

# *Who Killed Telecom? Why the Official Story Is Wrong*

by Lawrence Gasman

## **Executive Summary**

In the mid-1990s as it seemed that lawmakers were about to abandon much of the regulatory apparatus that had hampered the telecommunications industry since the 1930s, the telecom equipment industry began to boom, helped in part by the rise of the Internet. The deregulatory trend led ultimately to the 1996 Telecom Act, and soon the architects and implementers of that act were congratulating themselves on a job well done. We were supposedly building a new telecom infrastructure fit for the information age.

Then, in 2000, shipments of telecommunications equipment went into sharp decline, and construction of the information age infrastructure came to a grinding halt. Lots of money and jobs were lost, and the new class of telecom industry executives that had emerged in the post-deregulatory era got most of the blame. These people were thought to be manipulating the market and misleading consumers about sales and growth. Once the truth came out—so goes the “official” story—the market collapsed.

However, even a fairly cursory glance at the actual history of this period suggests that the “official” story exaggerates the powers of senior telecom executives and that a far better place to look for a source of telecom’s collapse is the

Federal Communications Commission, which at the time was determined to crowd as many firms as possible into the telecom sector. That strategy was to be achieved by lowering barriers to entry and, in particular, by giving newcomers low-cost access to the networks of the carriers. When it became obvious that the market was top heavy with competitors, the telecom bust occurred.

It would have been far better if deregulation had simply let market forces do their work without scoring success primarily on the number of competitors. If there was worry that the incumbent carriers were so powerful that no meaningful competition could emerge, policymakers should have taken a look at newer technologies such as wireless and voice-over-IP, which are potentially highly disruptive of the incumbent players’ position. The good news is that the kind of regulatory measures that brought about the telecom bust now look like they are failing legal challenges. But what happened to telecom in the late 1990s remains a cautionary tale of how reforming regulation rather than truly deregulating can lead to disaster. With Congress potentially poised to reopen and revise the Telecom Act, lawmakers must learn from the mistakes of the past and ensure they do not repeat them.

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## Introduction

When Bill Clinton signed the 1996 Telecommunications Act into law, there was a widespread consensus that it would sweep away the dead hand of regulation and enable the invisible hand of competition to build a telecommunications infrastructure fit for the age of information. The only dissenters were a few analysts—and even a lawmaker or two—with libertarian leanings who thought the act did not go far enough—they wanted the Federal Communications Commission scrapped, for example—and a few on the left who felt that the act abandoned what they believed should be government’s role in providing affordable and universal telephone and data services.

Such voices of dissent became increasingly muted as the years that followed saw a huge boom in the telecommunications industry. As Figure 1 shows, shipments of communications equipment from U.S. factories took off in an unprecedented manner during the 1990s. In fact, the telecom boom began a few years before the 1996 act, presumably because

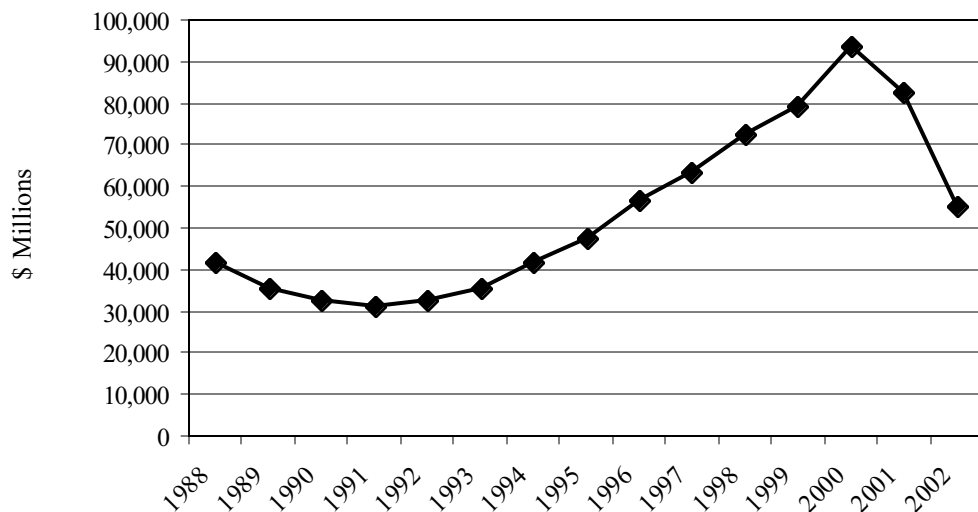
it had become apparent that there was a large majority in Congress for “doing something about telecom.” An omnibus deregulation bill became a virtual certainty and the market acted accordingly.

With the act signed into law, politicians and regulators were quick to congratulate themselves on their success. Vice President Al Gore, who may not have invented the Internet but certainly made it his crusade during his time as a senator and vice president, said:

We are on the verge of a revolution that is just as profound as the change in the economy that came with the Industrial Revolution. Soon electronic networks will allow people to transcend the barriers of time and distance and take advantage of global markets and business opportunities not even imaginable today, opening up a new world of economic possibility and progress.<sup>1</sup>

Reed Hundt—the FCC chairman who presided over the implementation of the 1996 U.S. Telecommunications Act<sup>2</sup>—had this to

**Figure 1**  
**U.S. Communications Equipment Shipments**



Source: U.S. Department of Commerce.

say about the impact of his time at the FCC:

The communications revolution has had technological, economic and political dimensions that are each and all beyond precedent or expectation. The multifaceted revolution would not have had such a grand scale and scope but for the new laws that . . . were enacted in the first term of the Clinton-Gore Administration. . . . Now several years after the events . . . it appears that by a combination of design and luck, the Commission's economic and social decisions . . . have helped foster the rise of not only the New Economy, but the Internet Society as well. These twin phenomena have created more wealth and more opportunity to enhance the quality of life for all citizens than any nation has ever enjoyed."<sup>3</sup>

Ironically, both these comments were made just before the telecom industry went into steep decline in the year 2000. By the time 2002 rolled around, Michael Powell, Hundt's successor as chairman of the FCC, was summing up the realities of the telecom marketplace as follows:

This is an industry suffering—there have been nearly 500,000 jobs lost, a reported \$2 trillion of market value extinguished, and by some estimates companies are laboring under nearly \$1 trillion in debt. Corporate governance scandals, overcapacity, hyper-competition in some markets, a retrenchment of capital, continuing credit-rating downgrades, continued cuts in work force and capital expenditures and bankruptcies sadly characterize the day. Few are prospering. Few are growing. Few are spending. Few are investing. The status quo is certain death.<sup>4</sup>

Telcos toppled. Equipment vendors evaporated. Component companies collapsed.

And the image of the telecom industry CEO diminished from that of Randian superhero to Dickensian villain. In a mid-2002 cover story titled "The Great Telecoms Crash," *The Economist* used a cartoon to illustrate the industry's woes. The cartoon showed a large crater surrounded by a number of onlookers—presumably investors and employees of telecom companies—prostrate before it. The story itself began by noting that, "the bigger they are, the harder they fall." And an editorial in the same issue conjectured that "the rise and fall of telecoms may indeed qualify as the largest bubble in history."<sup>5</sup>

## The Official Story

What was it that caused such a precipitous decline? The telecom industry had always been cyclical in terms of its capital expenditure, but cyclical is not the same thing as "boom and bust." Likewise, one might have expected a tailing off of the huge investments that began in the 1980s and that were intended to turn the old analog voice network into a digital network that was equally capable of carrying voice, data, and video. But why would that happen so suddenly?

