

Network Pluralism and Regulatory Pluralism

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Two basic forces shape change in today's telecommunications' networks: the integrative forces of technology which push toward ISDN and integrated broadband networks, raising barriers to entry; and the social and economic forces of pluralism, which move the network toward a decentralized and segmented federation of subnetworks. The tension between these forces is most pronounced on the front where they intersect: the rules of interconnection of the multiple hardware and software subnetworks and their access into the integrated whole. Such interconnection and access extend traditional common carrier principles from users to networks. In coming years policymakers must structure ways in which network interconnection is granted, defined, policed, priced, and harmonized. Many questions must be resolved concerning technical standards, national uniformity, and international collaboration. They must be confronted within a federal decision-making process which accords considerable weight to state and local government. Regulatory structures in telecommunications have paralleled the stages of the industry itself. The monopoly stage of the industry was accompanied by price and profit regulation. The breach of monopoly was tracked and sometimes facilitated by regulation focusing on industry structure. We have now reached a stage in which the network is rearranged from a centralized starlike structure into a matrix of interconnected but decentralized networks. This moves the focus of regulation to encompass not only traditional consumer protection, but also networks protection—where necessary, mediating the interaction of carriers, network operators, enhanced service providers, end-users, and equipment manufacturers. The key regulatory issue in this new network system is interconnection, and the main regulatory decisions shaping the network of the future will be in this

area. Open Network Architecture (ONA) is the main regulatory battleground on which the rules of interconnection will be set.

Pluralism is the key concept for future telecommunications—pluralism in the shape of the network and pluralism in the policy process. To understand the consequences of this concept, we will examine the reasons for the disintegration of the traditional centralized network system; identify the nature of interconnection as the key regulatory issue of a pluralist network; analyze problems associated with Open Network Architecture interconnection; discuss the rocky state of federalism in telecommunications regulation and ways to overcome it; and demonstrate how states' governments must be intimately involved in these issues. We will propose a framework for decisionmaking for interconnection issues on the intergovernmental and interindustry levels.

Background

Interconnection was a policy issue from the moment that the original Bell patents expired in the late nineteenth century and rival carriers emerged. American Telephone & Telegraph (AT&T) reestablished control by preventing interconnection of rival local networks into its own local networks as well as into Long Lines. It took a strong Department of Justice challenge and its resolution in the so-called Kingsbury Commitment of 1913¹ to resolve these issues and assure interconnection. The system was stable until the late 1960s, when its restrictiveness was successfully challenged, first for equipment interconnection in *Carterfone*.² AT&T dragged its feet in assuring easy interconnection to its competitors, and this became a major factor in the government's antitrust law suit and AT&T's subsequent dismemberment. At the same time, issues of software network interconnection were being considered in the FCC's *Computer Inquiries*.³ Critical issues were, among others, the conditions under which AT&T and later its successor companies could provide enhanced telecommunications services. The emerging policy required them to provide nondiscriminatory interconnection to other enhanced service providers as a condition for their own right to supply such services. The companies were also required to establish fully separated subsidiaries. This condition was relaxed in *Computer III*, but the Bell Operating Companies (BOCs) and AT&T had to establish Open Network Architecture arrangements

(to be preceded by a preliminary stage of Comparably Equal Interconnection, [CEI]) that specified interconnection arrangements to the core of local networks, the local exchanges. To make such arrangements meaningful, they had to provide for the unbundling of network elements and exchanges, such as basic switching and call forwarding. In concept ONA aimed at permitting separate access, interconnection, substitution, and competition with each of the basic elements of the exchange. It sought to provide greater ease in establishing layers of software-defined networks superimposed on basic transport functions.

ONA has been interpreted as both a broad and a narrow concept. In its limited interpretation, ONA is merely about equalizing terms of competition for enhanced service providers. Indeed, the FCC's ONA procedure is limited, and its notice in this matter was modest in scope. The general process, however, will lead inevitably to a broadening. Similarly, the first Microwave Communications, Incorporated (MCI) case involved only a private line microwave system from Chicago to St. Louis, but it grew inexorably into much more.

The entire twenty-year policy sequence of network opening was controlled by the federal government—the FCC, Department of Justice, Judge Greene, and the D.C. Court of Appeals. The states, through their public utilities commissions (PUCs) fought a long string of defensive battles and lost virtually all of them, with the exception of the treatment of depreciation accounting.⁴

When ONA arose on the policy agenda, questions of substance and jurisdiction were raised: what kind of rules should there be for local exchange interconnection and who should set such rules? These questions are interrelated: allocating regulatory competency to a particular governmental level can determine the outcome of policy. (For example, leaving corporation statutes to the states has led to some interstate rivalry for incorporations, especially by Delaware, and over time this has brought about a marked relaxation of restrictions on corporate management.) The two questions are also philosophically interrelated. ONA as a concept of liberal local exchange interconnection strengthens the values of decentralization, openness, and hierarchy reduction. As a regulatory concept, it was not driven by demand; rather, the FCC placed it on its agenda as a conscious philosophical choice. However, the FCC has not acknowledged this decentralizing philosophy at the level of policy formulation. To the contrary, the FCC and various industry groups often believe that industry diversity

must be accompanied by a policy monopoly of the central government. The problem with this dichotomy will be outlined below. But first, we will discuss the nature of pluralism in the network and of pluralism in regulation.

Pluralism in the Network

Perhaps the greatest failing of traditional telecommunications policy analysis is that it centers on what might be called "supply-side" telecommunications. That is, it looks at the subject from the angle of production and producers: AT&T versus MCI, long-distance versus local companies; enhanced versus basic service providers.

