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Cooperatives: Smothering
a Golden Goose?

by Rob Frieden

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Privatization of Satellite Cooperatives: Smothering a Golden Goose?

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Privatization has become a major economic and industrial model in international telecommunications, an industry historically predominated by government-owned carriers. In both developed and developing nations,¹ governments have abandoned part or all of their telecommunication carrier portfolio in the expectation that private enterprise and competition will foster improved efficiency, more investment in the sector, greater output, lower prices, service diversity, higher quality and enhanced consumer welfare.² Some empirical studies validate this expectation with reference to improvements in many of the statistical indices used to track progress, efficiency and performance in telecommunications.³

In telecommunications privatization initiatives initially generated skepticism about the benefits and concerns about the massive unemployment that would result when a corporatized incumbent carrier restructures to meet competition and to operate in a more businesslike manner.⁴ Yet in most cases,⁵ governments concluded that they should promote private ownership in the sector and some degree of facilities-based, or resale competition.

In view of such unimpeachable evidence that both operators and consumers can benefit from privatization and competition, presumably such initiatives would improve the satellite market segment as well.⁶ Many countries have authorized facilities-based satellite competition, and several private, commercial satellite ventures operate in such diverse locations as the United States, Canada, Australia, Japan, Indonesia, Malaysia, Thailand, and Hong Kong.

If privatization has generated such ample dividends should one conclude that any sort of public ownership model has become woefully obsolete? Put another way, should the satellite cooperative model that has served as the organizational foundation for international and regional satellite carriers like INTELSAT, INMARSAT and EUTELSAT migrate to the private model as quickly as governments can sell their shares?

The readily expected affirmative response to this question should not occur unless and until one can conclude that the private operator model can generate the kind of positive, network externalities and global connectivity achieved through the cooperative model. The fact that both cooperatives and their commercial competitors agree, for different reasons, that the cooperatives should become private evidences the possibility that more is at stake than simply fostering "a level competitive playing field." Officials at incumbent satellite cooperatives assert that privatization makes it possible to adjust to changed circumstances arising from more extensive competition from private "separate systems." Officials at these separate systems also consider privatization of a sort essential, but their version appears more like divestiture: spin-off the once dominant cooperative into several smaller, regional carriers lacking a large transponder inventory in any ocean region ⁷ so that they can no longer dominate the market. ⁸

Heretofore analysis by the United States government of satellite carrier privatization appears to have proceeded on a simple political calculus: if both major constituencies desire a change to the status quo, then it appears reasonable to make some kind of change ostensibly promoting competition and private enterprise. ⁹ Both incumbent cooperatives and their private competitors believe that the cooperative model has outlived its usefulness. The cooperative believes that it must break free of requirements imposed by governments in its charter, that

obligates it to average costs and support global connectivity. It believes its quasi-governmental status and existing governance structure prevents nimbleness and timely response to consumer requirements. The cooperatives' competitors argue that government-conferred privileges and immunities make it possible for the incumbent to exploit preferential access to capital, orbital slots and markets. Yet these competitors have concentrated on acquiring market share in business services and the global video programming distribution market with little regard for, or capability to provide worldwide, basic telephony services.

This paper will consider whether and how satellite cooperatives must change in response to changed circumstances arising from more extensive competition by private separate systems. The paper concludes that both the incumbent cooperatives and their new commercial competitors have mischaracterized the privatization issue. It explains how incumbents already have become business-orientated and how privatization may simply serve as a way to avoid having to satisfy requirements that have generated the greatest global contribution and the largest positive network externalities. The paper also examines how some separate systems seek to convert privatization into structural divestiture with an eye toward diluting the market power of once dominant cooperatives.

Network Externalities in Satellite Telecommunications

Satellite-delivered telecommunications can enhance consumer welfare by generating higher value as a satellite serves increasing numbers of users and points of communication. Satellites can provide expanded access without increased costs and often without higher user rates.¹⁰ The unconcentrated signal from a geostationary orbiting satellite can illuminate as much as one-third of the earth's surface.¹¹ Once a carrier incurs the substantial sunk cost to make this

footprint available, the incremental cost for it to serve an additional point of communication and additional users via another earth station approaches zero. An additional point of access requires users to install or interconnect with an earth station, acquire domestic facilities to link their premises with the earth station and pay space segment charges.