The conventional wisdom—what we are going to call "the official story"—is that a bunch of greedy carpetbaggers, perceiving that there was *something* to all this Internet and "information age" stuff, jumped into the telecom market, hyped it out of all proportion, and misled investors in order to boost stock values. Then, at the last moment, as the market began to acknowledge the hype and fraud, these crooks got out with their own large personal fortunes mostly intact. According to this explanation, the blame for telecom's collapse lies squarely in the laps of greedy businessmen and just shows what happens when we try to deregulate. As exemplars of that point of view, consider the following quotes:

- "What has happened to the global telecoms industry . . . is a salutary lesson to

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all those who buy the simple proposition that public is bad and private is good.” (Will Hutton, “The Titanic Greed of the Telecom Giants,” *Observer* [UK], April 2001)

- “The broken business models and crippling debt are the wages of greed, corporate crime and misguided regulation.” (Peter A. Bernstein, “What’s Wrong with Telecom,” *IEEE Spectrum Online*, January 2003)
- “[WorldCom’s] financial troubles became a symbol not only of the collapse of the speculative high-tech bubble in the 1990s, but also of the greed and corporate malfeasance that is synonymous with the time.” (Christopher Stern, “Judge Clears WorldCom’s Exit from Bankruptcy,” *Washington Post*, November 1, 2003, p. A1)

Like all good half-truths, the official story is indeed only half true. Of the big-name executives in the telecom business in the bubble years, some were fools and a few were crooks.<sup>6</sup> There was not a John Galt among them. There were indeed less-than-perfect executives trying to convince anyone who would listen—investors, the press, analysts and the general public—that the future of telecom promised nothing but good things. But could it be that the telecom bust was set off, not by the deregulatory zeal of the 1996 act, but rather by the fact that it did not lean far enough in the direction of deregulation?

### **Telecom Managers Behaving Badly?**

Let’s consider the inadequacies of the official story first. The biggest problem is explaining how the alleged bad guys got so much power. Many of the celebrity CEOs who are accused of manipulating the industry during the bubble era were, after all, “newbies.” Consider the background of Bernie Ebbers, who was chief executive of WorldCom during this period. Before he started WorldCom, Ebbers ran hotels. Winnick, who was the co-

founder of Global Crossing, had a background in junk bonds and, before that, in the furniture industry. Similar biographies were common at the time. But it seems unlikely that a handful of executives with those sorts of backgrounds could really have fooled so many people in an industry that is 130 years old with a mature and conservative management structure and a sophisticated understanding of what works and what doesn’t work—both technologically and from a business perspective. The telecom industry is not, and was never, the dot.com industry, run by young men and women who had little management experience, or even aptitude for management, and an insatiable appetite for hype.

The second big question is just *how* the men at the top could bend the industry to their will. Almost no one believes that the telecom bust was caused by senior managers directly stealing money from their firms. There were a few instances of such crimes, but not enough to make the industry collapse. There *were* plenty of examples of poor management and bad judgment.<sup>7</sup> But again it’s hard to make a strong causal link from that to the devastating decline of the telecom industry. Then there were the “creative accounting” practices used to cover up losses by the big telecom companies as the telecom market headed south. The recognition that such practices were being used certainly *did* help lead to the crash. But they could just as easily be interpreted as the actions of panicky managers as they could be interpreted as clever manipulations by these same managers. Indeed, in the cases in which the supposed villains were new to the industry, foolishness and panic seem more plausible explanations than wickedness.

While in some cases, executives really did try to mislead investors and the world at large about how well their own companies were doing, one of the big myths about the telecom go-go years was that those high up in the industry were able to cover up the fact that the Internet was growing at a much slower rate than was popularly supposed. The villain of the piece in this instance was

supposedly WorldCom, which, for historical reasons, controlled much of the Internet backbone and therefore had a better handle on how much traffic was actually flowing through the Net.

The specific claim that was usually made at the time was that Internet traffic doubles every 100 days. In his book *Broadbandits*, Om Malik ties what he calls this “urban legend” back to WorldCom in a number of ways,<sup>8</sup> but the kind of thing that was being said is well illustrated by a quote from the late John Sidgemore: “We’re seeing growth at an unprecedented level. Our backbone doubles every 3.7 months, which means that it’s growing by a factor of 10 every year. So three years from now, we expect our network to be 1,000 times the size it is today. . . . The big challenge is to deploy infrastructure fast enough to accommodate such a growth rate. We’re in a supply-constrained economy for the first time in the telecom industry.”<sup>9</sup> With that kind of comment from one of the most respected executives in the industry, it is hardly surprising that bankers, venture capitalists, and stock investors felt comfortable pouring money into telecom.

Now, if the gripe is simply that WorldCom executives *sought* to mislead the public about the rate at which the Internet was growing, this may well be true. *Broadbandits* reports that despite frequent bullish pronouncements about the growth of the Internet, WorldCom’s *actual* traffic statistics were kept under “lock and key,”<sup>10</sup> and it is indisputable that WorldCom’s senior management were not the most honest people around, as later accounting frauds were to prove.<sup>11</sup> However, if the gripe is that there was no contrary evidence from respectable sources and that investors, analysts, and so on were forced to rely on the dubious statements of WorldCom, this is simply nonsense. There were alternative sources of traffic data from AT&T and others that provided strong evidence that the Internet was not growing as strongly as the hype suggested. As early as October 1998, Andrew Odlyzko, then a research scientist for AT&T Labs, published a paper using data that showed that the

Internet was growing at between 70 percent and 150 percent per year.<sup>12</sup>

It was also possible to estimate future growth of the Internet on the basis of plausible consumer behavior. At the height of the boom, industry consultant Peter Sevcik examined Internet growth based on all three of the following data sets: (1) number of users—a relatively easy number to get hold of; (2) connect time; and (3) user profiles—Sevcik’s innovation. He came up with growth rates that were far more modest than anything that the industry—WorldCom or anyone else—would admit to at the time.<sup>13</sup> My own company published a couple of studies in the same period examining the likely future growth of the Internet infrastructure based on the typical take-up of information technology and consumer electronics products. Interestingly, this showed Internet switching, routing, and access equipment expenditures by North American carriers more than doubling between 1998 and 2003 and then falling off until the end of the forecasting period, which was 2007.<sup>14</sup>

All in all, the official story as described above seems weak and makes a lot of leaps. That some of the highest officials in telecom got out of the industry’s collapse with their fortunes relatively intact is widely resented. For those who lost a lot of money—or their jobs—in telecom in the past few years, such resentment is understandable. But it doesn’t mean that the bigwigs of telecom were to *blame* for the crash. And even if they were—if it could be proved that the telecom industry in the 1990s was invaded by men and women with no moral compass whatsoever who ultimately wrecked the industry—this would immediately just push the need for explanation one notch back. Why, one could ask, at exactly that point in time, and why in the telecom industry? As for the data that showed that business plans were being built on fairy tale growth models for the Internet, this was quite well known at the time. It was simply ignored. Om Malik in *Broadbandits* reports of the reception to Odlyzko’s paper that “Every time Odlyzko put up an argument, it was like

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screaming into a 100-mph gale force wind.” My own experience as a consultant was similar. Identifying a client’s business plan as unrealistically bullish all too frequently produced glazed eyes and the response that I could not possibly be correct, since some other industry analyst had predicted that within a year or two the market would be worth billions of dollars. The general response to my company’s Internet forecasts from our clients was that they were far too pessimistic. This was hardly the case—since those 1998 projections didn’t even hint at the debacle to come in telecom. So we were, in essence, wide-eyed optimists.

