include another satellite to serve the eastern half of the country and an in-orbit spare.

RCA:

RCA's initial system would comprise one satellite serving the Eastern time zone (with six channels) and an in-orbit spare. Its full system would consist of four operational satellites capable of serving all fifty states. RCA plans to lease most of its transponders, but not on a common carrier basis. It also asked permission to retain one or more channels for its own use.

STC:

STC's initial system would consist of one satellite (and one in-orbit spare) serving the Eastern time zone with three channels of subscription television. When it is fully operational, the system will consist of four satellites serving the entire nation.

USSB (Hubbard):

USSB's system would consist of two satellites (and one in-orbit spare) serving the country with three channels. USSB proposes to distribute advertiser-supported programming to independent broadcasters, who would own a chunk of the system, and directly to homes that are unserved or underserved by local broadcasting. The first channel would consist of general, advertiser-supported programming, produced by USSB and its member stations. The second channel would be a 24-hour news and information service and the third channel would carry public affairs programming.

VSS:

In its intial phase, VSS proposes two satellites to provide one channel of programming to the continental United States. VSS's programming would be advertiser-supported and would be distributed to terrestrial broadcasters, and individual homes. It proposes to carry the programming of Dominion Satellite Network Inc. and affiliate based in Naples, Florida. When fully operational, the system will consist of four satellites (and one on-ground spare) offering two channels.

Western Union:

WU has proposed an initial system that would consist of two satellites with two channels to serve the entire nation. When fully implemented, its system would consist of four satellites,

providing four channels of national service. WU plans to lease its channels, but has asked that it not be forced to offer those channels on a common carrier basis, but that it be permitted to pick and choose users.

	Interim System			Fully Implemented System			
	Number of Satellites	Coverage	Channels	Number of Satellites	Coverage	Channels	Cost[1]
CBS	1	East US	3	4	US	3	NA
DBSC	3	US	6	3	US	6	614
Graphic	1	West US	2	2	US	2	500
RCA	1	East US	6	4	US	6	760
STC	1	East US	3	4	US	3	NA
USSB	2	US	3	2	US	3	400
VSS	2	US	1	4	US	2	450
Western Union	2	US	2	4	US	4	450

[1]Cost in millions of dollars

Source: Broadcasting, November 8, 1982, p. 46.

APPENDIX TWO

DBS LICENSEE ORBITAL SLOTS AND CHANNELS OF SERVICE

	Coverage	Channels	Orbital slots (degrees west long.)
CBS	Half US	6	101,148
DBSC	Half US	10[1]	101,148
Graphic	Half US	2	119,148
RCA	Time Zone	6	101,119,148,157
STC	Half US	6[2]	101,148
USSB	Half US	3[3]	101,148
VSS	Half US	6	119,148
WU	Time Zone	4	101,119,148,157

[1]Each of DBSC's two satellites is designed to broadcast six channels of service to half of the United States and four additional channels to three discrete regions within the primary service area through three spot beams.

[2]STC plans to provide six channels of service to the Eastern half of the United States through two co-located three-transponer satellites at 101 degrees; it plans to provide similar service to the Western half through two three-transponder satellites, or more likely, one six-transponder satellite at 148 degrees.

[3]Each of USSB's two six-transponder satellites is designed to provide three channels of service in each of two time zones. The satellite at 101 degrees would broadcast three channels to the Eastern time zone and three channels to the Central zone.

Source: Broadcasting, Jan, 16. 1984 p. 48.

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