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TURMOIL IN TELECOMM:

WILL WASHINGTON AND THE STATES

MOVE FORWARD ON REFORM?

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MODERATOR:
TERI RUCKER
Senior Writer, National Journal's Technology Daily

PANELISTS:

ROBERT W. CRANDALL
Senior Fellow, Economic Studies, The Brookings Institution

ROGER NOLL
Professor of Economics, Stanford University

CHARLES H. FERGUSON
Nonresident Senior Fellow, Economic Studies, The Brookings Institution

QUESTION & ANSWER SESSION

THIS IS AN UNCORRECTED TRANSCRIPT.

P R O C E E D I N G S

MS. RUCKER: Hi. Good morning, everyone. Welcome to the Brookings Institution Panel on "Turmoil in Telecomm: Will Washington and the States Move Forward on Reform?"

I'm Teri Rucker with the National Journal's Technology Daily. We'll just get underway.

Robert Crandall will be our first speaker. He is a senior fellow in the Economic Studies Program at the Brookings Institution. He specializes in industrial organization, antitrust policy and the economics of government regulation.

Second will be Roger Noll. He is currently the Morris Doyle Centennial Professor in Public Policy at the Department of Economics at Stanford University.

And third up is Charles Ferguson. He's a nonresident senior fellow of Economic Studies at Brookings. His expertise is in antitrust policy, communications policy and comparative economics.

So, without further ado, we'll have Bob Crandall and his presentation.

MR. CRANDALL: Thanks, Teri.

I guess I'm going first because I have a few charts I'm throwing up on the PowerPoint presentation, and actually the reason I'm doing what I'm doing, and the speakers didn't know what we were each doing until just a few moments ago, is that Bob Litan wrote the cover copy for this, and he suggested, "Among the contentious issues, our competition in local telephone markets accelerating the delivery of broadband and bailing out the telecommunications industry."

That last one scared the hell out of me so I thought I better do something to address it, so that we don't go down the road of VRAs for autos, tariffs for steel, bailouts for corn farmers, and so forth in telecomm, when I don't think it's necessary.

So I'm going to start out with just a description of what has happened since the 1996 act and probably not spend a lot of time on regulation. I judge that Roger and Charles will follow with more discussion of regulation.

So "Turmoil in Telecomm," that's I guess Bob Litan's title.

I started out with showing what has happened in the narrow band sector of the telecommunications market in terms of the share, which is of total lines which have been captured by the new entrants. And this chart, which I hope you can see all the way in the back of the room, breaks down from FCC data the increasing penetration of the new local competitors, the so-called CLECs--as it's probably known in this room, if you're involved in telecomm. Who doesn't know what a CLEC is?--and how they are reaching their final customers.

That deep-blue line starting at 2000, second quarter, and expanding all the way to 2002, fourth quarter, is the UNE-P, which essentially is a form of resale using what's called the UNE-Platform. It's a misnomer because there's no unbundling that goes on there, although it's called the Unbundled Network Element Platform.

That, plus the light blue at the bottom, are a large share of the lines which the new competitive entrants offer, which is essentially a resale product. It simply transfers the marketing and the billing function from the incumbent local carriers to a new set of carriers without adding much value.

The ONET there at the top, the red, is increasingly cable television companies. In fact, the number of lines accounted for by the new entrants, non-cable entrants, over their own facilities has been shrinking over the last couple of years.

And then the UNE-L, the yellow one there, the second one up, comprises, well, a couple percentage points of that 13-percent share. That is mostly companies offering services to businesses over the loops of the local companies, but providing their own switches, and the rest connecting to the backbone any way they want.

So what this shows is that we've had a growth far more than any other country, other than the U.K., which started with cable years ago, through the so-called unbundling policy, but most of it has really evolved into resale, and in fact, as I will show in a minute, most of the people doing this business, the new local entrants, are bankrupt or have done very badly economically.

Secondly, if we go to the broadband market, this is a forecast for this year from Morgan Stanley looking at actuals and forecasts out through the end of this year, through 2006. This breaks down broadband between cable modem service, DSL provided by the incumbent local carriers, and the red one, the little red bar at the bottom is the amount of DSL provided by the new competitive local exchange carriers, usually through line sharing; that is, through leasing the upper frequencies of the lines from the incumbent local exchange carriers.

None of the companies doing this are making money. Virtually all of them have gone bankrupt. The three major ones have gone bankrupt. One of them survives, Covad, with about a $900-million market cap.

What has happened since '96, despite all the hype about the growth of the telecomm business, is that, in fact, there's been no growth in revenues in the wire line

sector, but all of the growth in telecomm has come from the wireless sector, as far as revenues go.

Nevertheless, we had, during the late 1990s, an incredible investment boom under the assumption that there was going to be this incredible increase in network usage, particularly perpetuated by people at WorldCom. Obviously, it didn't happen, and the disaster which followed leads to the title of today's session, "Turmoil in Telecomm."