### **The Feds Did It!**

It’s possible that the entire industry was in a state of denial or mass hysteria. But there may be a less psychological explanation. As we have seen, there is little evidence that the people at the top of telecom had the power to create the telecom boom or the telecom bust all on their own. But there can be little doubt that regulators and politicians do have such power. Much of the boosterism emanating from the private sector could be dismissed as overenthusiastic (and even perhaps unethical) marketing. But the equivalent message from the public sector was often far grander, as the earlier quotes from Gore and Hundt show.

The pronouncements on the joys of telecom by officials from the public sector—couched as they usually were in terms of social revolution—must have done as much as anything to convince the public that a new era was dawning and that this is where their hearts, minds, and dollars ought to be. This is even more likely to be the case, given that the public sector began its propaganda effort on behalf of telecommunications much earlier than the telecommunications industry itself. For example, as a senator, Al Gore campaigned for a government-funded information infrastructure and introduced legislation that would extend the use of taxpayer-funded

research networks to kindergartens.<sup>15</sup> The bottom line is that politicians and regulators were setting the stakes very high and it was they, not private-sector managers, who had the power to restructure the telecom industry in a wholesale manner.

What is frequently assumed is that the 1996 Telecommunications Act opened up the floodgates to a wild horde of new telecom start-ups that flooded the industry with goods and services, so that eventually the bubble popped. As the article in the IEEE’s *Spectrum* magazine quoted earlier puts it, “Too many companies chased too few customers and—to make matters worse—many were using similar technology.”<sup>16</sup> What is interesting is that this writer believes that it is intuitively obvious that such a situation could only be due to “greed.” He goes on to claim that another factor in the downfall of telecom was “misguided regulation,” which he defines as “policies that protected incumbent phone companies but were disguised as competitive reform, like the Telecommunications Act of 1996 in the United States.”

My discussions in the industry strongly indicate that these views are widely held. But again they are half-truths. Yes, the problems were largely caused by “misguided regulation” and “too many companies chasing too many customers.” But the misguided regulation certainly did not favor the incumbent phone companies—in fact, quite the opposite was the case. And it was this misguided regulation itself—not greed—that led to the glut of telecom products, services, and capacity. The real villain of the telecom bubble in the United States was the 1996 Telecommunications Act—as interpreted by Reed Hundt’s FCC.

### **The Unbearable Lightness of Telecom Regulation**

Perhaps it was just a slip of the pen, but the reference in the *Spectrum* article to misguided *regulation*—rather than misguided *deregulation*—gets it precisely right. Although the word deregulation was repeated in mantra-

like fashion by almost everyone in government and the industry when describing the 1996 Telecom Act, the act was only deregulatory in the sense that it swept away many of the old regulatory structures that had evolved since the last omnibus telecom act, which was in 1934. There was certainly a consensus among both regulators and legislators that the regulatory environment for telecommunications in the United States was out of date. Unfortunately, looked at from some historical distance, that consensus also comprised a determination that telecom should be governed by new rules, not by no rules. While the deregulation of interstate trucking had at its core the abolition of the regulatory agency governing trucking, there was never a serious consideration of shutting down the FCC.<sup>17</sup> The 1996 act was regulation remade, not regulation abandoned. Some of us noted that at the time, although we still hoped for the best. In an article in *Regulation* magazine, published immediately following President Clinton's signing of the 1996 act, I noted that the act had been presented

as radical deregulation under which the country will move toward a brave new world of telemedicine, distance learning, and movies-on-demand. According to the hype, such wonders will be created by the competitive forces that have been set free by the new act. But the truth is that the Telecommunications Act of 1996 is a timid piece of legislation that barely acknowledges the competition that [is] emerging as the result of new communications technology. And rather than diminishing the government's role in directing the telecommunications industry, the bill has increased it. . . . Of course the 1996 Act is not really a piece of deregulatory legislation at all. By most accounts it adds more than eighty new items to the FCC's "to do" list.<sup>18</sup>

One conclusion that I might have drawn from this analysis is that more regulation was

likely to hurt rather than promote the prospects for telecom—after all, more regulation generally tends to be bad for business. In retrospect, I wish I had made this point clearer. However, I *did* note that the act left much to the FCC and that it specifically enjoined the commission to

forbear from applying any regulation or any provision of this act . . . if the commission determines that enforcement of such regulation or provision is not necessary to ensure that charges, practices, classifications, or regulations are just and reasonable [or] is not necessary for the protection of consumers.<sup>19</sup>

In this appallingly vague wording, I thought might lie the salvation for telecom regulation. In the 1980s, under Chairman Mark Fowler, the FCC was highly restrained with regard to using its power. That helped make the 1980s a decade of growth for the electronic communications business. Less conspicuously, succeeding FCC Republican chairmen took a similar approach, and I thought that there was some hope that the Clinton administration's choice for FCC chairman, Reed Hundt, might adopt the same strategy.

By 1996 it was already clear that the Hundt FCC was playing fast and loose with the First and Fifth Amendments to the Constitution in its approach to universal service and children's television. "Universal service" originally referred to the Bell system promise to provide nationwide service in return for its government franchise. In the 1996 act it became a slogan for a broad range of redistributionist policies to bring subsidized services of all kinds to schools, rural residents, the old, the sick, and even the homeless. These were goals heartily endorsed by the Hundt FCC.<sup>20</sup> In the case of children's television, the issue was writing new "public interest" rules for broadcasters—an issue dear to Chairman Hundt. In both cases, it became clear quite quickly that property rights and

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free speech were of far less concern than social goals as far as Hundt and his supporters were concerned. Nonetheless, at the same time the early Clinton-era FCC had also shown some inclination to forbear on administrative matters. For example, Chairman Hundt was on record as doubting the wisdom of government-mandated advanced television standards. Furthermore, the “New Democrat” promise that they would make government more efficient seemed to favor regulatory forbearance. After all, as I note elsewhere, “Not applying rules costs nothing.”<sup>21</sup>

### **Loading the Dice**

As it turns out, I was naive. Indeed, it is something of an irony that a regulatory framework created soon after the Reagan revolution ended up being in some ways more dirigiste than the 1934 act, which was created at a time when the best minds all had a socialist—or worse—bent.<sup>22</sup> Although the 1996 act removed some of the regulatory absurdities that had crept into telecom law since the 1930s, it also essentially gave the FCC a mandate to define the rules and oversee the creation of the new Internet infrastructure.

