

Regulating the Electronic Enterprise 3

In the United States, most communication goals have been pursued by private industry through a regulatory framework. This is a decidedly American approach. While fostering the private sector, this approach provides government some control over the negative impacts of the single-mindedness of the market.¹ It has proved highly successful in the past. However, with the advance of technology and the expansion of competition across industry lines, determining the precise role for regulation and which goals are most appropriately sought in a regulatory arena has become increasingly difficult.

The past 10 years have witnessed the breakup of what was once an integrated and unified Bell telephone system in favor of an increasingly diverse and highly competitive communication/information marketplace. This trend has been fueled by both technology advances and procompetitive regulatory policies. Since 1959, when the Federal Communications Commission (FCC) approved the “above 890” decision allowing MCI to offer discount private line service, the advance of competition has continued relatively unabated.² Today, it is marked by the emergence of new wireless technologies, the rise of competitive access providers, and regulatory policies—such as collocation and re-

How these electronic markets are deployed and interconnected, and the rules by which they operate, will be critically important.

¹Michael D. Reagan, *Regulation: The Politics of Policy* (Boston, MA: Little, Brown, and Co., 1987).

²The “above 890” decision greatly liberalized the licensing of private microwave. With the subsequent Carterphone decision in 1969, the FCC also opened the customer premises market to competition. And finally, with the Execunet decisions in 1967 and 1978, requiring AT&T to provide interconnection to MCC, the FCC struck the final blow to the AT&T monopoly by opening long-distance service to competition.

laxed cross-ownership rules—that aim to extend competition to the last stronghold of monopoly, the local exchange.³

Business users have been the major beneficiaries of these developments. Competition has not only driven down the costs of business-related products and services; it has also spawned a variety of highly innovative vendors and service providers eager to meet the mounting, and increasingly diverse, communication and information needs of business. Competition has also fostered the unbundling of communication systems and networks, thereby allowing business users much greater flexibility and control.

Despite these gains, however, it is unlikely that the future needs of all businesses will be adequately met through competition alone. Competing providers of communication and information networks will not necessarily volunteer open access to business users. Consider, for example, a situation in which there are three competing local exchange carriers that are vertically integrated. Each may offer an alarm service. There are no guarantees that a fourth alarm service provider will be able to get connected to customers through any of the three carriers. Some form of government regulation may, thus, be required.⁴

In an economy based on electronic commerce, businesses will also require new forms of access. Having access to a variety of advanced communication and information technologies, although necessary, will no longer suffice. Equally important will be the ability to gain access—in real

time—to these technologies as they are configured and reconfigured into electronic networks of buyers, sellers, and information that together comprise a “virtual” marketplace.

How these electronic markets are deployed and interconnected, and the rules by which they operate, will be critically important. If they are deployed unevenly, or fail to interconnect, those who can gain access most easily and/or negotiate among them will enjoy a considerable—and in some cases unfair-competitive advantage. The national economy will also suffer to the extent that trade and economic growth are constrained, and resources poorly allocated as a result. To avoid such an outcome, a number of regulatory options could be considered.

OPTION A: Provide for Open Access and Interconnection by Extending Common Carriage Requirements

The principle of common carriage seeks to assure that certain services, considered to be critical to the public, are provided on an open and nondiscriminatory basis to all who are willing and able to pay for them.⁵ In the United States, the notion of common carriage was first used to provide farmers equal access to grain elevators. Later it was extended to infrastructure-related services such as transportation and communication.⁶ The obligation to provide communication services on a common carrier basis is embodied in the Communications Act of 1934.

³See Robert M. Entman and Charles M. Firestone, “Local Competition: Options for Action,” Forum Report of the Eighth Annual Aspen Conference on Telecommunications Policy, Aspen, CO, Aug. 8-12, 1993.

⁴See for a further description, Francis Dummer Fisher, “Identifying the Potholes in the information Superhighway: A Public Interest Perspective,” *Telecommunications Magazine*, vol. 28, No. 4, April 1994, p. 23.

⁵The origins of common carriage can be traced back to the Roman Empire when shipowners, innkeepers, and stablekeepers were held accountable for such public service obligations. As the notion of common carriage evolved under English common law, it was applied to public occupations such as “bakers, brewers, cabdrivers, ferrymen, innkeepers, millers, smiths, surgeons, tailors and what-f ingers.” Eli Noam, “The impending Doom of Common Carriage,” prepared for the Aspen Communication Council’s Forum, Jan. 7-9, 1993, Wye River House, Wye, MD, revised July 1993, pp. 4-7. See also William K. Jones, “The Common Carrier Concept as Applied to Telecommunications: An Historical Perspective,” submitted to the Federal Communications Commission as Appendix to the Reply Comments on International Business Machines Corp. in “Competitive Carriers Rulemaking,” FCC Docket No. 79-252 (filed Apr. 4, 1980).

⁶Ibid.

Despite its long tradition, the principal of common carriage, as it applies to communication today, is invoked less frequently and its scope has become more narrowly defined. For example, based on the distinction made in Computer Inquiry 11⁷ between basic and enhanced services, value-added network providers—such as system integrators or electronic data interchange (EDI) service providers—are not subject to common carriage principles.⁸ The principle of common carriage may erode even further in the future because of the growth of the value-added services market and the emergence of new technologies and providers who are often exempt from common carriage responsibilities.⁹ In fact, common carriage may not be economically sustainable over the long term, given the separate systems of contract and common carriage. Contract carriers, having fewer public obligations than common carriers, have a significant competitive advantage.¹⁰

The waning of common carriage has not been greatly lamented in the post-divestiture regulatory environment. On the contrary, viewing common carriage primarily as a mechanism for encouraging competition, most regulators have seen no need for it in today's more competitive communication marketplace. It is assumed that, with competition, prices will be held in check and government kept to a minimum; it is also assumed that access will no longer be a problem because of multiple and competing providers. Thus, for example, the FCC held—until recently challenged by the Federal District Court—that interexchange carriers competing with AT&T (e.g., MCI, Sprint, etc.) were no longer obliged to publicly file their tariffs.

New service providers have also played a role in restricting common carriage. Not wanting to bear the obligations of common carriage, they have lobbied, often successfully, to differentiate

⁷The FCC, in its 1980 Computer Inquiry II decision, maintained the regulation of basic services, but deregulated enhanced services. AT&T could compete in the enhanced services and customer premises equipment markets only by establishing a fully separate subsidiary.

⁸See for a discussion of this sequence of events, Thiel de Sola Pool, *Technologies of Freedom* (Cambridge, MA: Belknap Press of Harvard University, 1983), pp. 220-223.

⁹For example, the Cable Act of 1984 explicitly prohibits the regulation of cable as a common carrier or public utility. Nor is the Internet considered to be a common carrier. Most recently, the Omnibus Budget Reconciliation Act of 1993 amended Sec. 332 of the Communications Act to create a special class of commercial mobile services subject to common carrier regulation under Title II of the act. However, it also provides that the FCC can exempt such services from certain obligations, including the tariffing requirement.

