Six Degrees of Competition: Correlating Regulation with the Telecommunications Marketplace

A Report of the Fourteenth Annual Aspen Institute Conference on Telecommunications Policy

Robert M. Entman, Rapporteur

with

Regulation: The Next 1000 Years

A Background Paper by Michael L. Katz

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Foreword

Clearly, telecommunications technologies and services have changed profoundly from the invention of the telegraph through the present day. Communications regulation, however, has progressed much less drastically. For much of the last century, the communications regulatory system—both by design and default—has maintained three types of asymmetries: geographic asymmetry, functional asymmetry, and competitive asymmetry. Today, each of those asymmetries is being called into question.

Geographic asymmetry in communications regulation occurs when laws vary across jurisdictions. It is a natural consequence of our three tiered regulatory system, where federal, state, and local regulators each have the authority to prescribe, interpret, and enforce rules. For example, a single telephone company may be subject to rather different regulatory regimes from state to state, and cable operators face different requirements from city to city.

Functional asymmetry occurs as regulators apply discrete rules to different modes of communications services, such as the varied regulatory schemes for broadcasting, cable television, and telephones. Thus, a cable channel may be regulated differently from a broadcast one, even though they look the same on the television set, and similar distinctions are arising from the delivery of telephony over various communications media.

Competitive asymmetries result when regulators apply rules differently to different groups of companies or consumers in the same business. The actions taken by regulators in the long distance market following the divestiture of the Bell Operating Companies from AT&T, for example, resulted in the imposition of different requirements on AT&T from its competitors.

At the time of imposition, each asymmetry has made regulatory sense. However, increased competition and technological convergence have called into question whether continued asymmetries continue to make sense in the new communications environment.

Competition for basic communications services exists in many cities and towns across America. In some geographic markets, consumers can choose between two types of advanced service providers—wire and cable—for two-way, reasonably priced, "always on" services. Increasingly, wireless providers and satellite companies are developing the capacity to provide business and residential customers with two-way services at reasonable prices. Over the longer term, we can expect that consumers will also utilize communications services via broadcasters or energy utilities.

As the Internet demonstrates, information increasingly can pass through the vast communications networks without regard to which media it uses to get to the end user. Nonetheless, communications regulation continues to be determined by the mode through which the bits flow. As the six formerly discrete technological pathways to the home become increasingly interchangeable, regulators are challenged to re-consider which types of services or service providers warrant similar regulation. They need to determine what the litmus tests ought to be for determining where asymmetries are warranted in communications regulation: geography, incumbency, essential facilities, market share, or some other criteria.

These questions are not posed in isolation. The Federal Communications Commission, for example, has an initiative, "A New FCC for the 21st Century," to fine-tune its mission and review its organizational structure in order to develop proposals for regulatory change. Academics and critics have also called for exploration of the proper regulatory structure for the new world of communications.

In this context, the Aspen Institute Communications and Society Program convened the Fourteenth Annual Aspen Institute Conference on Telecommunications Policy, August 15-18,1999, in Aspen, Colorado, to explore how regulation could be correlated to a competitive marketplace of converging technologies. The participants examined how regulation could best maintain asymmetries that are beneficial to society while eliminating asymmetries that no longer serve the public interest. Thirty-one government officials, executives of global communications and information companies, academics, and consumer representatives participated in the three days of sessions.

This report addresses the basic conceptual questions of what should be the nature of regulation in a competitive, broadband future. But, it also addresses the more immediate questions of the transition to the future,and how fundamental policy questions such as interconnection, mergers, spectrum allocation, jurisdiction, universal service, and consumer protection should be handled in the interim.

Although the report details these, and other, more specific suggestions, it is important to note that no votes were taken, and participants were not asked to sign any particular statements. Thus, the observations of consensus are those of the rapporteur and should in no way be construed as the statement of any particular participant or employer unless specifically noted as such. Furthermore, these suggestions, as in previous Aspen Institute conferences on telecommunications policy, are intended primarily to advance the dialogue and deliberation on these issues in other official and informal forums. We do not pretend to have the definitive answers, but rather, we seek to suggest models, options, and new ways of thinking about the important issues in this field.

Acknowledgments

There are numerous individuals whose commitment of time, intellect, and resources have made the Fourteenth Annual Aspen Institute Conference on Telecommunications Policy possible. First, we thank the authors of this conference report and essay, professors Robert Entman and Michael Katz. Robert Entman, conference rapporteur, has contributed to this year's conference, as well as to each conference in the 14-year series, in invaluable ways. In addition to his faithful representation of the meetings, his reputation for accuracy and neutrality has helped foster an environment where participants are comfortable engaging in honest and open dialogue. Michael Katz also deserves our sincere thanks, both for co-moderating the conference and for authoring the provocative background paper for the conference, reprinted here,"Regulation: The Next 1000 Years."

Second, we gratefully acknowledge the conference participants, whose names are listed in the appendix to this report, for their participation in the conference and for their follow-up afterward. We particu-

larly want to thank our sponsors, without whose generous support this conference would not have been possible: Ameritech, AT&T, Bell Atlantic, Cablevision Systems, Cox Enterprises, EDS, GTE, Intel, Intermedia Communications, NorthPoint Communications, SBC, Sprint PCS, Teligent, and U S West.

Finally, we thank the staff of The Aspen Institute Communications and Society Program for the respective roles they played in the development and production of the Conference on Telecommunications Policy and the conference report. Thanks to Beth Wachs, program associate, for developing the conference and overseeing the production of this report; Elizabeth Golder, senior program coordinator, for coordinating the conference; and Sunny Sumter Sana,publications manager, for coordinating the production of this report. We also thank the staff of the Aspen Institute publications office—Rebecca Weaver, publications manager, and Tyler Stone, graphic design specialist—and David Stearman, copy editor, for assistance in editing and producing the final report.

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Introduction

The Fourteenth Annual Aspen Institute Conference on Telecommunications Policy explored the contentious issues of regulatory symmetry and asymmetry in the telecommunications industry. The core question was whether regulatory policy should be harmonized so that all similarly situated providers are treated the same way. Assuming that symmetrical treatment is desirable, exactly how should regulators approach the task?

At the conference, one working group explored harmonization within transmission modes, under which all providers employing a similar mode would be treated similarly. Another group examined the achievement of harmonization by assuring equivalent treatment of functionally equivalent services (regardless of mode). The third working group asked, "How can there be any sin in asymmetry?" This group probed circumstances in which asymmetrical regulation remains the best option. The goal of this report is also harmonization: to bring coherence to a diverse and multidimensional dialogue.

Discussion of the working groups' informal reports revealed a considerable amount of concord among key players in the telecommunications policy community. Perhaps most noteworthy were the following general points of agreement:

- Policy should aim to generate widespread business and residential access to communications services by fostering competitive markets. Competitive communications markets have the following characteristics: no dominant provider and no essential facilities. Some participants suggested that competitive markets require at least four competitive providers of broad-

band voice, data, and video services. Registering the consensus on this basic vision of broadband competition, the Federal Communications Commission (FCC)—at the behest of the National Association of Regulatory Utility Commissioners (NARUC)—created the Federal-State Joint Conference to Promote Advanced Broadband Services in October 1999, which has roughly the same goal.

- Regulators should adhere to a "rebuttable presumption" against asymmetry. This presumption does not mean asymmetry is always undesirable; it only means that the burden of proof should be on those who argue against symmetrical treatment. Ultimately, however, the real goal is near-ubiquitous access to competitive broadband providers. Promoting that end can justify asymmetrical regulation in some instances. Indeed, what is asymmetrical regulation from one perspective could be regarded as a difference in treatment that helps establish equivalent restraints and opportunities for different market players, thus serving the ultimate purpose of symmetry. In other words, conference participants generally favored an approach that might be called "rationalized asymmetry": If competitive providers are treated differently, such distinctions should serve larger goals.
- Conference participants believe that a political settlement of disputes over symmetrical regulation between incumbent local exchange telephone companies (ILECs) and cable television operators is achievable along the following lines. ILECs would provide interconnection to their "essential" facilities (as assessed by criteria defined below) to other carriers, including cable and competitive local exchange carriers (CLECs), for both voice and data. In return, the cable industry—assuming no additional regulatory burden on cable operators—would drop its objection to freeing up the ILECs. The incumbents could invest in new facilities to compete against new entrants in markets such as video, broadband, and long distance, and these new services would be free of regulation. Discussants implicitly assumed that such an

agreement might break the paralyzing practice of competing by legislation and litigation that continues to hinder wide-open market competition and innovation, especially for residential customers.

- Conference participants proposed a new placeholder standard for determining exactly what unbundled network elements (UNEs) the ILECs would be required to provide when interconnecting. They dub this criterion the "E-pair" (as opposed to the 1996 Telecommunications Act's "impair") standard, on which more information follows.
- The accelerating trend toward merger and consolidation should be met, according to the general sentiment at the conference, with a more differentiated, calibrated antitrust response that incorporates all three levels of government as appropriate: federal, state, and local.

The remaining sections of this report describe more fully the aforementioned ideas, as well as other innovative propositions and contentious issues that arose throughout the conference.

Nirvana, Or How the World Ought To Look Once the Transition Is Over

Before conference participants explored regulatory symmetry, their first order of business was to articulate goals for public policy, as well as for the telecommunications sector as a whole. To gauge whether regulation is doing well, members of the communications policy community—business, government, public interest, and consumer advocates—must identify the ultimate objectives and enunciate a shared vision of the future. Participants agreed that during a transition period, regulation will remain a significant force in telecommunications markets. Government oversight will not simply go away; it will persist as a major factor for several years. Improving the design and operation of this transitional regulatory system was a chief concern of the conference.

From an end-user perspective, the key goal is to provide consumers with a choice of competitive suppliers and services. Considerable dis-

cussion at the conference indicated that residential consumers ideally should have choice of access from among at least four facilities-based providers offering service at approximately competitive prices. If this scenario were to occur, participants predicted, users would enjoy convenience and reliability of service,at reasonable prices. Other, more specific, goals for consumers would be having a wide choice of service level (fast or slow, a lot or a little) and ubiquitous access geographically—nobody would be left behind the information age. On a still more fine-grained level, conference attendees agreed that consumers would want the freedom to choose Internet sites without discrimination by the provider of access (i.e., deliberately slowing or blocking connections to some sites disfavored by the access provider). The latter point raises issues of market concentration and discrimination—matters discussed later in this report.

The desired goals from the provider perspective are somewhat different,though not necessarily incompatible with that of users. From the standpoint of providers, these goals all work to allow them the greatest opportunity to serve end users. These aims assume that all companies want to make money and maximize shareholder value. They also assume, most importantly, that the "essential facility" concept has been acceptably defined once and for all by government authorities.

Most conference participants seemed to feel that the most important regulatory puzzle to solve may be interconnection to incumbent local telephone networks on terms that are acceptable to all parties. If providers enjoy access to essential facilities on reasonable and equitable terms, the ideal world from providers' standpoints would look something like the following: Services would be arranged and priced according to bit rate and use rate, irrespective of the specific ways that customers utilize services or facilities. Firms would be allowed to earn a reasonable return on the equity investment needed to expand the scale and scope of their services. Beyond plain old (voice) telephone service (POTS), which may remain under regulation longer than the rest of the market, all firms should have regulatory flexibility if not complete freedom on "optional" services. Providers should be allowed to choose the delivery method they prefer to meet their

universal service obligations (if any). In the interest of competition and innovation and the closely linked incentive to invest private capital, government should strive to minimize the costs and risks that regulation imposes on telecommunications firms. By the end of the transition period, the major mechanism of government oversight would be antitrust regulation.