The value of satellite service accruing to users can increase as the satellite serves more earth stations and more users with no degradation in service quality and often without higher charges to reflect the increased utility.¹² The concept of direct network externalities reflects the enhanced value of service accruing to users.¹³ The benefit is considered an externality, because standard economic analysis and the pricing of service may not take into account this outcome. Indirect network externalities result when increasing coverage and market penetration result in more plentiful, lower costing complementary goods. For example, consensus on technical standards for earth stations accessing INTELSAT satellites can promote industry-wide equipment compatibility and help manufacturers achieve economies of scale by having to support fewer product lines with different technical standards.¹⁴

INTELSAT has generated positive network externalities simply by succeeding in commercially exploiting satellite technology previously used primarily for defense, space exploration and intelligence gathering applications. It has increased the likelihood for, and extent of such positive network externalities by enacting a governance document that deliberately prices space segment on an averaged cost basis and makes it possible for developing nations, strapped for hard currency, to participate in the cooperative by investing in as low as a 0.05% ownership share.

The INTELSAT governance documents contain lofty objectives like "expand[ing]

telecommunications services to all areas of the world . . . which will contribute to world peace and understanding . . . for the benefit of all mankind." ¹⁵ It achieves such goals by deploying a global constellation of satellites and by creating a governance structure that favors investment and active participation by representatives of nations with low volume traffic requirements and presumably an interest in capturing the benefits of network externalities. For example, Article IX of the INTELSAT Agreement requires broad geographical representation to the cooperative's Board of Governors, its executive board of directors. Article V(d) of the INTELSAT Agreement requires the cooperative to offer space segment at the same rate for each type of usage, a provision interpreted as requiring the cooperative to average costs for each service category so that a single rate applies regardless of traffic density.

INTELSAT's governance documents also confer privileges and immunities to the cooperative that translate into financial, operational and logistical advantages vis a vis private ventures. The organization's Headquarters Agreement ¹⁶ requires the host nation to exempt the cooperative from tax liability and to treat its employees as diplomats, free from search and civil liability. Immunity from law insulates the cooperative from regulatory agency and antitrust court scrutiny. Such privileges and immunities translate into millions of dollars in savings over what commercial entities typically have to pay. Additionally treaty-level commitments to the cooperative require every nation, which has become a Party to the INTELSAT Agreement ¹⁷ and INMARSAT Convention ¹⁸ to avoid causing "significant" technical or economic harm to the cooperatives when authorizing separate system competition. Ironically, these provisions and the limitations proposed by INTELSAT and adopted by the United States on access to the Public Switched Telephone Network ¹⁹ ostensibly to safeguard the cooperatives' core revenue streams,

forced separate systems to concentrate on peripheral video and business applications that developed into the most financially lucrative of all segments.

INTELSAT has largely accomplished its mission to achieve worldwide access via satellite to basic telecommunication services. Indeed much of its expansion in terms of satellite inventory and revenues result from targeting non-core service markets, e.g., transponder leasing for domestic services, business applications and video program distribution. The INTELSAT Agreement provides the cooperative with the legal competency to provide such services, but they supplement core, "lifeline" access to switched and private line, primarily voice traffic commonly referred to as plain old telephone service ("POTS"), the primary mission of the cooperative.

Whether to privatize a cooperative like INTELSAT should be based on an affirmative conclusion that INTELSAT, however reconstituted, and the various other separate systems collectively will meet the world's basic satellite telecommunications requirements. Unfortunately the debate has not addressed whether privatization can occur without derogating the benefits of satellite connectivity, particularly access to POTS on a global basis. Instead, separate system operators allege that INTELSAT has impermissibly dominated the international satellite telecommunications marketplace by exploiting its governmentally conferred privileges and immunities in ways that maximize market access, profits, retained earnings,²⁰ warehousing of orbital slots for satellites and avoidance of tax liabilities. INTELSAT officials appear so enamored with the ability to become more competitive that they appear willing to abandon a defense of the status quo and the need for a cooperative to achieve economies of scale so that it can provide ubiquitous POTS efficiently.²¹

POTS to PANS and Reduced Network Externalities

None of the players seem content with the status quo, because everyone has visions of capturing large market shares in non-POTS service segments. The current organizational structure makes it difficult for INTELSAT to diversify and for separate systems to compete with an incumbent who, institutional limitations notwithstanding, has aggressively diversified well beyond basic, lifeline services. Pretty Advanced New Services ("PANS") e.g., the business and video program delivery applications that constitute elements of the Global Information Infrastructure, ²² fill transponders, generate higher revenues, justify larger constellations of satellites and presumably accrue more generous profits.