¹⁰Noam op. cit. footnote 5. The common carrier will not (rely be singled out to pay a subsidy. Unlike the contract carrier, he will not have the benefit of being able to select his customers so as to maximize profits or to price discriminate. Despite this unstable situation, the answer is not necessarily to eliminate common carriage obligations and/or to establish a mechanism for sharing the costs of subsidy among all providers. The question of whether openness should be imposed by regulatory authority still must be addressed.

¹¹See, 203 of the Communications Act of 1934 requires all common carriers to file all of their charges for interstate services. In keeping with Sec. 203(c), they must not "charge, demand, collect or receive compensation other than the charge specified." In an effort to streamline regulations, the FCC, in 1980, declared that all rates that were filed by nondominant carriers would be presumed to be lawful. In a second report, adopted in 1982, the FCC initiated a policy of forbearance that exempted many resellers from procedural filing requirements. In 1983, it extended this policy to all resellers and "specialized carriers," leaving AT&T as the (rely company that had to file tariffs. Responding to a lawsuit initiated by AT&T, the U.S. Court of Appeals ruled in October 1992 to vacate this policy. See David Irwin and Kevin Walsh, "Understanding the FCC's Forbearance Policy," *Telecommunications*, September 1993, pp. 41-42.

themselves. As in the case of the cable industry, emergent providers have often claimed that, if precluded from providing content as well as carriage, they will be unable to generate sufficient revenue to deploy new technologies.¹² They emphasize that because they are not the dominant providers, they pose no competitive threat to common carriage.

Notwithstanding the growth in competition, there are a number of reasons for reconfirming the principle of common carriage at this time. Common carriage serves not only to enhance competition, but also to facilitate interconnection and reduce transaction costs. When regulators view common carriage solely in terms of competition, these other values are not sufficiently taken into account.

Recent alliances and proposed mergers among communication vendors and service providers (e.g., AT&T and McCaw) also raise fundamental questions about just how competitive the future communication marketplace will be (see figure 3-1). Such alliances will likely increase, given converging technologies and recent court decisions challenging the constitutionality of regulatory prohibitions of cross-ownership. If the future marketplace is made up of a limited number of vertically integrated firms, instead of a market consisting of a number of independent vendors competing head-to-head with one another to provide a variety of communication and information services, the notion of common carriage will take on a new, prominent significance.

The scope of common carriage may also need to be expanded to include not only the providers of

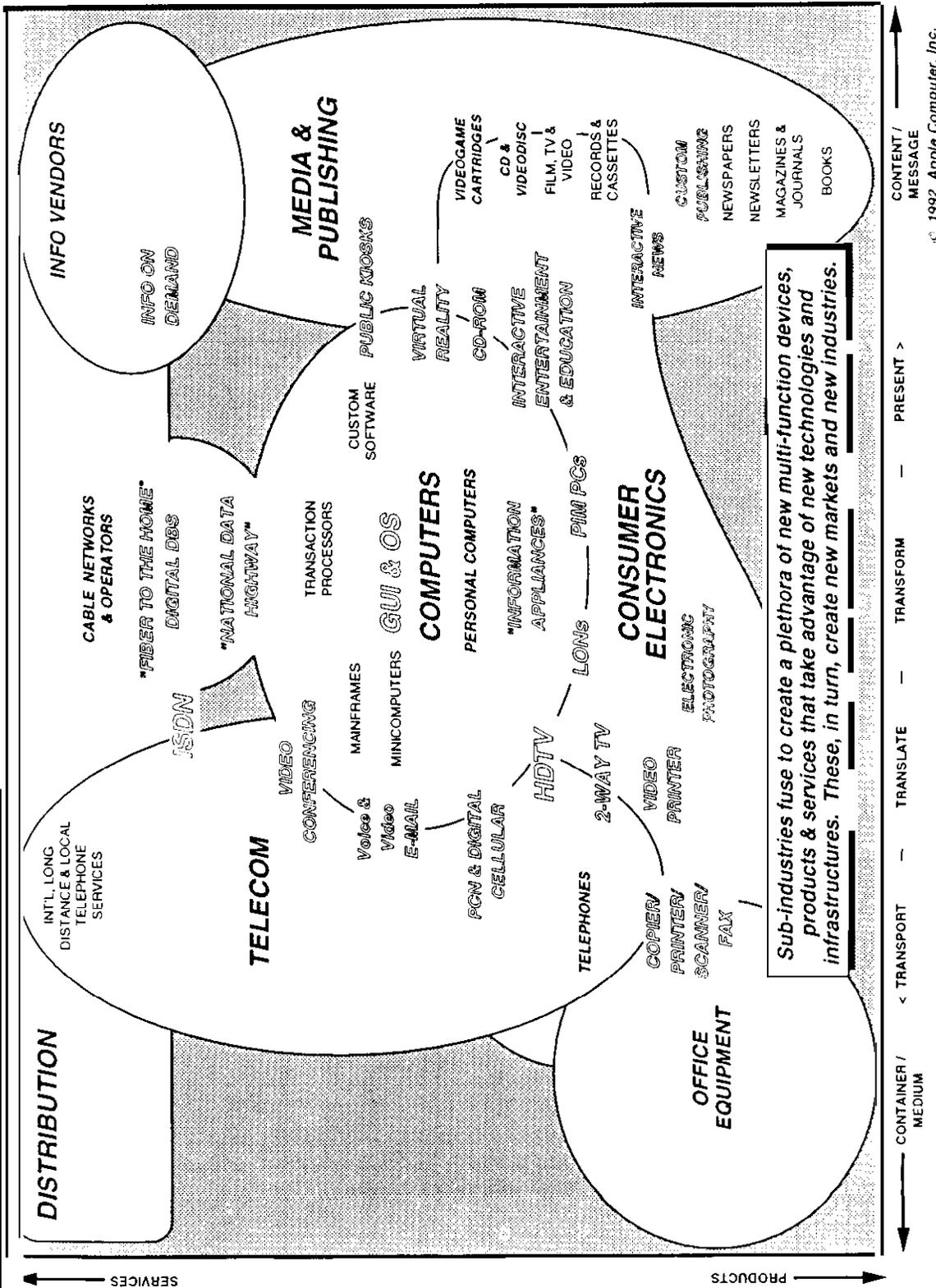
transmission facilities, but also those who provide networking services. The traditional definition of common carriage fails to give due credit to the fact that—in a knowledge-based, global economy—being able to access information from a variety of sources or to transmit it from one point to others is not sufficient (see figure 3-2). It is essential to be able to interconnect in a timely fashion to the entire interactive network of buyers and sellers, together with the information that constitutes an electronic marketplace. Only by operating within such a networked environment are transaction costs minimized and “economies of agglomeration”¹³ achieved (see figure 3-3). Losses due to increased transaction costs will be especially high in an economy in which competing in time and on the basis of information are more important than ever before. Despite the increasingly essential nature of networking services, they are currently presumed to be enhanced services and, hence, excluded from public service obligations.