That might not have been so bad if the Hundt FCC had not been so bent on carrying out its mission with such fervor. Moreover, whatever may have been the genuine intentions on the part of regulators to cut down on bureaucracy and regulatory baggage, they seem to have failed in this too. A recent study by Greg Sidak of the American Enterprise Institute indicates that the number of telecom lawyers, as measured by membership in the Federal Communications Bar Association, grew by 73 percent in the late 1990s. In that period, there was also a 37 percent hike in FCC spending and a tripling of the number of pages of regulations in the *FCC Record* in the post-Telecom Act period.<sup>23</sup>

Worse still, the same false messianism that drove the Hundt FCC to impose its paternalistic vision of kids’ TV and universal service on

America also drove it to foist a market-distorting vision of competition on the telecommunications industry. It was this more than anything that set the stage for the meteoric rise and precipitous fall of the telecom industry. More specifically, the Clinton administration, its FCC, and above all Chairman Hundt himself had a vision of competition that seemed to emphasize quantity over quality. Thus in Hundt’s book he congratulates himself on his success interpreting and managing the 1996 act: “Within three years [of the FCC’s efforts to promote ‘competition’] there were 6,000 Internet service providers, 250 new competing local telephone companies, a half dozen new long-distance companies, [and] dozens of new equipment vendors.”<sup>24</sup>

But as in so many matters—both private and public—emphasizing quantity over quality is not always wise and may be a sign of naivety. As I pointed out in another *Regulation* article in 1997: “The FCC assumes that more competitors means more competition and that any competitor is as good as any other. But that egalitarian premise ignores the fact that a mix of large and small suppliers might be the best arrangement for providing services. . . . The FCC has again taken on the role of centralized planner, almost guaranteeing an inefficient result. The consumer is the ultimate loser.”<sup>25</sup> As it turned out, this was correct, if not actually an understatement. It was the more-is-better philosophy of the Hundt FCC that may have contributed more than anything else to creating the U.S. telecom bubble that ultimately burst.

Here’s how it worked. Pervading all discussions of telecom regulation during the period leading up to and soon after the 1996 act was signed into law was the assumption that the severed parts of AT&T were still too powerful, either as the result of their history as part of the Bell system monopoly or because they were, in some sense, natural monopolies. At some level, this was hard to argue with. The Baby Bells controlled the bulk of the physical facilities that provided local calls and access to long-distance networks. In addition, they had a brand name, a technical skill set, and



political savvy and contacts that no start-up could hope to match.<sup>26</sup>

As a result, there was a consensus that something needed to be done to give new carriers a head start. Even some dyed-in-the-wool libertarians thought that, as a practical matter, this was necessary. We soothed our consciences by telling ourselves that some minimal force by the government was necessary to redress the government wrongs of the past that established AT&T as a monopoly in the first place,<sup>27</sup> and which, in turn, resulted in an intolerable competitive environment.

The specific issue of concern here was the degree to which the Bells should be forced to give newly emerging competitors access to their networks. It was understood that if the Bell companies simply refused to allow the newcomers to send traffic over the incumbent Bell networks, start-up local carriers would have to incur huge upfront costs to build completely new networks from scratch before they had signed up any customers. At best, this would mean considerable delays in the arrival of meaningful local telephone competition. At worst, investors would soon find better ways to use their money than betting on new entities whose competitive advantage over the Bells was far from clear.<sup>28</sup> In the worst-case scenario, no competition would ever appear.

As an aside, it should be noted that the almost universal assumption—that the Bell companies, if left to their own devices, would refuse to cooperate with rivals in mutually profitable situations—is wrong. Long-distance companies regularly lease or trade facilities where this makes sense for both parties. So do Regional Bell Operating Companies and the many independent (mostly rural) telephone companies that have always been outside the Bell system. This type of behavior has always taken place, even in the darkest days of AT&T dominance. In addition, AT&T prior to its break up would sell its services through agents, where the local presence of these agents in a small community or in an industry made that a commercially viable strategy for both sides. Indeed,

although under the leadership of Theodore Vail in the early days of the Bell system AT&T deliberately drove many small independent telephone companies out of business by refusing to connect them to the AT&T network, this turned out to be something of a short-term solution. Ultimately, Vail had to turn to the government to protect the Bell systems' dominance.<sup>29</sup>

But to be fair, a willingness by incumbent local telcos to trade or lease facilities or use outside agents in certain situations is not the same thing as a willingness to open up networks to competitors who exist primarily to take away much of the Bell's business. Given all of that, an insistence that the Bells open up their networks to competitors seems reasonable, although the Takings Clause in the Fifth Amendment makes such action worrisome, even taking into account the manner in which the Bell system acquired its power.<sup>30</sup> Thus in 1994 the DC Circuit Court struck down FCC collocation rules that gave competitors access to Bell central offices and used uncompromising language in its ruling, noting that the rules were a Fifth Amendment violation since a "permanent physical occupation authorized by the government is a taking without regard to the public interest that it might serve."<sup>31</sup>

It's hard for a libertarian-minded analyst not to be sympathetic with this kind of thinking. But sometimes property rights can be a tricky issue, and, as a practical matter, few people have really questioned the notion that some kind of forced facilities sharing is a prerequisite for broad-based competition to emerge in the local telephone market. However, it is also true that equally few people would question that such competition would ultimately have to be based on facilities owned by the Bells' competitors, not on shared facilities. It is possible to imagine minimalist FCC rulings that would give competitors access to Bell facilities as a short-term break, with definite sunset provisions.<sup>32</sup> This would (1) help the Bells' competitors get over some barriers to entry, which probably would not have emerged in a real free market

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in the first place, (2) force these competitors to include building their own facilities in their economic calculations from the outset, and (3) possibly get over one of the objections implicit in the DC Circuit Court ruling mentioned above—that the forced access would not be a permanent one.

This minimalist approach is, however, inconsistent with the beliefs of Hundt and the New Democrats that competition should be defined mostly in terms of quantity of competitors. If quantity is what you care about most, then what you need to do is specify forced access in such a way that you can get as many people to rush into the market as possible and not make them worry all that much about the future costs of building a network. Taking this approach is even more attractive if you are, like Hundt, a man in a hurry, who wants to show that he can reform telecom and then move on to some other powerful and lucrative position.

And it was all so easy to achieve. All Hundt had to do was come up with aggressive regulations that guaranteed cheap access to almost every part of the Bell network. And hang the consequences. Cato’s Adam Thierer points out that Hundt’s “managed competition vision for the telecom sector could be filed under the ‘burn the village in order to save it’ theory of political philosophy.”<sup>33</sup> Thierer goes on to note: “In several chapters of his book, Hundt boasts about Commission efforts to deliberately handicap the Bells and advantage rivals. Considerations of future innovation and investment took a backseat to the short-term goal of rapidly increasing the number of new entrants into the market.”<sup>34</sup>

## **Reed’s Big Unbundling Adventure**

The specific mechanism for implementing Hundt’s policies was something called, innocuously enough, “unbundling.” This meant that certain parts of the network were identified by the FCC as ones that had to be made available to competitors at wholesale

prices. The methodology was not the FCC’s choice; it was mandated in the 1996 act, and it is difficult to see how even the most minimalist forced access scheme could have proceeded without something like unbundling. However, as with other requirements of the 1996 act, much was left to the interpretation of the powers that be at the FCC. In particular, the 1996 act said next to nothing about how the FCC should set prices for unbundled elements—it simply required that they be based on “cost,” which left plenty of wiggle room for Hundt and his associates.