This bias is not surprising; after all, regulators deal primarily with carriers, technologists with networks, and economists with competition. But this supply-oriented perspective obscures a demand-side telecommunications analysis. Telecommunications is not simply a service produced by carriers, but is an interaction of groups and subgroups in society, facilitated by service vendors called carriers. The supply structure, if left to its own devices, reflects the underlying interaction of communication users with each other, whether in an all-encompassing user coalition or in several user groups. Thus, deregulation is not simply a policy primarily liberalizing the entry of suppliers. Just as important, it liberalizes exit from an existing but now confining coalition of users.

This process might be called "the tragedy of the common network" because it is undermined not by the failings of the traditional system, but by its success. The success of communalism creates the forces for particularism. In its early stages the existing first network participants seek additional partners to share costs and enhance their reach. In time, however, they pay a price for this outreach: democratizing participation leads to democratizing the control of cost-sharing redistributively, and this redistributory burden grows as the last participants enter the network. The larger users increase their electronic communications at a faster rate than the smaller ones, and their technical requirements are increasingly differentiated from those of average users. As the combined volume of large users rises, they can account for much of cost savings of sharing just between themselves. They therefore form alternative networks for large parts of their communications needs, first independently then

with their closest suppliers, customers, or market partners.

The driving force for restructuring telecommunications has been the phenomenal growth of user demand for telecommunications, which is itself based on shifts toward a service-based economy. This shift in advanced industrialized countries was due partly to their loss of competitiveness in traditional mass-production industries, as compared to newly industrialized countries. It was due as well to a growing pool of workers people skilled in the handling of information. Information-based services, including headquarters activities, therefore emerged as a major comparative advantage of developed countries, while manufacturing and retailing became decentralized.

The growth of technological and operational alternatives undercut the importance of economies of scale and scope once offered by the centralized network. Economic and technological development led to an increased specialization and to a divergence rather than convergence of options. Application options increased considerably with technology.

By their nature and tradition, network operators provided standardized and often nationwide solutions, carefully planned and methodically executed. For the large users who depend on telecommunications, this was not enough. In the old days, sharing a standardized solution was acceptable to users because the consequential loss of choice was limited and outweighed by the benefits of the economics of scale gained. As the significance of telecommunications grew, the costs of nonoptimal standardized solutions began to outweigh the benefits of economies of scale, providing the incentive for nonpublic solutions. Furthermore, some users aggressively employed differentiation of telecommunications services as a business strategy to provide an advantage in their customers' eyes and therefore affirmatively sought a customized rather than general communications solution.

Another factor contributing to more pluralism in telecommunications networks was the growing number of groups in society that are linked via telecommunications. Their communications needs as collectives became more specialized, and private user clusters emerged. Early examples were travel agents and airlines, automobile parts suppliers, and financial institutions.

We are merely at the beginning of what will be a lengthy process of change. The future network system is one of great institutional, tech

nical, and legal complexity. It includes national and regional carriers, local exchange companies, specialized service providers, cable television companies, domestic and international satellite carriers, local area networks (LANs) and wide area networks (WANs), private networks, shared tenant services, and value-added networks. The future network environment will be a pluralistic network of networks which are partly overlapping, partly specializing along dimensions such as geography, price, size, performance, software value-added, ownership status, access rights, and so forth. Economies of scale and scope will not become irrelevant: broadly based public networks will still exist, as will powerfully integrated networks with broadband capability. Economies of group specialization and of clustering will, however, be equally important. Such differentiation will permit users with similar needs, or with frequent interaction, to operate more efficiently. It will also allow public networks to be more efficient for their clientele, since they will not need to satisfy the demand of every constituency. In the traditional model standardization was a key element; in the pluralist model interconnectivity is the predominant characteristic.

The key requirement for such a system to function is the possibility of network interconnection, even among competitors. A quasi-common carrier principle is extended from users to networks. In the United States and the United Kingdom establishing interconnection and access of new hardware and software networks has been critical for the opening of the network system to new entrants.

Jurisdiction over Interconnection

In such an environment, the rules of interconnection and access for newcomers to the public network is the most important tool of structural regulation. Whoever controls the rules of interconnection controls the network system: the FCC, the states, or both. For the FCC to establish a federal predominance over interconnection to local exchanges is to establish federal control over local networks themselves, since the contradictions in treatment of largely identical service elements would not permit a stable dual regulatory system to exist over time.

Thus, there are four major possibilities for jurisdictional power.

- (1) Expelling the states from the area: this would create major political battles, deprive the policy field of a major source of innovation and experimentation, and eliminate an important element of policy stability.
- (2) Full federal withdrawal: this could lead to the United States as a telecommunications-Lebanon facing a world of telecommunications-Japans.
- (3) Noncooperative coexistence: this would be characterized by continuing litigation, delay, uncertainty, and manipulation in industry forum-shopping.
- (4) An institutionally collaborative approach: outlined below, it establishes a balance between national uniformity and regional/local diversity.

Important industry groups, particularly enhanced service providers, desire policy uniformity to complement technical standardization. Nonetheless, there are hidden costs in terms of innovation, flexibility, and process. A more careful analysis establishes the need for a system in which uniformity and diversity coexist, as is true for much of the economic system of this country.

Pluralism in Regulation

Given today's antagonism between the states and the FCC, it is hard to remember that coregulation dominated federal and state responsibility for communications regulation for a long time. Federal and state goals in this system were quite similar. The cooperative spirit was so great that the federal government permitted a system of revenue transfers to the states to support low local rates without direct federal oversight. Through the 1970s, however, federal and state goals diverged and the old system fell apart.