To separate systems, the INTELSAT cooperative model prevents full and fair satellite service competition, because INTELSAT can leverage its premiere role as the carrier of first and last resort for POTS into domination of ancillary markets. On the other hand, INTELSAT officials assert that they must diversify and serve new market niches to shore up revenues that might drop when separate systems acquire greater shares of PANS markets leaving INTELSAT with non-lucrative POTS traffic. Because INTELSAT and other cooperatives have aggressively expanded the number of in-orbit satellites, they fear stranded investment if they cannot provide both POTS and PANS.

If INTELSAT and separate systems had their ways, an unanticipated but quite possible outcome would be that lesser developed nations might have better access to Home Box Office and other video programming than satellite-delivered dialtone! INTELSAT and separate systems currently vie to have their satellites considered "Hot Birds" for video programming, i.e., the preferred satellite of programmers and users, because the most popular programs are accessible

from that particular satellite. Separate systems have shown absolutely no interest in providing small slivers of single transponders for switched international message telephone service. For example, 72.4% of the \$116.2 million in revenues PanAmSat Corporation generated in 1995, came from broadcast services, primarily the carriage of video programming.²³ \$30.1 million accrued from business communication services with \$2.14 million, representing two percent of total revenues, accruing from POTS services.²⁴

If separate systems like PanAmSat have no inclination or spare capacity to serve international message telephone service,²⁵ this market segment defaults to cooperatives like INTELSAT. If a privatized INTELSAT were to devote even more time, money and effort at expanding its PANS market share, then the possibility exists that the level of positive network externalities will drop for international POTS. In its zeal to target and serve PANS markets, satellite cooperatives might end up having to raise POTS rates thereby reducing positive network externalities, because it will need more revenues to support a larger satellite fleet possibly less efficiently loaded with revenue-generating traffic. POTS rates might rise simply because satellite cooperatives might try to burden all ratepayers with investments in costly technological features required only by a smaller set of PANS customers. "Markets exhibiting network externalities can fail, in that the unregulated outcome produces less total surplus than is possible. Indeed, recognizing that 'externality', [i.e., that the pre-privatized, cooperative model generated positive externalities] is commonly understood to denote market failure."²⁶

Satellite users have grown to expect global connectivity, i.e., the ability of the integrated, interconnected telecommunication infrastructure to provide dialtone anytime, and to achieve access to any geographical point served by an earth station. If separate systems do not

significantly play a role in achieving a global connectivity assessment,²⁷ because they only serve one region, concentrate on PANS markets, or cannot access the public switched telecommunication network in some nations, then cooperatives remain the satellite carrier of first and last resort.²⁸ Accordingly, privatization of satellite cooperatives becomes that much more risky, because the contemplated organizational realignment might:

- impact adversely previously accrued network externalities; and
- reduce the versatility, connectivity and robustness in network access consumers have received from the current global telecommunication infrastructure.

Even if privatization generates the kind of consumer dividends that has accrued in other telecommunication sectors, the gains will flow primarily to PANS-consuming businesses and consumers of video programming. Also they must be weighed against any losses in positive network externalities resulting from migration of traffic onto several "balkanized" satellite networks that may not be fully interconnected, and from the possible increases in POTS rates even if the POTS-providing part of a former cooperative continues to average costs. No one has yet to state that remote localities and lesser developed nations do not deserve access to state of the art satellite networks for POTS, unless they can afford to pay the higher unit costs that a Ramsey-pricing,²⁹ fully commercialized environment would establish. The United States, United Kingdom, Canada and even Hong Kong have universal service funding mechanisms designed to make POTS fully accessible and priced at below market rates. The policies driving universal telephone service include financial cross subsidies. The international satellite cooperative model only requires the availability of averaged satellite prices and low thresholds for investment by lesser-developed countries.

False Privatizations

The scope and nature of satellite cooperative privatization means different things to different constituencies. For INTELSAT it means operational freedom. For INMARSAT it means access to land mobile services using handheld terminals communicating directly with a new constellation of intermediate circular orbiting satellites.³⁰ For separate systems like PanAmSat it means ridding cooperatives of "diplomatic status, tax exemption, antitrust immunity, government subsidies, and freedom from the regulatory process."³¹