Conflicts between the ideal world from the perspective of users as opposed to providers could arise most significantly on matters such as exactly when specific regulations could be removed, and the scope of universal service obligations (for instance, how far beyond POTS should such obligations extend?). The ultimate vision of the world once the transitional issues are resolved, however, seems widely acceptable from almost any standpoint. As discussed at the conference, in such an ideal world business and residential consumers alike would enjoy vibrant competition for all services, with prices approaching cost. Competitive broadband video, voice, and data providers would be available in virtually all areas. Distinctions between local and long-distance service would vanish in such a regime, with the resolution of interconnection issues and the entry of ILECs into what is now called the long-distance market. Government policy would make no distinctions among transmission media. Offerings would be characterized by tiering and service quality differentiation to match diverse user tastes. With multiple means of access to broadband services, consumers would be able to move seamlessly between technologies.

In this environment, customers would predictably exhibit high satisfaction and high engagement with services, which would enhance investors' confidence that they could extend their activity without fear of an intrusive government role. To the extent that universal service needs remained, support would be channeled to individuals unable to pay because of low income or location in very high cost areas. All of this enhancement of economic efficiency would increase the availability of investment capital—creating a telecommunications market dominated by innovators, with advances in research and development quickly translated into new products.

Six Major Transitional Issues

Agreeing on nirvana was the easy part. Far more vexing puzzles arise in figuring out how to get there from here, particularly in how to determine and enforce the desired degree of symmetry in regulatory treatment—a calibration that would hasten the achievement of the ideal end state sketched above.

In general, most participants envisioned a five-year transition period, during which markets and regulators would jointly evolve toward more or less full reliance on competition to govern telecommunications markets, under a regulatory regime both minimal and harmonized (or at least rationalized) across services. At the end of this transition period, the FCC's mission would be restricted to enforcing certain limited rules of competition, spectrum management, and universal service/consumer protection.

State and local authorities would carry out analogous transition plans. States would operate under the federal transition framework, with regulatory activities limited to enforcement of competition rules, conflict resolution, and consumer protection/universal service. Thus, states might, for example, respond to consumers' complaints about local telephone services in areas offering little or no competitive alternatives. Local government activities would focus on the exercise of their local power over property (governing rights-of-way and the like) and consumer protection/universal service within their jurisdictions.

The FCC would coordinate with Congress in carrying out the transition plan, and seek new legislation where necessary. States and localities would act similarly with respect to their legislative authorities.

The working groups and the plenary sessions focused on six key transitional issues:

1. **Interconnection.** Here the emphasis was on breaking the current deadlock by brokering a deal between the two most powerful industry blocs: cable, long-distance, and CLEC firms on the one side and ILECs on the other.
2. **Mergers.** Concern about anticompetitive forces arising from rapid consolidation of firms in the industry led to consideration of innovation in antitrust policy.

3. **Spectrum.** Given the widely agreed goal of having four competitive providers of broadband access available more or less ubiquitously, the need for flexibility and innovation in wireless services became clear. The hope would be that providers of wireless broadband could become full-fledged competitors to wireline suppliers. This scenario would require regulatory adjustments in the treatment of spectrum.
4. **Jurisdiction.** The issue of harmonizing regulatory approaches across levels of government arose as participants assessed the risk of regulatory "balkanization," with conflicting requirements between federal and state jurisdictions, between different states, or between a state government and its localities. The participants made only slight headway on this problem.
5. **Universal service.** Deciding what universal service means in a broadband future, and how to pay for it, remain contentious matters. At least in theory, the latter issue is far less difficult than the former. Many policymakers argue that the current scattershot approach to universal service should be replaced with a system that is financed broadly but targeted narrowly: relying on general tax revenues and distributed according to individual need. Calculations of political feasibility, however, affect most peoples' perceptions of what actually can be done about universal service.
6. **Consumer protection.** In an end-state in which government imposes minimal regulation,many conference participants felt, there will still be a need for active government monitoring and consumer education to protect consumers and help them to participate fully in the benefits of market competition. In this view, antitrust activities alone may not be enough.

Interconnection and Cable-CLEC-ILEC Harmonization

Many issues will arise during the transition to harmonized, minimal regulation of highly competitive broadband markets. There is no way the conference could have considered, let alone solved, all of them.

Participants therefore focused on some of the most important and contentious issues, especially those surrounding differences in treatment of ILECs on the one hand and cable television operators and CLECs offering various combinations of video, voice, and data on the other.

Beyond the goal of achieving market-driven, minimally regulated telecommunications markets, participants generally shared a couple of other assumptions. The first assumption was that broadband infrastructure should be deployed as rapidly and as ubiquitously as possible. This goal informs all of the recommendations coming out of the conference. The second assumption was that the current, relatively *laissez faire,* regulatory regime for cable generally promotes that overriding goal. The nub of the issue, then, is how to move toward regulating ILECs in a similar way to promote competition in the range of services that cable and ILECs will be offering—but without prematurely jettisoning regulations necessary to that promotion of competition.

The basic goal here is to allow voice and data CLECs (and cable television systems acting as CLECs) to readily utilize the ILEC's local network, as envisioned in the 1996 Telecommunications Act. Thus, specific issues currently holding up many CLECs' ability to interconnect with the ILEC—such as implementing effective Operating Support Systems (OSS), local number portability, and others—will also need to be resolved. These latter issues were not explored at this conference, though they have been addressed in previous discussions of the Aspen Institute Conference on Telecommunications Policy series.[1]

The specific goal of the discussion that follows is to get beyond one of the most difficult conflicts between ILECs and their competitors: determining exactly what unbundled network elements ILECs must provide to those seeking to interconnect. Under the 1996 Telecommunications Act, ILECs are required to offer CLECs and other competitors access to unbundled service elements that, if not provided, would "impair" those other firms' ability to compete. ILECs argue that competitors have in some cases used this provision to demand access to elements that are both proprietary and unnecessary. Participants at the conference thus decided to adopt a placeholder standard, dubbed the "E-pair standard," in order to explore the issues that would emerge once the FCC adopted a final standard.[2]

The participants discussed the possible evolution of the "E-pair" placeholder standard into a broader federal policy that would strike compromise between ILECs and CLECs on interconnection. One of the participants suggested how this might work. Under a new policy, service elements that were certified as proprietary would not be subject to the UNE regime unless they were found to be *necessary* to the competitor's operation. This is a narrower standard than impairment,since petitioners can argue that the absence of almost any element they desire would "impair" their ability to offer exactly what they want. On the other hand, for service elements classified as non-proprietary, the ILECs would indeed be subject to the existing "impair" standard.

Using the "E-pair" placeholder standard to create compromise on interconnection between the ILECs and CLECs, the conference turned to consider the larger *quid pro quo* of substantial deregulation of the ILECs. For services requiring new investment beyond that necessary for the existing voice infrastructure, an ILEC would not be regulated, assuming it fulfills the requirements of Sections 251 and 271 regarding interconnection—as modified by the "E-pair" standard—along with the following additional stipulations. These conditions for regulatory reprieve were added for CLECs specializing in data transmission because the 1996 Act did not specifically contemplate the emergence of such firms. ILECs must provide access to unbundled local loops to data CLECs, allow collocation at central offices of data CLEC switches, provide local transport to the central office and the data CLEC switch, and provide digital subscriber lines (DSL) for data CLECs as long as the subscriber lines are already being conditioned for DSL by the ILEC in the area the data CLEC requests to be served. If the ILEC meets these requirements, it will receive the following deregulatory benefits:

1. No price regulation for advanced services.
2. No discounted resale requirements for advanced services.
3. No unbundling of advanced services (a change that will require an alteration in rules within the FCC's current statutory authority).

4. Deregulation of vertical services beyond POTS (e.g., call waiting and caller ID).

5. Deregulation of the business market.

Note that the foregoing list does *not* include permission for ILECs to offer inter-LATA (local access and transport area) data transmission. Assuming that ILECs fulfill the requirements of Section 271, they will be permitted to compete in the long-distance voice market; data carriage is another matter, however, which would properly be considered only after all of the other conditions are met. In addition, ILECs would continue to face regulatory oversight for their legacy investment, made under rate-base regulation, in local loops that remain "essential facilities."

For their part, cable providers would be freed of what they view as the threat of being treated as common carriers. The goal, according to Lisa Rosenblum, senior vice president of regulatory and legal affairs for Cablevision Systems, would be to assure the industry that companies could invest in cable under the existing paradigm that links control of content and transport (and implies First Amendment rights for cable operators). Lawrence Strickling, chief of the Common Carrier Bureau at the FCC, observed that the ability to exclude others' content is not necessary to assure cable operators' ability to provide the content they want. Rosenblum responded that she did not mean to imply a desire to exclude others, only to assert that the political tradeoff that cable expects is continued freedom from close regulatory oversight.

This very pragmatic trading of benefits and concessions was not without critics. Some participants argued that the 1996 Act already requires ILECs to provide interconnection on just and reasonable terms and that ILECs should not be promised any deregulatory sweeteners unless and until they comply fully with the Act as it stands. Dissenters also expressed fear that loosening the requirements on ILECs—even if limited to the E-pair idea—could pave the way for the incumbents to leverage what Strickling called their "privileged access to the loop." Some participants remained skeptical about both sides, fearing that deregulation could allow cable and ILEC systems alike to proceed as relatively closed systems, shutting out most other competitors.

Roger Noll, Morris M. Doyle Centennial Professor of Economics at Stanford University, argued that the proposed compromise would break the political stalemate at the cost of simply "dividing the pie" between two oligopolists (cable and ILECs), rather than maximizing competition across the board. Strickling and others pointed to the continued frustration of competitive carriers' attempts to obtain equivalent operating support systems, number portability, and collocation—all of which were mandated by the 1996 Act. Given this record, they argued, allowing ILECs to go unregulated could produce anticompetitive abuses. Several participants suggested that, at a minimum, the unregulated activities of ILECs should be located in separate subsidiaries, although this proposal did not receive careful scrutiny at the conference.

Steven Gorosh, vice president and general counsel of NorthPoint Communications, seemed to sum up the majority sentiment, however, by implying that the perfect is the enemy of the good. Although Gorosh admitted that the proposal might not fully assuage the fears of all categories of competitors, he argued that "opposing this settlement because it doesn't solve every problem is like saying, 'We're not going to pursue peace in Northern Ireland unless we solve the Palestinian problem.'" Gorosh's optimistic view seemed to sway most participants, especially when he reminded attendees that a half dozen bills before Congress would simply deregulate ILECs without any new protection for CLECs. As Joel Klein, Assistant U.S. Attorney General and head of the Department of Justice's Antitrust Division, noted, "Lots of people are willing to put a lot of money on the table, so they seem to believe they can succeed in a competitive market." In other words, most participants felt, given all the competitors knocking at the door, the proposed compromise seems worthy of risking re-monopolization.Should monopoly arise again, Klein asserted, it can be handled through antitrust or, failing that, by re-regulation.

There will be nettlesome transitional regulatory issues even assuming ILECs' good will and intense effort at satisfying the interconnection conditions. One of these important perplexities is line-sharing. Currently, the ILEC has to bear all of the cost and risk for maintaining a local loop even when a data CLEC wants to use only a portion of the line exclusively for

data. Such data CLEC firms don't want to buy the entire loop—only the portion sufficient for data. This problem could be solved by giving the data CLEC access to the entire loop, but at 50 percent of the normal price. Because this strategy presumably is only transitional, the implicit subsidy that might arise from such a price should not engender massive distortions. However, some ILECs may be unwilling to share in this way.

Another issue that obviously is one of considerable importance at the moment—though only briefly mentioned at the conference—is whether to require cable companies to provide other Internet Service Providers (ISPs) with access to cable's broadband facilities. Some participants suggested that symmetrical treatment entails imposing access requirements on cable as long as ILECs face such requirements. More participants, however, seemed to agree that subjecting cable to closer regulation would ultimately diminish competition by discouraging cable firms from investing in a speedy rollout of broadband.