A bit of historical background is useful. The first thirty-five years of telephony saw no federal regulation. Such regulation started in 1910 with the Mann-Elkins Act,⁵ which extended an undefined regulatory authority to the Interstate Commerce Commission. Although the ICC largely failed to exercise that authority, it did establish a position of dominance over state regulation of the railroads.⁶ By analogy state regulatory authority for telephony also became legally tenuous, though the ICC did not in fact exercise its powers.

When the Communications Act of 1934⁷ was drafted, the states urged statutory limits on the new powers of the Federal Communications Commission over intrastate wire communications. Congress responded positively by prohibiting FCC regulation "in connection with intrastate communication service by wire."⁸ Congress intended to limit the scope of federal telephone regulation. The House report on the bill, for example, stated that "some 97½ or 98 percent of all telephone communications is intrastate, which this bill does not affect" [my emphasis]. How wrong these words turned out to be!

Following the 1934 act, public policymakers tried to reconcile the statutory fiction of intrastate/interstate network separation with the reality of integration. A system of coregulation emerged from these efforts, in which both federal and state agencies regulated the same facilities at the same time and in which the federal level cooperated to keep low local rates.

But this cooperative system could not last once federal and state policy goals diverged. The FCC began to embrace the concepts of efficiency, competition, markets, and entry, while the state commissions continued to emphasize equity and redistribution.⁹ The split between the states and the FCC first emerged seriously concerning terminal equipment. In a series of decisions which culminated in *Carterfone*,¹⁰ the FCC opened the accessory equipment market to rivals of AT&T. Many states, on the other hand, advocated a restrictive approach during this period, fearing that telephone companies would lose revenues which supported residential rates.

But the FCC prevailed in a landmark decision, *North Carolina Utilities Commission v. FCC*.¹¹ The separation of interstate and intrastate communications by sections 2(b) and 221(b) of the 1934 Act, the legal linchpin of the cooperative system, did not survive this equipment registration decision. Instead, the court found that the state's actions had frustrated the commission's efforts to discharge its responsibilities to create a national system of telecommunications and was therefore invalid. The court read the protected part of telecommunications very narrowly and rendered it almost meaningless. If virtually all facilities of a nationwide network are part of the interstate network, FCC jurisdiction would extend to all aspects, and the federal preemption would relegate the states to a role subordinate to the FCC. That was more than a dozen years ago. Since then FCC preemption of state regulation has been moving forward steadily.

Preemption is based on interpretations of the commerce and the supremacy clauses of the federal Constitution. The commerce clause contains a balancing test to weigh the local interest in regulation, burdens on interstate commerce, and regulatory methods. The supremacy clause tests conflicts between state policy results and the objectives of the federal statute. During the past few years FCC preemption has included: new customer premises equipment (CPE), end-user access charges, intrastate WATS, cellular radio CPE, paging services, digital termination service, vertical blanking interval of TV signals, teletext, FM subcarriers, incursion into local franchise territories, structural separation of subsidiaries, inside wire, radio common carriers, many private networks, cable television provision of telecommunications, and backyard satellite reception.

For example:

(1) For depreciation rules the FCC tried to require states to switch from whole-life to remaining-life depreciation and to use equal-life groups in doing so. Several states refused to adjust their accounting principles, and the matter went to the Supreme Court.¹² If there were any preemption case in which the Supreme Court might reverse the FCC, this was it because it did not demonstrate strong need for preemption. Even so, six federal courts had supported the FCC, and only one, in Arkansas, supported the states' position before it was reversed on appeal. The Supreme Court, however, did overturn the FCC, giving the states a rare victory (which unfortunately is sometimes interpreted as farther-reaching than might be prudent).

(2) On another front in 1983 the FCC preempted rate regulation for access of nonmandatory cable television channels. It preempted states from regulating cable systems that do not use public rights-of-way, so-called satellite master antenna television systems (SMATV). After passage of the 1984 Cable Communications Act, it excluded most state regulation of basic cable rates and struck down the use of local zoning codes to limit backyard satellite antennas and amateur radio operations. The 1984 act substantially reduced local and state regulatory power over cable operators, to the point of superseding a few provisions of the franchise contracts which had been voluntarily entered by cable companies eager for the franchise. In another significant decision, *Cox Cable*,¹³ the FCC preempted much of the states' ability to regulate the use of cable TV systems in bypass operations as a common carrier requiring state certification.

With the exception of the previously mentioned Louisiana case, there has been a virtually unbroken string of state defeats in recent years. Before that case the last state victory of note in the courts was the *NARUC II* case.¹⁴ There were a few instances of voluntary and temporary self-denial by the FCC; the satellite dish preemption could have reached further. These limitations, however, were by FCC choice, not legal necessity. Furthermore, courts began to apply first amendment rights for cable operators as "video publishers," and local regulation was held to be subject to the antitrust laws.¹⁵ Both developments raised further barriers to state and local regulation of telecommunications.

Recently, the FCC has become more conciliatory. For example, it has used the Joint Board process to compromise on the actual rates in end-user access charges; however, it can ignore or reverse a Joint Board recommendation. The legal powers of the FCC remain, even when it chooses to bring the states into negotiating processes.

Why is federal regulatory predominance a problem? Should not federal regulation avoid duplication, reduce spillovers, lower cost of compliance, and provide access to expertise?

Increased centralization refocuses the distribution and balance of power in this country. A fundamental principle underlying federal and state constitutions has been a division of power among institutions and levels of government. There is a cost to such fragmentation, of course, reflected in occasional calls for an "energy czar," or a "drug enforcement czar"—mythical figures who can make the trains run on time while being as benign as Mother Teresa.