Instead, the privatization debate should address how to enable incumbent satellite carriers to revamp their governance, management and operations to respond to changed circumstances in a manner that fosters full and fair competition. This objective places satellite service privatization more closely in the context of other privatization initiatives in telecommunications where governments link incumbent "liberalization" with market entry and deregulation. Satellite cooperatives deserve liberalization from a "decision-making [that] mixes political, public policy and business considerations, and the constant search for consensus among oftentimes competing interests . . . [who have] inhibit[ed] the ability of the organization to respond in a timely way to customers' needs or competitive market forces."³²

However, the terms and conditions for such liberalization must include more than a stipulation that restructured incumbent cooperatives will retain "universal access" as a primary "tenet."³³ Despite Congressional hearings, inter-agency Task Forces, direct involvement by the Vice President of the United States and extensive analysis by officials and investors in the satellite cooperatives, little if anything has been generated to determine just how to spin-off a lean and nimble competitive satellite venture while retaining a "scale[d] back . . . global . . . consortium . . .

providing essential global interconnectivity 'lifeline' services." ³⁴

Universal access and global connectivity surely means more than the existence of a satellite footprint over all populated regions of the world. ³⁵ Rene Anselmo, the founder of PanAmSat, in Congressional testimony stated that "providing global 'universal' satellite service is no burden, nor is providing service to lesser developed countries a burden . . . ; [instead] [i]t's a golden opportunity." ³⁶ PanAmSat has exploited market access opportunities primarily by outmaneuvering INTELSAT for video programmers and other business customers. The nature of the services PanAmSat offers does not constitute ubiquitous POTS access and lifeline services to localities unserved or underserved until it entered the marketplace.

Universal access means more than Mr. Anselmo's willingness to pick up any thin route INTELSAT would care to abandon, nor does the following qualify PanAmSat as a provider of global POTS:

I am the only one who has ever provided universal service. . . .
Anybody can use our satellite. You don't have to kiss a minister's
ass to do it. You just get an uplink and use the technology. That is
not true under the INTELSAT system. The only one that can use it
is the PTT monopoly. ³⁷

At the very least a privatized or revamped satellite cooperative needs to retain satellites in all ocean regions having an efficient level of transponders loaded with paying traffic, adequate orbital slot reservations, sufficient cash in hand, and a level of staff and other resources sufficient to maintain current space segment usage rates. Likewise, such ventures must have the wherewithal to capture the benefits of future efficiency gains. Simply put, the divestiture of a satellite cooperative into two or more entities should do nothing to prevent the surviving POTS-provider from achieving economies of scale, global connectivity and ubiquitous interconnection

with terrestrial facilities used to originate and terminate international message telephone service. INTELSAT can achieve the operational freedom it desires by separating its POTS and PANS service offerings, but in a manner that does not allocate all cutting edge technologies and the latest generation satellites to the PANS-affiliate, or spun-off commercial venture(s). The surviving POTS-cooperative should not have to muddle through with higher costs, less attractive orbital slots and inadequate personnel and operational resources.

Officials of separate systems fear that privatization would accord cooperatives yet another opportunity to erect barriers to full and fair competition. To abate such concerns they want incumbents relieved of their government-granted privileges and immunities and substantially restructured so that they are "restructured into several separate companies . . . with any one company not allowed to own or control more than two in-orbit satellites, and equal number of future orbit slots, in each ocean region."³⁸

The Preferred Solution and What Is Feasible

In an ideal world INTELSAT and other cooperatives should not risk reducing positive network externalities and balkanizing POTS network connectivity through privatization when non-structural remedies like corporatization can achieve the kind of commercial orientation and operational flexibility they seek. "On balance, it appears that incumbent satellite organizations can achieve much of the emancipation they desire without officially privatizing, provided they seek only to streamline and economize the existing scope of operations."³⁹ In exchange for operational flexibility, much of which it already has achieved despite its cooperative structure, INTELSAT would lose opportunities to reduce the cost of borrowed capital, shelter retained earnings, secure market access primarily through incumbent carriers with dominant market shares,

enjoy antitrust, tax and other legal exemptions and occupy many of the best satellite orbital slots.

Despite handicaps that could result in depressed earnings with no measurable improvement in efficiency, INTELSAT's management has pressed its Signatory owners to pursue privatization scenarios. Ironically, nothing in the current INTELSAT government documents has prevented the organization from streamlining, reducing overhead and staff and even selectively deaveraging rates to meet competition. The current management team has substantially corporatized the cooperative and has aggressively expanded the number of in-orbit satellites to tap every available market, including ones historically considered outside the cooperative's wingspan, e.g., deploying "landmass" satellites for intra-regional and domestic services instead of trans-oceanic, inter-regional services.