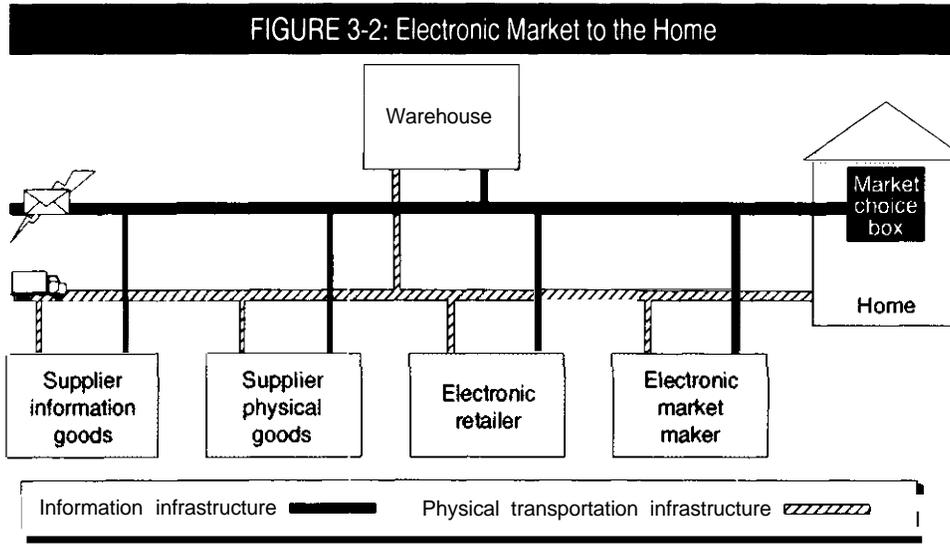
One way of providing for greater access to, and interconnection among, future electronic networks would be to apply common carrier obligations not only to the providers of the “public switched telecommunication network” and to any monopoly conduit providers, but also to all who take advantage of common carrier access to provide value-added services.¹⁴ This would create a mixed system in which all vendors could provide both common and contract carriage, as long as those claiming common carriage in a downstream direction provided equivalent services upstream. All common carriers would provide unrestricted communication services, which are neutral with

¹²Throughout cable’s history, a number of people have suggested that it be treated as a common carrier, an idea that cable companies have fiercely resisted. In 1970, for example, the Sloan Commission on Cable Television toyed with the common carrier approach, but concluded that if cable companies were given common carrier status, they would not have enough economic incentive to develop their systems. See Ithiel de Sola Pool, *op. cit.*, footnote 8, p. 169. A similar argument is being put forward today with respect to set-top boxes and whether or not their architectures should be open. For cable’s argument as to why it should enjoy first amendment rights, see G. Shapiro, P. Kurland, and J. Mercurio, *Cable’s speech: The Case for First Amendment Protection* (New York, NY: Harcourt Brace Jovanovich, 1983).

¹³Sometimes referred to as “economies of aggregation.”

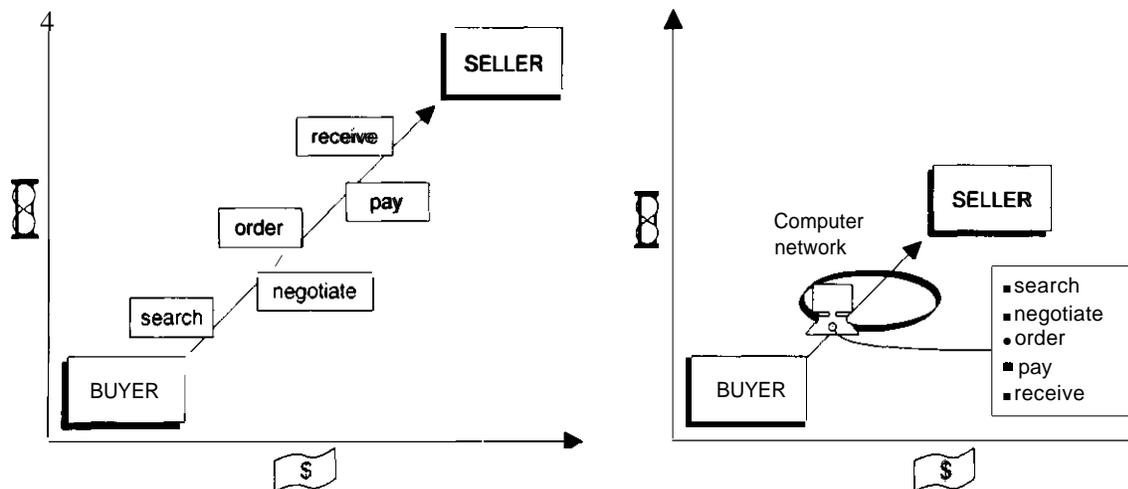
¹⁴This option is derived from Eli Noam, “The Superstructure of Infrastructure: Thinking About a Future Without a Public Network,” Columbia University Working Paper, Series 1992, #476, pp. 5-7.





All markets need to be arranged. At the very least, a site needs to be determined where buyers and sellers can come together and space needs to be allocated. These arrangements have traditionally been made by middlemen—wholesalers, retailers, financiers, advertisers, etc.—who transmit price and product information and establish the link between buyers and sellers. Because “market makers” control critical market reformation, they can create bottlenecks. With electronic commerce, the market maker might be a value-added network provider, or it might be embodied in technology, as in the case of a home-based “market choice” or “set-top” box.

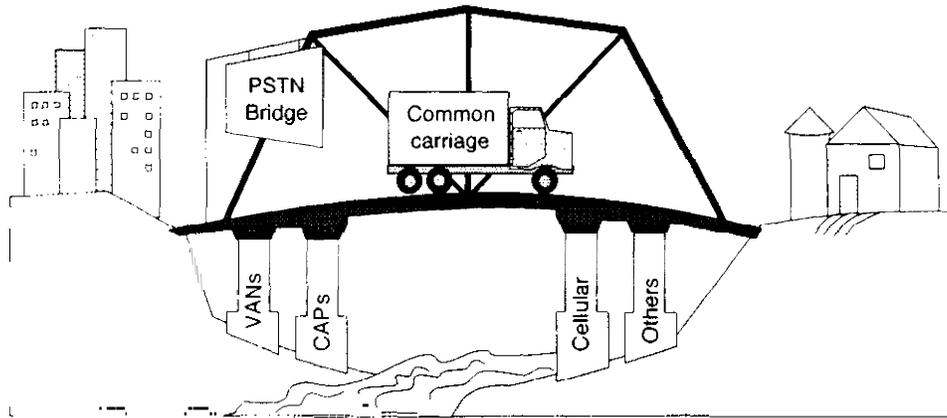
SOURCE Robert Benjamin Consultants, 1994



Much like a medieval fair or a marketplace, electronic networks permit “economies of agglomeration”—different transaction functions (for example, searching, ordering, and paying) can be done in one place by one provider. In the past, this place was, in fact, a physical space. An electronic market accomplishes an analogous agglomeration without being confined by spatial dimensions. This agglomeration creates value by reducing transaction costs.