With the regulatory forbearance traditions of its predecessors in mind, the Hundt FCC could have been quite conservative in its interpretation of unbundling. It could even have found justification for a conservative approach to unbundling in the 1996 act itself, since the act requires the FCC to consider whether competition would be “impaired” before it defines an “unbundled network element.” But as the title of his book and its somewhat manic tone indicate, Hundt saw himself as a revolutionary, and “restraint” simply wasn’t in his vocabulary.

Recognizing that unbundling was the key to bringing new businesses into the market at a rapid pace, which was, as we have seen, Hundt’s definition of competition, the Hundt FCC had the specifics of unbundling ready for use within four months of the passage of the 1996 act. In the words of telecom scholar and lawyer Peter Huber, they

unbundled absolutely everything. The \$25 electrician’s box on the outside wall of most houses, where the phone company’s lines connect to the inside phone wiring. The loop that runs to the central office. The switching equipment and software in that office. The high-capacity fiber-optic lines that connect local offices to the long-distance network, along with operator and directory-assistance services. And more, much more.<sup>35</sup>

Moreover, “the new rules also required

incumbents to offer all the unbundled elements as a single re-bundled package—at the new wholesale rate.”<sup>36</sup>

What this meant was that rather than giving newcomers a little bit of assist to break into a market that the government had closed off in the past, the FCC was making up for past government sins by giving these newcomers the right to pillage the Bell networks. Hundt’s rush to action completely ignored the one thing upon which everyone seemed to agree—that the eventual goal of competitive policy in local telecommunications was to have the “newbies” build their own networks. But as Huber pointed out, under Hundt’s rules: “New entrants . . . would not have to build a single new item or a single new inch of network themselves if they did not care to. They could compete simply by placing a new label on the facilities that they had requisitioned, customer by customer, from the old phone company.”<sup>37</sup>

Perhaps even more disastrous was the way that “wholesale prices” were set for unbundled elements. After all, if all that the FCC had done was to give competitors access to unbundled elements but had then set prices very high, nothing of significance would have ensued. As we have noted, the 1996 act required only that the FCC base wholesale prices on “cost.” A reasonable approach might have been to take the view that “cost” was what the Bells had paid. This would have also watered down the takings argument, in that the Bell companies could reasonably be thought of as having been justly compensated. Instead, futurists that they were, Hundt and his supporters at the FCC pushed for a cost definition based on what it would *theoretically* cost a competitor to build facilities on the basis of current technology, starting from scratch. This definition and the process surrounding it is generally referred to as TELRIC, which stands for Total Element Long-Run Incremental Cost. Because of the rapidly falling price/performance ratios for any equipment based on microelectronics, this led to wholesale prices that were much lower than might have been derived using historical costs.

Also, because the actual costs of equipment deployments are often significantly higher than the theoretical costs (because of inefficiencies, such as equipment delays and bugs in the system), newcomers were bound to get a much better deal by using the Bell lines than by building their own. Since the wholesale prices as calculated by the regulators could not take such problems completely into account, the Bells not only had to give their rivals low-cost entry to the networks, they were also effectively forced to provide an element of free service. All things considered, Hundt’s rush to make the market more “competitive” was virtually a giveaway for the new entrants. Here is Huber again, describing the bargains that were to be had in Hundt’s everything-must-go sale:

A competing phone company can now lease from Verizon, in perpetuity, an unbundled copper telephone line from an East 87th Street apartment to the basement of 97th-and-Lexington for about \$15.50 a month. It can also lease, at regulated rates and for as long as it may wish, a cage in Verizon’s basement to house any equipment it might care to connect to the line. Switching service will run the new company \$5 a month. Caller ID—which Verizon itself would sell to ordinary customers for \$8 per month—will cost just twenty cents at wholesale.<sup>38</sup>

And the competitive local exchange carriers—not to mention the folks who invested in them—were very happy.

## How Reed Hundt Created Greed

No wonder the market boomed. The Hundt FCC gave away the Bell companies network, and lots of new entrants jumped in to seize the opportunity. As new local service providers appeared in droves, so did new long-haul investment and both new equip-

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ment companies and components companies designed to support the new local and long-distance networks that were being built. It was widely believed—correctly to some extent—that new carriers would prefer to deal with equipment suppliers with which they shared an entrepreneurial spirit and that the new carriers might not get the same attention that the Bells got from established equipment firms such as Nortel or Lucent. In addition, there was a prevalent view that the new carriers would need different kinds of equipment than the old carriers. For example, it was said that the new guys on the block would have to focus on leading-edge services to best compete with the Bells and that they would have to widely deploy wave division multiplexing systems to cost optimize the fiber they acquired from the Bells.<sup>39</sup>

However, it is unlikely that much serious economic analysis was ever done to support such propositions or, indeed, much of the other conventional wisdom of the day. Hundt's FCC could hardly have come up with a better scheme to attract the reckless and put off entrepreneurs with an eye to building real businesses. First, the federal regulators not only brought down the barriers to entry in the local telephone business; they ended up subsidizing market entry. Then regulators, politicians, and industry leaders went around the country making speeches about how fast the market was going to grow and how much money there was to be made. So greedy fools rushed in where economically rational angels feared to tread. Although both liberal and conservative journalists spent a lot of time whining about the greedy folks who killed telecom, let us all remember that it was Gore and Hundt who *wanted* people to rush into the business in order to create a competitive market, which they had defined purely as a numbers game.

What the Hundt unbundling scheme actually created was a boondoggle. Fools could go into business using the Bell networks at bargain basement costs. They thought that there were big bucks to be made short term, because telecom was the latest

fad and the Internet was “where it's at.” They could forget about ever having to build their own networks. Their competitors would provide them. By contrast, the sober entrepreneurs realized that there was never going to be enough money in the business to justify their own networks, primarily because they would, from the get-go, be competing against numerous new entrants who were subsidized by the unbundling scheme.

Meanwhile, the unbundling scheme was making things hard for the Bells on a number of levels. A government scheme that essentially confiscates large chunks of a public company's strategic assets is not a policy designed to keep its share price high. As the unbundling scheme took effect, Bell share prices fell, forcing the companies to take on more debt and making them think twice about investing in their network at all. It was not just a matter of capital expenditures in a general sense. When Bell companies came up with an innovative new service, they were often compelled to help their rivals get into precisely the same service. For example, as I pointed out in a 2001 paper for Cato, it was

a regulatory nightmare for a Bell company to provide wavelength services. Immediately after the 1996 act was signed into law, some state public utility commissions ruled that if a Bell installed any wave division multiplexing [WDM] equipment . . . they would be forced to sell some of the channels to their competitors. The result was predictable. In 1997, U. S. West stopped deployment of WDM systems, even though WDM was much less expensive than laying additional fiber. . . . Eventually, the FCC overruled those decisions. Currently, as long as a Bell can prove that it is deploying WDM channels merely for its own commercial use, it will not be forced to give its competitors access to them. But this is only a modest improvement, because if a Bell company sells just one channel to a competitor for good commercial rea-

sons, it opens itself up to the charge that it has installed WDM for reasons other than its own use, and it is likely to be forced to make all of its wavelengths available to its competitors.<sup>40</sup>

So unbundling, as defined by the FCC, caused new carriers to jump into the telecom market without a care in the world and little regard to building physical networks in the future. At the same time, the unbundling discouraged more conservative entrepreneurs who wanted to get into the business with the long term in mind by slowly building up their own infrastructure. Finally, it even discouraged the Bells from investing in the future.