Some participants asserted that private agreements between cable systems and other ISPs have been reached without government intervention. In the weeks after the conference, for instance, AT&T—poised to become the largest cable provider through acquisition of large stakes in several multiple system operators and in one of the two major cable broadband services (Excite@home)—was reportedly negotiating with ISPs to reach just such cooperative arrangements.[3]

The majority view was that too much symmetry (i.e., treating cable just like ILECs) can be a bad thing. Besides, these participants indicated, cable companies do not have domination over a bottleneck facility—the local telephone network—that ILECs enjoy. In the words of Alex Netchvolodoff, vice president for public policy of Cox Enterprises, "Cable doesn't have loops; it was built with venture capital, and all its new service since the 1996 Act has been based on risky investment." These were fighting words, of course. Frank Hatzenbuchler, vice president for pricing and regulatory strategy of US West, argued that the 1996 Act requires ILECs themselves to make risky investments in upgraded facilities and then, unlike cable, to offer competitors access to them. Effectively, Hatzenbuchler said, this requirement means that if the new services do not succeed in the market, ILECs are stuck with paying for the facilities by

themselves, but if the offerings succeed, ILECs must share the facilities with competitors—hardly a compelling incentive to make the investment.

There is little hope of getting cable and ILECs to see eye to eye on what constitutes equivalent regulatory treatment. These two behemoths might agree, however, that regulators should not necessarily seek "symmetrical" regulation—a condition that competitors may never perceive the same way. Instead, government should consciously balance policy issues, ends, and means to reach the ultimate goals. In other words, when officials implement seemingly asymmetrical rules, they should ensure a *rationalized asymmetry* that establishes equivalent competitive conditions—what has been called (perhaps too often) "a level playing field"—and promotes the availability of competitive broadband providers.

Assuming that a regulatory regime of the sort just suggested would in fact accelerate deployment of broadband infrastructure and high-speed residential access to the Internet, a positive reinforcement cycle could emerge. Under conditions of relatively slow deployment of broadband, growth in demand would occur at a lower pace than would be true if deployment intensified. (This analysis presumes a large pent-up demand among residences for high-speed broadband.) Acceleration of deployment will likely demonstrate the great demand and revenue potential in this market and draw in wireless providers. Absent clear demonstration of broadband's mass market appeal, various species of multipoint distribution services (MDS), personal communications services (PCS), satellite, and other potential competitors (including wireline electric utilities) will hesitate to invest. Once they see the appeal conclusively, they are more likely to make the investments required for broadband access to reach rural areas and for existing broadband providers in the city to face more competition.

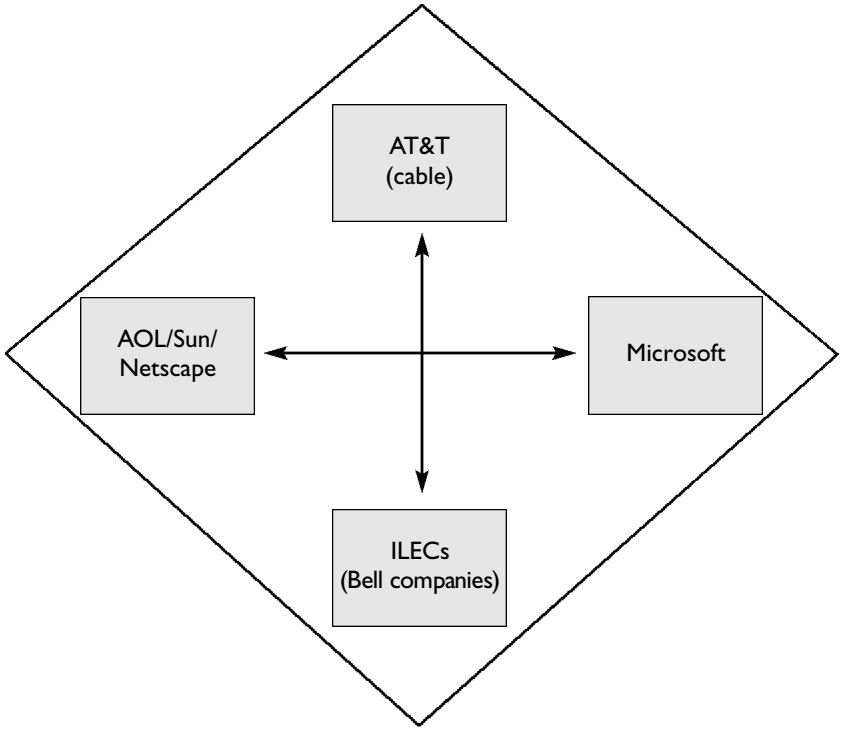
Mergers

It is possible to extrapolate from recent trends of merger and acquisition to a future in which telecommunications market structure is undesirably concentrated. There is a real possibility that one technology or two or three firms will dominate in the supply of broadband access. Fringe/niche providers will continue to be present

in almost any scenario, although if current trends continue, successful CLECs will be acquired by large firms rather than remaining independent. For example, recent acquisitions of TCG and MFS,[4] two competitive access providers, have eliminated strong competitors from the market and built investors' expectation of size—thereby creating a self-fulfilling pressure for consolidation. On the other hand, large size, deep pockets, and national reach all bring benefits to consumers as well as companies, so issuing decrees against corporate combinations makes no sense.

Robert Pepper, chief of the Office of Plans and Policy at the FCC, suggested a schema for understanding the alliances and competitive relationships among key players in the emerging broadband industry. He drew the following diagram:

STRATEGIC ALLIANCES IN THE BROADBAND MARKETPLACE



The basic idea is that AT&T—both historically and recently with its entry as the largest player in cable television systems—has been a natural antagonist of ILECs. At the same time, the alliance of Netscape/America Online (AOL) and Sun Microsystems pitted against the Microsoft empire forms another competitive relationship. With broadband, however, we see a scrambling of the dimensions, so that competition and cooperation are taking place across these axes. Thus, we see AT&T aligning with Microsoft against Netscape/AOL and the Regional Bell companies. Yet despite deep division over AOL's access to AT&T's broadband local cable facilities, America's largest ISP has been talking with AT&T about a cooperative arrangement—at the same time it has been negotiating with the Bell companies for broadband access via their DSL services. Furthermore, the major direct satellite provider, DirecTV, which is offering its own (currently inferior) species of broadband service, already has alliances with AOL and some Bell companies. There is great fear among companies that, as Pepper put it, "the other guy is going to take everything," and concern about the financial community's strong belief that whoever gets in the door first will win the most business. This situation is spurring new discussions and alliances among former antagonists.

Klein pointed out that any alliances are likely to be unstable and to continue shifting around the axes. The problem that this dynamic poses for traditional regulation is that the vertical axis is highly regulated, whereas the horizontal axis is,in Klein's words, "unregulated and unregulatable." To superimpose the old telephone regulatory model (the vertical axis of AT&T and the Bell operating companies) over a system in which strategic alliances are occurring between them and unregulated computer software and service companies such as Microsoft or AOL (the horizontal axis) could prove difficult at best. Even applying relatively less complex antitrust regulation could be problematic because combinations that might be regarded as anticompetitive on one dimension might promote competition on another.

Although conference participants had no solution to this conundrum, they did tackle issues involving clarification of antitrust regulatory review and jurisdiction. One large problem for policy at this point appears to be

the multiplicity of agencies that can review mergers, many with unclear authority or conflicting aims and criteria of review. The FCC, the Department of Justice (DOJ), state governments, and local governments can all enter the arena of antitrust review. With multiple jurisdictions, many incompatible pressures may arise. At the federal level, for example, the FCC's review standards appear stricter than DOJ's. Either of these federal agencies' activities may conflict with those of agencies in one or more states, and, of course, agencies in individual states can conflict with each other. State review may lead to conflicts with their own localities, or with those of other states. The list goes on. Conference participants explored the various levels of government review and discussed how broad the scope of intervention at each level should be. Participants agreed that the process should be rationally calibrated according to issues raised by individual mergers—blanket policies will not do, and differences among jurisdictions should be rationalized.

Most participants appeared comfortable with having some degree of state review. Such state review, however, does inevitably raise coordination problems. Michael Katz, Arnold Professor of Business Administration at the University of California, Berkeley, noted that FCC directives may conflict with those of states. For example, whereas the FCC may instruct Ameritech and SBC that they must have a national strategy compatible with broad federal policy objectives, states may demand that the merged entity promise to focus on their own (i.e., the states') particular needs. State standards of scrutiny can also vary widely. Bob Rowe, public service commissioner from Montana and chairman of the NARUC Telecommunications Committee, observed that some states use a "no harm" standard, whereas others require mergers to show "affirmative benefits"—a much stricter condition.

Nonetheless, participants generally regard state regulation as a valuable source of information and insight on the particular effects of mergers. As Rowe suggested, horizontal and vertical coordination—that is, coordination among states and between states and the federal level—is needed to reduce conflicts and ensure that antitrust regulation serves the ultimate objectives described at the outset of this report.

With respect to local government review, some participants argued that it should be confined to any effects on the core responsibilities of municipalities (e.g., digging up streets). Others, however, contended that the effects of merger on consumers, on the ability of a company (usually a franchised cable company) to fulfill its contractual obligations, or on local economic development also fall appropriately within local government's purview. The decision of Portland, Oregon, to demand that AT&T grant access to its cable broadband service to America Online is an example of such a local government intervention. Jane Lawton, president of the National Association of Telecommunications Officers and Advisors and cable administrator for Montgomery County, Maryland, argued that local government has a legitimate need to understand how a merger might affect business and residential customers. In particular, she stressed the requirement that municipalities understand whether a new owner has different priorities that might undermine existing contract agreements.

Noll remarked that each side was making partially valid arguments. Mergers in any industry certainly can have major effects on communities, he noted. Yet if two supermarket chains merge, they need not seek government approval in every locality—even though more consumer welfare is at stake in food prices, which devour far more of most households' budgets than telecommunications. Instead, localities are free to file their views with DOJ, which decides whether the proposed merger is anticompetitive. With regard to telecommunications—especially cable, with its numerous local franchise agreements—local governments often "push the envelope" as far as they can; if there is ambiguity in a franchise agreement, localities may push hard for concessions until courts or the FCC stop them.

Thomas Reiman, senior vice president for public policy of Ameritech, reported that because Ameritech owns cable systems, it needed approval for its merger with SBC from 85 cable franchising authorities. Localities could demand such concessions as a freezing of rates for five years, to protect consumers from any rate increases resulting from the merger. Some participants denounced such practices, in rather strong terms, as "exacting tribute" from merger partners. A local franchising authority also might

suddenly claim jurisdiction late in the process, at which point it can take months to get court review. Thus, Noll suggested, the federal concern for competitive national telecommunications markets should determine whether mergers occurs. Yet Noll and other skeptics acknowledged that clear evidence that a merger will harm the ability of a company to deliver its contracted services does justify a voice for local government.

Julia Johnson, public service commissioner from Florida, noted that her state takes a differentiated approach. The state defers to local governments on cable merger issues; for telephone companies, neither the state nor localities exert any authority to condition mergers, although Florida may file comments with DOJ and the FCC. This practice becomes more difficult, however, as distinctions between a "telephone company" and a "cable company" dissolve. Johnson observed that it would be helpful for states to know more about what kinds of information on a merger's potential impacts the federal agencies could use. Johnson thus suggested a solution for the disruptive jurisdictional conflicts over merger approval. States and localities enjoy the best position to assess a merger's practical impacts on actual markets. It would be prudent, therefore, if the FCC and DOJ, which have final authority to certify corporate combinations, would develop mechanisms to share information with state and local governments.

Although such a development would certainly help to reduce jurisdictional conflicts over merger policy, this area clearly needs more explicit attention from policymakers at all levels. As Deborah Lathen, chief of the Cable Services Bureau at the FCC, observed, the core policy of ensuring widespread broadband access could be frustrated by municipalities and therefore requires national authority. One question that demands priority attention, then, is what specific issues (if any) should be delegated to the states and localities for review. Another is whether the best practice would be to encourage these other levels of government to submit comments to the federal agencies but prohibit them from detailed review of mergers. Rowe's suggestion of a new forum that would focus on eliminating unplanned asymmetries in merger review seemed highly appropriate in this context.