SOURCE Off Ice of Technology Assessment, 1994

FIGURE 3-4: Common Carriage "Rights-of-Way"



SOURCE: Office of Technology Assessment, 1994.

respect to content, use, and users. In turn, they would not be held liable for the content transmitted over such networks. All private carriers not linked to a common carrier would be exempt from common carrier obligations. In this way, the principles of private property and freedom of association would be held inviolate. Such a system would create common carriage "rights-of-way" that would function like public roads and highways that pass private property, or like easements that allow public passage through private land.¹⁵ (See figure 3-4).

One problem with such a solution is that it does not answer the persistent question of how far to extend the right to interconnect. Every information activity—even those wholly between parts of a firm—'connects' in some manner to the activities now conducted by common carriers. A tele-

phone instrument connects, for example, but does not require enforced interconnectivity because standards suffice. At the same time, there are networks that do not connect with common carriers—such as cable television—which, some people would argue, should nevertheless be subject to interconnection and openness requirements.¹⁶

A new common carrier policy, which calls for revamping the existing system of common carriage, might be very difficult to implement and administer. The current system is bound together not only by an extensive history, but also by the entire regulatory structure that has evolved to execute it. Most people tend to associate common carriage not only with interconnection, but also with regulation and—depending on one's perspective—all of the costs and benefits associated with it. Those

¹⁵As further described by Noam: "They would permit the unimpeded transmission of content and services across the various interconnected networks and enable end-to-end connectivity, although not on the entire bandwidth of a transmission. Some rights-of-way would be quite wide superhighways, while others could be narrow but otherwise unobstructed lanes." *Ibid.*, p. 6.

¹⁶Fisher, *op. cit.*, footnote 4.

70 | Electronic Enterprises: Looking to the Future

seeking to minimize government regulation would likely oppose a new common carriage policy on the grounds that it would undermine competition and all of the benefits that deregulation has already achieved. On the other hand, those who have viewed common carriage as a way of promoting social as well as economic goals may be unwilling to accept the confines of a policy such as this, which would be focused primarily on developing an open network architecture.

Strong opposition to a revised common carriage policy can also be expected from the many stakeholders who have an interest in maintaining the current system. For example, large business users, who can now directly access the local exchange provider's central office switch, will not be willing to lose control over their networks. Nor is it likely that the growing number of value-added providers will be willing to relinquish control over how they price and to whom they provide services.

Despite the potential problems of extending common carriage, the time is ripe to consider this option. The present regulatory regime is stretched to its limits. Increasingly, it is the courts, rather than Congress, that must grapple with—and often decide—fundamental regulatory issues. Reformulating common carriage policy would also be timely, given the convergence of technology and the rash of industry alliances and mergers. Unable to predict what services they will be providing in the future—and thus which team they will be on—stakeholders will likely be more inclined to make concessions and agree on what constitutes a level regulatory playing field. If Congress fails to act now to redefine common carriage, its opportunity to do so may be overtaken by the avalanche of technology change, the hardening of stakeholder

positions and alliances, and the force of international developments and events.

OPTION B: Promote Business Access to New Technologies and Services by Redefining the Notion of Universal Service

To support technology deployment for business, as well as equitable access to the services and economic opportunities that advanced communication and information technologies offer, Congress might extend the notion of universal service to take into account the social and economic changes taking place today. A revised definition of universal service would need to be based on some agreed-upon criteria for determining which services are essential and should be made available at reasonable costs and on a universal basis. Any expansion of universal service would also need a new financing mechanism because the traditional system based on cross-subsidies is no longer viable in a competitive, deregulated environment.¹⁷

The concept of universal service has always been a vague term whose meaning was never formally defined.¹⁸ First described by Theodore Vail in the *Annual Report of 1910*, as part of his vision of the telephone industry, the goal of providing universal service was incorporated in its essential intent in the Communications Act of 1934, which states:

[T]o make available, so far as possible, to all the people of the United States, a rapid, efficient, nation-wide and world-wide wire and radio communication service with adequate facilities at reasonable charges. . .

The mandate for universal service reappeared more concretely in the 1949 law that directed the

¹⁷ See for a discussion of the problems and a potential solution, Eli Noam, "NetTrans Accounts: Reforming the Financial Support System for Universal Service in Telecommunications," second draft, Columbia Institute for Tele-Information, Columbia University, New York, NY, September 1993.

¹⁸ As noted by Gordon and Haring: "The term 'universal service' appears in no public law and there is no public law defining precisely what it means. . . it is a shorthand expression generally used to refer to [the policy articulated in] Title I of the Communications Act of 1934." Ken Gordon and John Haring, "The Effects of Higher Telephone Prices on Universal Service," FCC office of Planning and Policy, Working Paper Series, 1984.

Rural Electrification Administration (REA) to promote nationwide telephone service.

Defining universal service more specifically was not necessary when there was one uniform service provided by AT&T and users essentially had the same communication needs. Businesses and households used the telephone for voice communication in the same ways. The FCC and state regulatory commissions were charged with ensuring that overall costs were equal to overall prices, and that rates and profit levels were kept within a reasonable range regardless of use. To carry out its mandate, AT&T adopted a subsidy system that set prices on the basis of value of use rather than cost of use.¹⁹ These subsidies served well as a means of expanding telephone service. By 1952, AT&T operated almost entirely under a nationwide price averaging system, and by July 1989, 93.3 percent of Americans had a telephone in their home.²⁰

With technology widely available and universal service ostensibly achieved, many began to question the rationale behind the traditional telecommunications regulatory framework.²¹ Government, it was believed, needed only to ensure that “plain old telephone service” would be affordable to all. This objective could be accomplished either by providing direct subsidies to the poor—as in the case of lifeline service—or by adopting special pricing schemes that capped, or limited, price increases for basic services. These approaches were particularly appealing because they were compatible with the stereotype of a deregulated, competitive, telecommunication environment, whereas the traditional way of financing

universal service through cross-subsidies was not. With competition, nonregulated providers, with no obligation to cross-subsidize, could undercut regulated providers by pricing their services closer to real costs.

The issue of universal service could not, however, be settled so easily or permanently. Universal service is a relative term whose meaning is bound to change over time and in different circumstances. In the early years of the United States, the goal of universal service was to provide equitable access to the postal system. The concept had to be redefined repeatedly to take into account changes in the social and economic environment, as well as the development of new means of information delivery—the public school system, mass media, telegraph, and telephone.²² Once again, as the United States moves from the industrial era into an age where knowledge and information play an enhanced role, and the variety of information and communication services is continually evolving, the term “universal service” must be revisited.