Constitutional division and separation of power is not the only way to deal with dominance in society. The Reagan administration has emphasized the role of the market in controlling market power. Its deregulatory policies have, however, collided with the fragmentation of power among different levels of government. It relinquished governmental power to the private sector in telecommunications; but in so doing it shifted the balance of federalism between the central government and the states. Having to choose between deregulation and decentralization, it chose deregulation. But once one establishes centralized regulation, a future administration can always determine its degree of leniency or strictness. Hence, regulatory centralization, even in the name of deregulation, may not be in the long-term interest of those advocating a conservative economic agenda.

Decentralization enhances flexibility, proximity, and regulatory accountability. Differing local circumstances and environments require different arrangements. Moreover, diversity among state policies provides a foundation for change. As Justice Brandeis wrote, "It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country."¹⁶

In telecommunications the United States has experienced two decades of continuous regulatory change. Other industrialized countries have found change much more difficult. America never had a comprehensive blueprint for telecommunications reform, but reform did take place, in contrast to many developed countries where telecommunications policy is centrally controlled. The United States has witnessed steady, gradual change through the piecemeal actions of governments, courts, and private initiatives.

Analyzing the processes of federalism is impossible without analyzing policy outcomes. In the first instance, most participants care far more about specific decisions rather than which level of government makes them. For example, liberals traditionally support federal intervention in civil rights matters, while many conservatives favor states' rights—each group because it felt its views were better served by these respective levels of government. But once a conservative federal administration was empowered, many liberals discovered states' rights, while many conservatives grew frustrated with state obstruction of national deregulatory policy. Opportunism can override ideology: often, policy preferences are outcome-oriented and depend pragmatically on interest group strength.¹⁷

Can this trend toward federal predominance be thwarted? The federal courts are reluctant to reduce FCC preemptive power, arguing generally that telecommunications is tied into an interstate system, for which the FCC sets policy, and that the FCC's choice not to regulate constitutes a policy which the states should not frustrate. Justice Burger, for example, while a D.C. Circuit Judge, upheld an FCC preemption in 1969 stating that: "any other determination would tend to fragment the regulation of a communications activity which cannot be regulated on any realistic basis except by the central authority; fifty states and myriad local authorities cannot effectively deal with bits and pieces of what is really a unified system of communication."¹⁸

Furthermore, recent appointments to the federal appellate courts are likely to be sympathetic to FCC deregulatory policies. Such agreement on substantive policy may well create further rationales for supporting procedural preemption.

Another approach to reverse centralization is through legislation. By enlisting Congress and governors, states have on occasion put the FCC on the defensive, forcing it to negotiate and compromise with the states. This has helped to invigorate the Joint Board process and has made the FCC at least slow its rate cap policy to replace rate-of-return regulation. But legislation restricting the FCC is rare. In fact, the major recent instance in which Congress limited FCC regulatory powers was the 1984 Cable Communications Act, which concurrently restricted even more state and local power. In the long run familiar Washington relationships will be stronger than temporary sympathy with positions of distant states. Congress is more likely to assign to itself more regulatory power than to the states.

On substantive policy the states usually favor redistributive policies. In an ideal federal system national policy is best placed centrally among state policies in order to be acceptable to most participants. It is then also acceptable to leave policy to the states because their policies are, on average, similar to the federal ones. Such federalism produces policy diversity but not fundamentally different policy. This was roughly the situation of telecommunications policy before the FCC embarked on its deregulation. State commissions, however, usually did not follow the FCC. Even governors who otherwise advocate free-enterprise support regulatory policies in telecommunications that are less market-oriented than those of the FCC. Thus, questions of jurisdiction involve both process and outcomes. Ironically, if the states were less uniform in their policy positions, they might well have greater influence with the federal government.

Are the differences between state and federal policies permanent? In many regulatory fields state rules tend to be more lenient than the federal ones, such as environmental or securities regulation. In corporation law the states, led by Delaware, have been relaxing their strictness (what former SEC Chairman William L. Cary has called the "race to the bottom"). However, when it comes to nuclear or chemical dumping, each state likes to regulate the activity out of its own territory right into its neighbor's back yard, leading to some overregulation by the states.

In telecommunications state regulators are much closer to the end-users than their federal cousins. They have to face the main losers in telecommunications deregulation, the subsidized residential customers. In the past states were able to impose redistributory obligations on the telephone carriers and on some of their customers because the telephone company was not going to move to Delaware. Local telephone companies accepted these burdens because they received a quid pro quo—protection from competition. For larger users who paid some of the bills, these were too small a share of business costs to cause them to move to states with lower telephone rates.

The benefits of deregulation are highly abstract—things like productivity trends and efficiency—and the beneficiaries are companies residing far away in Silicon Valley, Westchester County, or Taiwan or are white-collar corporate headquarters and large financial institutions. For most states then there are many in-state, voting losers and a few primarily out-of-state and corporate winners. States therefore tend to overregulate. Less than ten years ago, a good number of states fought against competition for terminal equipment. If today telephones are available for less than \$10 at the hardware store, it is not because of the states. The federal government focused its efforts on eliminating the inefficiency of restrictions. It did not consider the telephone service as a social service. A logical economist's approach would be to substitute open and budgeted subsidies for the hidden ones of regulation. But the FCC has no mandate for such action, and Congress already had a \$200 billion deficit on its hands. The FCC therefore created uncompensated losers, who in turn appealed to state commissions, since they were closer and more responsive. The state commissions have thus found themselves holding the redistributory bag to counteract the impact of the federal policies. Local service rate increases and life-line schemes are good examples of this. The state commissions have also borne some administrative costs of the new federal policies.

Thus, while federal policies toward long-distance service used to provide revenue for state redistributive policies and subsidies, this has now reversed, with states helping to make FCC policies politically palatable by covering some of its negative fallout.