Spectrum

Because it already seems clear that telephone networks and cable systems will be offering broadband in most places, the hope of obtaining less oligopolistic,facilities-based competition rests in considerable measure on wireless systems—which raises the issue of spectrum policy. The history of spectrum policy is not entirely happy. Many observers believe that the FCC's rules historically deterred competition because they were driven more by the goal of protecting incumbent spectrum holders than by a determination to allocate scarce spectrum to its most valuable uses. The FCC has made enormous strides toward correcting this bias, however, promoting competition and allowing markets to allocate spectrum.

Conference participants discussed two major issues of spectrum policy that will influence the emergence of more competitive broadband markets. The first involves the current allocation of large amounts of spectrum for digital broadcasting, although high-definition broadcast television appears to be a low-valued use for this amount of spectrum. In the year since digital broadcasting began, fewer than 50,000 high-definition sets have been sold.[5] Pepper argued,however, that broadcasters are not required to use their new spectrum allocations for digital broadcasting; they only have to use about 20 percent of their space for television. The problem is less a matter of regulation than the lack of creativity among broadcasters, Pepper alleged. Other participants said that broadcasters still feel they have insufficient flexibility. Judging from the discussion, it might be beneficial for the FCC to issue a definitive ruling that clarifies this matter and encourages broadcasters to consider alternative uses for the spectrum Congress granted them.

A second issue identifies a potentially beneficial asymmetry: prohibiting ILECs from acquiring scarce spectrum in their own regions of service when other firms might use that spectrum to compete against the incumbent. Some participants argued that any such prohibition should apply with equal force to cable companies because the public would not be served by having either entity dominate spectrum. In any case, the discussion did not suggest preventing cable or ILECs from possessing any spectrum—only ensuring against either or both generating undue market power by controlling a potentially competitive

facility. All of this analysis is subject to the rebuttable presumption against asymmetry. If one or two firms are seeking to use part of the spectrum to compete against incumbents with market power, that circumstance might justify an asymmetry. If this were not the case, asymmetric rules might not be justified, and cable or ILEC firms would be free to acquire spectrum in their own areas.

Jurisdictional Symmetry

The federal system always contains the potential for undesirable or beneficial distinctions in regulatory policy. The potential for state or local government actions that conflict with federal policy has been a continuing concern of the Aspen Institute Conference on Telecommunications Policy series from its beginning. Considerable progress has been made since the earliest gatherings (in the mid-1980s). For one thing, state and local regulators have generally come to see the advantages, or at least the inevitability, of competition largely replacing regulated monopolies. For another, the 1996 Telecommunications Act, as well as joint federal-state boards and other forums, have provided impetus and means for harmonizing regulation. Nonetheless, conflicts are inevitable.

Beyond conflicts cited in the discussion of merger policy, another example is the pricing of local collocation, loop, and transport, which are within states' jurisdiction. State control raises a problem for broadband that was not foreseen in the 1996 Act (at least from the FCC's perspective): Although DSL is an interstate service, the FCC cannot set prices related to DSL. On the other hand, the state perspective, voiced by Rowe, rejects any claim that DSL is inherently "interstate." Such a stance, Rowe said, clashes with how networks function and are built, as well as with previous FCC approaches. As a result, the FCC's DSL decisions are on appeal. This conflict could be remedied via federal legislation. Until it is,there is a real possibility of continued jurisdictional friction and unplanned regulatory asymmetry.

A second example of jurisdictional asymmetry is the vast variety in tax and fee policies across states and localities with respect to cable and telephone companies. Creating equal competitive positions requires that

these policies be somehow harmonized or rationalized. One mechanism would be to set license charges, taxes, and fees owed to local and state government by cable and telephone at the same percentage of revenues for like services. Balancing municipal and county charters and codes—including the fees they set—with federal telecommunications goals is not a straightforward task, however, because local governments have larger legislative roles (including overseeing rights of way) that neither state utilities commissions nor the FCC have, as well as mandated public processes they must follow. Here again, then, there is potential for asymmetry that does not arise from careful policy analysis.

Envisioning how to resolve such problems is not easy. Federal preemption is one perennially popular option, at least with some people. Its political feasibility, however, is questionable—not to mention its legitimacy and desirability. More realistic may be the hope of *minimizing* rather than eliminating incongruities between regulatory jurisdictions, via legislation and through forums that enable officials from different levels of government to exchange information and ideas for solutions.

Universal Service

Universal service has been considered annually throughout the Aspen Institute Conference on Telecommunications Policy series. One reason is that participants from industry, government, academia, and consumer groups almost unanimously endorse the goals embodied in that term. Another reason, however, is that many participants see the current regime of universal service as a significant barrier to full development of competitive markets and diffusion of new technology and services. As has been true at so many previous conferences, most participants at this year's conference agreed that the fix requires that universal service subsidies be targeted only to individuals in demonstrable need and that, ideally, funding for subsidies be drawn from general tax revenues. Almost everyone also believes, however, that relying on broad-based tax revenues is politically infeasible, so the issue becomes determining a viable second-best approach to funding.

Participants at previous conferences have considered more thoroughly exactly what services or functions ought to fall under the universal service mandate and how to decide on these inclusions as the information revolution progresses.[6] One element discussed this year was minimizing asymmetries in funding obligations placed on carriers and avoiding, if possible, asymmetries between carriers eligible to receive universal service subsidies and those required to contribute to universal service funds. Participants generally seemed to agree that all carriers should, to the extent practical, contribute to universal service funding. Thus, for example, if ISPs were to become eligible to receive universal service subsidies,they should also be required to contribute to the fund. Although this approach is far from using general revenues to support universal service, it would broaden the base of funding, promote competitive neutrality, and reduce pricing distortions in any one or two sectors of the industry.

Kathryn Brown, chief of staff for FCC Chairman William Kennard, reported that FCC policy seeks the broadest based funding possible.On the other hand, Brown added, "We won't go to 'food stamps' for telecommunications," even if a kind of voucher system might be the most economically efficient alternative. She also noted that funding of individuals may remain politically out of reach,so universal service will likely continue to involve funding of rural and low-income areas rather than funding of individuals, schools, and libraries.

The question, then, would be how to accomplish universal service goals in an equitable and technology-neutral manner. Despite some participants' pleas for targeted subsidies—funded by general federal or state taxes—to specific individuals in need, Mark Lloyd, executive director of the Civil Rights Forum on Communications Policy, observed that universal service remains "a political problem" that will not yield to efficiency reasoning. Thus, this year's conference made little progress in determining how to improve the funding and distribution of universal service subsidies. Nor did the gathering explore the issue of updating universal service, beyond observing that demands and needs for support are likely to change as broadband service moves from exotic luxury to commonplace and perhaps to near-necessity over the next few years.

Consumer Protection

Several issues were raised in a working group session that arise from the consumer or local government perspectives. These issues were not much discussed in plenary session, nor were they resolved, but they do suggest the range of problems confronting policymakers. For example, several participants cited the bundling imposed on residential customers, whereby pricing sometimes makes obtaining services that fit individual consumers' needs at the lowest possible price all but impossible. Thus, people who want only HBO, for example, typically are forced to subscribe to regular (nonpremium) cable or satellite service. One participant observed the irony of companies that are pressing for unbundling of service components with regard to their own purchases (from ILECs), yet require bundled purchases on the part of the retail customers they are serving. For their part, firms argue that such "forced bundling" is hardly unique to the telecommunications industry. People cannot purchase just one hot dog at the supermarket, nor can they subscribe only to a newspaper's sports section, even if they never crack the news pages. Firms gain real and often considerable savings by bundling, and passing these savings along allows firms to satisfy the greatest number of consumers.

A tangentially related issue has to do with ensuring access to advanced services in commercially "less attractive" areas (urban or rural). The absence or serious delay of ubiquitous deployment for all potential users could have severe repercussions in unserved areas. The consequences of slow and uneven rollout go far beyond mere inconvenience and frustration. Many small businesses located in urban neighborhoods that are low income and relatively unattractive marketing targets cannot obtain broadband access today, even as their competitors in more upscale areas can. Of course, the problem also exists in high-cost, low-density rural communities.

Small businesses attempting to compete with larger firms that have broadband access can exploit the many and explosively growing opportunities of electronic commerce (e-commerce). Being limited to dial-up modems severely constricts the prospects of smaller operations, however. For example, a Denver printing firm with seven employees finds it difficult to compete against companies that have broadband and thus

can offer customers the ability to send large files via e-mail for direct printing.[7] A phone modem that takes 20 minutes to download a brochure, often unreliably, is no match for a high-speed connection that can convey text and pictures perfectly in seconds.

The country may thus face a digital divide among businesses, which could heighten pressures toward corporate consolidation across the economy. Moreover, there is the potential of increasing social stratification that arises when consumers who live in some neighborhoods enjoy the advantages of broadband while others must wait for years. This access allows the more fortunate to pull further ahead in school, in their ability to make informed consumer and investment choices, and so forth.

Government fixes for uneven rollout of broadband are difficult to envision,however. For example,if a broadband platform is not available to an area, how could another be required to serve as a substitute? If DSL via ubiquitous phone lines is not offered in an area, for whatever reason, should government require that another broadband provider establish such service? How long should government officials wait to determine that the delay in bringing DSL has been "too long," so that such a requirement must be invoked?

Perhaps the most important thing that government officials can do is to make policies that encourage rapid diffusion of technologies that enable broadband access—precisely the agreed aim of the conference. Geographic disparities in availability of broadband may turn out to be limited to a few exceptional areas, if policies suggested herein are successful in unleashing companies seeking to offer broadband wherever they can do so profitably. For the remaining areas, universal service policies may be required.

Conclusion

This year, as in past years, more questions emerged than answers, more problems than solutions. Participants generally appeared to believe, however, that there is a realistic chance to reduce if not eliminate regulatory anomalies and conflicts that have stymied or delayed the diffusion of competitive broadband technologies. Key to this goal initially will be getting ILECs to provide interconnection as envisioned

in the 1996 Telecommunications Act. Once competitive providers of voice and data take firm root in the marketplace and ILECs then join the long-distance fray while being freed of most regulatory burdens for new investment, the floodgates should open, and competitive broadband should begin moving swiftly.

One development that occurred after the conference lends credence to the idea that competitors are enjoying some success at cracking the local market: The Chair of the New York Public Service Commission, Maureen Helmer, announced on October 19, 1999, her support of Bell Atlantic's application before the FCC to begin offering long-distance service. The FCC followed with approval of the application on December 22, indicating its belief that the company has fulfilled the 14 "checklist" requirements for opening the local exchange to competitors contained in the 1996 Telecommunications Act.[8] Although AT&T and Covad filed suit to block Bell Atlantic's entry, the company did begin offering long distance service in January 2000. The outcome of these legal actions could not be foreseen.

Indeed, irrespective of ILECs' compliance with the checklist and entry into long distance markets, the demand for broadband may be intense enough to speed up rollout. According to one estimate, the numbers of households enjoying broadband access will soar from 700,000 in 1999 to 14.7 million in 2003. By then, broadband will be available to approximately 80 percent of U.S.households.[9] Supporting this vision, in October 1999 SBC Communication—the single largest provider of local telephone service (owning, upon its merger with Ameritech, one-third of U.S. access lines)—announced "Project Pronto." This plan seeks to speed SBC's rollout of DSL to make DSL available to 80 percent of SBC's customers by 2002 and to earn $3.5 billion in new annual revenues from this investment.[10]

Of course, these projections are subject to wide margins of error. A more pessimistic observer might suggest that these projections assume a friction-free diffusion process and that those doing the calculations neglect regulatory considerations that could impede firms' ability to respond to the demand. If some of those issues could be addressed as suggested at the conference, however, the projections do imply that competitive broadband providers may indeed be serving many millions of businesses and residences throughout the country within five years.

Notes

1. See Robert M.Entman, *Residential Access to Bandwidth: Exploring New Paradigms,* a report of the Thirteenth Annual Aspen Institute Conference on Telecommunications Policy (Queenstown, Md.: The Aspen Institute,1999), pp. 8–13.