And gradually the Hundt plan unraveled. While Chairman Hundt himself could leave office claiming victory for his policies, it soon became obvious that his vision was ill-considered at best. For in his desperate haste to ensure that anyone with a taste for telecom could get into the business, little thought was given to how these new entrants could actually make money without networks. And essentially there was only one way—piece together unbundled elements of the Bell networks in innovative ways and re-brand them with your own name. It is possible to imagine someone making a long-term business out of this by catering to some niche user market. The value added—the margins—in such a business would be derived from the new entrants' knowledge of the specialist market, not from network costs. But to expect a business to simply use the Bell networks, re-brand them, and then cater to a broad-based audience is expecting a lot, especially given the strength of the Bell brand in the first place. Maybe a new carrier or two could get lucky on this model, but it isn't very likely. Probably, the best that could be hoped for is that some new entrants could tap into the price sensitivity of the telephone business, attract some customers away from the Bells, bleed cash for a while, and then sell their customer base back to the Bell they took it from in the first place.

For all these reasons, the kind of competition (if that's what it was) that had been pro-

moted by Hundt's scheme was virtually certain to come unglued. And it did. The new "value chain" that had been created by radical unbundling turned out to be a house of cards. It wasn't just the new telcos themselves that failed. Almost every equipment company that came into being during the telecom boom has now disappeared, having been acquired or simply gone out of business.<sup>41</sup>

Why did the market collapse when it did—in the year 2000? There may have been no single reason. Perhaps federal telecommunications policies had lowered barriers to a point that the numbers of competitors in all segments of the telecom market had reached some kind of "tipping point," at which implosion became inevitable. Recent work in chaos theory has made it a widely accepted fact that fairly small events in an economy can have catastrophic outcomes if the conditions are sufficiently unstable. Could it all have gone another way? Or was the invention of the World Wide Web and the irrational exuberance that flowed from it destined to produce a gold rush mentality? The ultimate answers to these questions will come from future technology historians writing at a time when tempers have had a chance to cool and damaged careers and investment portfolios have repaired themselves.

But writing from the perspective of 2004, it is hard not to conclude that the FCC could have done a much better job. Surely there was some way to avoid the thousands of pages of new regulations and, indeed, making an effort to avoid such bureaucratic encumbrances is exactly what one might expect from government-efficiency-loving New Democrats. Unfortunately, what we should also have expected is exactly what we got—an attempt to manage a complex socioeconomic environment so that everyone gets "fair" access to the network,<sup>42</sup> with big businesses seen as the enemy to be punished in some way. If this all just sounds like thinking from the 1960s, remember that Reed Hundt took the name of his book from the title of a Beatles' song and that Democrats of a different generation have been highly critical of

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Hundt's way of doing things. Thus Alfred Kahn, who chaired the Civil Aeronautics Board as it was being dismantled, has called Hundt's pricing rules TELRIC-BS. "BS," Kahn claims, stands for "blank slate." But we all know what he really means. Although not of a different generation, Eli Noam, professor of economics and finance at Columbia Business School (and once talked about as a possible future Democratic commissioner on the FCC), has written of TELRIC that "cost is often calculated on the basis of impenetrable engineering models that Lenin would have liked if he only had had computers."<sup>43</sup>

While the Hundt unbundling rules allowed him to claim early success and advance himself personally, I doubt there was ever a cynical and deliberate conspiracy to push the personal interests of Hundt, Gore, and their cronies any more than there was a conspiracy to push those of the leaders of WorldCom, Global Crossing, et al. It is much more likely that they simply got caught up in the limitations of their own worldviews. In the case of Reed Hundt, his background in antitrust law meant that it was impossible for him to conceive of competition in more realistic terms.

A more economically literate and less ideological FCC chairman might have lobbied simply for removing the regulatory barriers to entry in the telephone business and giving prospective entrants a bit of help for a while, by making sure that the Bells couldn't kill off competition before it got started. But if Hundt and his friends in the administration and at the FCC had taken that route, they would have also had to accept an end game in which the Bells competed for the major segments of the local telephone business<sup>44</sup> with a small number of other large powerful entities. This is pretty much the structure that free markets dictate for highly capital intensive industries. But this type of oligopolistic situation would be anathema to a Clintonian New Democrat with a built-in mistrust of large establishment businesses and a romantic idea of what competition actually looks like in the real world. For it seems that, in

their resentment of big business, New Democrats differ from those to their left only in the sense that New Democrats suffer from the fatal conceit that competition in private industries, such as the telecom industry, can be easily managed to meet certain social goals, while Leftists want direct government control—that is, a whole new system. Reed Hundt's FCC was a textbook case of New Democrat thinking.

Now that the damage has been done, how can it be corrected? The future is beginning to look a little brighter, for both regulatory and technological reasons. On the regulatory front, the recent FCC Triennial Review on unbundling went some way toward addressing some of the problems of unbundling in the area of new services. Meanwhile, court challenges to the facilities-sharing rules have proved successful. In March, 2004, the U.S. Court of Appeals for the District of Columbia said that the unbundling rules could not be justified, and three months later the Supreme Court refused to intervene.

The danger hasn't passed, however. The Triennial Review left much undone, while adding to the bureaucracy and boosting lawyers' fees rather than increasing consumer benefits.<sup>45</sup> And the FCC is now attempting to rewrite the rules to make them more palatable to the courts. In addition, both the unbundling rules and the universal service rules that stem from the 1996 act as interpreted by Hundt's FCC are becoming institutionalized. The latest generation of regulators and communications lawyers by now probably finds it hard to imagine that there are other ways of doing things. Careers increasingly depend on keeping things the way the FCC made them following the 1996 act, and any attempt to reverse the rules could be delayed for years by litigation and fights among the FCC commissioners.

In addition, there are calls for more regulation by those who never much liked the idea of deregulation in the first place. Writing in the *American Prospect* on what he calls "The Great Telecom Implosion," Paul Starr claimed:

A century ago . . . the Progressives were divided in their response to the rise of big business. Some sought to restore the earlier entrepreneurial world . . . others accepted the large corporation and called for regulation to achieve liberal ends. By the New Deal, the second viewpoint had decisively won out. Despite the romantic appeal of competition and the imperfections of regulation that hard won realism will have to win out again.<sup>46</sup>

This is a dreadful prospect for America, but there remain two big hopes for telecom reform in the long run. First, that the current dominant regulatory ideology—that managed competition is the only way to go in the telecom industry—will give way to a more laissez-faire approach. As problems with the 1996 act grow, there will surely emerge a new generation of Young Turks who want to address these problems with free-market solutions. The subtitle of a book by Peter Huber sums up what is needed: *Abolish the FCC and Let Common Law Rule the Telecosm*.<sup>47</sup>

The other big hope for telecom is that technological change will make current regulatory structures obsolete as telecom markets become more contestable. While the bursting of the telecom bubble has led to a lack of investment in new telecom technology, the bad memories will ultimately pass, and telecom will return to its historical pattern of being a rather conservative industry that nonetheless makes regular technological leaps forward. There are a couple of big hopes for disruptive technology here. One is wireless, which has two potential impacts on traditional telecommunications. First, consumers—especially younger consumers—are shifting to cell phones as their primary means of telephone communications. This is beginning to take a significant bite out of the wireline revenues of the incumbent carriers. The reason for this trend is that mobile telephony typically comes with many more features than the regular telephone service. And it also usually offers free long distance.

