

**Telecommunications  
Competition and  
Universal Service:  
The Essential Tradeoffs**

**P. H. Longstaff**

***Program on Information Resources Policy***

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## Executive Summary

Can a government really create a world in which communications services will be offered on a truly competitive basis *and* in which regulations mandate below-cost prices for some customers, expensive new services, and the scope of each vendor's customer base? Are policymakers the world over fooling themselves and their constituents into believing that they can have it all?

This paper examines the hard tradeoffs emerging as governments try to open the telecommunications industry to competition *and* preserve (or increase) their commitment to "universal" access to telecommunication services. These tradeoffs include:

- Government mandates to build new channels will bring new messages at greater speeds and increase the competition for cultural or political hegemony. Competition with existing government, religious, or social powers can be expected to meet increased government control of new channels.

- Government efforts to make new channels universally available may mean that government will subsidize the new channels at the expense of existing, competing channels, ultimately decreasing competition in communications and information services. *Or*, government mandates of universal affordability may burden one channel with such high costs that other channels will move in and take away their customers. (There is a price at which a business would find the post office quite competitive with telecommunications.)

- Government efforts to build the infrastructure necessary to allow rural communities to "move bits and not people" (as for telemedicine and distance education) may reduce the current availability of educational and medical services in centers of rural markets and move high-paying jobs to urban areas, where they can be offered by telecommunication. Such a change could drain cash from already troubled areas.

- Government attempts to encourage competition among vendors in or of a particular channel by promoting standards for interoperability and compatibility may actually reduce competition in the long run by setting existing standards in cement and inhibiting innovation by those inside and outside the system. Unless these were global standards, the innovation would be likely to occur elsewhere, putting the country that "picked" a technology at a serious disadvantage.

- If the cost of new (very expensive) services were spread over all those served, low-cost customers such as businesses would subsidize high-cost customers such as rural communities. If a country's trading partners do not choose to burden their businesses with

these costs, the trading partners could gain a serious advantage in trading any good or service that relies heavily on communications services. Thus, control within the country may hamper competition with outsiders.

- To the extent that government mandates special rates and infrastructure for activities such as education and medicine, it takes resources out of any “pot” of money that otherwise might be redistributed to high-cost customers. Business and residential customers might pay an even larger share of the system than they do today. At some point, these increases may become politically unacceptable.

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## Chapter One

### Introduction

In the mid-1990s governments all over the world, including those at the state and federal level in the United States, were poised to spend billions of taxpayer dollars (or to mandate investment by private providers) in order to build telecommunications (i.e., computer-based, interactive service) infrastructure or to subsidize these services for certain customers, or both. Some policymakers also proposed guaranteeing citizens access to certain information carried on this infrastructure. While some analysts condemned the wild claims made for the new technology as “hype”<sup>1</sup> and pointed out that these plans were not without some serious downsides, government officials seemed convinced that this spending was crucial for the competitiveness of their economies and for a better standard of living for their citizens.

This policy is clearly reflected in the United States in the Telecommunications Act of 1996, in which the government declared its policy to promote “interactive media.” Similar statements have been made by the European Union<sup>2</sup> and the government of Japan.<sup>3</sup> The discussion was not limited to building national infrastructure but encompassed a vision of what became known as the Global Information Infrastructure (GII).<sup>4</sup>

Most of these plans are said to find their precedent in national policies known as “universal service,” which were developed in the early to mid-twentieth century to encourage the widespread adoption of postal and telephone services. The idea of universal service is that all citizens are better off if all citizens have access to these services. This policy goal has given rise to comprehensive government regulatory schemes including outright government ownership of the systems (in most countries) or heavily regulated private monopolies (in the United States). In all countries, the government has set rates for service that forced some customers (usually business and urban customers) to pay more than the cost of delivering the service to them in order to make the service available to others (rural and residential customers) at prices lower than the cost of delivering service to these others. As long as the

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<sup>1</sup>See, e.g., Clifford Stoll, *Silicon Snake Oil: Second Thoughts on the Information Highway* (N.Y.: Doubleday, 1995); Todd Lappin, “Déjà Vu All Over Again,” *Wired* (May 1995), 175ff.

<sup>2</sup>See, e.g., Open Network Provisioning (ONP) Directive on Interconnection and Universal Service, Council of the European Community (CEC), 1995 OJ C 281, Oct. 25, 1995.

<sup>3</sup>See *Program for Advanced Information Infrastructure*, Ministry of International Trade and Industry, May 1994, available at: <http://www.glocom.ac.jp/NEWS/MITI-doc.html>

<sup>4</sup>See, for example, *The Global Information Infrastructure: Agenda for Cooperation, National Telecommunications and Information Administration*, United States Department of Commerce, Washington, D.C., 1995, available at: <http://ntiaunix1.ntia.do.../documents/giiagend.html>

system was a closed one, so that all costs and revenue could be taken into account by the government owners or regulators, matters worked more or less to everyone's satisfaction.

The balance established by these tradeoffs remained undisturbed until recently, when provision of these services by government or private monopoly entities began to crumble in many countries and the viability of government policies for subsidized service was called into question. Monopolies are no longer thought to be the most efficient way to provide communications services, and government is encouraging competition in order to bring the benefits of a market economy to this sector.

But can any government scheme provide for competition *and* government promotion of universal service? These two policy goals illustrate a paradox common to many regulatory endeavors: when you have more of one thing than you want, you often have less of another. Almost no one wants all of one and none of the other. Most would prefer to have both. The universal service debate can be characterized as a classic case of choosing between equity and efficiency. On one hand, government seeks equity for its citizens through a politically mandated pricing structure and level of service, while, on the other, it seeks to unleash the power and efficiency of a free market that will make decisions about price and service based on rate of return to investors.

In the mid-1990s governments all over the globe were looking for ways to bring the benefits of competition to their constituents (thus, to have their cake) as well as to put demands on those competing service providers to deliver service to certain customers at or below cost (and eat it, too). Policy experts from many countries have attempted to find some acceptable middle ground but, at least at this writing, without success. Some analysts have asserted that the two goals are not of equal weight,<sup>5</sup> but for the purposes of this paper both are assumed to be important public objectives.

The problem has been made even more complex by the introduction of computer technology, which is cheaper and faster than such traditional media as print and broadcast. The advent of computer technology has led some commentators and government officials to propose that the definition of universal service be expanded beyond telephony and postal services to include access to new data and video services. Some went further, proposing to guarantee access to certain messages on those services, and even to access to these messages for those who cannot afford the access fees.

But many of the proposed expansions of universal service overlook that the political and economic justifications for the original policy do not necessarily apply to the expansions. For

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<sup>5</sup>See Julian L. Grand, *Equity and Choice* (N.Y.: HarperCollins Academic, 1991).

example, precedents for government-subsidized information services have a drawback that may not be acceptable in the wide-open democracies forecast for the Internet: when governments pay the piper they ultimately call the tune, often demanding censorship and *restricting* access to information.

In addition, it is important to remember that the existence of other communications channels was not taken into account when the original tradeoffs were made, because they were not thought to be part of the same industry. No one thought newspapers and broadcasters were in the same business as telephony. But if the focus of debate is the delivery of certain crucial messages to citizens, it would be foolhardy to ignore that the communications resources of any country are not limited to its telecommunication infrastructure and that much of the muscle for delivering vital information already exists in a *very* competitive marketplace. By mandating resources for telephony, governments may indeed be harming older technologies that could be part of a competitive communications/information marketplace. In addition, failure to treat alternative channels as consumer substitutes would distort any economic analysis of this sector as well as any attempt to predict demand for new services.

This paper attempts to look at the issue of access to communications from several broad perspectives. It begins by looking at the precedents for government-mandated access to the various channels of communications said to be converging on one another in order to bring all the appropriate precedents to the table. Next, it examines the forces causing the communications sector to change that must be taken into account in any policy formulation. It concludes with a discussion of several proposals in this area and how they deal with the control versus free market dilemma as well as calls to increase the scope of government control to include new services and entitlements for access to certain information.

As a preliminary matter, it is necessary to point out that certain terms used here to describe aspects of the communications sector may not be familiar to all readers. As a framework for broad discussion of this sector, as this author has suggested previously,<sup>6</sup> it may be useful to go back to the roots of all communication, using "Information Theory."<sup>7</sup>

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<sup>6</sup>For a general discussion of how this theory can be applied to communications regulation, see, Patricia Hirl Longstaff, *Information Theory as a Basis for Rationalizing Regulation of the Communications Industry* (Cambridge, Mass.: Program on Information Resources Policy, Harvard University, June 1994, P-94-4).

<sup>7</sup>This theory was the foundation for the advancements in computers and telecommunications that led directly to the communications revolution with which we are now trying to come to grips. Information Theory demonstrates how every communications event can be broken down into the same basic elements, no matter which technology is being used. See, Claude E. Shannon, "A Mathematical Theory of Information," *Bell System Technical Journal* 27, 1948, 379-423; and John R. Pierce, *An Introduction to Communication Theory, Symbols, Signals and Noise* (N.Y.: Dover Pub., 1980).

This term is used here merely to label certain functions performed by the various players in this sector.

The paper refers to four main categories of communications channels that are useful in considering public policy:

(i) *Point-to-point*. These channels allow senders to reach any receiver connected to a system or network. Usually, the system will have some kind of central point where messages are sorted or switched into connecting channels for distribution to the intended receiver. Examples include the postal service and telephony. These channels usually allow individuals to be senders or receivers, i.e., they are said to be “two way.”

(ii) *Point-to-multipoint*. These channels allow a sender to reach anyone in a position to receive the message and are not addressed to any one place or receiver. These messages are intended for many people or places at the same time. Examples include broadcast, cable, and publishing and are often referred to a “mass media.”

(iii) *Multipoint-to-point*. These channels would make it possible for many people to send messages to the same receiver at the same time. They are largely theoretical at this time, but services such as those that verify credit cards are a step in this direction, i.e., many different senders communicate with a central place simultaneously. Such communication assumes a receiver/sender capable of carrying on more than one communication at a time, as computers are.

(iv) *Multipoint-to-multipoint*. These channels are also largely theoretical, because they assume that both ends of the communication process are capable of more than one simultaneous communication process. This process may be possible in the communications sector, where both ends of the communication are computers.

The term “access” is used in a variety of contexts in the literature and the political debate. This paper attempts to make clear when a discussion deals with:

- physical access to a channel or message (i.e., when the channel is reasonably available to anyone willing to pay the going price),
- economic access (the channel or message is available at a politically acceptable price),
- access entitlements (the channel or message is available regardless of ability to pay), and,
- cases where the access contemplated is for *senders* or *receivers*.

Throughout, the discussion assumes that the communications sector is one system that includes a variety of technologies, regulatory regimes, and business strategies, all of which have an impact on one another as they compete to fill society’s communications needs and wants. For a variety of reasons (including regulatory turf battles), regulators have often failed

to acknowledge the inherent interconnectedness of this sector, but any policy that claims to be “universal” in scope must do so.