Technological advances, realignments and restructuring in the communication and information industries, and the Clinton Administration vision for a National Information Infrastructure (NII)²³ are creating a need to reexamine the notion of universal service and the mechanisms for financing it. To this end, for example, the National Communications Competition and Information Infrastructure Act of 1993 (H.R. 3636) would create a joint federal-state board that is charged with assuring universal high-quality telephone

¹⁹See Anthony Oettinger, “The Formula Is Everything: Costing and Pricing in the Telecommunications Industry,” Program on Information Resources, Center for Information Policy Research, Harvard University, Cambridge, MA, P-88-2, October 1988.

²⁰Federal Communications Commission, Common Carrier Bureau, Industry Analysis Division, “Telephone Subscribership in the United States,” 1990.

²¹See, for instance, Gerald Faulhaber, *Telecommunications in Turmoil: Technology and Public Policy* (Cambridge, MA: Ballinger Publishing Co., 1987), esp. ch. 3.

²²U.S. Congress, Office of Technology Assessment, *Critical Connections: Communication for the Future*, OTA-CIT-407 (Washington, DC: U.S. Government Printing Office, January 1990).

²³The Clinton Administration first presented its vision of a new National Information Infrastructure in February 1993 in a white paper entitled “Technology for America’s Economic Growth: A New Direction to Build Economic Strength.” This vision was updated in September 1993 in the NTIA report, “The National Information Infrastructure Agenda for Action.”

72 | Electronic Enterprises: Looking to the Future

service and determining the exact nature of the universal services that the telephone company must provide. Similarly, as part of the NII Agenda for Action, the National Information and Telecommunications Administration (NTIA) will hold public hearings on universal service, and work with the state regulatory commissions to “determine how the universal service concept should be applied in the 21st century.” Added to these government initiatives are a number of private and nonprofit sector proposals for a new look at universal service.²⁴

This growing awareness of the need for updating the notion of universal service is not accompanied by any agreement about what a new vision entails. Some contend, for example, that universal service should apply only to touch-tone digital service; others call for an open platform, allowing for two-way switched access to voice, data, and video service; still others would require two-way switched broadband services to the home bundled with certain kinds of “public” information such as essential health services and/or K-12 educational services. In other cases, the problem of definition has simply been postponed or circumvented through the use of vague references such as “affordable, advanced communication services.”

In the current deregulated, competitive market environment, it is particularly important to agree on a definition of universal service and to devise an efficient and equitable means of financing and administering it. Whereas the subsidies that financed universal service in the past were indirect and hidden, future subsidies will be subject to public scrutiny and increasingly will be forced to compete with a variety of other social and economic priorities. Moreover, in a competitive environment, issues will likely arise with respect to how, and to what extent, the responsibility for meeting the goal of universal service should be

shared among communication and information providers. Care will be needed to assure that funding mechanisms do not favor some providers over others.

Efforts to redefine a universal service policy befitting the 21st century may also founder if the term “universal service” becomes a catch-all phrase with too many demands placed on it. Many people have already called for a definition of universal service that incorporates the goals of common carriage, privacy, security and survivability, and intellectual property protection. While such goals may have merit, it is not clear that a single policy, which is designed primarily for promoting deployment and enhancing access, will be the most suitable and cost-effective mechanism for achieving all of these objectives. In the past, it was possible to reconcile multiple goals within a single policy framework because there was a single, unified service provider. However, when there are many different players capable of providing, accessing, and controlling parts of the infrastructure, a broader based and more highly targeted policy strategy is called for.

While this report cannot provide a definitive answer to the question of what should constitute universal service, it can shed light on the factors—given the growth of electronic commerce—that must be considered when developing an operational definition. OTA identified four major factors:

1. *A greater overlap between business and residential communication needs.* Although the communication needs of businesses and residential users diverged greatly since the breakup of the Bell system, they will overlap more in the future. High capacity, advanced technologies will need to be widely dispersed if vertically integrated businesses downsize and distribute their operations horizontally, and if there continues to be an in-

²⁴See, for instance, Benton Foundation/Columbia University Seminar on Universal Service; Susan Haddon, “Extending Universal Service Through the Net,” testifying on behalf of the Alliance for Public Technology, at the New Mexico Public Hearing on Universal Service; Computer Professionals for Social Responsibility, “Serving the Community: A Public Interest Vision of the National Information Infrastructure”, and Electronic Frontier Foundation, “Open Platform Campaign, Public Policy for the Information Age.”

creased reliance on contingent workers and telecommuting. Under such circumstances, “plain old digital service” will likely prove inadequate as a basic service.²⁵

2. *The role of “electronic” transaction costs.*

There are economic transaction costs associated with accessing knowledge and information. In an economy in which knowledge, speed, and flexibility are critical for success, how transaction costs are distributed will be very important. As more and more commerce takes place electronically, network architecture (as determined, in part, by those providing networking services and the structure of the market) will be an increasingly important factor accounting for such costs, and technological expertise will become a measure of one ability to bear these costs. To minimize transaction costs, economic players must be able to access and share information both within and across electronic networks (markets). If, in such an environment, all businesses and consumers are to operate on relatively even playing fields, gateways will need to be open, navigational tools will need to be available, and some basic level of systems integration will need to be guaranteed.

3. *The critical role of the network administrator and network market information.* Markets do not exist in a vacuum: they must be “made” and administered in one form or another. Administrative tasks might include, for example, ordering, shipping, billing, and funds transfer. To participate in electronic commerce, therefore, economic actors will need much more than simple network interconnection: they must also have access to the substantive informational and administrative infrastructure that supports market transactions. In most cases, the network administrator will both provide these services and control this information. As electronic commerce becomes more prev-

alent, the network administrator may gain so much economic leverage that rules and regulations will be required to assure equitable access, not only to networks but also to essential marketing services and marketing information.

4. *The shift of control and equipment costs to the user* The greatly improved performance of computer technologies and their convergence with communication technologies have facilitated the dispersal of intelligence and control throughout communication systems and toward the user. This development will make future information and communication technologies and systems more flexible and versatile. At the same time, however, it will shift some of the equipment costs to the user. If these costs are beyond the means of some people, regulators may need to expand the definition of universal service—and the subsidies that support it—to take customer premises equipment into account. This is, in essence, the kind of policy that the Government of France pursued when it subsidized the distribution of Minitel receivers (see box 3-1).

OPTION C: Relax Antitrust Constraints and Cross-Ownership Rules

A third way the government might seek to meet the technology criteria would be to relax antitrust constraints and allow for greater market entry. If companies were permitted to enter new markets and vertically integrate, they could benefit from greater economies of scale and scope; thus, they would have greater financial and technical resources available for technology innovation and deployment. Although regulatory agencies, the courts, and Congress have been moving in this direction, they have been unable to keep pace with the convergence of technology and the market and

²⁵Recent Pacific Bell study, for example, differentiates between four types of telecommuters and their needs: 1) voice communicators who do sales, research, and consulting; 2) documents exchangers, such as lawyers, accountants, and real estate agents, who use fax and electronic mail; 3) basic data communicators, including financial managers, computer programmers, and telemarketers who need to access data from host computers; and 4) advanced data communicators, such as engineers, scientists, and industrial designers who require advanced multimedia technologies. As reported in “Pacific Bell Tailors Services to Telecommuters,” *Telecommunications Reports*, vol. 59, No. 34, Aug. 23, 1993, p. 11.