Unlike a few years ago, the quality difference between wireline and wireless communications is now relatively minimal.

The other hope from wireless is that *fixed* wireless can offer an alternative to copper and fiber-optic cables in access networks. This has been talked about for almost two decades, and until recently one didn't see that much fixed wireless in the access infrastructure except in some of the newly emergent nations, where its deployment was mainly motivated by how quickly a network could be installed, rather than its cost relative to wireline communication. (It is obviously quicker to install a network of wireless transponders than to rewire an urban area with fiber.) However, the success of "WiFi" networks for mobile computing in the home, office, and public buildings has given a new impetus to fixed wireless. Although WiFi is probably not going to provide a ubiquitous public access platform, it is part of the solution. Similar technologies—notably "WiMax"—may well enable fixed wireless to emerge as a major part of the access segment of the public network over the coming decade.

WiFi and WiMax are industry standards that came out of the Institute of Electrical and Electronic Engineers' 802 Project, which is primarily focused on standardizing local data networks. As such, voice is not the primary concern of these standards. However, over the past decade it has become increasingly practical to convert traffic into packetized data traffic—more specifically, Internet Protocol traffic—and transport it in exactly the same way that other IP data are carried. As a result, in the context of WiFi, it is now possible to imagine a home in which both the computers and the phones are connected to the home WiFi network and both the data traffic and the voice traffic are sent and received over the Internet.

There's a lot more to Voice-over-IP (VoIP)<sup>48</sup> than just running data over home WiFi networks. At a physical level VoIP traffic can be carried over both wireless and wireline networks, and it appears to promise radically improved economics for voice traffic. And,

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**No matter how telecom deregulation evolves in the early 21st century, what happened to telecom in the late 1990s remains a cautionary tale of how reforming regulation rather than truly deregulating can lead to disaster.**

like the shift in mobile communications, it is a serious threat to the incumbent voice carriers who have built their networks on an entirely different technology—time division multiplexing (TDM)—and consequently on entirely different business models. The rise of both wireless and VoIP therefore presents challenges to the Bells and other incumbents—carriers that, at the time of the 1996 act, were universally seen as possessing huge technology and established network advantages over any newcomers.

This is not the place to go into detail about either the technology or the economics of wireless or VoIP. However, it is worth noting that they present practical short-term ways for potential rivals to the Bell companies to get into the business with physical networks that are separate from the Bell networks—and there is a widespread consensus that it will only be when this happens that true competition will have arrived. When Congress was putting together the 1996 act, it was not seriously considered that VoIP and wireless could prove significant challenges to Bell dominance of the market. At the time, there seemed no serious alternatives to forced access to the Bell networks being provided to the new entrants. The only debate was over the extent and length of time that this would be provided.

Now it looks like new technology could ultimately supply a genuine alternative access to telecom policy based on forced access and that there is even more reason to truly deregulate telecom—that is, to abandon regulation rather than merely reform it. Technological change may eventually mean that many of the most cherished assumptions of the 1996 act will follow those of the 1934 act into the dustbin of telecom history. One can only hope that, this time, it won't take more than 60 years for it to happen. In any case, no matter how telecom deregulation evolves in the early 21st century, what happened to telecom in the late 1990s remains a cautionary tale of how reforming regulation rather than truly deregulating can lead to disaster.

## Notes

1. Quoted in Victor Rivero, "Electronically Shaping a New World Order," *Government Technology*, August 1999, <http://www.govtech.net/publications/eCom merce/aug99/newworld.phtml>.

2. Our concern in this paper is primarily with the United States, but we note that (1) the debacle in the U.S. telecommunications industry, which accounts for some 40 percent of the world market, was a major contributory factor in the worldwide crash of the industry and (2) much of the poorly designed regulation that led to the crash in the United States was mirrored by the behavior of regulators in Europe and elsewhere.

3. Reed E. Hundt, *You Say You Want a Revolution: A Story of Information Age Politics* (New Haven, CT: Yale University Press, 2000), pp. ix–x.

4. Michael K. Powell, speech at the Goldman Sachs Communicopia XI Conference, New York, October 2, 2002, [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-226929A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-226929A1.pdf). The conference seems very badly named under the circumstances.

5. *The Economist*, July 20, 2002, pp. 9, 59–61. "Telecoms" is the British contraction of "telecommunications."

6. By far the best researched and entertaining single source of biographical information on bubble-era telecom executives is Om Malik's book *Broadbandits: Inside the \$750 Billion Telecom Heist* (Hoboken, NJ: Wiley, 2003). I have drawn on that book throughout this paper, even though—as this paper makes clear—I don't quite share the view that the telecom debacle was a "heist."

7. For example, according to Malik (pp. vii–viii), Ken Rice, the former CEO of Enron Broadband Services, "was more interested in his collection of Ferraris and motorcycles than in running Enron Broadband."

8. See Malik, pp. 13–16.

9. Daniel P. Dern, "Intranet Visionaries, Part II: An Interview with John Sidgemore," *Telecommunications*, August 1997. Sidgemore came to WorldCom via WorldCom's acquisition of UUNet, a major Internet provider and was considered one of the most important people in the industry during the glory days of the telecom boom. Ultimately, Sidgemore ran WorldCom for a short while after the fall of Bernie Ebbers. He died during the period that this paper was being written and, as his obituaries pointed out, he was one of the few highly placed telecom executives to get through the tele-



com bubble with his reputation unscathed.

10. See Malik, p. 13.

11. For the story of the fall of WorldCom, see Lynne W. Jeter, *Disconnected: Deceit and Betrayal at WorldCom* (Hoboken, NJ: Wiley, 2003).

12. Andrew Odlyzko and Kerry Coffman, "The Size and Growth of the Internet," *First Monday*, 1998, [http://firstmonday.org/issues/issue3\\_10/coffman/index.html](http://firstmonday.org/issues/issue3_10/coffman/index.html).

13. Peter Sevcik, "The Myth of Internet Growth," *Business Communications Review*, January 1999.

14. "Internet Implications 2: What Building the Internet Will Mean for Service Providers and Their Suppliers," Communications Industry Researchers, 1998.

15. See Lawrence Gasman, *Telecompetition: The Free Market Road to the Information Highway* (Washington: Cato Institute, 1994), p. 107.

16. Peter A. Bernstein, "What's Wrong with Telecom," *IEEE Spectrum Online*, January 2003, <http://www.spectrum.ieee.org/WEBONLY/publicfeature/jan03/comm.html>.

17. Except by a small group of analysts and commentators from libertarian and conservative think tanks and—for a short while anyway—by the Speaker of the House, Newt Gingrich.

18. Lawrence Gasman, "The Telecommunications Act of 1996," *Regulation* no. 3, 1996.

19. 1996 Telecommunications Act, Section 160(a)(1).

20. See Lawrence Gasman, "Universal Service: The New Telecommunications Entitlements and Taxes," Cato Institute Policy Analysis no. 310, June 25, 1998.