The paper attempts to look at the current need for tradeoffs from several broad perspectives. It begins by looking at the history of government-mandated access to various channels in the communications sector, in an effort to bring many of the appropriate precedents to the table. Next, it examines the forces that are causing the communications sector to change and that must be taken into account in any policy formulation. These forces will also affect the timing of any regulatory actions. The paper concludes with a discussion of several proposals in the area of universal service, which deal with the issue of control versus free market, as well as with calls to increase the scope of government control to include new services or entitlements for access to certain kinds of information.



## Chapter Two

### Overview of Regulation of Access to Communication Channels

Predictions of the wonders of the “information superhighway,” which were common political rhetoric in the early 1990s, ignored that no one ever seriously predicted or advocated a single system or “highway” over which all information would travel and to which all citizens should have access.<sup>1</sup> What was envisioned was a variety of information transportation systems (channels) from which communications receivers and senders could choose. Many felt that these channels might, to some extent, interconnect with one another to form a larger system.<sup>2</sup> It was often suggested that competition among channels would be necessary to bring better service, more innovation, and to lower the cost to the communications sector.

Unfortunately, many of the political debates did not take into account all the channels that serve communications needs and assumed that the enhanced speed made possible by new telecommunications technology would make channels such as print and broadcast obsolete. Not even the most rabid “nethead” predicted that the older media would all die any time soon. Instead, the established channels responded to the opportunities opened by the new technologies and began to move into one another’s turf, creating new hybrids of communications services. Thus, changes in the regulatory structure of one channel began to be felt by all the others.

Of course, government has never been very far from the communications channels that operate in its territory, because control of communication is the source of much power and an important part of national sovereignty.<sup>3</sup> Some of these channels have been the subject of government efforts to encourage access by citizens as senders and/or receivers but few of those efforts have designated that access as an absolute *entitlement* that will be paid for by government if the individual can’t afford the applicable access charges or as a *right* when they want to send or receive the “wrong” message.

In the United States, every channel has a unique regulatory scheme (based largely on the politics and technology in existence when the channel was introduced), different speeds at which it delivers messages, and a distinct cost structure. By the late 1990s, some of these differences had become blurred by convergence, but in most cases they remained clear enough

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<sup>1</sup>See M. J. Richter, “A Guide to the Information Highway,” *Governing* (September 1994), 59-69.

<sup>2</sup>For an excellent discussion, see, Eli M. Noam, “Beyond Liberalization: From the Network of Networks to the System of Systems,” *Telecommunications Policy* (May-June 1994) 286-294.

<sup>3</sup>See Oswald H. Ganley and Gladys Ganley, *To Inform or To Control? The New Communications Networks*, 2nd ed. (Norwood, N.J.: Ablex Pub. Corp., 1989).

to enable consumers to make choices. For example, advertisers and consumers could trade cost for speed or reach.

## 2.1 Education and Libraries

An *entitlement* to access to a particular channel has generally been granted only where government owns the channel, controls the messages that go through it, and provides access to all citizens free of charge. Nearly all governments have, with varying degrees of commitment, adopted measures that amount to universal access *for receivers* in several government-owned point-to-multipoint services, e.g., government may pay the costs associated with delivery of messages conveyed by public education institutions and public libraries. However, no individual or group is given the right to *send* messages in these channels. The messages in these channels are controlled by government bodies (school and library boards) and often are the subject of attempts to make sure that only the “right” messages are conveyed. That is why there are still school libraries in the United States where *The Wizard of Oz* is banned, because it is about witches. The history of government censorship of its own channels has led some to suspect that officials will be unable to resist the temptation to “clean up” any new channels it builds and operates. Public institutions will almost certainly remain important parts of the communications infrastructure, because they serve the critical role of alternative channels for those who cannot afford access to private education or information services—a role is clearly evident in the Telecommunications Act of 1996, in which congress mandated special funding and rates for services to these institutions.<sup>4</sup>

## 2.2 Print

Neither the federal nor the local levels of the U.S. government have ever seen a direct role for themselves in assuring access to publishing (a point-to-multipoint print channel) for senders or receivers. There is no right to have a letter to the editor published by the local paper,<sup>5</sup> nor government programs to give money to people who cannot afford to buy subscriptions or books. However, the federal government has taken indirect steps by allowing newspapers, magazines, and books access to the postal system (as senders) at reduced rates.<sup>6</sup> Government-funded access for receivers can be seen in state laws that mandate the publication of certain public notices (such as city council minutes, delinquent tax lists, etc.). Newspapers are not *required* to print these notices, but the notices are an important source of revenue for

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<sup>4</sup>See 47 U.S.C. 254 (h), and 47 U.S.C. 706-708.

<sup>5</sup>The U.S. Supreme Court has held that it would be inconsistent with the guarantees of the First Amendment to the Constitution for government to require that senders be given access to newspaper print channels. *Miami Herald v. Tornillo* 418 US 241 (1974).

<sup>6</sup>39 United States Code 3626.



small papers and most small publishers would be loath to print stories liable to anger the government officials who are some of their best customers.<sup>7</sup> Perhaps the closest to an enforceable right of access to a channel involving print may be found in court cases that protect pamphleteers from local government restrictions on distributing in public places.<sup>8</sup>

Free access for *receivers* to a point-to-point print channel is provided by the postal system. But a sender in this channel must pay the applicable postal rate. The cost of the postal system is spread over all senders in the system, and, as in the telephone system, some senders pay less than the cost of their service, i.e., first-class senders subsidize other senders in this channel. In this context, the terms "costs" or "actual costs" are generally terms of art (over which much time and political capital have been spent) for rate-making purposes, but here they are used in a more pedestrian sense: How much money does it take to deliver the service?

Some of point-to-point print service provided by the postal system is now being lost to channels outside the system (e.g., to such independent services as United Parcel Service [UPS], as well as facsimile [fax] and e-mail), creating concern that the system of internal subsidies will have to be revisited and access for senders soon have to be based more closely on the cost of providing the service to the parties. Rising prices for high-cost services (such as in rural areas) may also bring new suppliers into those markets, creating real competition, lower prices, and better service.<sup>9</sup> The problem of service to high-cost customers parallels one visible in the other major point-to-point communications channel, telephony.

Despite occasional predictions of their demise, print channels remain important as the twentieth century nears its end, because they offer relatively low cost for senders and receivers, especially given the advent of desk-top publishing. Print can be used in a point-to-point service (e.g., through the postal system) or can be used for point-to-multipoint (newspapers, books, etc.), but it is not constantly updatable and its delivery is generally much slower than electronic channels can provide. In addition, the physical nature of print increases its cost and limits the amount of information that generally can be presented (i.e., edited) by the sender. It does, however, offer a permanence and portability that many other channels lack.

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<sup>7</sup>See e.g., 81 NY Jur. 2d §6-24; Minnesota Statutes, Chapter 331A.

<sup>8</sup>See *Perry Education Association v. Perry Local Educators Association* 460 US 37 (1983).

<sup>9</sup>For a detailed discussion of these issues as they apply to postal services, see, *Free the Mail: Ending the Postal Monopoly*, edited by Peter Ferrara (Washington, D.C.: Cato Institute, 1990).

### 2.3 Broadcast

U.S. law regards broadcast communications channels as public resources but licenses them to privately owned companies which are heavily regulated to insure that government does not lose control entirely, allowing it to further social and economic goals congress deems important.<sup>10</sup> Although the term “universal service” has not been used in broadcast policy debates, the idea of broad public participation has always been a part of the political and regulatory debates, with more or less general agreement that government should, to the extent possible, insure that all geographic areas and cultural groups have access to *some* broadcast signals as *receivers*. But government has never attempted to guarantee access (i.e., make it physically available) to any particular channel or for any particular message. For example, radio listeners in a particular geographic area have no right of access to particular music formats.<sup>11</sup>

Outside the United States, governments generally charge a license fee for access by receivers and do not see such access as an entitlement. Until the 1980s, when some broadcast channels were opened to private enterprise, access by senders was strictly controlled by the government agencies that operated broadcast stations.

On the other hand, governments all over the world have invested much time and energy in *blocking access* to the broadcast channel. Even though censorship of this channel is forbidden in the United States, licenses have been lost by those foolish enough to broadcast the “wrong” messages.<sup>12</sup> In 1996 the urge to block access to bad (that is, violent) broadcast messages was aided by technology in the form of the “V” chip. This device gives parents the power to block access but requires some kind of rating agency to tell parents when a program is violent. Many broadcasters have complained that the “V” chip violated their First Amendment rights, but within a week after President Clinton signed the bill some appeared of them ready to give up these rights in return for government grants of free access to spectrum for advanced television (TV) services.<sup>13</sup>

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<sup>10</sup>In most countries, broadcast channels are owned and operated by government or a quasi-government organization. In the United States the electromagnetic spectrum was said to be a scarce public resource that must be given only to the most deserving applicants for a broadcast license. This “scarcity” rationale is now thought by many to be outdated because of technological innovations that are opening up more of the spectrum and the proliferation of wire-based services. See Itihel de Sola Pool, *Technologies of Freedom* (Cambridge, Mass.: Belknap Press of Harvard University Press, 1983), Chapter Nine, note 5.

<sup>11</sup>*FCC v. WNCN Listeners Guild*, 450 U.S. 582, 101 S. Ct. 1266, 67 L. Ed. 2d 521 (1981).

<sup>12</sup>See, for example, *KFKB Broadcasting v. FCC* 47 F.2d 670 (1931), or *Trinity Methodist Church, South v. FCC* 62 F.2d 850 (1932).

<sup>13</sup>See “Ratings System, If Born, Could Be Chip In TV’s Other Battles with Regulators,” *Wall Street Journal*, Feb. 15, 1996, B3.

This channel is a point-to-multipoint service that allows a message to go from one place (the broadcaster's transmitter) to many points at the same time. There has never been any suggestion that all citizens have a right of access to the channel as senders, i.e., to be broadcast licensees or to use the facilities of any licensee.<sup>14</sup> The Federal Communications Commission (FCC) has tried, however, to make sure that licensees include women and minorities, on the theory that they would bring diversity to the available broadcast programming.<sup>15</sup>

Broadcast also offers relatively low costs to senders (on a per receiver basis) and has generally been free to receivers, except for the cost of their radios and television sets, i.e., the decoding equipment. This pricing scheme may change as sophisticated new coding equipment makes it possible for broadcast signals to be used by Direct Broadcast Satellite (DBS) and "wireless cable" systems that charge receivers. Broadcast channels are capable of instantly updating messages but cannot easily target them. They are the quintessential "mass media" and have been used effectively for news, entertainment, education, and advertising. In the United States (and in most of the rest of the world), more households have access to television sets than to a telephone.<sup>16</sup>

## 2.4 Telephony

Traditional telephone service is a point-to-point channel that allows customers to be both senders and receivers. It allows them to communicate to wherever there is another telephone. Until recently, most governments have paid only lip service to the notion that all citizens should have access to the channel. In most countries this channel has been owned and operated by the government, although in the 1990s privatization occurred in many developed countries. In the United States, the channel was privately owned but operated as a monopoly under heavy government regulation. A study by the Organization for Economic Cooperation and Development (OECD) found that there is no common definition of "universal service" and that the penetration of phone service varies widely, even in developed nations.<sup>17</sup> In developing nations, the level of service and rates of penetration provided by government-

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<sup>14</sup>Certain people have been given a limited right of access to the broadcast channel, including congressional candidates and unendorsed candidates. See, 47 USC 315 and 47 CFR 73.1930. But broadcasters cannot be treated as common carriers. See *FCC v. Midwest Video* 440 U.S. 689 (1979).