BOX 3-1: Support for Minitel in France

To assure widespread access and promote the use of information services, the French Government played a major role in the initial financing and deployment of the Minitel system. As of January 1992, 6,000 terminals had been deployed and French consumers and businessmen had access to more than 2,500 videotex services, 70 percent of which were commercially oriented. In recent years, Minitel use has begun to shift from personal communications to more business-related services, approximately 30 percent of the time spent online is now devoted to professional applications. Minitel also provides access to major databases, a service that grew 187 percent between 1989 and 1990. This trend toward business applications is also reflected in home use. Increasingly, individuals are using Minitel to carry out transactions such as banking and home ordering. Minitel services are, moreover, global in scope, among the countries that can access the system, for example, are Italy, Germany, the United States, the Ivory Coast, Korea, Japan and Singapore.

SOURCE: Wallis Conhaim. "Maturing French Videotex Becomes Key International Business Tool," *Information Today*, vol. 9, No. 1, January 1992, p. 28.

merger opportunities that technology advances afford.

The regulations that constrained integration in communication industries were aimed at promoting information access and diversity in the marketplace of ideas. These prohibitions were implemented through antitrust law and consent decrees, as well as by regulatory limitations on ownership rights. Thus, for example, in the case of the mass media, the FCC prohibits one entity from owning a newspaper and a TV station in the same market.

Until 1984, the government prohibited the common ownership of three commercial AM, FM, or television stations where any two stations were located within 100 miles of the third, and where the primary service areas of any of the stations overlapped. In like fashion, local telephone companies were, under the 1984 Cable Communications Policy Act, prohibited from providing video programming within their service areas. The Modified Final Judgment (MFJ), which led to the divestiture of AT&T, also restricted the line of businesses in which the Regional Bell Operating Companies (RBOCs) could engage (see box 3-2).

This regulatory approach was based on two major assumptions. First, with spectrum scarcity and the potential for monopoly in delivering telecommunications services, regulators acted as though the means of communication were limited and competition had to be promoted and enforced. Secondly, they assumed that each technology—print, telephony, or radio—was technologically restricted in the services that it could provide. Thus, they believed that it was possible to insulate services, as well as service providers, from one another.

With technology advances, both of these assumptions have proven false. For example, new technologies such as digital radio and fiber optics provide many new transmission pathways. Others, such as spread spectrum and high bit-rate digital subscriber lines, are being used to make more efficient use of existing communication channels. Moreover, with the shift from analog to digital technologies, it is increasingly difficult to differentiate among technologies, much less set legal boundaries between communication services.

Responding to these changed circumstances, and viewing these restrictions as impediments to the development of the U.S. communication infrastructure, government policy makers have called for their relaxation or elimination. As part of this strategy, the FCC, for example, adopted an

BOX 3-2: The Modified Final Judgment

A consent decree entered into by the American Telephone & Telegraph Co (AT&T) and the Justice Department in 1982 settled a decade-long antitrust suit. AT&T was broken up into eight companies the reorganized AT&T and seven regional holding companies. Local service was assigned to the newly formed holding companies under certain restrictions, developed and administered by Federal District Court Judge Harold Greene. The basic premise of this divestiture settlement was that the Bell system's competitive markets should be separated from their noncompetitive monopoly markets in order to prevent unfair monopoly abuses, such as AT&T forcing captive local ratepayers to bear the burden of subsidizing equipment and long-distance service against emerging rivals. The competitive markets had begun with MCI's challenge to AT&T's monopoly on long-distance service, starting in 1968, and the entrance of competing manufacturers of customer premises equipment.

A Modified Final Judgment (MFJ) went into effect at the beginning of 1984, clarifying and expanding the terms of the 1982 consent decree. The Bell system's 22 local telephone operating companies (BOCs) were separated from the parent company (AT&T) and grouped into seven regional Bell holding companies (RBHCs), which were entrusted with providing local services. The seven regional Bell holding companies (Ameritech, Bell Atlantic, BellSouth, NYNEX, Pacific Telesis, Southwestern Bell, and U S West) were specifically prohibited under the MFJ from entering the three lines of business deemed competitive and therefore assigned to AT&T: 1) designing and manufacturing telecommunications network and customer premises equipment, 2) providing information services (such as electronic yellow pages), and 3) providing long-distance service.

The information-services ban was to prevent RBHCs from using their control over the local loop "bottleneck" to engage in anticompetitive conduct toward other information services providers. The prohibition was subsequently amended at the triennial review in 1987, and later reversed and remanded by the U S Court of Appeals for the District of Columbia. The other two provisions of the MFJ are the subject of intensifying congressional activity.

SOURCE: Office of Technology Assessment, 1994.

L

open network architecture (ONA)²⁶ policy requiring that RBOCs unbundle their services and provide competitors equal access to the local exchange. Deregulation, it was argued, could proceed once the local telephone companies were no longer able to leverage their control of local switching to gain an unfair competitive advan-

tage. With the Cable Act of 1992, Congress also authorized the telephone companies to enter into the cable business, a decision that gained legal support in the recent federal court decision ruling it unconstitutional to prohibit Bell Atlantic Corp. from providing cable service because it violated

²⁶Open Network Architecture (ONA) is the network design conceived by the FCC to assure that competitive service providers could gain equal access to exchange carriers' networks for the purpose of implementing new services. The underlying idea is that, if the Bell Operating Companies provide their competitors equal access to their networks, they will no longer need to be subject to line-of-business restrictions. In November 1993, the FCC ruled that, to fulfill this requirement, the Bell Operating Companies would have to allow competitors to collocate their operations at the telephone companies' central switching facilities.

76 | Electronic Enterprises: Looking to the Future

the company's first amendment rights.²⁷ There are a number of bills pending in the 103d Congress that would, to a greater or lesser extent, free the Bell operating companies from line-of-business restrictions. The Clinton Administration has generally favored these developments, announcing its own intent to work toward the eventual elimination of all cross-ownership regulations.²⁸

Despite these initiatives, policy makers have been hard pressed to keep abreast of technology advances and market developments. Taking advantage of technology convergence and the globalization of the communication marketplace, for example, many companies have found ways to proceed with their long-range plans to develop the technological and financial capabilities to provide advanced, integrated services. Similar to what is occurring in other sectors of the economy, communication and information technology vendors and service providers are entering into a rash of new mergers, alliances, and joint ventures that often span the globe. Virtually every kind of information-related business is getting into the act, pairing up with partners that a few years ago would have been considered unlikely. Thus, joint ventures and alliances are occurring between cable and telephone companies, cable companies and internet providers, and telephone companies and providers of electronic data interchange ser-

vices. Equally striking is the extent to which this integration is occurring at the international level. The international telecommunications market is currently comprised of five major multinational groupings (see figure 3-5).