The game is stacked against the states because the FCC is both a player and umpire. By defining an area as interstate in nature, the FCC can win almost every argument. The agency can expand its turf to

suits its desired outcomes. For example, in the *Hecht* case,¹⁹ a private intrastate network was held to be really interstate, so that federal rather than Maryland rules applied. Since it is rare for an agency voluntarily to give up power once acquired, this process is cumulative. Each new FCC generation adds jurisdictional power in those areas of particular concern to itself.

A frontal assault against this situation is hard to imagine. It would require more judicial skepticism toward expanding jurisdiction by preemption. Since 1983 several nontelecommunications cases have been resolved in favor of the states when state action had a different rationale or method from the federal one, when there was no clear congressional intent or when the cost to pursue congressional intent had become prohibitive.²⁰ On the other hand, the Supreme Court in the landmark *Garcia* case²¹ decision undercut much of the Tenth Amendment defense against preemption.

This leaves the states to engage the FCC in constructive cooperation. On issues like ONA the battle lines are not yet hardened, and the problems they raise require analysis rather than combativeness. Cooperation could set jurisdictional boundaries between the state and federal levels for selected issues. Any such change seems more likely if states' policies are more widely distributed along the spectrum from strict regulation to substantial deregulation. The spectrum of state policies is already widening. For example, on the issue of shared tenant services, Texas and Oklahoma arrived at radically differing policies. More divergence is likely.

Open Network Architecture before the States

The divergence of interest, and yet the unavoidable necessity for state-federal collaboration, is apparent on the many issues of ONA. State regulatory commissions have only recently begun to explore the new interconnection, access, and unbundling regime of open networks. New York and Maine have ONA proceedings, California has a task force, and several others are studying the subject. All eyes are on the FCC because of its ongoing rulemaking, and some states are suspicious of ideas initiated by the FCC. Others view ONA primarily as an attempt to unchain the Bell Operating Companies. The FCC has sent mixed messages to the states. States have focused on jurisdictional questions rather than playing substantive roles in interconnection

developments that can profoundly change their traditional role in exchange services. The FCC has begun to recognize that states must be part of the process if they are not to become part of the problem.

As recently as 1985, several Regional Holding Companies (RHC) embraced the open network concept as a vision of the future. Some of their *Computer III* filings before the FCC showed innovative thinking: they combined the opening and disaggregation of the central office functions with deregulation and entry into information services. They proposed easier competitor access to the network. They protected the network as their most important asset, its intense utilization was in their own best interest. But in their ONA plans of February 1988, a more cautious spirit had taken over. Partly because the FCC gave the Bell companies little time to plan or implement, the plans concentrated on the present, largely repackaging existing offerings or those already contemplated. It is possible that negative judicial holdings on RHC participation in information services reduced the quid of new deregulated opportunities for the quo of opening the network to further interconnection. Possibly, too, the RHCs wanted to keep down the cost of the unbundling process. And uncertainty about proregulatory state reaction to impacts on ratepayers may have been a factor at a time that the states challenged the framework of *Computer III* in the courts.

The filings did not confront longer-range implications of the future of an open network. These include: future competition in central exchange services, including potential incursions across franchise territories by some Local Exchange Companies (LECs) exchange services and even facilities; major enhancement in the possibilities of local transport competition (bypass) and of private group networks; built-in strains between local transport and exchange which could lead to full-scale structural separation; moves toward a "distributed" rather than centralized physical architecture of public central office functions, analogous to the computer industry's evolution into distributed processing.

Interconnection and Local Competition

Discussion of ONA principles often centers on access for Enhanced Service Providers (ESPs), giving the impression that the issue revolves around software networks. But the principles of interconnection and

unbundling go much further. The FCC has already decided that interstate ONA elements, while based on expressed ESP needs, should be available to anyone, not just to ESPs. This could ultimately include a wide array of interconnectors with interstate traffic, such as AT&T, the OCCs, long-distance resellers, facilities bypassers, private networks, independent telephone companies, cellular operators, RCCs, other BOCs, and even international or foreign carriers.

For example, bypassers could transport interstate traffic on their own or on leased lines to the LECs exchange, have it switched there, and take at least the interstate part of the rearranged traffic to its destination. Similarly, they could use LEC subscriber lines and switches as a feeder system for their own trunks to major destinations, including to interexchange companies. The distinction between private fixed networks and public switched networks would blur. Competitive regional and local exchange companies could emerge, particularly were states to adopt intrastate rules similar to federal ones. And LECs could compete with one another for the business of switching the traffic of bypassers, independent telephone companies, or cellular operators. Interexchange carriers, similarly, could enter local distribution.

In the absence of assured regulatory protection, the BOCs established an in-house containment strategy to avoid, if possible, renting pure switching functions. The various parties disputed whether the FCC implicitly required additional unbundling or only limited unbundling. The FCC intended ONA as an aid to competition and innovation. A fundamental direction was that local exchange companies unbundle exchange services into discrete Basic Service Elements (BSEs) that could be bought separately and as needed by users. However, apparently to prevent pure transport interconnection, or to avoid ESP exchange access through other carriers that would permit the piecemealing and bypassing of their networks and challenge the existing pricing structure, the RHCs uniformly sought to establish something called Basic Serving Arrangements. These consist of two or three elements: an access link from the interconnector to the central office; basic central office functions; and transport between central offices. Different types of BSAs are offered, analogous to present access line arrangements, such as circuit and packet switched service or private-line circuits. By establishing these BSAs the regional companies sidestep an important part of unbundling. To mix metaphors

they unbundle the bells and whistles but not the meat and potatoes. Basic switching is not considered a BSE, but feature add-ons are. And in order to get a BSE, one first needs a BSA; sometimes BSEs require a particular BSA, such as a private line.