Nevertheless, the cachet of privatization, joint support for privatization from most constituencies, United States government advocacy and the possibility of significant appreciation in Signatory investment ⁴⁰ make some sort of INTELSAT privatization inevitable. ⁴¹ Accordingly, we should consider what kind of privatization poses the least harm to network externalities while addressing how to foster fair, facilities-based competition. The former requires more than rhetoric about the importance of global rate averaging and POTS access. Accordingly, any structural realignment must specify that the entity continuing to serve the POTS mission will average rates as articulated in Article V of the INTELSAT Agreement, without exception. ⁴² To promote universal access the POTS entity should own and operate a constellation of satellites currently filled with POTS traffic at efficient transponder loading levels, with a reasonable expectation that it will have access to additional orbital slots and satellite resources should traffic requirements necessitate additional capacity and orbital resources. This means that the POTS and

PANS enterprises must divide resources fairly without saddling the former with the oldest and less efficient satellites on grounds that POTS requires less sophisticated satellite technology.

Similarly, it means that the POTS entity must have allocated to it adequate network control earth stations, personnel, and capital. On fairness grounds all retained earnings should vest in the POTS entity. INTELSAT and INMARSAT as cooperatives generated such revenues managed to evade terms in their governance documents that required lowered space segment utilization charges instead of increasing Signatory capital compensation well in excess of marketplace interest rates. Likewise, the POTS entity should promote seamless connectivity with earth-based resources by seeking investment in the cooperative and access to its satellites by both incumbent Public Telecommunication Organizations, which invested in the original INTELSAT and INMARSAT, and market entrants or non-carriers. Such "direct access," which the FCC refused to require,⁴³ promotes connectivity among an increasingly robust and diverse array of service providers.

A plain vanilla, POTS-providing INTELSAT parallels the recent decision by the Signatories of INMARSAT to spin off a commercial enterprise to engage in riskier and potentially more financially rewarding mobile services to handheld transceivers. While ICO Ltd. grabs press attention and explores how to make a \$2.6 billion business case for a new constellation of satellites, INMARSAT the cooperative can continue to meet its essential mission of providing maritime, aeronautical and some land mobile services, with particular emphasis on protecting life and property in locales where few if any other satellite operator provides service.

Providing POTS does not grab headlines and does not support campaigns for bigger satellite fleets and more aggressive marketing. Yet it remains an essential undertaking that if

properly managed can generate healthy revenues. If anything the quest to do more has motivated INTELSAT and INMARSAT officials to consider leveraging core services and basic competency into peripheral markets fully capable of competition among private enterprises. A POTS entity unable to act on the temptation to diversify cannot wrongly exploit privileges and immunities conferred as a way to promote global connectivity, rate averaging and worldwide participation in a cooperative.

Because no one could prevent INTELSAT and INMARSAT from diversifying into adjacent markets, separate systems have valid claims that privileges, immunities and other preferences wrongly confer a comparative and competitive advantage to incumbent cooperatives. We will never know whether INTELSAT and INMARSAT could exploit economies of scope in their new market forays, or whether they simply leveraged their incumbency to foreclose, burden and reduce competition from private sources. What we do know is that once a decision is made to "liberate" the incumbent cooperative, whether through privatization, or the creation of a separate commercial enterprise, several competitive safeguards are necessary. The governments that agreed to create satellite cooperatives must attend closely to any divestiture or reorganization primarily to ensure that incumbents, its affiliates, spun-off ventures, incumbent investors like Comsat and new investors compete on equal terms in the marketplace with an increasing number of private, commercial systems.

While a non-privatized POTS entity should retain government-conferred privileges and immunities surely a privatized or spun-off commercial enterprise has no valid claim to them. Similarly, POTS and PANS enterprises must conduct business at arm's length, preferably with little cross-ownership and limited opportunities for companies to investment in both entities.

Practically speaking a privatization or divestiture will continue to involve many of the same investors in the original ventures. Accordingly, governments, and not the Signatories, must establish rules on how the two entities will interact. Such rules should specify that the POTS entity cannot cross-subsidize competitive PANS, and that the PANS venture must be subject to national competition and antitrust laws, regulatory oversight and audit scrutiny of the nation where it establishes a corporate identity.