This trend toward integration will likely continue in the future as a result of the mutually reinforcing conditions driving it. These include, for example:²⁹

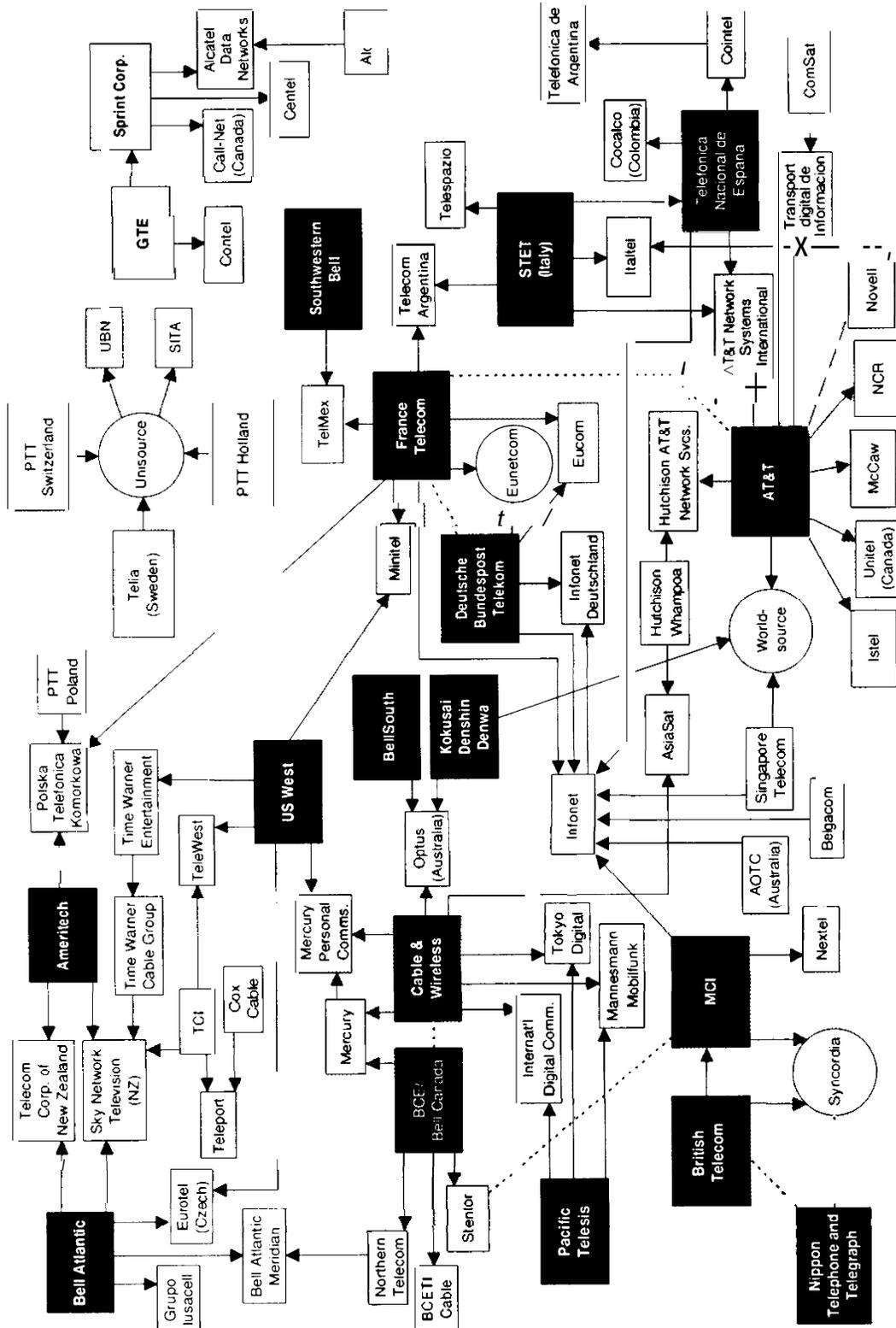
- the very high costs and uncertainty entailed in performing R&D and the need to share resources and risks;
- the rapidity of technology change and the need to monitor, explore, and strategically exploit new markets and product niches;
- the need for technology transfer among complementary and converging technologies;
- the need for interoperability in networked systems; and
- the need to circumvent trade barriers and regulatory policies.

Acknowledging such imperatives, Raymond W. Smith, Chairman of Bell Atlantic Corp., claimed that the companies that will be most successful in delivering future interactive multimedia services will be those that can "put together the right combination of programming, packaging, and distribution platforms," and that recognize

²⁷On Aug. 24, 1993, U.S. District Court for the Eastern District of Virginia ruled that the statutory prohibition barring telephone companies from providing viewer programming directly to subscribers in their service areas is unconstitutional. The Justice Department subsequently asked the court to clarify its decision by limiting its scope to the plaintiffs in the case (Chesapeake and Potomac Telephone of Virginia and Bell Atlantic Telephone Corp.) and to enjoin enforcement solely of section 533(b) of the Communications Act, rather than the entire section. The other Bell regional holding companies, as well as GTE Corp. and Rochester Telephone Co., have filed a joint motion to allow them to intervene in the case, on the grounds that the court's decision should apply to them as well. In a subsequent ruling, U.S. District Judge T.S. Ellis III "reluctantly" denied the joint motion, thereby limiting the scope of its decision to the Bell Atlantic case. The other companies may still file lawsuits on their own behalf. See "Judge Rules Video Programming Decision Applies Only to Bell Atlantic Companies, Denies Intervention Plea," *Telecommunications Reports*, vol. 59, No. 40, Oct. 4, 1993, pp. 4-5.

²⁸According to Administration spokesmen, the Administration will try to put together such legislation by the end of 1994. See "White House Hope Telecom Bill Will Pass in 1994," *Telecommunications Reports*, vol. 59, No. 46, Nov. 15, 1993.