<sup>15</sup>See, e.g., *Notice of Proposed Rulemaking (Regarding Ownership Restrictions)*, Federal Communications Commission, MM Docket No. 91-140.

<sup>16</sup>See Sydney Head, Christopher Sterling, and Lemuel Schofield, *Broadcasting in America*, 7th ed. (Boston: Houghton Mifflin, 1994), 100 (citing information for 1993).

<sup>17</sup>*Universal Service and Rate Restructuring in Telecommunications* (Paris: Organization for Economic Cooperation and Development, Committee on Information, Computer and Communications Policy, 1991).

owned monopoly systems indicate a long way to go before those countries can assure access for all citizens.<sup>18</sup>

In recent decades, however, U.S. regulators have taken steps to make sure that every citizen can get access to the channel at a “reasonable” price, but none has given citizens an *entitlement* to that connection (i.e., furnished by government if the customer cannot afford it) or to any particular level of service, although a number of authors have called for some variations on these themes.<sup>19</sup> Some government actions, such as removing pay phones from street corners used by drug dealers, have actually reduced access for some low-income people.

However, one commentator has pointed out that the original use of the term “universal service” had nothing to do with government policy to connect all citizens to a phone system,<sup>20</sup> but was delete a policy intended to encourage competing phone companies to interconnect with one another, thereby avoiding the necessity for individuals to subscribe to several services in order to be able to reach everyone. Widespread availability of service was brought about by these government policies and by market forces, as competition swept the industry after the expiration of the Bell patents, encouraging independent companies to build in areas not served by the Bell system.<sup>21</sup>

In addition to the perceived need to rationalize a “messy” system (i.e., to connect the many phone companies into one system), government action to encourage access has, in theory, been justified by a need to promote health and safety (via access to emergency services, such as fire and police protection) and to correct a market failure brought about by “externalities” to the system that cannot be recovered in the price of the service. This theory posits that the value of a communications system goes up for each individual customer every time more customers are added, but the price of the service cannot go up for each new addition.<sup>22</sup> But it was not until the late 1960s and the early 1970s that regulators in the

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<sup>18</sup>Penetration rates are as low as 0.21 per 100 in Bangladesh and as high as 49.33 in the United States on a per capita basis. In the U.S., 95 percent of all households have access to a telephone. See Tommy T. Osborne, *Better Telephone Service for the Have Nots: In Whose Interest, by Which Means, and Who Pays?* (Cambridge, Mass.: Program on Information Research Policy, Harvard University, August 1992, P-92-4).

<sup>19</sup>See, e.g., Heather Hudson, “Universal Service in the Information Age,” *Telecommunications Policy* 18, 8 (November 1994), 658-667.

<sup>20</sup>It was used in 1916 by Theodore Vail, President of AT&T, with regard to what became known as the “Kingsbury Commitment.” In this settlement of antitrust actions against it, AT&T agreed to stop buying small telephone companies and to let them connect with its long-lines service, thereby setting up one interconnected system.

<sup>21</sup>Milton Mueller, “Universal Service in Telephone History,” *Telecommunications Policy* (July 1993), 352-369.

<sup>22</sup>See, e.g., Michael Katz and Carl Shapiro, “Network Externalities, Competition and Comparability,” *American Economic Review* 75, 3 (1985), 424-440.

United States began to talk of the need to make sure that people with below-average incomes had access to this channel of communication on terms affordable to them. That led to the development of regulations for "lifeline" rates.<sup>23</sup>

To accomplish these diverse goals, a complex system of internal subsidies was developed through which low-cost service subsidized high-cost service. Thus, rural service was subsidized by urbanites, residential service was subsidized by businesses, and local service for everyone was subsidized by long-distance service. The mechanisms to distribute these subsidies include government-mandated accounting rules called "separations" (which provide for "access" charges to be paid by long-distance carriers for access to the local phone system),<sup>24</sup> and the Universal Service Fund (USF), a mechanism that shifts resources from urban, lower cost communities to rural, higher cost ones.<sup>25</sup> In the 1990s approximately \$800 million was redistributed annually by the USF and related low-income assistance programs such as the Lifeline Access Fund.<sup>26</sup> USF money was distributed to local telephone companies with higher than average costs, but not all of their customers are too poor to pay the actual cost of bringing them the service. This has led some to suggest that subsidies that go directly to households or businesses and are based on ability to pay would be more efficient.<sup>27</sup> This system of subsidies is almost entirely internal to the system and not apparent to the telecommunications customers, who are either paying or receiving the subsidies.

This system of rate subsidies and transfer payments worked more or less to everyone's satisfaction until new technologies allowed formerly distinct companies and industries to poach on one another's turf, creating competition in some services, starting with long-distance service. True to the laws of classical economics, this competition brought down prices. At about the same time, policymakers came to believe that having a state-of-the-art communications system would be necessary if the United States was to be competitive in a

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<sup>23</sup>See *Notice of Proposed Rulemaking (Regarding Ownership Restrictions)*, Federal Communications Commission, MM Docket No. 91-140, 355.

<sup>24</sup>This scheme was, in effect, continued by the Modification of Final Judgement, which governed the telecoms industry from 1982 to 1996. The charges were levied on an even "flatter" basis than before, leading some long-distance carriers to complain that access charges were subsidizing local service and inhibiting competition in those markets.

<sup>25</sup>See Anthony G. Oettinger, *The Formula is Everything: Costing and Pricing in the Telecommunications Industry* (Cambridge, Mass.: Program on Information Resources Policy, Harvard University, October 1988, P-88-2); and Carol L. Weinhaus and Anthony G. Oettinger, *Behind the Telephone Debates* (Norwood, N.J.: Ablex Pub. Corp., 1988).

<sup>26</sup>Peter K. Pitsch and David P. Teolis, *Updating Universal Telephone Service* (Indianapolis, Ind.: Hudson Institute, 1994), 4.

<sup>27</sup>*Ibid.*

global marketplace.<sup>28</sup> The best way to achieve innovation and lower cost, they reasoned, was to let loose the power of competition which was already revolutionizing and reducing costs in the long-distance market.

But this meant that low-cost, high-tariff customers like large urban businesses would be the first battleground for competition, and, as those customers left “the system” for the new competitive access providers (or simply bypassed the system by building their own channels), their contributions to the subsidies for rural and residential services went with them. The intricate scheme that had been knitted together for “the” system began to unravel, and regulators began to ask whether it is possible to have competition *and* low-priced service in rural areas.<sup>29</sup> If it is true that early competition in the industry (not government-mandated internal subsidies) actually built much of the service in those areas, then the question may not be one of either/or. The level of service in those areas will almost certainly be influenced by the success (or lack thereof) of the new competitors on the horizon, including wireless technologies such as personal communications services (PCS) and low-earth orbit (LEO) satellites.<sup>30</sup>

At about the same time that public utility regulators became aware of the benefits of competition in the telecommunications system, it was becoming increasingly clear that the revenues available to government at all levels to provide services such as education and health were not going to keep up with the demand for those services. The failure of revenue to keep up with costs led government administrators, like their counterparts in the private sector, to look for ways to reduce their costs and make their operations more efficient. Government bought equipment to bypass the local telephone network (saving access and toll fees), and government planners began looking to computer and communications services to deliver educational, medical, and other citizen services to remote areas, thereby reducing staffing and office costs there. Projects to build government-owned fiber-optic lines and microwave services proliferated in the 1990s,<sup>31</sup> taking millions of dollars out of the revenue base available for universal telephone service goals.

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<sup>28</sup>Not everyone believed that dismantling the Bell system and opening telephony to competition was a good thing. See, e.g., Constantine Raymond Kraus and Alfred W. Duerig, *The Rape of Ma Bell: The Criminal Wrecking of the Best Telephone System in the World* (Secaucus, N.J.: Lyle Stuart, 1988).

<sup>29</sup>For an economic analysis of these issues see, e.g., Jean-Jacques Laffont and Jean Tirole, “Optimal Bypass and Cream Skimming,” *The American Economic Review* 80, 5 (December 1990), 1042-1061.

<sup>30</sup>See, e.g., Rob Frieden, “Satellite-Based Personal Communication Services,” *Telecommunications*, Americas edition (December 1993), 25-28.

<sup>31</sup>For a list of such activities, see, National Association of State Telecommunications Directors, *1994 State Reports* (Lexington, Ky.: The Council of State Governments, 1994).

If government resources continue to decline, this trend toward government bypass of the system will almost certainly accelerate. It is difficult to deal with, because the officials who must cut their budgets are usually not the same ones who must worry about universal service. Government will thus join the many business firms that have found that through bypass they can get communications services at lower cost by avoiding the system that pays the subsidies used to promote such goals as universal access to the channel.<sup>32</sup>

Like publishing, the service known as telephony has the potential of being both a point-to-point and a point-to-multipoint channel in the near future.<sup>33</sup> It can be portable, updated instantaneously, and targeted to specific people or mass audiences. But should the proposed broadband services that bring voice, video, and data services be treated like telephony or as a new channel which requires special considerations when discussing universal access? If treated differently, what effect will the new services have on the more heavily regulated "plain old telephone service" (POTS)?<sup>34</sup>

Government regulations to restrict access to new interactive services were born in the very act that was supposed to free them to find their way in the marketplace. In the same section where it declares government policy is intended to "promote" these services, the Telecommunications Act of 1996 placed greater burdens on these services to restrict access to "adult" messages than had previously been held constitutional for broadcast and cable.<sup>35</sup>

## 2.5 Cable

Cable TV can be thought of as a point-to-multipoint "super" channel with many channels simultaneously being delivered to receivers. Receivers can select only one of these channels at a time. Cable systems are localized and, unlike the postal and telephone systems, are not part of a larger nationwide system. They do not allow point-to-point communication among most U.S. subscribers (at least, not at this writing), and so the "externality" problem of telephony does not arise (i.e., more subscribers are not necessarily a benefit to all other subscribers). Because the cost of operation and infrastructure cannot be recovered entirely from advertising revenue, cable companies must charge for access. The reasonableness of its

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<sup>32</sup>For a discussion of the history and economics of bypass see, e.g., Walter G. Bolter, James W. McConnaughey, and Fred J. Kelsey, *Telecommunications Policy for the 1990s and Beyond* (Armonk, N.Y.: M.E. Sharpe, Inc., 1990), Chapter Six.

<sup>33</sup>It may also facilitate multipoint-to-point and multipoint-to-multipoint when computers are senders or receivers or both.