Conclusion

Proper execution in the privatization sweepstakes can enhance consumer welfare. With safeguards designed to retain the consumer benefits accruing from network externalities, governments should divest their telecommunication satellite holdings and eliminate privileges, immunities and insulation from competition conferred to enterprises who have subsequently abandoned the mission of promoting global access to basic telecommunication resources. However, improper execution of the privatization maneuver can exacerbate previous mistakes by expanding the permissible market access wingspan of incumbents while at the same time reducing or eliminating regulatory safeguards. In the case of international satellites the matter of privatization has become immersed in a broader referendum of what an incumbent should be able to do in view of changed circumstances and what it should not be able to do, because such changed circumstances also include market entry by private competitors.

Incumbent satellite cooperatives should not leverage dominance in POTS to dominate competitive PANS. Likewise they should not exploit a special status, granted to them because of their POTS mission and their ability to foster positive network externalities, as a way to thwart private competitors. On the other hand, private competitors, now matter how frustrated by prior

policies that deprived them of full and fair market access opportunities, should not exploit their more receptive audience with decisionmakers to have imposed on incumbents and their affiliates or spun-off ventures unfair burdens and handicaps.

The international satellite marketplace has generated ample consumers dividends. Necessary but risky tinkering with the organization, management and regulation of the sector should enhance consumer welfare rather than tilt the competitive playing field in the favor of one type of operator versus another.

Notes

1. See, e.g. Michele Balfour and Cameron Crise, "A Privatization Test: The Czech Republic, Slovakia and Poland," 17 Fordham International Law Journal 84 (1993).
2. See, e.g. Ingo Vogelsang, "Micro-Economic Effects of Privatizing Telecommunications Enterprises," 13 Boston University International Law Journal 313 (Fall, 1995).
3. See, e.g., William L. Megginson, Robert C. Nash and Matthias van Randenborgh, "The Privatization Dividend," Public Policy for the Private Sector No. 5, 33 (Dec. 1995).
4. See, e.g., Ahmed Galal, Leroy P. Jones, Pankaj Tandon, and Ingo Vogelsang, Welfare Consequences of Selling Public Enterprises (Washington, D.C.: The World Bank 1993); James M. Naftel, "The Natural Death of a Natural Monopoly: Competition in EC Telecommunications After the Telecommunications Terminals Judgment," 6 Emory International Law Review 449 (1992); Steven D. Lando, "The European Community's Road to Telecommunications Deregulation," 62 Fordham Law Review 2159 (May, 1994).
5. In some instances, unions or popular opinion thwarts privatization initiatives. For example, in Uruguay "the path to easy privatisation was blocked by a 1992 referendum that voted down the partial sale of the national telephone company." "Slowly Doesn't It," The Economist, World Politics and Current Affairs; International, p. 40 United States edition (March 23, 1996).
6. For an overview of regulatory and marketplace developments in international satellite services, see Rob Frieden, International Telecommunications Handbook, Chapters 12-13 (Norwood, MA: Artech House, 1996).

7. Satellite carriers providing international and inter-regional service typically locate satellites in "middle ocean" orbital slots. At these locations the satellite can maximize connectivity for users seeking trans-oceanic telecommunication, e.g., United States to and from the United Kingdom, or Japan. The world has three major ocean regions for purposes of satellite connectivity: the Atlantic, Pacific and Indian.

8. See Gregg Daffner, "Intelsat vs. Private Satellite Systems: Visions for a Better Way," in D. Wedemeyer, ed. Proceedings of the Pacific Telecommunications Council Seventeenth Annual Conference. 620 (Honolulu: Pacific Telecommunications Council, 1995); PanAmerican Satellite Co., White Paper: A New Private Enterprise Intelsat (April 20, 1992).

9. See, e.g., "Clinton Administration Backs Affiliate Option Being Considered by Intelsat Working Group," 61 Telecommunications Reports No. 24, 18 (June 19, 1995); "Gore Heads Administration Meeting with Satellite Task Force," 61 Telecommunications Reports No. 37, 21 (Sept. 18, 1995).

10. See Michael L. Katz and Carl Shapiro, "Technology Adoption in the Presence of Network Externalities," 94 *Journal of Political Economy* 822 (1986); Michael L. Katz and Carl Shapiro, "Network Externalities, Competition, and Compatibility," 75 *American Economics Review* 424 (1985).

11. For an introduction on satellite technology see Andrew F. Inglis, Satellite Technology An Introduction, (Boston: Focal Press, 1991); Donald M. Jansky and Michel C. Jeruchim, Communications Satellites in the Geostationary Orbit, (Norwood, MA: Artech House, 1987).