21. Gasman, "The Telecommunications Act of 1996."

22. This is most obvious in the reform of the "Universal Service" requirements, which were formally embodied in law for the first time in the 1996 act. See my "Universal Service: The New Telecommunications Entitlements and Taxes."

23. See J. Gregory Sidak, "The WorldCom Fraud and the Collapse of American Telecommunications after Deregulation," *Yale Journal on Regulation* 20 (2003): 207.

24. Hundt, pp. 193–94.

25. To be fair, nobody involved with the telecom dramas of the mid to late 1990s was that interested in pinning down what they meant by competi-

tion—although they all knew it was a good thing! This is quite understandable, since public figures—whether politicians, legislators, or regulators—are prone to bland statements. Anything more precise might have serious political costs. This is a pity, since without a clear definition of competition in telecom it is impossible to determine whether the expected goals of competition are likely to be achieved.

26. There was always some competition for the Bell companies and even for the pre-break-up AT&T, since, where appropriate, large organizations could build their own private networks, which might include their own physical facilities. Since the 1980s, alternative carriers had emerged to provide networking facilities for this special application, and AT&T actually competed for this type of business with its former "daughters" once their divestiture had occurred. However, everybody agreed that the purpose of reforming existing regulation was to ensure that residential consumers, small businesses, and smaller organizations more generally would have a wider choice of communications options. As we have already noted, nobody specified how wide.

27. The history of the Bell system from the 1934 Communications Act onward was dominated by the understanding that government would provide AT&T with guaranteed profits and keep out all competition in return for it providing nationwide service—one of the key goals of the 1934 act. The Bell System also had to stay out of certain businesses and make its intellectual property universally available. That seemed to work well enough before the technological revolution in microelectronics led to today's rich landscape of actual and potential telecommunications services. In any case, although it seems that today almost any successful firm attracts accusations of monopoly—the latest and strangest example being Google—nobody could argue with such accusations against the old AT&T. AT&T in the old days was the classic monopoly—a private government concession from which all others were excluded at the risk of legal action.

28. In the 1980s long-distance competition emerged quite rapidly and successfully. However, its economics were quite different from local competition. In the old Bell system, AT&T Long Lines priced high in order to subsidize AT&T's local telephone systems—this was part of its universal service deal with government at the time. However, even after the break-up of the Bell system, AT&T was typically the most expensive option, so it was relatively easy for even low-quality alternatives to compete with AT&T on price. Although successful alternatives to the Bell system emerged in the 1980s for specialized business

services, any newcomer attempting to compete with the Bell local services more generally faced an uphill battle to survive in a policy environment where state and federal regulators insisted—even after the Bell break-up—that local phone charges should be as low as possible.

29. For a discussion of voluntary interconnection in the electronic communications business, see the section on “Competition and Interconnection” in Gasman, *Telecompetition*, pp. 120–22.

30. For an excellent discussion of forced access and “takings,” see Adam Thierer and Clyde Wayne Crews, *What’s Yours Is Mine: Open Access and the Rise of Infrastructure Socialism* (Washington: Cato Institute, 2003), pp. 9–12.

31. *Bell Atlantic Corp. v. FCC* 24 F.3d, 1441, DC Circuit, 1994.

32. Adam Thierer has suggested February 8, 2006, as a cut-off date. This would be the 10th anniversary of the 1996 Telecommunications Act. By this time, he believes it would be possible for new physical (wireless and fiber) facilities to be built that could compete with Bell networks. See Adam Thierer, “UNE-P and the Future of Telecom ‘Competition,’” Cato Institute *TechKnowledge* no. 48, February 1, 2003, <http://www.cato.org/tech/tk/030201-tk.html>.

33. *Ibid.*

34. *Ibid.*

35. Peter Huber, “Telecom Undone,” January, 2003, [http://www.manhattan-institute.org/html/\\_comm-telecom.htm](http://www.manhattan-institute.org/html/_comm-telecom.htm).

36. *Ibid.* This piece gives an excellent, if depressing, account of the many bad things that have grown out of the Hundt FCC’s unbundling doctrine, including burgeoning bureaucracy and litigation.

37. *Ibid.*

38. *Ibid.*

39. Wave division multiplexing enables multiple streams of information to be sent down a single fiber.

40. Lawrence Gasman, “Why ‘Fair’ Competition Fails in the Telephone Industry: The Case of Wavelength Services,” Cato Institute *TechKnowledge* no. 27, November 26, 2001, <http://www.cato.org/tech/tk/011126-tk.html>.

41. For example, “Wave Division Multiplexing,

Photonic Switching and the Coming of All Optical Networks,” Communications Industry Researchers, 1999, listed 45 companies active in the business of selling equipment for optical networks. Of these, 14 are still selling such equipment. And only 3 of these were created during the optical telecom, the rest being the giants of the telecom and CATV industries such as Lucent, General Instrument, and so forth, which have evolved since the beginning of that industry.

42. This is even more obvious when universal service issues are brought into the picture.

43. Eli Noam, “Regulating in Order to Deregulate,” *FT.com*, May 2002.

44. The crux of the 1996 act was opening up competition for the mass-marketed communications services bought by residential users and small business, not bringing more companies into the market for specialist business services. In many ways these had been competitive for some time.

45. My primary concern in this paper is to analyze the underlying causes of the telecom bubble. Although the unbundling issue lies at the heart of this “mystery,” explaining the likely consequences of the latest version of unbundling contained in the 576-page, 2,447-footnote Triennial Review lies beyond the scope of this present piece. For an excellent analysis of the review, see Adam Thierer, “Was the UNE Triennial Review Worth the Wait? Part 1: The Process,” Cato Institute *TechKnowledge* no. 57, <http://www.cato.org/tech/tk/030829-tk.html>; and Adam Thierer, “Was the UNE Triennial Review Worth the Wait? Part 2: The Substance,” Cato Institute *TechKnowledge* no. 58, <http://www.cato.org/tech/tk/030915-tk.html>.

46. Paul Starr, “The Great Telecom Implosion,” the *American Prospect*, September 9, 2002, pp. 20–24.

47. Peter Huber, *Law and Disorder in Cyberspace: Abolish the FCC and Let Common Law Rule the Telecom* (New York: Oxford University Press, 1997). It should be noted that, for Huber, antitrust law is a de facto part of common law. This would not be the view of all libertarian-leaning analysts, and some of us would like to see antitrust law play little or no role in future telecom policy.

48. The reader should note that there is a distinction between “voice-over-IP” and “voice-over-the-Internet.” The former describes the use of a particular networking protocol (i.e., IP) to carry voice traffic. It leaves open what kind of network is going to be used for transmission. For example, VoIP can be and is used instead of standard PBXs in some offices. Voice-over-the-Internet means precisely what it says. Thus, all voice-over-the-

Internet is VoIP, but not vice versa. This is an important distinction because the technological problems that emerged as VoIP was developed have largely been solved, whereas sending voice-over-the-Internet still presents network engineering challenges because of the complex nature of the Internet itself. Thus we are not quite at a point where voice-over-the-Internet is a complete alter-

native to regular voice service in terms of quality. It should be remembered that in the early days of long-distance deregulation, much the same could be said about the services that were alternatives to AT&T. This changed quite quickly as these services reached critical mass and quality became a key competitive issue. We will see much the same evolution pattern with voice-over-the-Internet.

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