<sup>34</sup>Some attempts have been made to predict the usage questions. See Samaradasa Weerahand, Robert S. Hisiger, and Victor Chien, "A Framework for Forecasting Demand for New Services and the Cross Effects on Existing Services," *Information and Economics Policy* 6, 2 (July 1994), 143-162.

<sup>35</sup>47 U.S.C. 230.

charges was the subject of some debate in the 1990s, but, suffice it to say, the charges are not generally insignificant and may make access unavailable to some groups in the population.

In the United States, cable companies must obtain a franchise from the local unit of government where they do business. In return for this right to do business, that unit of government generally demands that the cable company provide no-charge access for government and educational institutions (as senders) and provide some kind of access for members of the general public (as senders) to its transmission facilities. Access by receivers has never been deemed an entitlement, but rates for a basic service package are regulated by the local governments and the FCC, ostensibly to encourage access by all citizens.<sup>36</sup> Thus, at the local level, the receivers of premium channels and pay-per-view services may subsidize the service for those who take only the basic package.

Just as in the telephone and postal systems, this scheme of internal subsidies works as long as “the system” is not subject to competition, which takes the top group of ratepayers out of the system, reducing the money available to pay for people who get service below cost. But such competition is being encouraged by congress and the FCC. It is clearly on the way from DBS providers as well as telephone-based “video dial tone” services. Local governments will thus find it increasingly difficult to demand free access as senders and internal subsidies for basic service receivers.

Because it is a collection of point-to-multipoint channels, cable can efficiently increase the number of messages in a geographic area. Each cable channel can be updated instantly and can target messages only in a gross sense (e.g., the sports channels are more likely to reach receivers who are men). Like the other point-to multipoint channels, a cable channel has been used successfully for news, entertainment, education, and mass marketing. In the mid-1990s, large cable companies were beginning to talk about investing in switching equipment which would make them capable of becoming point-to-point services.

## **2.6 Summary of Trends in Access Regulation**

In cases where the government owns a point-to-multipoint channel (e.g., public education and broadcasting in most countries) and receivers are given access at low or no cost, the messages they receive are controlled by the government. In privately owned and operated point-to-multipoint channels (usually referred to as “media”—broadcast, cable, and print), receivers that pay the cost of their access (premium cable services, video dial tone)

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<sup>36</sup>Cable Act of 1984, Public Law 98-549, and Cable Television Consumer Protection and Competition Act of 1992, Public Law 102-385; both Acts amend the Communications Act of 1934.



have greater control over the message than those whose access is subsidized by senders (e.g., advertisers). In nearly all cases, those that pay the piper call the tune.

Point-to-point channels that act as an integrated system (e.g., traditional postal and telephony) are capable of government-mandated internal subsidies for low-income or high-cost subscribers as long as all revenue remains in the system. Revenue from subscribers that pay the highest prices (but may have the lowest costs) will leave the system if alternative channels become available at lower prices. To stop this revenue drain, government must set up walls around the system that effectively keep all competing channels out of the reach of subscribers paying the highest prices. This is exactly what U.S. regulators did when they established local monopolies for telephones. But monopolies are thought to lack the discipline of the market, causing less innovation and higher prices, which can eventually cause customers with political and economic power to demand access to competing channels. Sooner or later, those that must pay their piper more will demand the right to find other ways to hear the tune.

Channels that are not integrated systems and protected by government barriers which keep out competitors have almost no mandated access for senders or receivers, because there is no way to spread the cost among all the channels competing for revenue. For example, mandated access for senders to broadcast could not be spread over all channels that compete with them (e.g., newspapers), and without spreading this responsibility the broadcast channel would be at a competitive disadvantage. Although newspapers and broadcast are not perfect substitutes for each other, a burden on one would be an advantage to the other. Any government policies to increase access by receivers or senders in a channel (e.g., tax credits for purchase of equipment or services or government programs to encourage the use of the channel) would benefit that channel at the expense of competing channels. Because those that own these channels are not ignorant of these effects, they maintain a constant vigil on policymaking forums to make sure that the balance of power is not disturbed. Thus, as the former monopolies (accustomed to and appreciative of government regulations to encourage access) move into this competitive arena, they can expect challenges to any proposals for government action to increase access at the expense of the competing channels.

In all countries, there are variety of ways for citizens to send or receive messages and to gain access to particular channels. For example, some people do not have telephone service in the home but have access to the system at the nearest pay phone. Some people read newspapers and books in the public library, rather than purchase them, or get messages about subjects that interest them through broadcast or cable. Sometimes such alternatives are not so convenient or comprehensive as other choices might be, but they are perceived as appropriate tradeoffs in the face of limited time or resources. No government has ever found it feasible to make all channels available to all citizens in the most convenient or comprehensive manner,

but access can be virtually universal through the individual's use of alternative access points or alternative channels.

## Chapter Three

### Forces Changing the Universal Service Debate

#### 3.1 New Technology

Volumes have been written about the new technologies that will revolutionize communications.<sup>1</sup> New technology will be applied to create new channels (e.g., new satellite services), new coding/decoding systems in current channels (e.g., moving from analog to digital encoding, signal compression, etc.), and new varieties of sending and receiving equipment.<sup>2</sup> Many writers have predicted that these changes will mean the end of many existing channels, but this outcome was far from certain in the mid-1990s. Few mentioned that competition from existing channels might prove beneficial to the development of new ones.

Theoretically, increased competition among these channels will result in a shifting equilibrium and the sector will continue to evolve toward the best technology the system (i.e., consumers) can afford. Government has an impact on what is “best” through its subsidies of process and product innovation.<sup>3</sup> It also has an impact on what consumers can “afford” through tax incentives and other revenue-shifting schemes, such as those discussed above for telephony and the postal system.

All these innovations will be most efficiently employed if they all work together, i.e., if they are all compatible in a large system.<sup>4</sup> If the parameters of that system could be identified it would, in theory, be possible to establish a process to set standards for such compatibility. Unfortunately, the standards setting process seldom keeps pace with technological change. Policymakers and industry players are faced with constantly evolving technology which has an impact on many other technologies, from both a competitive and a compatibility standpoint.

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<sup>1</sup>See, e.g., *Critical Connections: Communication for the Future* (Washington, D.C.: Congress of the United States, Offices of Technology Assessment, U.S. Government Printing Office, 1990).

<sup>2</sup>For a snapshot of this technology, see, “The 6th Annual State-of-the-Art Issue,” *Telecommunications* 29, 1 (January 1995) (Americas edition).

<sup>3</sup>See Lewis M. Branscomb, “The National Technology Policy Debate,” *Empowering Technology: Implementing a U.S. Strategy*, edited by Lewis M. Branscomb (Cambridge, Mass.: MIT Press, 1993), 1-35.

<sup>4</sup>See Nicolas Economides, “Desirability of Compatibility in the Absence of Network Externalities,” *The American Economic Review* 79, 5 (December 1989), 1165-1181.

For example, in the mid-1990s it was not even clear whether the customer premises equipment for the “information highway” would look like a television set or a computer.<sup>5</sup> Of course, it would be dangerous to assume that one technology (and the firms that manufacture it) will “win.” Both might be used, as long as their systems and components were interoperable. Such compatibility would be better for consumers, because it would mean greater competition, which, ultimately, is better for manufacturers. Helping to create opportunities for interoperability and interconnectivity during this time of change, is one of the roles for government that virtually everyone agrees on. But even that role has changed, owing to the complex nature of the systems to be rationalized,<sup>6</sup> and too heavy a regulatory hand laid on too early in the process could do more harm than good, killing new technologies before they can be born. One commentator outlined government’s role in terms that would be familiar to complex adaptive systems theorists:

Is there a royal road to the common byte? Probably not, but history offers a few lessons: Start small, test often, leave room for growth, abjure theology, play off the dominance of the U.S., pick the layers carefully, and keep plugging.<sup>7</sup>

### 3.2 Convergence

In the much-touted “information age,” new products and services may defy old distinctions between the various traditional communications firms. Consider a business that wants to put a color printer into homes and offices to be used with a cable TV service, to print out color coupons or advertisements at the request of the customer or to print out magazine articles and even whole books.<sup>8</sup> Is this a cable service? A publishing service?

The telephone company that starts delivering movies, professional wrestling, and reruns of 1960s sitcoms<sup>9</sup> will still look like a telephone company (it will still have lines that go into the home and may also offer POTS to the same customers), but it will act more like a cable

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<sup>5</sup>See, e.g., John Markoff, “Potent PC Surprises Those Betting on Interactive TV,” *New York Times*, May 8, 1994, 1, Main section.

<sup>6</sup>See, “The Economics of Standards,” edited by Cristiano Antonelli, *Information and Economics Policy* 6, 3-4 (December 1994, Special Issue).

<sup>7</sup>Martin C. Libicki, *Standards: The Rough Road to the Common Byte* (Cambridge, Mass.: Program on Information Research Policy, Harvard University, August 1994, P-94-6), iii. For an expanded version of this report, see Libicki, *Information Technology Standards: Quest for the Common Byte* (Newton, Mass.: Butterworth-Heinemann, Digital Press, 1995).

<sup>8</sup>A joint venture to deliver such a service was announced in 1993 by Hewlett Packard, the computer and printer company, and by Time Warner, the entertainment and publishing company. See “The Media Business,” *The New York Times*, Oct. 12, 1993, D15.

<sup>9</sup>Joint ventures to deliver “video dial tone” service were announced by most of the former regional Bell operating companies (or RBOCs) in the mid 1990s, but several of the ventures were later modified or abandoned.

TV service.<sup>10</sup> This situation is further complicated by a service in addition to its standard video fare that the local cable company may soon start offering that looks like POTS.<sup>11</sup> Just as the shape of the formerly distinct industries has begun to blur, so the size of many of the players is expected to grow (through mergers and joint ventures) as players seek economies of scale as well as economic and political power to impose their will on smaller players.<sup>12</sup> This trend toward mergers and alliances can be seen everywhere in the mid-1990s, perhaps most vividly in the coalitions formed to enter the market for local telephone services and for new communications services such as PCS.<sup>13</sup>

This convergence may affect both the technology that becomes available and the level of competition that will operate in the communications sector, but at this writing there was no way to predict what the “converged” world will look like. This unpredictability will make prescriptive public policy for universal service even more difficult to devise.

### 3.3 Competition

In the mid-1990s policymakers in the United States (and many in the European Union [EU] and Japan) were committed to increasing competition in the communications industry as a way to accelerate innovation and lower costs and thereby staying competitive with global trading partners. This idea can be seen in both the academic literature and political rhetoric.<sup>14</sup> Government policies based on it are endorsed (at least, for public consumption) by all the major players, including elements of the telephone industry, cable, broadcast, and publishing. Stopping these policies for competition is probably impossible in the long run, because conditions continue to change, making new rules for the game and creating openings for those better adapted to meet new conditions. It has been suggested that the new role for

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<sup>10</sup>Noam has predicted that many current telephone and cable companies will evolve from information conduits to “systems integrators” who make use of a variety of technologies to serve their customer. Industry officials have agreed that this seems likely to occur. See *Washington Telecom Week 2*, 17 (April 30, 1993).