Unbundled access, however, is what some users desire, and it puts state regulators in the middle of the critical issue of collocation. Some carriers, such as New York's Teleport Communications, wish to terminate directly in the physical location of the LEC exchanges themselves and locate the necessary equipment on those premises rather than reaching the exchanges via LEC-provided lines. The LECs resist, arguing that physical access by any other carrier could create operational and logistical problems. Collocation raises a host of pricing and technical issues too lengthy to consider here. But it deals primarily with physical premises, an eminently intrastate issue. The FCC has thus refused to mandate physical collocation because it believes there may be other and more cost effective ways to minimize access costs, and it does not want to chill their development or the establishment of contractual arrangements.

The competitive scenario for local transport and switching is a view into the not too distant future. It continues trends begun by the emergence of powerful private networks, shared-tenant services, and bypassers. But it makes further entry more accessible to small users. If these lead to substantial technological innovation and cost efficiencies, and if the new networks have to support basic service for the poor, then these changes may not be negative. Such developments cannot be prevented by regulation, but they can be channeled for an orderly transition. To deny states a role in this process is to deny them their ability to affect local service. Conversely, however, to leave ONA interconnection entirely up to each state could create compatibility problems. The responsibility for local service overlaps with a federal policy to assure unobstructed interconnection. Reasonable federal-state accommodations is extremely important.

The ONA plans of the Bell companies indicate that only about 40 percent of the requested BSE requests will be met in the near future and many requests will never be satisfied. Still others were not articulated in the expectation of denial or to protect future business plans.

The Bell companies wish to reject requested service elements because they are technically infeasible, impractical to unbundle or to bill; uneconomical to provide; requiring excessive customization; or

out of bounds under the Modified Final Judgment.²² Several RHCs, recognizing the business opportunities of some service elements, find a requested BSE feasible while others do not, or not yet. All of these roadblocks to a BSE require regulatory attention if ONA is to provide access as a right.

It is important to recognize just how complicated these questions are. How finely unbundled should BSEs be? How fast should they be deployed? Who should pay for their development? How standardized should they be across the country and across customers? How customized can they be, and if so, how should the costs be distributed? Can BSEs be resold? What should the extent of facility unbundling be, when at the same time technological forces strengthen the importance of integration, such as in ISDN and integrated broadband networks? What about interconnection to telephone companies' software programs, data bases, storage capacity, signaling channels, network management functions, billing arrangements, technical specifications, or customer information?

Pricing

One of the critical questions for suppliers and users is how to charge for ONA-type services. Telephone companies seem to accept the prospect of state regulation of ONA pricing, that is, of decentralized and nonuniform prices. Most Enhanced Service Providers, however, want nationally uniform rules and rates, service definitions, interfaces, installation, and even administrative procedures for "standard" BSEs. This is an understandable interest for ESPs, many of them fledgling firms desiring compatibility and portability. The need for national uniformity for pricing service elements is not as compelling as for basic protocol standardization, provided that pricing does not manipulate the competitive environment. It makes no sense to have uniform prices or pricing rules across the country without regard to local costs, conditions of demand, alternative offerings, technological state of the network, demographic and economic characteristics, etc.

No doubt, the desire for national uniformity will lead to calls for a preemption of conflicting state pricing regulation. Such preemption will not work because it cannot be limited to ONA. Federal preemption would establish prices for service elements that are, as likely as not, different from those of comparable services presently tariffed by

the states for intrastate use. This creates the potential for arbitrage and conflict. Uniformity is possible only if one preempts state tariffing of most services, and not just of service elements—that is, if state rate regulation is largely cut off. To do so would represent an unprecedented challenge to federalism in telecommunications regulation. Furthermore, because price determines the quantity of demand, taking pricing out of state hands would deny them an essential tool to effect another traditional goal, to assure universal service. To prevent this the FCC and the states need to agree on broad guidelines to prevent confusion and incompatibility.

Thus, state and federal regulators will soon have to deal with the nuts and bolts of BSE charges and how to live with each other on these issues. One basic question will involve the principles for pricing BSEs. While few would disagree that the costs of new service should be borne by those who cause them, this cliché offers little advice. For the moment the Bell companies anticipate diverse pricing policies reflecting variations in monopoly power, regulatory regimes and business strategies. Some talk of cost-based pricing, some of market pricing or negotiated rates, and several plans imply that ONA services could subsidize the rest of the network or subsidize service elements to promote new services. No carrier advocates a classic rate-of-return-based pricing.

From the state perspective tracking ONA implementation and the recovery of ongoing costs will be difficult. The integrated structure of regulated BOCs and BOC-ESPs, together with complex joint and common cost allocation, make it difficult to detect cross-subsidies or unfair competition. The FCC views accounting rules as a major non-structural safeguard against cross-subsidization, and many states are currently establishing such rules for their own jurisdictions. The provision of adequate data is essential for any regulatory regime in ONA. It is also necessary to separate the interstate and the intrastate elements of ONA services.

Thus, many questions have yet to be resolved.

- Who should bear the risk of developing and introducing service elements? Must each service element be priced according to the same principle or depending on market conditions? Some may face competitive offerings, while others do not.
- Must each service element revenue cover its own cost or only in the

- aggregate? How should cross-subsidization be handled?
- Could service elements be defined so finely as to permit undue price discrimination between users?
 - How much flexibility should there be in the rates? Can users be charged according to negotiated rates to make price discrimination possible, can such negotiated rates ensure that needs for customized BSEs are met or that later entrants are not overcharged? Similarly, should it be possible for an ESP to obtain exclusivity to a BSE in return for its special development?
 - Which cost definition should be used—average, incremental, fully distributed?
 - Segments of sophisticated data services have already left the public network. Should there be pricing incentives to bring them back?