2. Sec. 251(d)(3) reads: "In determining what network elements should be made available for purposes of subsection [of Sec. 251](c)(3), the Commission shall consider, at a minimum, whether--(A) access to such network elements as are proprietary in nature is necessary; and (B) the failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer."

3. "AT&T Keeps Stretching Cable," *Interactive Week* (October 11,1999), pp. 7–8.

4. AT&T completed acquisition of TCG on July 23,1998. Worldcom acquired MFS on December 31,1996.

5. "HDTV: You're Not Going to Like this Picture," *Business Week* (October 25,1999), p. 50.

6. See Entman, *Residential Access to Bandwidth,* pp. 16–23.

7. See "On the Wrong Side of the Wires," *USA Today* (October 11,1999), p. 1B.

8. "In the Matter of Petition of New York Telephone Company…" Comments to the Federal Communications Commission in Docket 99-295.October 19,1999.

9. "Faster, Faster, Faster: Companies Are Giving Net Users What they Demand:Speed," *Business Week* (October 18,1999), pp. 191–94.

10. Focus:SBC Unveils $6 Billion High-Speed Web Plan," Reuters (October 18,1999).

Regulation: The Next 1000 Years

Regulation: The Next 1000 Years[1]

by Michael L. Katz

I. Introduction

Historically, the application of U.S. telecommunications policy has been conditioned on a variety of characteristics of the regulated entity. For example, a "telephone company" offering a residential high-speed data service is subject to different requirements than is a "cable company" offering a similar service. An incumbent local exchange carrier is subject to different interconnection requirements than is a new entrant. And a local exchange carrier in San Francisco, California, is subject to different rules than is one in Aspen, Colorado.

Dissimilar treatment of service providers raises several potential problems. One set of concerns arises in markets in which multiple suppliers actually or potentially compete against one another.[2] The fundamental concern is that, unless all suppliers are treated equally, regulation—rather than the ability to satisfy consumer demands efficiently—will determine which suppliers prevail in the telecommunications marketplace. The results may be lower quality, less innovation and investment, and higher costs and prices. This issue arose, for example, with the regulation of AT&T as a dominant provider in the market for domestic long-distance telephony. One of the Federal Communications Commission's (FCC) motivations for ending this treatment of AT&T was the concern that regulation artificially handicapped AT&T and weakened competition.[3]

Convergence—the process whereby firms use versatile distribution technologies to operate in multiple areas that were previously considered to be distinct industries—increases the old challenges faced by regulators.[4] It also creates new challenges. To the extent that convergence leads to increased competition, convergence increases the possibility that asymmetric regulations will distort market outcomes. Moreover, to the extent that convergence leads to competition between suppliers who formerly did not compete with one another and have been subject to different regulatory regimes, convergence means that the various regu-

latory regimes will have to be reformed and harmonized or else run the risk of creating distortions.

A second set of concerns arises from regulations that vary by geographic region. One question that arises when policy varies by jurisdiction is whether one area must be "right" and the other "wrong." Rather than address that issue, however, my interest here is in the issue of whether the variety itself is costly or beneficial. The main argument against variety is as follows: Geographic economies of scope and network effects make it profitable and efficient for providers to span local and state jurisdictional boundaries. For such providers, compliance with a single set of rules is less costly than compliance with multiple rules. Moreover, there are likely to be economies of scale and scope in the policy creation process as well. Loosely speaking, one national proceeding can replace 51 proceedings in the states and the District of Columbia.

This discussion does not imply that all service providers should be subject to exactly the same regulatory requirements throughout the nation. First, suppliers differ in their market positions—often as the result of past regulatory asymmetries—and current regulations should reflect these differences to ensure that no supplier prevails as the result of unfair advantages or the inefficient exercise of market power. Second, there may be reasons to tailor rules to local conditions. There may also be more subtle reasons for the differential treatment of firms.

The remainder of this paper is organized as follows. Section II addresses two preliminary issues that many people may not consider to be issues at all: (1) terminology, and (2) arguments for treating similar providers dissimilarly. Section III examines and compares alternative approaches to harmonization within a given geographic area. Section IV addresses the question of the geographic scope of harmonization. Finally, Section V outlines several scenarios as a means of identifying future areas in which harmonization decisions will be important.

II. Preliminaries

This section addresses two preliminary issues to set the stage for the later analysis.

A. Is It All Semantics?

It is useful to begin by framing the discussion more rigorously than many readers will find sensible. This approach clarifies that the issue is *not* whether all telecommunications suppliers should be subject to the same regulatory rules. Subjecting all carriers to the same rules can be accomplished trivially through labeling. The real issue is the extent to which the common regulatory rules should take into account various supplier characteristics in determining which supplier actions are discouraged and which encouraged.

A bit of notation will help clarify matters. Let A_i denote the actions that supplier i is allowed to take under the regulatory regime. That is, public policy constrains the firm to choosing its actions from the set A_i. A_i could include everything from prices, to investments, to the content of any messages that the supplier sends to the public. For example, rate-of-return and price cap regulation specify sets of allowable prices. In the case of rate-of-return regulation, the allowable prices are related to other actions taken by the firm—notably its investments and expenditures on inputs.

The set of actions that supplier i is allowed to take typically also depends on certain characteristics of the firm (e.g., the supplier's market share for some service). Let ω_i denote the characteristics of firm i. Formally, the regulatory regime can be represented as the requirement that firm i is restricted to choosing actions in $A_i(\omega_i)$.

Notice that one can always choose a large enough set of characteristics that the same fundamental regulatory regime, $A(\cdot)$, applies to all providers.[5] Thus, the issue is *not* whether the same rule applies to all suppliers. The issue is what form that rule should take. In other words, which characteristics provide a useful basis on which to determine the allowable set of actions? Which telecommunications provider characteristics are of regulatory relevance?

For those to whom this is all Greek, an analogy to employment discrimination may be helpful.A requirement that the same rules apply to all employees would not be enough to prevent what many people would call discrimination. For example, suppose a firm adopted the rule that any employee—man or woman—who gave birth would be fired. The

same rule would apply to all employees without regard to sex, but it clearly would not have equal effects on men and women. The question then is not the uniformity of the rule; the question is which individual characteristics are admissible bases for a rule.

Returning to telecommunications regulation, ω may, in principle, refer to supplier characteristics along many different dimensions. One possibility is a set of regulatory labels (e.g., whether a given service provider is a "local telephone company" offering video services or a "cable company" offering video services). Another set of characteristics on which to base regulation is the provider's current market position (e.g.,its market share or whether it owns critical network assets).A particularly contentious issue is whether market position in one market (e.g., local wireline telephony) should be taken into account in determining allowable actions in another market (e.g.,information services).

The bulk of this paper concerns how to identify which differences among providers and services merit differential treatment by regulators and which do not (i.e., which elements are legitimately and usefully included in ω). Before turning to that debate, however, I want to note that there are arguments for disparate treatment of suppliers that are *otherwise identical*.

B. Arguments For Regulating Similarly Situated Suppliers Differently

There are at least three reasons why treating similar providers differently from one another might be socially beneficial.

1. *The marginal social costs of extending a policy to all providers in a market may exceed the marginal social benefits.* The balance of costs and benefits of any regulation will shift with the parameters of that policy. Hence, there is a question of how far to push the policy—the regulatory margin. With price ceilings, for example, tighter regulations might improve short-run pricing, but they also might artificially discourage investment. If that is the case, a tradeoff has to be made. There are at least two dimensions along which to make this tradeoff. Policymakers could choose to regulate all carriers equally and set the margin in terms of the stringency of the common price ceiling. Alternatively, the policy mar-

gin might be the number of carriers on which the ceiling is imposed. Under some circumstances, significant costs can be avoided by regulating only a subset of the providers in a market. At a minimum, exempting some carriers from price regulation saves the costs of monitoring and approving the prices of the unregulated firms. Moreover, even if only one firm is subject to a mandatory price ceiling, other firms may be forced to price similarly low because of competition from the regulated firm.[6]

The issue of whether the "last miles" of data networks should be open or proprietary is another important current debate in which the policy margin is the number of carriers to whom the regulation applies. For the sake of argument, suppose that cable modems and various types of digital subscriber lines (DSL) will be very close substitutes for one another and that there will be no other significant sources of competition. Should one or both of these systems be forced open? Open systems have the virtue of allowing competition at other stages in the value chain (e.g., Internet service providers and portals) even if there is an access network duopoly. The potential social cost is diminution of investment incentives. One might conclude that the benefits of an open system are greater than the costs if one system is opened but that the marginal benefits of opening a second system are less than the marginal costs.[7] If this is the case, it may be economically efficient to force one system open and allow the other to be proprietary, even if the systems are otherwise identical.[8]

2. *Different rules allow for experimentation and regulatory learning.* Applying different regulations to different providers may allow policymakers to gather additional information about what works and what does not. This sort of experimentation may be a particularly useful approach during times when technologies and market structures are changing rapidly and there are no clear "right" answers.A danger with this approach is that it creates competitive distortions that both generate efficiency losses and contaminate the results of the experiments. This fact sug-

gests that experimentation is most useful when the variation can be applied across distinct markets, which avoids the danger of distorting competition. I will return to this point below in my discussion of geographic heterogeneity.

3. *Leaving some suppliers unregulated while regulating others creates market-based observations and safety valves.* In a sense, this argument is a variant of the previous one. Nevertheless, it merits emphasis through separate consideration. When some suppliers are unregulated, their behavior can help generate insights into the (possibly unintended) effects of regulation. For example, if policymakers observed that the unregulated firms had higher levels of investment and innovation, this pattern might indicate that regulation was stifling otherwise beneficial activities. Such an observation might thus trigger a redesign of regulation or a reassessment of its costs and benefits. An observation that the unregulated firms were gaining market share would be especially noteworthy because it would tend to indicate that unregulated suppliers were better meeting users' needs and desires.

III. Overarching Philosophies

This section turns to broad questions about when heterogeneous suppliers should be treated similarly and when they should be treated differently. As the discussion in Section II.A makes clear, this question can also be posed as follows: What provider characteristics are relevant in determining how public policy should constrain or promote specific actions by a telecommunications provider?

A. When the Same?

If one were designing a green-field regulatory system, one could start with the principle that all providers should be treated equally (i.e., provider characteristics are not regulation relevant) unless there is an affirmative reason to treat them differently. Policymakers are not starting from scratch, however. Even within traditional industry boundaries there are

instances of asymmetric regulation. Moreover, convergence has dramatically increased the extent of asymmetries among competitors by creating head-to-head competition among firms subject to largely separate regulatory regimes. Hence, it is useful to develop principles to guide regulatory reform and set priorities for achieving harmonization. Such principles can guide the determination of when differential treatment is a source of social costs and when it is inelegant but largely inconsequential.

At least two broad approaches can be taken toward promoting uniform treatment of telecommunications providers.

Service harmonization. Under this approach,any two providers of the same service are treated similarly. Of course, one must address the issue of what constitutes the *same* service. This question can be answered properly only by taking into account the fundamental rationale for service harmonization: to avoid distorting competition and thus generating efficiency losses. Therefore, two services should be considered the same for these purposes if they compete with one another. Issues of competition are central to antitrust policy, and there is now a fairly well established methodology for determining whether two services compete with one another. In short, this approach states that two providers are offering the "same" service if potential buyers consider the two offerings to be close substitutes for one another.[9] This approach is intuitively sensible: When users are willing to switch among various providers' offerings, regulation should not distort those choices.

Medium harmonization. A second approach bases harmonization on the nature of the transmission medium. Under an extreme form of this approach, any two services transmitted over fiber optic cables would be treated equally, even if they were otherwise very different. Similarly, any two services carried over terrestrial microwave would be treated equally regardless of what the services were.