<sup>11</sup>Several cable companies have begun to upgrade their systems to fiber-optic cables and have announced their intentions to provide mobile point-to-point communication service via PCSs which will compete directly with local phone service.

<sup>12</sup>See Robin Mansell, *The New Telecommunications: A Political Economy of Network Evolution* (Thousand Oaks, Calif.: Sage Publications, 1993), Chapter Nine, “Collaborating with Rivals in Telecommunications.”

<sup>13</sup>For a one-day snapshot of this activity, see *The Wall Street Journal*, Oct. 26, 1994, which reported coalitions between a long-distance carrier and several cable companies to deliver local telephone service (A3) and between three of the “Baby Bells” with a large Hollywood dealmaker to develop video programming (B10). For a deeper look at this activity, see Derrick C. Huang, *Managing the Spectrum: Win, Lose, or Share* (Cambridge, Mass.: Program on Information Resources Policy, Harvard University, February 1993, P-93-2).

<sup>14</sup>See, e.g., Jan van Cuilenburg and Paul Slaa, “Competition in the Local Loop,” *Telecommunication Policy* (Jan.-Feb. 1994), 51-65.

government should be that of arbitrator or referee, making sure that the competition is played by rules that are fair.<sup>15</sup>

But fairness is a shifting concept that often finds its most vocal definition on the lips of stakeholders that are having trouble competing. No policymaker has failed to notice that businesses decry regulation when they are winning and demand it when they are losing. Fortunately, there is a well-developed body of law that sets some rules for the competitive enterprise, as well as a supporting, if sometimes contradictory, body of economic analysis on which to base the law. Perhaps the most important question in many policy initiatives to deregulate the telephone and cable industries is how much competition is enough to make sure the system will operate as predicted. Must markets actually be contested by two or more players, or is a theoretically contestable market enough for government to scrap regulation designed to protect consumers from monopoly providers?<sup>16</sup>

This and many other questions regarding the rules of the game are within the traditional role of regulators and are likely to be an important part of their role in the next decade. But regulators will have an increasingly difficult time sorting out who is really competing with whom and how the relevant "markets" should be redefined. This type of regulation may even be impossible during a phase of rapid change such as the 1990s, and only the most broadly applicable legal axioms may be applicable to the communications sector until it reaches a new state of equilibrium.

### 3.4 Urban-Rural Balance of Power

The power of rural communities to make demands on the wealth of urban areas is fast disappearing. In the United States, the landmark case of *Baker v. Carr*<sup>17</sup> (establishing the principle of proportional representation) and the massive migration of rural people to urban areas has left agricultural and small-town interests without the political power they once had to pass measures such as Rural Electrification Administration (REA) funding for rural telephone services and the universal service fund.<sup>18</sup> As described in **Chapter Two**, the internal subsidies that helped reduce rural and residential rates at the expense of urban and business customers are now unraveling as competition is introduced into the system, luring away those who paid the highest prices. There are a number of widely disparate estimates of

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<sup>15</sup>*Universal Service and Rate Restructuring in Telecommunications* (1991).

<sup>16</sup>See, e.g., Richard J. Gilbert, "The Role of Potential Competition in Industrial Organization," *Journal of Economic Perspectives* 3, 3 (Summer 1989), 107-127.

<sup>17</sup>369 U.S. 186 (1962).

<sup>18</sup>See, John C. LeGates and John F. McLaughlin, *Forces, Trends, and Glitches in the Network of Communications* (Cambridge, Mass.: Program on Information Resources Policy, Harvard University, May 1989, P-89-2), 11-15.

the effect that cost deaveraging would have on rural customers. A recent study found that it would save urban customers about \$77 per year, while costing rural customers \$316.<sup>19</sup>

At the same time, rural areas fear they will be further handicapped in their efforts toward economic development if they do not have modern telecommunications services available to the businesses and residents they are trying to attract. They remember all too well what happened to towns that were not on the routes of the last superhighways built in their states.<sup>20</sup> As competition for local telephone service spreads to these areas (most likely in the form of neighboring telephone companies nibbling at their fringes and at their best customers or competition from satellite and other wireless services) the price for local service will be driven to cost, reducing any extra revenue that might have been available to upgrade the existing system.

If a mechanism for shifting revenue from low-cost systems to high-cost ones (such as a universal service fund) is not in place, rural areas will undoubtedly pay significantly more for service *until* lower cost channels come into the market. Relatively high-cost, wire-based services may give way to wireless services, including those delivered via satellite. These wireless channels are currently available and are used for entertainment services as well as for remote telephone services. Others, including LEO satellites, will become available in the near future, but their initial prices are liable to be quite high and may not meet "affordability" objectives of public policy.<sup>21</sup>

But until it becomes clear how low rural rates will go after competition and technology change the cost and pricing structures, it will be difficult to design a new internal subsidy mechanism to insure affordability, particularly one that includes all the potential service providers. It would be unfair and inefficient to transfer funds only from the currently regulated telephony systems to other wire-based businesses if that would handicap the wireless technologies by keeping them out of these markets. On the other hand, not including wireless systems in the collection of money for universal service could unfairly benefit them by lowering their costs. If the goal is a nationwide (or worldwide) communication system that connects most individuals and businesses to one another, all the channels that interconnect to make up such a system must pay part of its costs and have an equal chance at the benefits.

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<sup>19</sup>See Carol Weinhaus et al., "Telecommunications Industries Analysis Project: What Is the Price of Universal Service? Impact of Deaveraging Nationwide Urban/Rural Rates" (Cambridge, Mass.: Telecommunications Industries Analysis Project, July 25, 1993).

<sup>20</sup>See Edwin B. Parker and Heather E. Hudson, *Electronic Byways: State Policies for Rural Development Through Telecommunications* (Boulder, Colo.: Westview Press, Aspen Institute, 1992).

<sup>21</sup>See Robert Frieden, "Satellites in the Wireless Revolution: The Need for Realistic Perspectives," *Telecommunications* 28, 6 (June 1994), 33(3), and "Infrastructure in the Sky," *The Economist* 330, 7856 (March 26, 1994), 101(2).

Some very remote areas may pay more than the national average, because the marginal advantage to the system of adding them is outweighed by the cost. Because many of these remote areas are unlikely candidates for economic development the higher cost may be politically defensible, unless government is ready to take the position that citizens have a right to live anywhere they choose, regardless of the cost for delivery of services.

But the loss of subsidized telecommunications service could be a serious blow to efforts at rural economic development in some areas of the United States. Communications infrastructure is seen as an important part of a set of competitive advantages that communities use to attract both new industries and the jobs that come with them.<sup>22</sup> Yet, as pointed out above, the political power to sustain subsidized service may be disappearing. Once again, looking at all available channels to fill communications needs will be important in finding the best way to adapt to this change in the environment. The answers to this dilemma are likely to be as different as the communities looking for new answers to their needs. A top-down answer from Washington or the state capitols may hurt some while it helps others. Communities that understand their options will almost certainly be better off, and programs operated by the federal or state governments may be helpful to them, *provided* options can be presented without government agencies having to act as marketing staff for one of the channels.

In the early 1990s new telecommunications services were being touted as the answer to many problems of rural communities. Urban medical specialists began to use them to deliver remote diagnosis services to hospitals in rural communities and to teach subjects that small schools could not afford to offer. Such service meant that local people did not need to travel to larger communities to obtain these services. But promoters seldom mentioned that these services could now be delivered from major urban centers and that local area doctors and school teachers might not be the ones providing the service.

For example, the best French teacher for students in a small town might not be the one in the larger community down the road but one in Paris. The best specialist to read an X-ray might not be in the regional hospital where a patient used to go for such service but in New York City. In an attempt to help small communities the technology may kill services currently provided in regional service centers and send those high-paying jobs to metropolitan areas.

This is exactly what happened when Rural Free Delivery made it possible for firms like Sears to sell merchandise in small communities, driving local retailers out of business.<sup>23</sup> The

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<sup>22</sup>See Michael E. Porter, *The Competitive Advantage of Nations* (N.Y.: Free Press, 1990).

<sup>23</sup>See Daniel Boorstin, *The Americans: The Democratic Experience* N.Y.: Vantage Books, 1974), Chapter Fourteen.



“shop-at-home” capability of interactive services will almost certainly strengthen this trend.<sup>24</sup> As these new services are sold in small communities, the result will be a flow of cash from that community to the metro area where the service originates.

Of course, some services could be provided from rural areas to the metro areas, such as information and text processing. Metro companies will look to these communities only if they can get the service at a lower cost (which generally means lower wages) and the appropriate communications infrastructure is available and priced to make the increased transport of the information a logical substitute for other costs.

In the mid-1990s, neither the positive nor the negative effects of new communications channels on rural communities were known or knowable. Policy initiatives to further rural development should thus be flexible enough to take corrective action when problems become apparent but policymakers should not assume that what works for one community will work for all. These initiatives will almost certainly be better informed if they follow the previously quoted injunction, to “Start small, test often, leave room for growth, abjure theology...pick the layers carefully, and keep plugging.”<sup>25</sup>

### 3.5 Internationalization of Communications

Technical innovations such as the digitization of many communications services have brought with a need for international regulatory adaptation. A recent report by the OECD noted this trend:

The progress of digitization, first in computing, latterly in telecommunications, and now in the broadcasting sector, is traced through product and service evolution. It is clear that once digital information flow is possible between the communications media and terminal equipment of each industry, it will no longer be relevant to treat them as separate sectors.<sup>26</sup>

The report did not, however, accept the emergence of a single network as a *fait accompli*. Instead, it saw the possibility of greater diversity as the system will evolve. Yet the new (or surviving) players may look very different from those known today. The report foresaw the possibility of:

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<sup>24</sup>But widespread shopping in cyberspace was by no means a sure thing in the mid-1990s, and some experts were predicting it was still decades away. See, e.g., Jared Sandberg, “Digerati Say On-Line Marketplace Won’t Maul Any Malls for a While,” *The Wall Street Journal* (March 8, 1995), B7.

<sup>25</sup>Libicki, *Standards: The Rough Road to the Common Byte*, iii.

<sup>26</sup>*Telecommunications and Broadcasting: Convergence or Collision* (Paris: Committee for Information, Computer and Communications Policy, OECD, 1992), 9.

- multiple network providers competing on the basis of alternative technologies;
- demand-driven investment based on “personal” voice, FAX and entertainment services;
- dilution of service revenues between channels even as the total market grows;
- continued divergence of residential and business requirements that may lead to the continuation of the television and telecommunications infrastructures;
- (at least in the near term) the continuation of “obsolete” services that compete with the new entrants on price and reliability.