12. INTELSAT typically does not engage in price discrimination on the basis of demand elasticity and user desire to lease capacity on a particular satellite. Private operators typically do. The "Hot Bird" concept reflects the added value and commensurately higher lease prices for satellites that become home to the most desirable video programs and networks. Because users have a financial incentive in limiting the number of earth stations they need to install and maintain, they prefer to access only a few satellites for their complete inventory of video programming. Private satellite operators who have executed transponder leases with programmers having the most desirable video product find that other programmers, perhaps offering less attractive fare, want to lease capacity and possibly exploit the benefits of being more widely accessible.

13. "There are many products for which the utility that a user derives from consumption of the good increases with the number of other agents consuming the good." Michael L. Katz and Carl Shapiro, "Network Externalities, Competition, and Compatibility," 75 *American Economics Review* 424 (1985).

14. See Carmen Matutes and Pierre Regibeau, "Mix and Match': Product Compatibility Without Network Externalities," 19 *Rand Journal of Economics*, 221 (1988).

15. Agreement Relating to the International Telecommunications Satellite Organization "INTELSAT," Preamble, Done at Washington, August 20, 1971, Entered into Force February 12,

1973, 23 U.S.T. 3892, T.I.A.S. No. 7582.

16. See, e.g., International Telecommunications Satellite Organization Headquarters Agreement, signed at Washington November 22d and 24th, 1976; entered into force November 24, 1976, 28 U.S.T. 2248, T.I.A.S. 8542.

17. INTELSAT Agreement, Article XIV(d).

18. International Maritime Satellite Organization Convention, Article 8, done at London September 3, 1976, entered into force July 16 1979, 31 U.S.T. 1, T.I.A.S. 9605.

19. As part of its determination what would constitute "significant economic harm" under Article XIV(d) of the INTELSAT Agreement, the INTELSAT Board of Governors established a proposed cap on separate system provision of services that access the public switched telephone network, i.e., switched telephone services. The cap has risen incrementally from 100 voice grade circuits per satellite system to 8000 bearer circuits per satellite and will cease to exist in the future.

20. Both INTELSAT and INMARSAT so accumulated large sums of retained earnings that their management decided to increase the rate of compensation paid to Signatories (investors) for the use of capital not converted into capacity usage. The cooperatives' governance documents required them to reduce space segment charges which in turn could have resulted in lower end user charges. See James D. Earl, "Through the Looking Glass of Privatization," in D. Wedemeyer, ed. Proceedings of the Pacific Telecommunications Council Seventeenth Annual Conference. 634 (Honolulu: Pacific Telecommunications Council, 1995).

21. For an analysis of INTELSAT's former economic arguments favoring the cooperative structure and limited competition, see Chris Rourk, "Analysis of the Technical and Economic Issues in the Consideration of International Telecommunications Satellite System Separate Form INTELSAT," 46 Federal Communications Law Journal No. 2, 329 (March, 1994).

22. See Rob Frieden, "Social, Logistical and Developmental Issues in the Global Information Infrastructure." in Speakers Papers, 7th World Telecommunication Forum, Strategies Summit, Vol. 1. Session 5. 14 (Geneva: International Telecommunication Union, 1995); Rob Frieden, "Satellites in the Global Information Infrastructure: Opportunities and Handicaps," 30 Telecommunications No. 2, 29 (Feb., 1996).

23. "PanAmSat Experiences 82% Growth in 1995 Total Revenues, Achieves 80% Increase in 1995 EBITDA," Business Wire (Jan. 29, 1996); available in LEXIS News Library, CURNWS file.

24. "Panamsat Likely Will Attract a Host of Aerospace, Telcom Suitors," 19 Satellite News No. 15, 1,2 (April 8, 1996).

25. This outcome may have resulted because INTELSAT, its Signatories, which operate major international gateway facilities, and the United States government severely limited access to

the public switched telephone network for so many years. Alternatively separate systems, by choice may have targeted large capacity customers like video programmers. Whether by necessity or choice, separate systems primarily have targeted and served non-POTS users.

26. John E. Lopatka and William H. Page, "Posner's Program for the Antitrust Division: A Twenty-Five Year Perspective," 48 Southern Methodist University Law Review 1713, 1739 (July-Aug. 1995).

27. In 1995 PanAmSat became the first separate system to operate satellites in each of the three major ocean regions (Atlantic, Pacific and Indian). Other systems operate in one region thereby requiring interconnection with another satellite carrier or INTELSAT. Currently connectivity between satellites depends on whether and how a carrier, earth station operator or space segment broker can customize a multiple satellite carrier routing. Such requests typically originate on an ad hoc basis from broadcasters, or occasionally from multinational enterprises with geographically diverse installations.