The rationale for medium harmonization is that monitoring the services being offered over a given transmission medium can be very difficult, particularly as various types of message are reduced to packets of digitized information. This point is often summarized as "a bit is a bit."[10] When regulators cannot easily determine which service is which, there is an incentive for providers and users to engage in *regulatory arbitrage*

by labeling traffic according to whatever service receives the most favorable treatment.[11] A variant of this problem arises in the pricing of local telephone network services. Although local calls on an incumbent carrier's network, long-distance calls, wireless-to-fixed calls, calls to Internet service providers, and entrant-to-incumbent local calls all place very similar demands on the incumbent's local network,they have been subject to very different regulatory regimes, particularly with respect to pricing. This situation has led to endless (and at times bizarre) debates about how to classify a given call. Had medium harmonization been in place, many of these problems would not have arisen.

One difficulty with medium harmonization is that one must confront the question of what defines a "medium." Are direct broadcast satellite television, cellular telephony, and terrestrial microwave data all examples of a single wireless medium? Or is satellite wireless different from terrestrial microwave? Is cell-based mobile wireless different from point-to-point? Based on the rationale for this approach, one could try to fashion a definition on the basis of monitoring costs and regulators' abilities to enforce policy distinctions among services offered over a given medium. Under such an approach, satellite, cellular, and end-to-end terrestrial microwave would be distinct media because regulators could easily monitor which one was being used for a given application. Wireline and hybrid technologies would very likely pose more problems. What classification is appropriate, for example, when a single message travels via copper, fiber, and terrestrial microwave and at times is in packets?

What constitutes a "medium" depends on how hard policymakers look. In choosing how hard to look, policymakers should balance the costs of making finer distinctions among media against the benefits. In some cases, it might be worthwhile to incur expenses to monitor provider behavior and make distinctions among component media that might at first glance appear to be a single medium. The earlier example of various services transmitted over local exchange networks is instructive in this regard. As a general matter, competitive and market conditions for two services can be very different despite the fact that the ser-

vices are offered (at least in part) over the same medium. These varying conditions may make differential regulation of the services socially beneficial.[12] For example, demand conditions might be very different, and charging prices that reflect these differences can be efficient.[13] Similarly, because the services reach different audiences, policymakers might want to regulate the content of digital broadcast television differently than the content of data services that use the same spectrum.

In closing this discussion of harmonization principles, two points about the relationship between service harmonization and medium harmonization are worth noting. First, medium harmonization can cut across *services* offered by a single provider, whereas service harmonization is applied across *providers* offering a single service. Second, although service harmonization and medium harmonization have different rationales, they are not mutually exclusive. Indeed, I argue below that policymakers should pursue both approaches.

B. When Different?

Providers in a given market often differ from one another. When, if ever, should these differences lead to differential regulatory treatment?[14] Because avoiding competitive distortions is one of the principle rationales for harmonization, a natural approach is to focus on whether providers differ in ways that may matter for competition. Of course, simply finding that one provider has a superior competitive position to another is not a reason to subject the providers to different regulations. A superior position today may reflect past investments and innovations. Moreover, policymakers must be careful not to punish providers for past successes because doing so would create future disincentives for providers to lower their costs or offer services consumers value highly. Thus, policymakers should apply more stringent or costly regulations to a particular firm only when its market position indicates that it has the incentives and ability to behave in ways that are contrary to the public interest and there is a reasonable chance that intervention will improve matters.

Antitrust policy deals with this issue by generally limiting its application to firms that have significant market, or monopoly, power.[15] With

regard to the economic regulation of telecommunications distribution networks, it can be useful to focus on "bottleneck assets" or "network choke points" as sources of market power.

One approach to asymmetry is to subject one service provider to more stringent regulatory restraints than other providers only if the firm in question controls bottleneck assets. Asymmetric control of bottleneck assets might justify asymmetric application of retail price regulation, for example. Alternatively, when the bottleneck assets are specific network facilities, the owner might be required to share those facilities with rivals. This sort of thinking underlies interconnection and network unbundling requirements currently placed on incumbent local exchange providers. In these examples, regulatory requirements are imposed specifically on service providers with bottleneck assets—either to prevent the socially costly exercise of market power or to facilitate competition that will limit market power.[16]

If one is going to base policy on bottleneck assets, then it is important to have precise and well-grounded conception of what constitutes a bottleneck asset. For discussion purposes, I offer the following (imprecise) definition:

> *Bottleneck Assets:* Assets that: (a) are critical to competitive success; (b) are possessed by very few providers and cannot readily be obtained; and (c) were not acquired by those who possess them solely through past "hard work."

The requirements that the assets be critical to competitive success and in limited supply are intended to ensure policymakers do not intervene in cases where there is, in fact, no problem. The third part of the definition may be the most problematic because it is the fuzziest and thus the most difficult to apply in practice. It is intended to remind us of the need to deal with the investment incentive issue. Suppose a firm owns assets that meet conditions (a) and (b). Moreover, suppose the firm has obtained its current market position solely by making significant, risky investments in the past that other firms could have chosen to make but did not. Under these circumstances, a policy that declares the assets to be bottlenecks and forces the firm to share them with rivals could discourage future investments. Thus, there may be a public inter-

est in allowing the firm to enjoy at least some monopoly profits as a return on its investments. Of course, there is nothing particular to telecommunications about this logic. Indeed, it is one of the rationales behind patent policy.

The need to consider how bottleneck assets were obtained requires an examination of provider histories in addition to their current market positions. Many industry observers have expressed the view that incumbents should be forced to open their networks or meet public service obligations to compensate for past governmental protection from competition or for other forms of public assistance. But,should the past regulatory regimes faced by local exchange carriers, cable companies, and broadcasters matter today? One basis for an affirmative answer that builds on the economic logic above is that investment incentive effects are unimportant in such cases because providers are not being punished for doing well. Instead, they are "paying back" the public for past assistance. Whether one concludes this argument is valid depends, in part, on how one comes out on deep issues of the nature of the regulatory contract between policymakers and service providers. For example, what rights come from ownership of facilities that were constructed under a monopoly franchise?

The concern for investment incentives also suggests that a key characteristic to examine in violating regulatory symmetry would be forward-looking investment needs of various providers. For example, AT&T has argued that it needs to make tremendous investments to offer two-way broadband services over cable plant and thus should be allowed to have a closed system. Local exchange carriers have made similar arguments with respect to DSL services. If policymakers were to decide to mandate only one open system, they might do so by comparing the incremental investments that will have to be made by the two types of networks, among other factors.

Stepping back to consider the issue more broadly, one question that policymakers face is whether there is a need for telecommunications regulation beyond general antitrust and consumer protection policies that apply to all sectors of the economy. Some commenters have argued that there is not. Other commenters have argued that telecommunications policy should go

much further than antitrust policy and foster competition by actively favoring new entrants and small incumbents. Requiring an incumbent provider to interconnect with an entrant on highly favorable terms would be one example of such a policy. The ill-fated auctions for C-block personal communications service (PCS) spectrum licenses were another attempt.

Supporters of this argument for regulatory asymmetry must answer the central question of why there is a need for an affirmative policy beyond reliance on market forces coupled with standard antitrust prohibitions on behavior harmful to competition. One might argue that entry should be actively encouraged because the private benefits to the new provider can be less than the total social benefits of entry. This wedge between private and social benefits can arise because entry typically benefits consumers as well as the entrant. Before concluding that entry should be subsidized, however, one must recognize that the private incentives to enter may be greater than the social incentives because of what has become known as the *business-stealing effect.*[17] Entry can be profitable for a firm even if all it does is divert business (and profits) from incumbents to itself, without any net addition to total economic welfare. As a result, the private gains from entry may exceed the social gains. Thus, at the general theoretic level, the case for subsidizing entry is problematic.

C. My Bottom Line

As a Berkeley economist of the 1990s, I come out in the middle: Harmonization—particularly service harmonization—is important, but market positions matter too. My proposal for discussion is the following:

> If users consider two services to be close substitutes, then providers of those services should be subject to similar regulations unless there are significant differences in the providers' market positions as measured by ownership of bottleneck assets. Policymakers also should be wary of policies that violate medium harmonization unless monitoring is straightforward and low cost.

This proposal reflects the fact that, although I favor harmonization generally, I am somewhat less concerned about medium harmonization

than service harmonization. This is so for the following reasons. Absence of service harmonization has the potential to distort competition and investments, and investment distortions can have large and long-lasting efficiency effects. Absence of medium harmonization generally does not raise the threat of distorting competition and investment to anywhere near the same degree. The primary difficulty with policies that violate the principle of medium harmonization is that they are likely to fail because service providers and users will engage in regulatory arbitrage in the absence of monitoring and enforcement policies.

One might wonder: What happened to the earlier arguments for treating symmetric firms asymmetrically? With two exceptions, I believe those arguments try to put too fine a point on regulatory design. The first exception is that there may be policies that generate net social benefits only when applied to fewer than all providers. For example, it is still an open question in my mind whether forcing some broadband local access networks to be open while allowing others to be closed would be a sound policy. Even here, there are important differences between cable and telephone company networks that policymakers should take into account in determining which would be better candidates for open systems.

The second exception is that it may be make sense to treat symmetric firms asymmetrically when they are in geographically distinct markets. I now turn to the general consideration of such markets.

IV. The Appropriate Geographic Level at Which To Make and Apply Policy

U.S. telecommunications policy is created and implemented at a variety of jurisdictional levels. Policy toward television and radio generally is made at the federal level. Responsibility for telephone regulation is split between the federal government and the 50 states and the District of Columbia.[18] In addition to state and federal commissions, municipalities also have a role in regulation of some aspects of local exchange carriers' operations. Similarly, cable networks have been—and continue to be—subject to regulations at the federal, state, and local levels, with local regulators generally playing a much large role than they do for other telecommunications services.

What is the appropriate geographic scope for telecommunications policy? In answering this question, one must again be careful about semantics. Questions of geographic scope are about more than the issue of whether regulatory policies should reflect varying local conditions. That kind of geographic variation can be accomplished by adopting rules that apply to all parts of the nation, but are conditioned on local characteristics. For example, much of the federal regulation of local exchange networks can be viewed as a single meta-rule that takes into account whether a market is rural or urban. Similarly, federal obscenity laws can be based on local community standards.

As before, the fundamental question is: What are the supplier and market characteristics on which regulation is appropriately based? The geographic component of this question is whether these characteristics should be assessed on a narrow or broad geographic basis (e.g., if market share is considered as a measure of dominance, should it be calculated on a national or local basis?). Another set of issues concerns the geographic scope of the regulatory bodies that create and enforce regulations. Although the geographic scope of the rules themselves and the geographic scope of the entity or process by which these rules are created are closely related, distinguishing between the two is important.

A. The Geographic Scope of Regulatory Policies

Consider first the geographic scope of the rules. In doing so, it is useful to define a *regulatory zone* as a geographic area over which the fine structure of regulatory policy is constant. That is, a given firm is treated equally at all points within a given regulatory zone but might be treated differently outside of that zone. For example, a Regional Bell Operating Company's service region would constitute a regulatory zone for the purposes of Section 271 of the Telecommunications Act of 1996 because the rules governing the carrier's provision of inter-LATA (local access and transport area) services are different within its service region than the rules in the rest of the nation. A regulatory zone can be smaller or larger than a jurisdictional area. The geographical or geopolitical scope of regulatory zones affects the costs of both compliance and enforcement.

Some costs increase when a provider's scope of operations cuts across the boundaries of two or more regulatory zones. The provider's compliance costs rise because it will find itself having to deal with the complexity of multiple sets of rules.[19] In the debate over the FCC's implementation of key provisions of the Telecommunications Act of 1996, compliance economies of scope were thought to be particularly important for potential entrants into local telephony, which generally planned to enter on a multistate basis. Enforcement costs also may increase when the scope of a provider is broader than a single regulatory zone. When a provider's operations span zones, applying the rules in any one zone can be difficult because the provider may be able to reallocate resources among zones—either in fact or solely on its books.