The report noted that this scenario is far less “tidy” than either the current system or a unified network and would probably be the least efficient in terms of investment strategy even though it would offer consumers and regulators more choices.<sup>27</sup> Although more choices may lead to temporary inefficiency as the systems adapt, “localization” of the global trend might allow various cultures to use communications to adapt to changing conditions that might be strictly local, such as changed weather patterns or political conditions.<sup>28</sup>

For the United States, these technology issues and choices translate into policy objectives for market-based approaches to regulation and increasing demands for access to foreign markets for U.S. firms.<sup>29</sup> Before other countries allow U.S. companies onto their turf, however, they will seek access for their own firms in U.S. markets. Such access will mean that foreign firms will need to be made part of the universe of channels included in the universal service debate in the United States and that U.S. firms will be affected by the policy determinations of other countries. Would high standards for universal service in the United States (thus higher costs for suppliers) keep out potential competitors, reducing the rate of competition and the benefits competition promises? Clearly, higher costs for telecommunications customers would be a deterrent to foreign investment, especially if there were alternative markets (which would not have such mandates) where firms could do business. This could eventually lead to a situation in which countries without universal service requirements would have the most competition, the best service, and the lowest prices. An international approach might level the playing field, but that does not appear to be practical any time soon.

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<sup>27</sup>OECD, see this chapter, note 15, 65-68.

<sup>28</sup>See Majid Tehranian, “Where Is the New World Order: At the End of History or Clash of Civilizations,” *Journal of International Communication* 1, 2 (1994).

<sup>29</sup>See, e.g., Barbara J. Farrah and D. Mike Maxwell, “Market-Based Public Policy,” *Telephony* (June 15, 1992), 80.

Many countries see their telecommunication infrastructures as a key resource in developing the capacity for global competitiveness and for attracting value-added industry and foreign direct investment. But their current systems are plagued by low penetration rates, poor quality of service, high costs, and a low level of the new technology demanded by local business users. This pattern of underinvestment in telecommunications has been attributed to a variety of factors: a failure of previous governments to understand the value of communications in economic development, frequent management changes as governments change, tariffs for local service set below cost, and the use of revenue from international toll calls to support other government programs.<sup>30</sup>

Open competition in all countries by large multinational firms could have a serious detrimental impact on the emerging and developing nations. Because such countries do not have either the capital or the technological expertise to become vendors of new, efficient services, they will be buyers of such services. These new expenses could cause a serious strain on their already troubled budgets and balance of payments. Eventually, however, as the technology becomes cheaper and the monopoly rents are squeezed out of the system, the prices for local businesses and residential customers should go down, increasing penetration rates. This increased communication should increase the efficiency of the local economy and increase taxable activity, making temporary losses worth the price. Assistance from the international community during the transition may be necessary in some cases.

But an international policy of universal access to global point-to-point communications services will bring new messages to areas formerly remote from the rest of the world. These new messages will decrease the stability of the local cultural and political systems as people use the new information to devise new schemas for adapting to their environment. In some cases, the addition of these communications channels will be an important environmental change that will cause adaptation. Destabilization is thus liable to occur, and, with it, government reaction to control the new channels in an effort to bring back stability.<sup>31</sup> Because instability is seldom seen as helpful to survival, a substantial part of the local population may support government efforts to keep out messages that are inconsistent with local religious or world views. Local censorship may be the most serious obstacle to any truly global communications system.

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<sup>30</sup>H. Kurt Hoffman and Michael Hobday, "The Third World and Telecommunications Policy," *New Directions in Telecommunications Policy 2*, edited by Paula R. Newberg (Durham, N.C.: Duke University Press, 1989), 245-246.

<sup>31</sup>See Gladys D. Ganley, "Power to the People via Personal Electronic Media," *The Washington Quarterly* (Spring 1991), 5-22; and Tehranian, this chapter, note 29.



## Chapter Four

### Proposals for Universal Service Reform

#### 4.1 U.S. Proposals

##### 4.1.1 The NTIA Infrastructure Report

In 1991, the National Telecommunications and Information Administration (NTIA), a part of the Department of Commerce, issued a comprehensive analysis of the nation's telecommunications infrastructure and of the impact of the trends described in the previous chapters on it as well as such policy goals as universal service.<sup>1</sup> The report dealt with universal service primarily as an access to POTS. It concluded that these universal service goals would be best served by the introduction of competition for local telephone service, because that would lower prices for this service and bring new services to local markets. The report also called for an end to the current system of subsidies.

“Universal” subsidies can generally only be paid for by “taxing” the very same subscribers that they are supposed to help, through above-cost pricing for certain service (e.g., long-distance calling or “optional” features). The end result is a byzantine system of elaborate cross subsidization that is arbitrary (in terms of who ultimately is subsidized and who is subsidizing) and market-distorting and, thus, serves neither equity nor efficiency goals.<sup>2</sup>

The report endorsed the idea that all providers of the service to be subsidized must contribute to any pool of money made available to promote access to the services. Alternatively, it endorsed a proposal to charge all business and residential subscribers a surcharge to fund this pool,<sup>3</sup> because such a charge would do least damage to economic efficiency and be borne by the broadest spectrum of telecommunications users.

Perhaps the most controversial recommendation concerned who would receive the subsidies. The report “strongly” recommended that

subsidies be targeted to those subscribers least likely to be able to afford telecommunications services, in the absence of some form of assistance. Such subscribers would be those in lower income groups, those with disabilities..., and some located in remote areas of the country. We

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<sup>1</sup>U.S. Dept. of Commerce, *The NTIA Infrastructure Report: Telecommunications in the Age of Information* (Washington D.C.: Dept. of Commerce, NTIA, Special Pub. 91-26, October 1991).

<sup>2</sup>Ibid., 313-314.

<sup>3</sup>This mechanism was proposed by John T. Wenders in *The Economics of Telecommunications: Theory and Policy* (N.Y.: Harper and Row, 1987), 191.

anticipate that any such subsidies will be much more limited than the substantial, wasteful, and hidden cross-subsidies of today.<sup>4</sup>

The inclusion in this recommendation of people who live in “remote areas of the country” is confusing, because they are not the people “least likely to be able to afford” these services. Their inclusion therefore seems a step back to the current system of funding rural telephone companies and not low-income rural subscribers.

As for new or “enhanced” services, the report called for an evolving group of basic services, called “Advanced USA,” to be made available across the country as demand develops. These services might include custom-calling features, facsimile (fax), computer-based information services, and caller-ID. They should be made available, according to the report, at a price at or near cost, but only as optional, so that they are demand driven.<sup>5</sup>

The report also recognized the importance of interconnectivity and interoperability in the universal service puzzle, because these standards will help bring competition to the local exchange and make it possible to share infrastructure.<sup>6</sup>

Rather than a top-down solution from Washington for these problems, the report recommended that policymakers watch the system carefully as competition is introduced to see where subsidies and other government intervention is necessary:

In light of the complexities of these competing concerns, there may not be any single “right” answer to the question of funding whatever support mechanisms are deemed necessary. Rather, we recommend that the FCC and the states move to introduce local exchange competition and evaluate the extent to which any subsidies are needed. If subsidies are found to be necessary, the FCC and the states should apply the criteria we have discussed to develop explicit and targeted sources of subsidy for Advanced USA in their respective jurisdictions.<sup>7</sup>

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<sup>4</sup>*NTIA Infrastructure Report*, 313.

<sup>5</sup>*Ibid.*, 286-287.

<sup>6</sup>*Ibid.*, 282.

<sup>7</sup>*Ibid.*, 315.

#### 4.1.2 NII Hearings on Universal Service and Open Access

In 1993 and 1994 the Clinton administration's Information Infrastructure Task Force held a series of hearings around the country to focus attention on two different but related issues which it identified as "universal service" and "open access."<sup>8</sup> The universal service issue was concerned with access by senders or receivers in point-to-point channels (e.g., telephone subscribers). The issue of open access concerned access by senders (and perhaps by receivers) in point-to-multipoint channels (e.g., by information providers to telephone or cable channels). The testimony in the hearings indicated that as yet no consensus existed on important aspects of these two issues, although some areas of agreement emerged.

The testimony did not reveal any shared vision of who or what will build the often referred to but seldom described National Information Infrastructure (NII). For example, at the Indianapolis hearing, panelists were asked who would drive the NII. A representative of the advertising community said that free enterprise would drive it, while a representative of the Sprint company declared that customers would drive it. Other participants advocated government's role as driver. The Clinton administration, on record as supporting private investment in the NII, saw a role for government in dealing with any market failures that developed in this environment.<sup>9</sup>

But many participants did not seem inclined to wait for market failures to become apparent and thought government must play an affirmative role in driving demand for the new technology through its power as a large purchaser of the new services for public institutions along with increasing business and residential demand through government training programs. Sometimes it was not clear whether those testifying understood that while the NII has many potential public benefits, the service providers will be private companies, not government agencies, and government efforts to promote the technology will be an indirect subsidy to these firms.

There was also no agreement on which communication or information services should be included in a new definition of universal service. One participant declared that information is not like food or water, things that all people must have a minimum of in order to survive and thrive, and that users of these services should define their own needs.<sup>10</sup> Although there is a minimum of information that people need to live (e.g., the location of food sources), the point seemed well taken. This testimony seems to conform to the rule that, in any society, the

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<sup>8</sup>See a report on these hearings, *National Information Infrastructure (NII) Field Hearings on Universal Service and Open Access: America Speaks Out* (Washington, D.C.: U.S. Dept. of Commerce, NTIA, September 1994).

<sup>9</sup>See *NII: Agenda for Action*, 58 Fed. Reg. 49,025, 49,028 (1993).

<sup>10</sup>See note 8 above, the testimony of Harmeet Sawhney, Associate Professor of Telecommunications, Indiana University, B-41.

information needs of individuals are highly dependent on what they do and how they use information. No mention was made of the use of government mandated information for “social engineering” or of forced speech by information providers, both of which would be inimical to the First Amendment.<sup>11</sup>

The hearings did find substantial agreement on several concepts that will be critical to fashioning a new funding mechanism to maintain the goals of universal service. First, substantial support existed for the proposition that all service providers should contribute to some kind of fund (or funds) established for the purpose of universal service. Second, many participants suggested that those funds should be distributed to those who are in need, rather than to entire regions of the country. A voucher system for individuals or companies that serve low-income people was suggested, perhaps modeled on the telecommunications requirements of the Americans with Disabilities Act of 1990.<sup>12</sup>

#### 4.1.3 Hudson Institute

In 1994, the Hudson Institute’s Competitiveness Center reviewed the history of universal service and current trends in allowing competition in telecommunications services.<sup>13</sup> Its report dealt with universal service as an access to the POTS channel and concluded that public policy should “facilitate competition in local telephone markets where it would be efficient” and “assure universal service objectives with minimum intrusion on the development of competition and of new digital services.”<sup>14</sup> It also concluded that government intervention in one of those goals would affect the other and that the goals must be balanced.