²⁹See, for discussions, John Hagedorn, "Strategic Technology Alliances and Modes of Cooperation in High-Technology Industries," in Gernot Graber (ed.), *The Embedded Firm: On the Socioeconomic of Industrial Networks* (London, UK: Routledge, 1993), pp. 116-137; Peter Cowhey and John Aronson, *Managing the World Economy: The Consequences of Corporate Alliances* (New York, NY: Council on Foreign Relations, 1993); and Jay Blumer, *The Role of Public Policy in the New Television Marketplace* (Washington, DC: The Benton Foundation, 1990).



that “market leadership in the multimedia era will require capabilities that transcend any one industry segment.”³⁰

Pointing to this rapidly changing business environment, many in industry argue that, if they are to participate, the government must move quickly to eliminate the remaining cross-ownership rules and line-of-business restrictions. They claim that deregulation would not only encourage greater technology innovation and deployment; it would also create new opportunities for growth and employment.³¹ Not surprisingly, the RBOCs are among the chief proponents of this point of view. They contend that regulatory safeguards to assure local competition are unnecessary, citing the development of wireless technology, the growing success of competitive access providers, and collocation rules as evidence that sufficient local exchange competition already exists.³² This perspective is increasingly shared by those in the cable industry who are now looking to partner, rather than to compete, with the local exchange telephone companies.³³

Others are less sanguine. While agreeing that local competition may emerge over the long term, they contend that it is currently insufficient, and call on government to retain safeguards against the potential abuse of the persistent bottleneck in the local exchange. As a prerequisite for lifting re-

strictions, they would require a test to prove that competition exists and that customers have real choices. It is a mistake, they argue, to equate competition with deregulation, adding that even where competition exists, government action may be required to assure that competition continues to flourish in an environment of rapidly changing technology. These views are prevalent among long-distance carriers, competitive access providers, value-added network providers, and business users who depend on the local exchange for access.³⁴

Parties have aligned differently regarding the prospect of large-scale mergers cutting across traditional industry lines. For example, while favoring cable/telco integration, the RBOCs looked askance at the proposed AT&T-McCaw Cellular merger. They claim that the creation of a vertically integrated company that can bypass the local exchange will serve only to undermine competition.³⁵ On the other hand, long-distance carriers and/or wireless operators, who advocate a slow pace in relaxing the MFJ prohibitions, have generally welcomed mergers that involve themselves. In these cases, they minimize the prospect of anti-competitive impacts, pointing out that it is almost always the local carrier that hauls cellular traffic to the interexchange carrier’s switch.³⁶

³⁰As cited in “Marketing Services Seen as New Battleground for Telcos, Cable TV as Barriers to Entry Fall,” *Telecommunications Reports*, vol. 59, No. 39, Sept. 27, 1993, p. 21.

³¹According to a recent study conducted on behalf of the RBOCs, the lifting of the line-of-business restrictions would generate approximately 3.6 million high quality jobs. As reported in *Telecommunications Reports*, vol. 59, No. 48, Nov. 29, 1993, p. 14.

³²See, for discussions, “Local Competition Debate Dominates Senate Hearing; Inouye Calls for Third Hearing, Suggests Clinton Official Attend,” *Telecommunications Reports*, vol. 59, No. 37, Sept. 13, 1993, pp. 3-6; and “Weiss Says Entry Barriers Are Blocking Info Highway,” *Telecommunications Reports*, vol. 59, No. 47, Nov. 22, 1993, pp. 37-38.

³³Cable companies which are highly leveraged, are looking to the telephone companies for the capital they need to develop advanced network platforms.

³⁴“Commenters Urge Safeguards for Inter-LATA Entry,” *Telecommunications Reports*, vol. 59, No. 37, Sept. 13, 1993, p. 30; and “AT&T Wants Stiff ‘Competition’ Test for RHC Entry Into Long Distance: RHCS Urge Immediate Relief,” *Telecommunications Reports*, vol. 59, No. 44, Nov. 1, 1993, pp. 16-17.

³⁵See, for a discussion, “Proposed AT&T-McCaw Cellular Merger Revives Significant Questions About Local Loop Competition,” *Telecommunications Reports*, vol. 59, No. 34, Aug. 23, 1993, pp. 3-7.

³⁶*Ibid* See also “AT&T Says McCaw Merger Won’t Hurt Competition,” *Telecommunications Reports*, vol. 59, No. 38, Sept. 20, 1993, pp. 22-23.

Of course, no merger has brought these issues into greater focus than the short-lived deal between Bell Atlantic, TCI, and Liberty Media Corp.³⁷ This merger, much larger than any other telco/cable agreement to date, was outlined in a letter of intent dated October 12, 1993. It **would** have given rise to one large Bell Atlantic company with a combined cable and telephone subscriber base of 22 million customers.³⁸ Seeking to allay any antitrust concerns, John Malone, President and CEO of TCI, promised that the company's full-service networks would maintain an open architecture. Many remained skeptical, however. They feared that instead of the hoped for competition between cable and telephone companies there would be the reincarnation of monopoly. A number of consumer-oriented groups were concerned that consumers would be forced to pay higher prices for less access.³⁹ On the other hand, the proposed merger received support from key players, including the tacit approval of the Administration, on the grounds that it would lead to greater infrastructure investment and deployment.⁴⁰

In sorting out precisely where to draw the line among businesses, it is important to remember that there are no easy or permanent solutions. If nothing else, the recent merger activity should be a reminder that the technology and market environment is in a state of flux. Thus, the policies and

polycymaking processes will need to be flexible and devoid of ideology. In addition, choices about the communication market structure will necessarily affect the appropriate rules for interconnection and the definition of universal service. Equally important, policy choices will need to take into account the globalization of the communication marketplace; hence the need to look also to the international arena in developing potential solutions.

Market regulation, moreover, cannot solve all bottleneck problems. There will always be bottlenecks; they will simply occur in different guises and places depending on the situation. In a highly competitive market environment, for example, the sheer number and variety of providers and networks may present a bottleneck, requiring the development of gateways and navigational tools. Even on the Internet,⁴¹ often characterized as the ultimate in democratic networking, bottlenecks are likely. In such a loose and user-oriented environment, the organizational culture and the need for special skills will constitute a bottleneck to usage, at least for some. Administrative bottlenecks will also be likely when increased usage requires making decisions about access priorities, payments and settlements, and rules governing security and intellectual property rights.

³⁷See, for discussions, "Bell Atlantic's Smith Defends Proposed TCI Merger Against Charges of Anticompetitive Behavior," *Telecommunications Reports*, vol. 59, No. 44, Nov. 1, 1993, pp. 1-5.

³⁸"Blockbuster Proposed Merger Between Bell Atlantic, TCI Liberty Media Raises Media Concentration Issue," *Telecommunications Reports*, vol. 59, No. 42, Oct. 18, 1993, pp. 3-8.

³⁹As Mark N. Cooper from the Consumer Federation pointed out: "To believe that these two companies would suddenly be converted into vigorous competitors requires a leap of faith that responsible public policy makers cannot make. In truth, the merger can (rely) make matters worse." As cited in "Metzenbaum Plans Bill To Change Cable TV Act: Allen Questions Pending Bell Atlantic-TCI Merger," *Telecommunications Reports*, vol. 59, No. 47, Nov. 22, 1993, pp. 16-17.

⁴⁰For instance Bell Atlantic's spokesmen said [that the merger would lead to a \$15 million investment over planned capital expenditures for a 5-year period, while TCI claimed that it would spend \$1.9 billion over the next 4 years building regional fiber optic "hubs." [ibid., p. 2.

⁴¹The Internet is a "network of networks" that connects users in all parts of the United States and around the world. Users communicate using electronic mail, retrieve data stored in databases, and access distant computers. See also ch. 4, box 4-5.