Some costs—in particular, distortions in competition and investment—can arise when market boundaries cut across regulatory zones. When there are two or more regulatory zones within a single market, policies that differ across regulatory zones can violate the principle of service harmonization. Moreover, from the perspective of promoting competition, it is difficult to see why policymakers would want to make within-market distinctions in any event. Hence, regulatory zones ideally would be at least as large as markets. Again, one can turn to antitrust principles for guidance in determining the geographic scope of markets. As with product market definition, the central approach to geographic market definition is to include service offerings by providers at two locations in the same geographic market if they are viewed by consumers as being close substitutes for one another and to place them in separate markets otherwise.[20]

B. The Geographic Scope of Regulatory Institutions

Another issue is the level at which rules are made. The efficiency of the current system of dual or triple (the word "trial"might give a more accurate flavor) jurisdiction can be subjected to economic analysis.[21] Such an analysis takes several factors into consideration.[22]

1. *Economies of scale and scope.* There are likely economies of scale and scope for governmental and private parties in the design of public policy.[23] In the case of private parties, a central parame-

ter is the extent to which providers and users have operations that cut across jurisdictional boundaries. This consideration will tend to favor policy formulation at the national or even international level.

2. *Jurisdictional externalities.* Public policy toward the provision of telecommunications services in one area may affect the provision of services in other areas. For example, charges for the completion of long-distance telephone calls clearly will affect the welfare of parties in areas where the calls originate. The effects of regulation on competition also may create jurisdictional externalities. For example, policies that make entry difficult in one geographic area may raise the overall cost of entering the industry and thus reduce the speed at which entry occurs in other areas.[24] This type of effect generally argues for policymaking at the federal or international level.[25]
3. *Decentralization and competition to limit bureaucracy.* The existence of state and local regulatory bodies is a form of decentralization.Each regulatory body is much smaller than a single, centralized organization would be. Large organizations often suffer from bureaucratic inefficiency and can be unresponsive. Moreover, when multiple policymakers undertake similar tasks, benchmarking—whereby one regulator's performance (e.g., the time taken to reach a particular decision) is evaluated by comparing it with that of others—may be possible. In this way, a form of competition is induced.[26] The current structure may thus avoid some of the problems that would be associated with an FCC of 20,000 or more employees.
4. *Network scope and policy enforceability.* Regulators may have limited abilities to enforce their policies on networks that span jurisdictions. When a single provider's network or an interconnected set of networks spans jurisdictions, policymakers may lack the authority to enforce their rules—as various countries' attempts to regulate content on the Internet have demonstrated. Moreover, when a provider's operations span jurisdictions, applying rules in any one jurisdiction can be difficult because

the provider may be able to reallocate reported financial accounts among jurisdictions in response to regulatory differences.[27] A classic (non-telecommunications) example is the strategic setting of internal transfer prices to shift profits to low-tax jurisdictions. The need for enforcement at a broad level suggests that policy design at a broad level would also be useful, although not essential. These considerations again generally argue for policymaking at the federal or international level.

5. *Adjustment to local conditions.* To the extent that market conditions and voter preferences differ across regions of the United States, it can be appropriate for public policy to reflect those differences. In the case of characteristics that are market statistics (e.g.,market shares and cost data), it would seem the information could be made available to federal authorities as easily as to state or local ones. Indeed, federal regulators might take advantage of economies of scale and scope in interpreting local data. On the other hand,there are at least two reasons why state or local involvement might be beneficial. One is that local regulators will probably be more responsive to the preferences of citizens in a particular area because of the political process and because the policymakers themselves will be part of the community. Second, participation costs may be lower for some parties, such as an individual citizen attending a hearing on zoning. Of course, these lower participation costs have to be balanced against the loss of economies of scope for other participants.

6. *Experimentation.* As noted above, for many policy issues it is impossible simply to calculate the "optimal" solution on the basis of theory and existing evidence. Thus, there may be considerable value in trying alternative approaches to regulation and observing what happens, with an eye to adopting the most successful approaches on a broad basis once they have been proven. By having experimental variation take place among geographically distinct markets, policymakers can avoid creating distortions from the asymmetric regulation of competing

suppliers. Today, experimentation is a largely unplanned process that takes place across many jurisdictions, including foreign ones. In theory, experimentation within the U.S. could best be coordinated at the federal level. There may be two advantages to decentralized experimentation at the state or local level, however. First, the resulting increase in the number of different decisionmakers involved increases the chances that innovative solutions will be discovered. Second, state-level policymaking may also allow for experimentation that could face legal challenges if instead the FCC were to implement a coherent program of experimentation that treated similar firms differently in different regions of the country.

V. Scenarios

It is easy to favor harmonization in theory. It is much harder to put it in practice. In this section, I identify some of the areas where difficult harmonization decisions will have to be made. One means of doing this is to develop scenarios. Loosely speaking, a scenario is a story that describes how an industry might evolve.

A. Methodology

A good scenario is not just any old story. To be useful, a scenario should be:

- *Coherent and internally consistent.* This feature is absolutely critical because the demand for internal consistency is what gives the scenario process its power. The scenario creator is forced to think carefully about how various potential developments will interact with each other. In some cases, different developments will reinforce each other; in others they will cancel each other out.
- *Based on plausible assumptions.* There is little point in considering a scenario in which the need for data networks is replaced by the development of energy beams that allow large piles of documents to be instantly transported through space. At the same time, one should not restrict one's attention solely to the

most likely outcomes. If there are low-probability events that would have very large implications, those events should be explored.

There are several benefits to using scenarios. First, a scenario is a way to consider a wide range of possibilities in a logical and relatively compact manner. Second, a scenario is a useful tool for identifying low-probability, high-impact events. A third benefit of scenario development is that it brings out underlying assumptions that otherwise might not be recognized. This benefit derives from maintaining internal consistency—too much would be taken for granted if one did not maintain the discipline of creating entire, coherent alternative worlds. Lastly, by building on the initial specification in an internally consistent way, the scenario process can extend one's thinking. If the process is done correctly, the story can take on a life of its own in the way novelists sometimes talk about their characters coming to life.

To work, the storytelling of a scenario needs to be combined with real analysis. To the extent possible, economic and business analysis should be used to predict how industry structure is likely to evolve and to understand agents' incentives to respond to evolving market conditions.

It usually is valuable to consider several alternative scenarios. In doing so, one should examine scenarios that differ in interesting and important ways (i.e., ways that matter for the questions at hand). Often it is useful to define critical dimensions or questions. For example, in constructing a scenario for desktop computing one might ask: Will all personal computers be networked, or will significant numbers stand alone? If most personal computers are networked, where will software reside? How much computing power and storage will be on the desktop? To generate alternatives, the scenario builder may want to map out good and bad extremes, although this is not the only way to do things. If one does map out good, middle, and bad cases, one should not simply take the good value of each parameter to create the good case, the medium value of each parameter to create the medium case, and so on. Instead, there should be a coherent story. Realization of a good parameter value along one dimension may be consistent only with the realization of a bad parameter value along another dimension, for example.

B. Sample Scenarios

In the remainder of this section,I sketch the beginnings of three scenarios for residential telecommunications services. I offer these scenarios to stimulate discussion; they are far from complete. In all three scenarios, I assume we are not going to see additional wires to the vast majority of residential subscribers.[28] The scenarios differ in terms of how various access technologies progress and how widely they are deployed. For example,a critical set of questions concerns the evolution of wireless access technologies and whether they will be capable of providing high-volume voice or broadband services on terms competitive with wireline services. There are similar questions about the development of DSL and cable for the delivery of various services.

Scenario 1: Most of the Status Quo Continues. Under this scenario, access technologies do not progress sufficiently to create strong competition in two-way voice and data services. Incumbent local exchange carriers' twisted pairs remain the only widely deployed voice access technology. Cable modems are rolled out with promised capabilities, but DSL proves to be incapable of providing enough bandwidth to compete for broadband data. Terrestrial and satellite broadcasters continue to compete with cable to provide full-motion video on a broadcast basis.

Local exchange carriers and cable carriers each would continue to control bottleneck facilities. Actual and potential competitors in related markets would thus seek cross-ownership restrictions to keep the owners of local access networks out of markets for services that rely on local distribution (e.g., long distance telephony and Internet service provision). Although one could argue that such rules would apply equally to all, they clearly would affect local exchange carriers and cable companies more than other providers.

Convergence with video entertainment would be incomplete. However, there still would be significant issues of service harmonization because of increasing competition among terrestrial broadcasters, direct-to-the-home satellite broadcasters, and cable systems. Convergence between the Internet and wireless radio broadcasts would also increasingly raise service harmonization issues.

Scenario 2: Access Competition Flourishes. In this scenario, wireless technologies, DSL,and cable all compete to provide access for voice and broadband services, falling short only with regard to broadcast-quality switched video. In this scenario, harmonization would largely be a transition issue for two-way networks. Once full-access competition developed, there would be little need for detailed oversight, and harmonization would be achieved by having all providers unregulated. Instead of regulation, policymakers would rely on economy-wide antitrust and consumer protection policies. Of course, transition issues could be extremely contentious, and it would be important to focus on whether the temporary lack of harmonization would distort investments in ways that would have long-lasting effects. The issues for video entertainment providers would be largely the same as in Scenario 1.

Scenario 3: Broadband for the Masses. Under this scenario, switched video becomes widely available.[29] Within this broad outline, however, one must describe how many providers exist and what percentage of households subscribe to the service. If there were many providers and the service became almost ubiquitously adopted (e.g., because it were primarily advertiser supported),then there would be little need for specialized regulation of any network owners. If certain content producers and packagers were able to attract significantly larger audiences than others, however, some policymakers would most likely seek to subject those content producers and packagers to special requirements. Nevertheless, no sound legal or economic rationale for doing so is apparent.

If switched video became widely adopted—but no more so than cable television today—policymakers might try to place special conditions on the broadcast television industry under the rationale that it was the only truly mass medium. Issues of service harmonization would be very powerful, however, given the capabilities of switched video and the increased opportunities for television content creators (including broadcasters themselves) to distribute their output through other media.

Lastly, if only a few carriers offered switched video services in any given market, the question of whether switched video systems should

be open or subject to common carriage would be the central issue. Again, the question of whether only a subset of systems should be open—and, if so, which ones—would arise.

VI. Where Do We Go From Here?

In this paper, I have presented several ideas that I hope will stimulate discussion and thought. The issues are far from straightforward. Although it is tempting to call for a "level playing field" and go home, the pitch of the pitch will always be in dispute. What is level in the eyes of one party is often severely tilted in the eyes of another.

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Notes

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2. Note that the potential for competition may itself depend on the regulatory regime.

3. For example, AT&T and others had long argued that asymmetric tariff filing requirements limited AT&T's incentive and ability to compete aggressively on price. See *In the Matter of Motion of AT&T Corp. to be Reclassified as a Non-Dominant Carrier,* Order, FCC 95-427 (released October 23,1995),and references therein.

4. As I have discussed elsewhere (see Katz,M.L.,"Remarks on the Economic Implications of Convergence," Industrial and Corporate Change 5 [Telecommunications Policy Issue 1996): pp. 1079–1095], convergence means many things to many people. The notion of carriers' crossing traditional market boundaries as a consequence of technological change lies at the heart of all of the interpretations of convergence.

5. If nothing else, one could append an index to ω that uniquely identifies each provider.

6. Similar arguments have been made for mixed-market policies in which publicly owned firms compete with unregulated, privately owned firms.

7. If the systems are close enough substitutes,then opening one might be enough to allow competition to flourish at other stages in the value chain. Whether broadband local access networks are in fact that similar is a debate I leave to others.

8. In practice,it would be surprising if actual systems ever were identical. Section III briefly discusses the question of how to pick which system to force open when there are asymmetries among the networks.

9. See, for example, U.S. Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines, April 2,1992 (revised April 8,1997).

10. Actually, it is not strictly true that there is no way of monitoring service types. The reason is that messages comprise bit streams, and it is not true that "a bit stream is a bit stream." One-way video and two-way voice, for example,place very different demands on a network in terms of latency and bandwidth. It is costly, however, to identify in practice what type of service is being transmitted over a packet network.