The report rejected the argument that rural markets are natural monopolies in which competition would be counterproductive and asked that competition should be allowed to flourish where it can, with other means used only in areas where competition does not take hold. It suggested that the overall level of universal service subsidies be reduced and that subsidy schemes be both retargeted to achieve greater efficiency (e.g., tying subsidy to income level rather than to geographic location) and reorganized to collect money from all customers or providers. The report recognized that the industry is in transition and that close

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<sup>11</sup>For a review of forced speech by senders, see P. H. Longstaff, *Information Theory as a Basis for Rationalizing Regulation of the Communications Industry* (Cambridge, Mass.: Program on Information Resources Policy, Harvard University, P-94-4, June 1994), 19-22.

<sup>12</sup>See note 8 above, e.g., testimony of Raymond Lawton, Associate Director for Telecommunications Research, National Regulatory Research Institute, B-45, and Barbara A. Cherry, Director of Issues Analysis for Public Policy, Ameritech, B-46.

<sup>13</sup>Peter K. Pitsch and David P. Teolis, “Updating Universal Telephone Service,” *Hudson Briefing Paper*, 167 (Indianapolis, Ind.: Hudson Institute, August 1994).

<sup>14</sup>*Ibid.*



monitoring by government is critical, as are transitional measures, such as a "bulk billing access plan," which would collect support from outputs such as interexchange services rather than from inputs such as access charges. It cautioned against expanding the goals of universal service to, for example, interactive video, because little evidence yet exists of a demand for such services and premature expansion of the requirements for universal service could increase the risk associated with bringing these services to market. In expressing this caution, the report examined the rationale for government activities to promote universal service in telephony and found them inapplicable to this expansion.

The calls for expanding universal service appear to be premature. Neither of the rationale for subsidies to local telephone networks justifies expanding universal service to include new digital services. The added benefits of interactive video services, for example, are certainly not necessities. As FCC commissioner Andrew Barrett put it, "I do not accept that everyone, because they have a telephone, should have interactive cable." Nor does the externality rationale apply here. For the foreseeable future, individual customers will benefit from the digital network by being able to interact with large, centralized video and information databases, not with other subscribers.<sup>15</sup>

This report offered important recognition of the difference between point-to-point channels, such as traditional telephony, and point-to-multipoint, such as video services that distribute messages from one sender to many receivers. It also recognized that many channels are available to Americans seeking information and that competition and technology may bring many more, but in the mid-1990s there is no way to tell which will find consumer acceptance or when they will appear. In an evolving environment, government intervention to "help" the channels by including them in the requirements for universal service could actually hinder their deployment or subsidize the deployment of the wrong technology.

#### 4.1.4 NetTRANS Accounts

Eli Noam, Director of the Institute of Tele-Information at Columbia University, writing about the problem of funding universal service in an open, competitive marketplace,<sup>16</sup> recognized that a funding mechanism must have participation from all firms that compete to sell the services included in the definition of universal service. Noam called the criteria he developed for any new funding mechanism the seven neutralities and the five "friendlies." The neutrality goals are described as follows:

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<sup>15</sup>Pitsch and Teolis, note 13, 10.

<sup>16</sup>Eli M. Noam, "Beyond Liberalization III: Reforming Universal Service," *Telecommunications Policy* 18, 9 (December 1994), 687-704.

- (i) *Competitive neutrality* is a new financing system that should not skew the relative market strength of any carrier.
- (ii) *Structural neutrality* should not “favor or disfavor” the integrated or unbundled provision of a service.
- (iii) *Technological neutrality* should not favor any type of transmission technology over others.
- (iv) *Applications and content neutral* should not favor any particular use of telecommunications or any type of message.
- (v) *Geographic neutrality* should not burden any parts of the country disproportionately.
- (vi) *Transitional neutrality* means the transition to a new system should offer neither shocks nor windfalls to any participants.
- (vii) *Jurisdictional neutrality* means a new system should be capable of integration into the existing federal-state regulatory system.

The “friendlies” are described as:

- (i) *Political friendliness* means that to be acceptable competitors should not be able to gain windfalls, unilateral advantages, or waivers from rate shocks.
- (ii) *Collection friendliness* means stability in generating the targeted revenues.
- (iii) *Administrative and user friendliness* means keeping things simple is a key requirement.
- (iv) *“Integratability” friendliness* means that existing universal service schemes need not be overturned.
- (v) *Productivity friendliness* offers incentives to increase efficiency of production.

Policy makers need look no further for a description of what they are seeking. A system that can meet all these criteria would almost certainly make its developer one of the greatest policy wonks of the twentieth century. But, according to Noam, such changes would not be easy and, none of the alternatives, Noam admitted, meet the criteria in every respect. The two that would come the closest, in his view, would be a value-added tax (which Noam concluded is not politically saleable and presents border-drawing and service coverage issues) and a net transmission account system, or NetTrans Account. Noam favored the latter but admitted that it, too, has bugs that need to be worked out.

The ideas behind the NetTRANS account embody a creative attempt to get everyone under the same tent, while, at the same time, recognizing that demands for contributions

toward universal service goals may come from more than one government entity. Essentially the NetTRANS account taxes all telecommunications channels on the basis of revenues they collect to carry messages in the channel (including both transmission and switching functions) and gives the tax to an independent administrative body to distribute. Noam has left the “how” and “to whom” of the distribution to others to decide, presumably using the five friendlies and seven neutralities as a starting point. But distribution could become constitutionally tricky if some of the money were given to entities outside the “channel” business, for example, in the form of subsidies to benefit certain senders (information providers). Such a distribution scheme could run into political trouble if it were painted as the basis for a system of information or communication “entitlements” that might burden the whole system or if it were to provide services only marginally supportive of public policy goals.

#### **4.1.5 The Telecommunications Act of 1996**

During the 1996 session of congress, the many stakeholders in the universal service debate finally found in the Telecommunications Act of 1996 a compromise all could live with.<sup>17</sup> Although the Act is rich in pronouncements on public policy in this area, it is short on specifics and does not address the tradeoffs identified in this report. The legislation was intended to break down regulatory barriers that stifle competition, in order to generate increased investment for infrastructure and new services as well as to lower costs. The Act deals specifically with the issue of universal service, but the difficult regulatory conundrums identified in this report were left to the FCC and state regulators. The lawmakers seemed to acknowledge that the mid-1990s was a period of rapid change for the communications sector but felt compelled to set ground rules for its evolution. The evidence is ample that congress did not trust the new, competitive marketplace to deliver service at politically acceptable prices. Special provisions were made for service to educational, medical, and library customers. The Act acknowledges the role of government in softening any readjustments requested by particular groups, such as rural communities, the disabled, and senders using other channels (i.e., publishers and broadcasters).

Although what should be included in the definition of universal service remained for others to decide, the Act clearly opened the possibility expansion to include more than traditional telephony. Universal service was declared a dynamic concept that could change as technology makes more possible. It could be read as taking the unprecedented step of

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<sup>17</sup>A bill was passed in the House of Representatives by a large margin and a slightly different bill seemed headed to the Senate floor but collapsed because of feuding among industry groups, with many objections made by some former Bell operating companies, which said the bill was stacked against them as competition is introduced into their areas of business. See Edmund L. Andrews, “Bill to Revamp Communications Dies in Congress,” *New York Times*, Sept. 24, 1994, 1.

including information services in the bundle provided to some at the expense of others purchasing telecommunications services.<sup>18</sup> As discussed in **Chapter Three**, any inclusion of information services would have broad implications for First Amendment issues and for competitive balances and could put the government in the position of subsidizing the information it prefers.

New transfer mechanisms were mandated to provide subsidies for groups the authors feared would not be served. The Act recognizes the need to bring all that would deliver the services into the new scheme but leaves this and many other fine points of the regulatory scheme to a federal or state board, which would make recommendations to the FCC. The Act deals with the possibility that no company would want to serve very high cost areas by allowing federal or state officials to “order” the best available company to serve such an area. That company would look a lot like a traditional common carrier (and the constitutionality of government “taking” company assets may have offer constitutionality problems), but it would be eligible for subsidies from a universal service fund. The Act uses the traditional model for these subsidies, i.e., the subsidies fund “carriers,” not consumers with demonstrated needs, as suggested by several scholars noted above.

The Act encourages interconnection and interoperability wherever technically or economically possible. This policy is supported by many stakeholders and by academic research. The Act encourages “sharing” and “planning” infrastructure,<sup>19</sup> which raises question about how firms would accomplish that in light of antitrust law but seems to be based on the belief that cooperation is necessary to provide the optimum infrastructure at the lowest cost with the greatest opportunity for access by competitive firms, especially in rural areas. Just how satellite-based services fit into the assumptions about availability of service, level of competition, or planning for infrastructure remains unclear, given that the provisions were focused on specific geographic areas where universal service subsidy mechanisms and infrastructure planning would work.

#### **4.1.6 State Government Efforts**

During the 1990s many state governments, worried about being left on a back road when *the* information superhighway was built, formed commissions or task forces to develop plans for infrastructure in order to increase economic development. Most such plans assumed that this highway would be built on the telephone infrastructure currently being regulated (through a public utility commission [PUC]) as a monopoly. Many of the statutes and

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<sup>18</sup>See, e.g., 47 U.S.C. 254 (b) (2), where the law declares that “Access to...information services should be provided in all regions of the nation.” Also the following section, (3), where it declares that persons in high-cost areas and low-income consumers should have access to information services.

<sup>19</sup>47 U.S.C. 259.

proclamations that set up the task forces heralded the dawn of competition for telecommunications services and predicted competition will bring lower prices and advanced services. Few acknowledged the inherent problems of having both competition and a centrally planned telecommunications system or the possibility that *the* highway might be an interconnected network of service providers (including terrestrial and satellite wireless) that would form a virtual highway, not one pipe going into all the state's homes and offices.

Even if these task forces were able to identify technology that might better serve their constituents, few of them realized that their plans might go out of date before coming out of the printer, because the technology continues to change. Unfortunately, little evidence exists to show that government (at any level) is good at picking technology<sup>20</sup> or that one system could be right for all citizens of a given state.

Nor can states design a comprehensive plan to include all service providers in the universal service fund that would be needed to subsidize infrastructure in rural areas, because some players (e.g., satellite services) cannot be regulated by the states.<sup>21</sup> The 1996 law does, however, give states the authority to set their own universal service rules in order to promote intrastate service. The states may define the services to be subsidized more broadly than the federal government, but they also must pay for any expansions with state collected funds.<sup>22</sup>

The comments filed in the 1994 NTIA proceeding indicated a wide variety of approaches to universal service in the states. This variety will give policymakers a chance to experiment and see what works in such very complex problems. For example, the comments from Texas expressed doubt that competition would bring an acceptable level of service to many parts of that state. They suggests a "bifurcated" system, in which telecom-munications would have two levels of regulation: one for basic telephone service and another for "advanced telecommunication and information services." Texas expressed the opinion that economic justifications for regulation, such as "positive externalities" or "merit goods," that apply to basic service may not necessarily apply to advanced services. Texas would consider mandating access to advanced services on the community level, e.g., at a local library or community center.