Another set of questions concerns existing services. Are they to be unbundled into oblivion? Some, presumably, will disappear. Others will be repriced, or their aggregate counterpart of service elements will lead to a different price than before. Certainly, this could affect some users negatively. In wide-ranging rate restructuring, there are not enough degrees of freedom to keep everyone satisfied while remaining consistent.

A Level Playing Quagmire?

ONA is designed to equalize competitive conditions for the broad array of interconnectors like enhanced service providers, and to permit the Bell companies to enter activities from which they had been excluded. Some of the advantages of a "home field" have been addressed by the FCC and regional company plans, including unequal access to technical standards and provisioning biases. The regional companies, in response to FCC guidelines, are willing to charge their own unregulated enhanced activities as they would charge unaffiliated service providers—maintaining meaningful parity where their own activities are collocated and their competitors are not. This would require a trade-off between competitive parity and economic efficiency.

Another bump in the level playing field is the extent of access by enhanced service providers to internal network functions that the local exchange companies can utilize. These include telephone company software programs, data bases, storage capacity, signaling chan-

nels, network management functions and processors, diagnostic functions, billing and collection arrangements, technical specifications, and customer information. Many of these functions are needed for full interconnection and a level playing field, but there must be limits to a "creeping socialization" of privately owned and managed carriers. This can be effected by extending the common carrier principle into the core of internal management and operations functions. Full disclosure of technical information can also reduce the incentive to develop proprietary technology, a long-term cost in innovation.

Billing functions and Customer Proprietary Network Information (CPNI) is particularly important, given its potential marketing value, and BOCs have superior access to it under the FCC *Computer III* decision. If CPNI is available to Bell product developers and marketing managers, they will be able to sift through computerized records in order to develop or market new products. Other ESPs, however, would have access to CPNI only with customer approval. To level the playing field means severely intruding into telephone customers' privacy or alternatively precluding a BOC from reasonably available information. One way to proceed would require the BOCs to process their CPNI for ESPs upon demand, and for a charge, without providing actual access to the data. End-users would have the right to be left out of any such processing.

Related problems deal with timing. A Bell Operating Company should not be able to hold off approval and deployment of a Basic Service Exchange until its own affiliated Enhanced Service Provider is ready to enter that particular service. Service elements should not be defined and priced to make price discrimination possible, nor should a departure from national service element definitions, or the sequencing of introduction, give BOC-affiliated ESPs a regional advantage over national services.

The long-range interest of the Bell Operating Companies is in a smooth ONA system. To stall ESPs would be an historic mistake. AT&T dragged its feet on interconnection of its long-distance service rivals, and the political-legal process became frustrating enough to seek the meat cleaver of divestiture. If the BOCs were to use interconnection as a strategic tool to repress competition, they might be threatened in a decade or two by a similar fate, and their exchange operations may become organizationally separated from their transmission functions.

Nonetheless, ONA by itself does not guarantee competition. It pro-

vides the possibility for entry, but actual entry will depend on cost and demand structures. No participant is owed a living. Fundamental economies of scale remain, despite their declining weight. It is possible that the system will implode into a much more unified structure, as did the old Bell System when it overwhelmed its independent rivals under Theodore Vail. Such a scenario is unlikely, given the varied nature and sophistication of service vendors and large end-users, which create communications market too heterogeneous for one organization. The unified system was appropriate for the industrial age, but is inadequate for an economy increasingly dependent on information and services.

It can be argued, as Milton Mueller has done,²³ that open access arrangements retard competition by making it unnecessary for carriers to duplicate facilities. This objection does not hold for software-based networks without a realistic possibility to create their own transmission network. Even for basic transport, ONA lowers barriers to entry because it permits step-wise entry rather than requiring all-or-nothing entry. It will nonetheless require vigilance to prevent oligopolistic and symbiotic arrangements to emerge. This is not to suggest that a significant backbone network will not prevail, particularly in local distribution. It will play a role as a prime standard setter. With time the system will evolve into a loose federation of subnetworks, and the overall network system will become a composite of numerous separate planning decisions. This probably has some cast in terms of efficiency and overcapacity, but what is the alternative? Can there be a stable solution in economies that otherwise favor a market mechanism and that want to stay on the leading edge of technology and applications?

Other Consumer Protection and Universal Service Issues

Regulatory policy must consider the likely effects of ONA on residential users. These customers, many of whom have little use for ONA services, could end up paying more because unbundling may reduce revenue that has previously subsidized residential service or because it could permit bypass and other revenue diversions. The volume of traffic and of revenues, however, could increase. Presently, a residential phone is used only about twenty-five minutes per day. An in-

crease of usage by only five minutes per day could thus increase the revenue-flow from usage-sensitive charges by 20 percent. ONA could make it possible to provide small users with services which in the past may have only been available for large users. New and useful services are likely to emerge, and the cost of central office switching could go down as a result of competitive incentives. Such positive effects are distant, while costs are more immediate. For now it is hard to defend rate increases due to interconnection restructuring if general ratepayers service is not directly and appreciably improved.

ONA should not interfere with the provision of universal service. ONA is primarily an aid for access to the network by software or hardware networks and by voice services; it does not directly affect the access of the individual subscriber to the public network. However, the ability to be reached is as much part of universal service as the ability to originate a call. Thus, if ONA results in the emergence of a system of regionally specialized protocols of exchange carriers that preclude access to or from subscribers in other areas, then universal service is affected. This can be an argument for basic national standards, but it is also an argument for an even geographical spread of ONA-capable exchanges. Clearly, ONA will be implemented first and foremost in major business centers. If introduction to rural or depressed areas is slow, a further long-range differentiation in service spectrum from one region to another would become unavoidable. For many states this would not be acceptable on public policy grounds. They would want to have a say in any arrangement that creates an intrastate service gap that is not temporary. Other states may wish to design an industrial policy in which they differentiate themselves in telecommunications service capabilities.