11. At least some members of Congress apparently reject the rationale underlying the medium harmonization approach. They are proposing to grant Bell Operating Companies relief from Section 271 of the Telecommunications Act of 1996 for data services even when the "data" networks are fully capable of carrying voice. It would be surprising if users did not try to take advantage of the ability to send voice and data over a single network and if carriers went to much trouble to detect whether voice was in fact being carried over their data networks.

12. In theory, the differential regulation of services could be achieved while treating all providers of a given service equally.

13. I am referring to so-called Ramsey pricing.

14. For reasons I hope will become clear, I focus on *provider* differences—which are relevant to identifying exceptions to service harmonization—to the exclusion of service differences of the sort that might be relevant to identifying exceptions to medium harmonization.

15. Difficult issues arise even when a firm clearly has market power. For example, I believe that Microsoft has significant market power, but it does not immediately follow that Microsoft should be forbidden to integrate its Internet browser into its various operating systems while other firms are free to do what they choose.

16. These rationales are different from the intuitive view that a provider with market power can "afford" costly regulations, such as universal service or affirmative content requirements. When the public policy concern is that the provider will exercise market power by elevating prices, policies that increase the provider's marginal costs may only make the problem worse.

17. For further discussion of these effects, see Mankiw, N.G., and M. Whinston, "Free Entry and Social Inefficiency," *Rand Journal of Economics* 17 (Spring 1986):48–58; and Berry, S.T., and T. Waldfogel, "Free Entry and Social Inefficiency in Radio Broadcasting," *Rand Journal of Economics* 50 (Autumn 1999):397–420. The latter authors empirically examine the U.S. radio broadcasting industry and conclude that business-stealing effects are substantial in that industry.

18. See Nadler, J.J., "Give Peace a Chance: FCC-State Relations after California III," *Federal Communications Law Journal* 47 (April 1995), available at http://www.law.indiana.edu/fclj/pubs/v47/no3/nadler.html, for a history of the often-bitter disputes between federal and state regulators over their division of responsibility.

19. The costs can be particularly large when different regulatory zones overlap one another.

20. In the extreme, there can be separate telecommunications markets for each point-to-point connection. As a practical matter, aggregating such micro-markets can be useful for policy analysis.

21. For an insightful analysis of these issues, see Haring, J.R., and K.B. Levitz, "The Law and Economics of Federalism in Telecommunications," *Federal Communications Law Journal* 41 (July 1987):261–330.

23. In this paper, I ignore transition issues. For example, past commitments that had been made by local regulators might be difficult to transfer to the federal level for legal and informational reasons.

24. There may also be economies of scope associated with regulation of multiple industries. Indeed, the scope of regulatory bodies reflects an implicit judgment about these economies. Local, state, and federal regulatory bodies today have very different scopes. For instance, state commissions often regulate electricity as well as telecommunications, whereas the FCC has a narrower scope.

25. On the other hand, some state commissions expressed concern about the proposed Bell Atlantic-GTE and SBC-Ameritech mergers precisely because the mergers' proponents asserted they would lead to greater competition nationwide; policymakers were worried that investments made to support competing in new markets would reduce network investment by incumbent local exchange carriers in their "home" states.

26. The current federal moratorium on state and local Internet sales taxes can be regarded as a policy that addresses the concern for jurisdictional externalities.

27. This type of competition is somewhat different from the well-known competition among jurisdictions to attract residents or business enterprises by offering favorable tax or regulatory climates. Although the latter sort of competition can be beneficial, it can also lead to issues of

jurisdictional externalities that may favor centralization.

28. This is a variant of a point made in Section IV.A.

29. Implicitly, I am assuming that power companies will not be significant entrants into local telephony and broadband access. Readers who disagree may wish to develop alternative scenarios of their own.

30. The widespread availability of high-quality switched video will depend on continued improvement of servers and distribution networks. There is little doubt that servers will improve sufficiently. The bigger issue is whether upgrading local access networks (which may include the use of intelligent customer premises equipment) can be achieved profitably.

APPENDIX

The Fourteenth Annual Aspen Institute
Conference on Telecommunications Policy

List of Conference Participants

August 15–18,1999
Aspen, Colorado

Rick Bailey
Vice President
Federal Government Affairs
and Public Policy
AT&T

Kathryn Brown
Chief of Staff
Office of Chairman William
Kennard
Federal Communications
Commission

Jonathan Chambers
Vice President
External Affairs
Sprint PCS

Alan Ciamporcero
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Regulatory Affairs
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Robert M. Entman
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Department of Communication
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Robert E. Ferguson
President
Federal Relations
SBC Communications, Inc.

Charles M. Firestone
Executive Vice President
Policy Programs
and
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Communications
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Heather B. Gold
Vice President
Regulatory and External Affairs
Intermedia Communications,
Inc.

Steven Gorosh
Vice President and General
Counsel
NorthPoint Communications

Frank J. Gumper
Vice President
Regulatory and Long Range
Planning
Bell Atlantic

Frank Hatzenbuehler
Vice President
Pricing and Regulatory Strategy
US West, Inc.

Julia L. Johnson
Commissioner
Florida Public Service Commission

Michael Katz
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Haas School of Business
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Joel I. Klein
Assistant Attorney General
Antitrust Division
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Deborah Lathen
Chief
Cable Services Bureau
Federal Communications Commission

Jane Lawton
President
National Association of Telecommunications Officers and Advisors
and
Cable Communications Administrator
Montgomery County, Maryland

Susan Littlefield
Cable Regulatory Administrator
City of St. Louis

Mark Lloyd
Executive Director
Civil Rights Forum on Communications Policy

John B. Lynn
Director
Global Telecommunications Policy
EDS Corporation

Susan Ness
Commissioner
Federal Communications Commission

Alex Netchvolodoff
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Roger Noll
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Chief
Office of Plans and Policy
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Note: Titles and affiliations are as of the date of the conference.

Brett A. Perlman
Commissioner
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Thomas Reiman
Senior Vice President
Public Policy
Ameritech

Lisa Rosenblum
Senior Vice President
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Cablevision Systems Corporation

Robert Rowe
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About the Authors

Robert M. Entman is professor and head of the Department of Communication,and co-director of the Center for Information Society Studies, at North Carolina State University. Dr. Entman teaches courses in mass media, political communication, and telecommunications policy. Holder of a Ph.D. in political science from Yale and an M.P.P. in policy analysis from the University of California (Berkeley), he served previously on the faculties at Northwestern University and Duke University. He has also been a Visiting Professor in the Lombard Chair at Harvard University. Dr. Entman is the author and co-author of numerous books and articles including *The Black Image in the White Mind: Media and Race in America, Mediated Politics: Communication in the Future of Democracy, Democracy Without Citizens: Media and the Decay of American Politics, Diversifying TV and Radio: Policies for Privatization and the Public Interest in Broadcasting,* and *Media Power Politics.* Dr. Entman has consulted and written or co-written many reports for government agencies and other organizations, the most recent of which are *Media and Reconciliation,* for President Clinton's Initiative on Race (March 1998) and *Residential Access to Bandwidth: Exploring New Paradigms* (Aspen Institute, 1999). He serves as co-editor of the book series *Communication, Society and Politics* for Cambridge University Press with Lance Bennett, and as editorial board member for *Communication Law and Policy, Communication Review* and *Political Communication.* Dr. Entman is chair-elect of the Political Communication Section of the American Political Science Association.

Michael L. Katz is the Edward J. and Mollie Arnold Professor of Business Administration at the University of California at Berkeley. He also holds an appointment as professor in the Department of Economics and serves as the director of the Center for Telecommunications and Digital Convergence. He has twice won the Earl F. Cheit Awards for outstanding teaching. Dr. Katz has published numerous articles on the economics of networks industries, intellectual property licensing, telecom-

munications policy, and cooperative research and development. He serves on the editorial boards of *The California Management Review* and *The Journal of Economics and Management Strategy.* Dr. Katz served as chief economist of the Federal Communications Commission from January 1994 through January 1996. He participated in the formulation and analysis of policies toward all industries under Commission jurisdiction, including broadcasting, cable, telephone, and wireless communications. Dr. Katz holds an A.B. summa cum laude from Harvard University and a D.Phil. from Oxford University. Both degrees are in economics.

The Aspen Institute Communications and Society Program

The overall goal of the Communications and Society Program is to promote integrated, thoughtful, values-based decision making in the fields of communications, media,and information policy. In particular, the Program focuses on the implications of communications and information technologies on democratic institutions, individual behavior, instruments of commerce, and community life.

The Communications and Society Program accomplishes this goal through two main types of activities. First, it brings together leaders of industry, government, the nonprofit sector, media organizations, the academic world, and others for roundtable meetings to explore the political, economic, and societal impact of communications and information infrastructures. Second, the Program promotes research and distributes conference reports to local, national, and global decision makers in the communications and information fields, and to the public at large.

Topics addressed by the Program vary as issues and the policy environment evolve. In recent years, the Communications and Society Program has chosen to focus on the issues of Internet policy, electronic commerce, information literacy, digital broadcasting, international and domestic telecommunications regulation, journalism, the role of the media in democratic society, and the impact of new communications technologies on democratic institutions and practices.

Charles M. Firestone has served as executive director of The Aspen Institute's Communications and Society Program for the past 10 years. In 1998, he was also named executive vice president for policy programs and international activities at the Institute. In this role, Mr. Firestone oversees the Institute's portfolio of 15 policy programs and guides the Institute's relationships with its international partners in France, Italy, Germany, and Japan. Prior to his position with The Aspen Institute, Mr. Firestone was director of the Communications Law Program at the University of California at Los Angeles and an adjunct professor at the

UCLA Law School.Mr. Firestone's career includes service as an attorney at the Federal Communications Commission, as director of litigation for a Washington, D.C. based public interest law firm,and as a communications and entertainment attorney in Los Angeles. He has argued several landmark communications cases before the United States Supreme Court and other federal appellate courts. Mr. Firestone holds degrees from Amherst College and Duke University Law School, and is the editor or co-author of seven books. He is frequently invited to speak at interactive conferences on the issues of democracy in the digital age.

Previous Publications of the Aspen Institute Conference on Telecommunications Policy

Authored by Robert M. Entman

Residential Access to Bandwidth: Exploring New Paradigms

This report explores policy initiatives that would encourage the widespread deployment of residential broadband services throughout the United States. It identifies our regulatory system as one of the chief obstacles to achieving ubiquitous broadband deployment and offers a new regulatory model to overcome these barriers.

1999, 35 pages, ISBN Paper: 0-89843-256-1, $12.00 per copy

Competition, Innovation, and Investment in Telecommunications

This report considers how public policy can foster investment, competition,and innovative services in local exchange telecommunications. The volume also includes "An Essay on Competition, Innovation, and Investment in Telecommunications," by Dale N. Hatfield and David E. Gardner.

1998, 52 pages ISBN Paper: 0-89843-235-9, $12.00 per copy

Implementing Universal Service After the 1996 Telecommunications Act

This report summarizes the Conference's suggestions for universal service policy options, generally, and financing options for schools and libraries, specifically, which were submitted to the Federal-State Joint Board on Universal Service in September 1996. The report includes an appendix with sections of the Telecommunications Act of 1996 that relate to universal service. $10.00 per copy

The Communications Devolution: Federal, State, and Local Relations in Telecommunications Competition and Regulation

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This report sets forth the compromise universal service funding plan arrived at by conference participants. It also describes approaches to removing barriers to local competition and addresses issues associated with competition in other fields by incumbent carriers. It includes an essay by Eli Noam entitled, "Reforming the Financial Support System for Universal Service in Telecommunications."

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Competition at the Local Loop: Policies and Implications

This report examines the trend toward greater competition in telecommunications, with new competitors such as cellular telephone, paging, cable television, private telecommunications providers, personal communications service experiments, satellites, and long-distance providers. It seeks to develop sound options for future public policies and addresses issues of universal service and jurisdictional control and preemption.

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