28. Full global connectivity requires a significant satellite component, because terrestrial and submarine facilities do not serve all geographical points and satellite access, if available, may constitute a cheaper alternative, e.g., to localities far interior from a point where a submarine cable makes landfall, or far from high volume terrestrial cables.

29. Ramsey pricing uses supply and demand elasticity as a gauge for determining what prices to charge. Under this pricing scheme carriers will offer the lowest rates to large volume users having many other service options and high sensitivity to price increases. Conversely, carriers will charge the highest rates to low volume users having few if any service options and a keen desire to communicate with the rest of the world.

30. INMARSAT has executed a privatization plan by spinning off a separate commercial venture, known as ICO, Ltd., to pursue a \$2.6 billion land mobile services venture designed to provide service to handheld receivers via a constellation of 10 intermediate circular orbiting satellites. ICO has received over \$1.5 billion in equity subscriptions, primarily from existing INMARSAT Signatories. While INMARSAT holds a minority investment share in ICO Ltd. the two enterprises must operate at arm's length.

31. Statement of Rene Anselmo, Founder and Chairman of PanAmSat, Future of Satellite-Based Services, Hearing before the Subcommittee on Telecommunications and Finance of the Committee on Energy and Commerce, House of Representatives, 103d Congress, 2d Sess., Serial No. 103-144 at p. 127 (July 28, 1994)[hereinafter cited as Congressional Hearing].

32. Statement of Bruce L. Crockett, President and Chief Executive Officer of Comsat Corp., in Congressional Hearing at 120.

33. In response to the question posed by Representative Ralph M. Hall regarding the need to establish a universal access fund to promote global access, Mr. Crockett stated: "Well, I think that the fact that INTELSAT and INMARSAT are prepared to stipulate as part of the privatization

process that universal access will be one of their tenets, that we won't have to worry about that being a problem." Id. at 158.

34. "Clinton Administration Backs Affiliate Option Being Considered by Intelsat Working Party," 61 Telecommunications Reports No. 24 p. 18 (June 19, 1995).

35. Rene Anselmo, the deceased founder of PanAmSat appears to have equated satellite footprint coverage with universal service: "During the next nine months we will launch PAS-3 and PAS-4 and we will have created a private global satellite system that will serve 98% of the world's population. That's what's called 'universal service' in the language of the spinmasters from Comsat who will be here to tout 'universal service' as a burden they must bear, a cross of thorns they must carry in return for being 'shackled' with all their privileges . . ." Congressional Hearings at 129.

36. Congressional Hearing at 130.

37. Id. at 161.

38. Id. at 136.

39. Rob Frieden, "Should Intelsat and INMARSAT Privatize?" 18 Telecommunications Policy No. 9, 679, 685 (Dec. 1994)(arguing against the type of privatization proposed for INTELSAT, but favoring INMARSAT's spinoff of a separate commercial venture structured to pursue markets outside the cooperative's mission and legal competency); see also Joseph Pelton, "How Intelsat was "Privatized" When No One Was Looking," 8 ViaSat No. 3, 38 (March, 1992); Alexandra M. Field, "INTELSAT at a Crossroads," 25 Law & Policy In International Business, 1335 (1994).

40. Brightening privatization prospects for INTELSAT has significantly buoyed the share price of Comsat Corporation, the sole U.S. investor in the cooperative. See Debra Sparks, "Comsat: Wallflower No More," Financial World, p. 14 (March 11, 1996); available in LEXIS, News Library, CURNWS file.

41. "It doesn't take a rocket scientist to figure out that the Satellite Act, INTELSAT, and INMARSAT no longer make sense in today's world. For me the question isn't whether INTELSAT and INMARSAT should be privatized, but rather when and how." Preliminary Statement of Edward J. Markey, Chairman Subcommittee on Telecommunications and Finance in Congressional Hearing at 2.

42. While INTELSAT claims to have deaveraged some rates on a competitive necessity basis, separate systems allege predatory pricing. Presumably because it provides "plain vanilla" lifeline access and services separate systems apparently do not care to offer, the POTS enterprise should not have the reason or ability to deviate from an averaged cost pricing system.

43. See Authorized User Policy, 97 FCC2d 296, policy reaffirmed, 99 FCC2d 177 (1985), aff'd sub nom., Western Union International, Inc. v. FCC, 804 F.2d 1280 (D.C. Cir. 1986).