Related to this will be the ability of small independent telephone companies to provide ONA interconnection. If the smaller independents are required to offer ONA interconnection, they may have to distribute their exchange services to larger independents or to the BOCs, and this reliance on subcontractors would reduce their role and their net revenues. States may therefore opt for a subsidy mechanism. Local choice should be encouraged.

The Need for Policy Coordination and Dispute Resolution

Coordination will understandably develop in the process of setting ONA rules. States will not leave this field because their problems concern services which they approve and tariff. Key to ONA is a system of dispute resolution to preclude unnecessary litigation. It is necessary to create an effective, fast-moving, broad-based, and independent coordination mechanism with undisputed legitimacy for all parties, including regional subgroups. There is room for regional bodies to support a national one which reflects the diversity of regions. Some common principles are in the interest of the states, since their policy goals could otherwise be undermined by competition to attract large users.

To some orderly minds any variation from uniformity is heresy. But total uniformity looks better on paper than in reality. A uniform system, like a convoy, moves at the speed of its slowest or most obstructionist participants. There can be value in inter-BOC rivalry: diversity can give impetus to innovation or efficiency, and economic rationality in a competitive system can lead to convergence and coordination even in the absence of regulatory requirements.

Uniformity is not equivalent to FCC preemption. Agreements among the states or between the state and federal levels can achieve the same result. Preemption should be used only after a solid evidentiary record establishes that serious nationwide harm is otherwise unavoidable.

Many states do not favor the existing Joint Board arrangement because it leaves the FCC in the driver's seat. They assert that local exchange is part of their traditional jurisdiction and therefore require parity at the least. A coordinating mechanism with a tripartite forum involving the FCC, the states, and industry could consider many ONA issues. Others could be delegated to two expert subgroups:

(a) An intergovernmental ONA forum of FCC and the states would be charged with coordinating jurisdictional policy interests. For example, it could define a hierarchy of uniformity, establishing basic functions whose national uniformity is essential and others where regional or local uniformity is desirable. Its conclusions would be certified by the FCC and the states for adoption, if the respective regulatory bodies so choose. Similarly, state regulators might be consti-

tuted into regional forums, again with FCC representation.

(b) A private sector ONA forum would include a balanced representation, including LECs, ESPs, equipment manufacturers, and large as well as residential users. This body would be responsible, in the first instance, for technical coordination, standards, BSE definitions, and dispute resolution. It would operate flexibly and informally rather than be bound by traditional regulatory process. Its agreements would be reviewed by the intergovernmental ONA forum and, again, certified to the FCC and the states for their possible adoption. If agreement is not reached within a specified and fairly brief period, an arbitrator would make a recommendation to the intergovernmental forum; the intergovernmental ONA forum could make a determination on issues of great importance instead of an arbitrator.

Outlook

Because major changes in U.S. telecommunications policy originated under a conservative political regime, they are often viewed as the product of American business interests. But recently, other industrialized countries have adopted similar policies or initiated discussions on such policies. Perhaps these changes therefore reflect more fundamental than transitory regime philosophy. These policy changes are part of a broad transition in public communications which the traditional notion of the public network—centralized, closed, and public spirited—is evolving into a new one that is decentralized, open, and privately motivated. This evolving network resembles a loosely interconnected federation of subnetworks, much like the system prevailing in transportation. Rules of interconnection and of access are critical in such an environment.

The telecommunications of the future will thus resemble the rest of our economic system. It will be more complex and perhaps less efficient than the old system, but it will reflect more accurately our underlying pluralist society.

Where does this leave future regulators? It would be naive to expect fewer regulatory tasks. Many disputes will probably become more regulatory in nature. Network pluralism raises many regulatory issues, including: protecting interconnection and access; the relation of telecommunications policy to economic development policy; regulatory treatment of telephone carriers in their capacity as mass media;

preventing oligopolistic behavior and cyclical instability; establishing new mechanisms for redistribution; and establishing global arrangements to match the global scope of networks.

The open network concept is one sensible contribution to this list, particularly for interconnection and industrial policy. In their capacity as mass media, ONA rules may require telephone companies operating integrated broadband networks to provide cable television companies with access to these telephone companies' facilities and bandwidths as a matter of right or to use their billing and collection for pay-per-view events. Similarly, an ONA regime would prevent oligopolistic behavior by lowering barriers to entry for newcomers. Opening the network could shrink internal sources for subsidy, thus raising questions about substitutes and redistribution. Finally, the openness of the network exemplified by ONA will not stop at the national borders. In the long run telecommunications will transcend traditional notions of full national, territorial control over electronic communications; they will become archaic just as national control over the spoken and the written word became largely outmoded in Western democracies.

Generalized interconnection is unavoidable. To defend centralism against the forces of pluralism is quixotic. Control of interconnection is thus a key element of regulatory supervision. To attempt policy centralization is thus to deny states any control of future telecommunications structures, an exclusion they are bound to dispute. Similarly, for states to fight the principle of open interconnection is to tilt at windmills.

The logic of ONA is the logic of federalism. If diversity and pluralism are the FCC goals — of services, competitors and options — it must also view pluralist policy approaches as sources of strength rather than weakness. If government noninterference underlies deregulation, the FCC should tread lightly on state exclusions and preemptions. To be result-oriented in seeking preemption is extremely shortsighted. Presidents and administrators, commissioners and policies come and go, but the balance of the federal system will continue.