The comments from the state of Florida, on the other hand, strongly favored letting market forces shape the future of the telecommunications sector. Florida stated that government action should only be taken to (i) prevent anticompetitive practices, (ii) ensure

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<sup>20</sup>See Lewis M. Branscomb, "Targeting Critical Technologies," *Empowering Technology: Implementing a U.S. Strategy*, edited by Lewis M. Branscomb (Cambridge, Mass.: MIT Press, 1993), 36-63.

<sup>21</sup>Such regulation is preempted by the FCC. See, e.g., 47 U.S.C. 205.

<sup>22</sup>47 U.S. C. 254 (f).

access to unbundled services, (iii) protect consumers where they have no choices, and (iv) ensure that consumers have access to the information necessary to make appropriate choices. Florida expressed doubts that any government agency could predict the market for specific services. Like Texas, Florida suggested that community-based access points may be appropriate for some parts of the state.

The comments from New York state distinguished among availability (the possibility of convenient access), accessibility (e.g., for the disabled), and affordability. This state, too, expressed the belief that competition would provide the primary road to these three goals, but, failing that, the state must step in. The state expressed doubts that intracompany and intercompany subsidies could survive in a competitive market, and it has put a rate scheme into effect intended to ease the dislocations which it believes are inevitable in the transition period.

The comments of Iowa took a different approach, that only regulatory mandates would ensure investment in "noncompetitive, low-volume areas" of the state. It believed that to encourage the deployment of advanced services, the state must have a regulatory policy in place, which would begin by making sure services are available in some community center (e.g., local library) in order to create additional demand for them.

California undertook a specific rulemaking proceeding on universal service in 1995. Its proposed rules would ensure service for all areas of the state by setting up a system of "Carriers of Last Resort." The state would pay the carriers the difference between the actual cost of service and the rate the PUC would consider "affordable." Payments would be made by a "virtual voucher" system, whereby the state's payments would be applied to customers' bills. Vouchers would allow the system to work in an area with more than one carrier, with payments based on the number of customers served. In areas where no carrier stepped forward to offer service, the state's funds would be used to "auction" subsidies to the carrier making the lowest bid to provide service.

There are other critical roles for states. Because the states are closer to the needs of industry and consumers than are policymakers in Washington, they are in a better position to monitor the effect of competition on the availability and affordability of traditional telephony and advanced services. For the same reason, the states are better able to put information about new communications technology into school curricula and training programs for business, *provided they are not captured by one of the channels and become a marketing tool for it.*

## 4.2 International Activities

In the 1980s and 1990s, many countries, including Japan and member nations of the EU, began privatizing government-owned monopolies for communications services. In many cases, the country was struggling to bring the benefits of competition to this market while also trying to position the former government entity to gain competitive advantages over forces that will be unleashed against it.<sup>23</sup> In many cases, this competition will come from nondomestic firms,<sup>24</sup> so the problem becomes international, making a once stable system very complex indeed.<sup>25</sup> As in the United States, this situation has led to calls for new regulatory approaches. The OECD issued recommendations for government in this new world:

In other words, what needs to be regulated is not the technology or even the operators themselves, but rather the relationships between them. In this context, regulation would not attempt to specify how or to whom a service would be provided, merely to ensure that the user has, wherever possible, a choice of service providers who are all competing on even terms. The regulator should therefore become less of a team manager, more of a referee.<sup>26</sup>

But what if the regulators in each country are only acting as referees formulating and carrying out government mandates for "public goods" such as universal service? The OECD could not even find a common definition of universal service among the nations.

Like their counterparts in the United States, European policymakers are struggling with the goals for universal service, because these must be articulated if regulators are to give part of the burden of this "public good" to the new competitors of the former state monopolies (formerly referred to as PTTs, Postal, Telegraph, and Telephone). The European Commission's 1993 Communication on Telecommunications Services<sup>27</sup> suggested that

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<sup>23</sup>For an interesting look at this transition in New Zealand, see Bob Johnstone, "Godzone," *Wired* (November 1995), 164ff.

<sup>24</sup>See Harry M. Trebling and Maurice Estabrooks, "The Globalization of Telecommunications: A Study in the Struggle to Control Markets and Technology," *Journal of Economic Issues* 29, 2 (June 1995), 535-544.

<sup>25</sup>For an overview of these issues in the EU, see Robin Mansell, Chapter Four in *The New Telecommunications: A Political Economy of Network Evolution* (Thousand Oaks, Calif.: Sage Publications, 1993); and *Telecommunications in Transition: Policies, Services and Technologies in the European Community*, edited by Charles Steinfield et al. (Thousand Oaks, Calif.: Sage Publications, 1994).

<sup>26</sup>*Telecommunications and Broadcasting: Convergence or Collision* (Paris: OECD, Committee for Information, Computer and Communications Policy, 1992), 90.

<sup>27</sup>Commission of the European Communities, "Communication to the Council and the European Parliament on the Consultation on the Review of the Situation in the Telecommunications Services Sector," Com(93) 159 Final, Brussels, 28 April 1993.

perhaps new competitors should pay a sort of “deficit access charge” to the current provider that would allow it to pursue its universal service obligations. The Communication recognized that the new competitors will probably dispute this plan and are likely to point out that in many countries the PTTs do not now use revenue from telephone services for universal service and are not expected to start doing so. The new competitors can be expected also to demand exemption from such charges until competition is fully established and the PTT cannot use revenue from deficit access charges to put them out of business with predatory pricing.

The amount of any deficit access charge might depend on different circumstances in each country and on the services and infrastructure being supplied by a new competitor. For example, one could argue that a company providing mobile (terrestrial or satellite) service that does not make as much use of an incumbent’s wire infrastructure should pay less.

The 1993 Communication echoed the conclusion of the OECD study, that there was no agreed-on definition of what the service would include that should be universally available. This point will become more important and more controversial than ever as new services become possible. The Communication concluded that:

Generally, the concept was recognized as one that will continue to evolve over time. Most commentators accepted that the elements of that definition would include a basic voice service, universal coverage and an affordable price.<sup>28</sup>

The 1995 Green Paper<sup>29</sup> on the liberalization of telecommunications infrastructure repeated many of these ideas and set the stage for the Council for the European Union’s Common Position on open networking, which set forth rules for interconnection with the telecommunications systems of the member states.<sup>30</sup> The issue of what constitutes “universal” service was touched on in the Council Resolution of September 18, 1995, which urged member nations to “continue consultation” on a regulatory framework to deal with such issues as a minimum level of service and the “definition of common principles for financing universal service.” It suggested that these principles should include transparency, proportionality, and nondiscrimination.<sup>31</sup>

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<sup>28</sup>Ibid., 9.

<sup>29</sup>Commission communication of 25 Jan. 1995.

<sup>30</sup>Common Position (EC) No. 17/95.

<sup>31</sup>CEC 1995 OJ C 258.



Clearly, the Commission took the position that concepts of universal service will need to be harmonized to achieve a single European market for telecommunications services, but the Commission is unlikely to achieve such harmony without a fight over the issue of "subsidiarity"<sup>32</sup> with some member states and their PTTs (i.e., over who has the final say, the member states or the Commission).

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<sup>32</sup>In the parlance of EU policy, this term indicates that an issue depends on whether individual countries have or the EU has jurisdiction, rather like states' rights in the United States.



## Chapter Five

### The Essential Tradeoffs

Making new communication technologies available to all citizens at an “affordable” rate *and* introducing real competition into the industry that is supposed to provide them will not be so easy as some have imagined. The desire of government to have both control and competition will lead to a series of tradeoffs, many made by regulatory bodies and the courts because seldom are they reflected in legislation that blithely mandates a perfect world for all stakeholders. The tradeoffs between competition and control include:

- If the cost of new (very expensive) services is spread over all those served, low-cost customers such as businesses will subsidize high-cost customers such as rural communities. If a country’s trading partners do not choose to burden their businesses with these costs, those businesses could gain a serious advantage in trading any good or service that relies heavily on communications services. Thus, control within a country may hamper competition with outsiders.

- Government mandates to build new channels may bring new messages at greater speeds and increase the competition for cultural or political hegemony. Any competition with existing government, religious, or social powers can be expected to meet with increased government control of new channels.

- Government attempts to promote competition among vendors in and of a particular channel by setting standards for interoperability and compatibility may in the long run actually reduce competition by setting existing standards in cement and inhibiting innovation by those inside and outside the system. Unless these standards were set on a global level, innovation would be likely to occur elsewhere, putting the country that “picked” a technology at a serious disadvantage.

- Government efforts to make new channels universally available might mean that government will subsidize the new channels at the expense of existing, competing channels, ultimately decreasing competition in communications services. *Or*, government mandates of universal affordability might burden one channel with such high costs that other channels will move in and take away its customers. (There is a price at which a business would find the post office quite competitive with telecommunications.)

None of these tradeoffs would be easy to make. The reactions of the industries in the communications sector, domestic and foreign, are impossible to predict at a time when technology and the other forces discussed in this report are changing this sector so rapidly.

This makes a top-down solution difficult to devise and to enforce and may argue for a “go slow and wait to see what happens” approach to regulation.

Policymakers would be well advised to keep the *whole* communications sector in mind. Taking into account the regulation of other channels can provide important evidence about the kinds of channel and message regulations that have worked. This evidence should be a necessary part of any decision, such as, Which telecommunications services must be made available to all citizens? What messages do citizens need? How are they currently getting them? Do they really need them delivered faster? At what cost? Little evidence (even in the U.S.) exists to show that channels and messages subsidized by the government will be free of government control, and even less to show that central governments know what information people in all areas and walks of life will need to adapt successfully in the twenty-first century.

Thus, a great deal of caution should be exercised by policymakers considering government subsidies for access to specific messages or channels. Actions to exert control on the process today may well eventually condemn those policymakers’ constituents to technological and informational obsolescence in a highly competitive world.

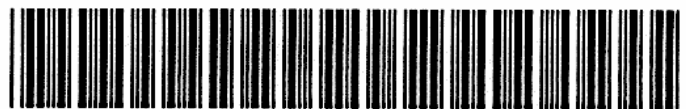
These tradeoffs must be acknowledged and must become part of the debate at every level of government, from the municipal cable authority to the international agencies that will struggle with universal service issues. Becoming enamored of the bright new communications technology may mean ignoring the shadows they cast. If the contrasts are not perceived, the real picture will not be seen at all.

## **Acronyms**

<b>EU</b>	<b>European Union</b>
<b>FCC</b>	<b>Federal Communications Commission</b>
<b>GII</b>	<b>Global Information Infrastructure</b>
<b>NII</b>	<b>National Information Infrastructure</b>
<b>NTIA</b>	<b>National Telecommunications and Information Administration</b>
<b>OECD</b>	<b>Organization for Economic Cooperation and Development</b>
<b>PCS</b>	<b>personal communications services</b>
<b>POTS</b>	<b>plain old telephone service</b>
<b>PTTs</b>	<b>Postal, Telegraph, and Telephone</b>
<b>PUC</b>	<b>public utility commission</b>
<b>REA</b>	<b>Rural Electrification Administration</b>
<b>TV</b>	<b>television</b>
<b>UPS</b>	<b>United Parcel Service</b>



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