As we approach the new millennium, communications and information technologies are transforming our lives. Whether we are on the job, at home, or on the go, we are more "connected" today than ever before.

Long distance calling now costs a fraction of what it did a decade ago, and as a result long distance minutes-of-use are growing rapidly. The cost of wireless calling has plummeted, and subscribership is soaring. Pocket devices now send as well as receive messages, and often function as extensions of our personal computers as well. Television stations that have converted to digital broadcasting are experimenting with multi-casting and new data services. Hundreds of video channels are available from cable, wireless cable, and satellite providers.

Meanwhile, the internet continues its blistering rate of growth, with hundreds of new Web sites, and tens of thousands of new users, every day. Virtually every segment of the communications and information industries is scrambling to respond to, or become part of, the internet.

At this time of extraordinary change, American consumers (and policymakers) are the beneficiaries of three great laws:

- *Moore's Law* (loosely stated) holds that the processing power available at a given price doubles approximately every 18 months.1 That's why networks and consumer devices are growing smarter, smaller, and cheaper all the time.

- *Metcalfe's Law* (loosely stated) holds that the value of a network increases with every additional connection to that network.2 When you buy a pager or a wireless phone, the value of *my* telephone increases. The same principle applies with the addition of websites.

- *The Communications Act* (generally speaking) provides the regime that enables *competition* to function as the primary driver for investment, innovation, and deployment in the communications sector. But it also embodies other goals, such as diversity and universal service, that could be neglected if competition were the sole objective.

As an FCC Commissioner, the law that is most central to my deliberations with my colleagues is the Communications Act of 1934, as amended on numerous occasions—and, most notably, as overhauled by the Telecommunications Act of 1996. But Moore's Law and Metcalfe's Law also guide my decisions. More generally, I believe that responsible public policy must be informed by, and consistent with, technological and business realities.

Our primary task at the FCC is to create an environment that enables innovation to flourish, and ensures that all Americans can partake of the benefits. These days, much of our time is spent dismantling the barriers to entry that for too long constrained which companies could provide local telephone service. Now, at long last, we are beginning to see competitive local exchange carriers, cable companies, and wireless companies all seize

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1 The original insight, in 1965, by Gordon Moore, co-founder of Intel, was that the number of transistors per square inch on *integrated circuits* had doubled every year since the integrated circuit was invented. Moore predicted that this trend would continue for the foreseeable future. In subsequent years, the pace slowed down a bit, but data density has doubled approximately every 18 months, and this is the current definition of Moore's Law, which Moore himself has blessed. Most experts, including Moore himself, expect Moore's Law to hold for at least another two decades.

2 The precise formulation as stated by Robert Metcalfe, creator of the Ethernet, is that the "value" or "power" of a network increases in proportion to the square of the number of nodes on the network. Marc Andreessen, one of the founders of the World Wide Web, states it more generally: "A network in general behaves in such a way that the more nodes that are added to it, the whole thing gets more valuable for everyone on it.... You saw it with the phone system.... You see it on the [i]nternet all the time. Every new node, every new server, every new user expands the possibilities for everyone else who's already there."
the opportunity to compete against incumbent telephone companies.

But even as we labor to expand competition, we must also work to preserve and enhance universal service. There is, of course, a great deal of truth in the axiom that "a rising tide lifts all boats." And the appetite for advanced capabilities from business users and high-end consumers has led to the development and deployment of many capabilities that are increasingly affordable to average consumers.

Yet it is also the case that unbridled competition, standing alone, will not suffice to meet all the special needs of discrete population segments. That is why Congress directed special attention to the needs of low-income consumers, consumers in rural, insular, and high-cost areas, schools, libraries, and rural health care providers, and people with disabilities.

The FCC has made a great deal of progress toward these goals. For low-income consumers, we have expanded Lifeline and Link-Up support to jurisdictions where it previously was unavailable and increased the amount of federal support in those jurisdictions that previously participated. Consumers in high-cost areas continue to receive affordable, high-quality telephone services due to a variety of implicit and explicit subsidies that are still in transition. The support mechanisms for schools, libraries, and rural health care providers have been initiated and seem to be surviving the inevitable startup difficulties. The Commission soon will adopt measures to promote accessibility of communications and information services for people with disabilities.

Much work remains to be done, however. Each of these objectives will continue to require time and attention. This is especially true of high-cost reform, where efforts to craft a regime that is more consistent with the increasingly competitive nature of the industry run into severe legal, practical, and political constraints. I care deeply about preserving affordable telephone service for rural areas, and I believe my concern is widely shared by other policymakers and industry participants, but this does not make it easy to work out the details of a new regime, or to map the transition from here to there.

Some parts of the problem are easier to address than others. It is no great challenge to require that all interstate carriers, not just long distance carriers pay explicit subsidies, and we have done so. It is also straightforward to direct that subsidies be "portable," i.e., that whatever explicit subsidy an incumbent carrier receives when it serves a particular customer will be transferred to a new entrant if the new entrant is successful in attracting the customer to its business. That part of the transition is also behind us.

Other parts of the equation are considerably more difficult. How does one quantify implicit subsidies—which is a necessary prerequisite to converting them to explicit subsidies? Should second lines be eligible for universal service support? How about wireless phones? Should businesses in rural areas also be able to pay less than the cost of serving them? How do we make all the changes that are needed to safeguard affordable, high-quality service, to promote competition where it is feasible, and to permit experimentation with new technologies, without creating unreasonable burdens on the consumers who must pay to support universal service?

And how does the internet affect the issue of universal service? Does it jeopardize it by diverting traffic away from services that are sources of subsidy? Or does the internet help universal service by stimulating communications consumption, spurring investment and innovation, and prompting the deployment of advanced technologies?

These are complex issues, with no easy answers. We need to provide the full measure of high-cost support that is needed, but without unduly increasing the burden on other consumers. We need to shift the manner in which billions of dollars of subsidies are collected and distributed, but avoid any disruption to rural carriers or American consumers. As the Legg Mason conference transcript in this issue demonstrates, reconciling these conflicting imperatives is, to say the least, no small task.

Preserving universal service is just one of the many issues on the Commission's plate. Other meaty issues include broadcast ownership, the transition to digital television (and digital radio), video competition, and spectrum management, to name but a few of the "hot topics."

This issue of CommLaw Conspectus samples several of the controversial issues that we have been, or will soon be, digesting. Should we retain, alter, or eliminate caps on the amount of radio spectrum available to any one wireless service pro-
vider? What are the legal and policy considerations that should inform our decision about cable "must-carry" rights for digital television broadcasts? How can we create opportunities for new voices in the FM band, without degrading existing broadcasters' signals or impeding their deployment of in-band, on-channel digital broadcasting? Who should pay whom, and how much, when a local telephone subscriber dials in to an internet service provider—or when she dials a customer served by a wireless carrier?

While we have yet to see how many of these issues will play out, CommLaw Conspectus serves a valuable function by creating a forum where ideas can be developed, theories can be expounded, and constructive solutions can be tested.

In a time when so many momentous issues are pending, it always helps to have thoughtful, insightful people—whether they are practitioners or students—assisting in the policy debate. The articles in this issue address a number of the most interesting issues in communications law, and I expect that the authors' treatment of these subjects continues the fine scholarly tradition of CommLaw Conspectus.