The explosion in capital spending took place mostly--this breaks it down, my estimates, by the way, there's a mistake. The source is not CompTel, but rather ALTS, A-L-T-S, for the new competitors' investment, CTIA for the wireless investment, and the rest of it's from company reports that I have calculated.

What this shows is that the huge surge in investment, investment surge in all sectors of the telecomm industry, but a very large share of the surge was in the new Competitive Local Exchange carriers who spent $55-, $60 billion between 1996 and 2001, and the long distance companies at the top, the maroon bars there.

Everyone else expanded somewhat, particularly the ILECs, late 1999, 2000, 2001. That is the Bell Companies, principally, but not nearly as much, there was not nearly as much excess investment with little return as in the top two bars, the Competitive Local Carriers and the long distance carriers.

Now, the other surprising thing that's happened is that the official numbers, and there's a problem here in measuring output in this industry, but anyway the official numbers in the Bureau of Labor Statistics show that labor productivity in the wireless sector actually has been substantially above the wire line sector and actually

grew since 1996, over the 1996-2001 period. There are no 2002 data yet, I don't believe. However, in the wire line sector, labor productivity growth actually declined.

What I tried to do then is to show what would happen if we backed out the tremendous number of employees that the new Competitive Local Exchange Carriers attracted and what I estimate to be their output, where I assume that those who have their own facilities add dollar-for-dollar to output, those who lease loops add 30 percent of their revenues to output, and those who simply resale don't add anything to social output. You can make any assumption you want, but I think any assumption you make on this, backing out the CLECs, would find that labor productivity would have grown in the absence of this frenzied entry since 1996.

The other thing that has happened, which has placed the long distance carriers in severe peril, and this may be hard to see, is that the average residential long distance bill has fallen dramatically since 1996, from about $250 a year to $149 a year in 2002, according to FCC data, data which are drawn from a survey company which collects local bills from customers, while the average wireless bill has increased from about $108 to $417. Now, remember that's a product of both increasing average usage of wireless, as well as increasing penetration of wireless in households.

Now, we all know what happened during the incredible "bubble" period. There was a sharp rise in the value of all kinds of high-tech stocks and in telecomm stocks as well. What I show here, I don't have wireless here because a lot of wireless is imbedded in the RBACs, and at times AT&T Wireless was within the long distance companies.

The group in the middle, the IXCs, the long distance companies, the CLECs or the new competitors, you can see what has happened since December 1999

through the end of September '03. The right-hand column shows you what happened to the S&P--I divided by 3 to put it on the same scale. The RBACs have come down more than the S&P, the cable company is about the same percentage, and of course the CLECs and the long distance companies have fallen dramatically.

Now, not included in the IXCs, which might increase that a bit, would be the value of WorldCom--MCI now, I guess--if and when it comes out of bankruptcy. But the bubble burst more for some than for others.

Now, the previous chart was market capitalization; that is, the value of the outstanding stock. This is the market value which somewhat overstates the value of the companies because it uses the book value of the debt, and clearly a lot of the debt for these companies, in particular, trade a substantial discount, but it's hard to get public information on the value of the debt.

What this shows is how much the market valuation of public CLECs has come down since December of 1999, from about nearly $120 billion down to around $12 billion, even though they spent $55 billion of this period in capital expenditures.

The same thing has happened to long distance companies. They have come down from $400 billion to about $50 billion, and you've got to add something to that for MCI, when it comes back, but probably not a lot.

And then the wireless bubble, which gripped the world, certainly gripped our wireless carriers, and they have fallen substantially since December of 1999, but as I shall show later, they are not in serious long-term trouble. It's just that they're no longer as valuable, not hyped as much as they once were.

And the cable TV companies have come down very little, in terms of total market valuation, from about $400 billion to $320 billion because they've had substantial

revenue growth, whereas, of course, the incumbent Bells, which will be next, have not had that kind of revenue growth. But even they, they never bubbled up much, and so therefore they haven't fallen back very much.

Now, finally, in this presentation, what I want to look at is what has happened to the market value per subscriber or per line across wireless, the incumbent local exchange companies, and the cable television companies, the three companies with facilities that reach the customer and who I think are the survivors.

What it shows is that the wireless companies have come down from perhaps $2,200 to $1,750 per subscriber. By my calculation, that's still above the reproduction costs of their assets, although a large part of the cost of the assets for a wireless company is what you pay for the spectrum. That varies over time, depending upon the most recent FCC auction and whatever went on in that auction. But by my calculation, the wireless companies are still substantially above the reproduction costs of their assets.

The Bell companies--by the way, the wireless companies are calculated on the basis of total subscribers times the value per subscriber of the publicly traded independent wireless companies--AT&T, Nextel, et cetera.

For the Bell companies, I have netted out their wireless assets, but I haven't been able to net out everything, and they are remarkably stable, around $1,900, despite the fact that they spend a large amount extending out their networks to try to increase the ability to deliver DSL.

Finally, the cable companies--oh, by the way, the costs of reproducing the Bell companies' assets is certainly probably in the $15-, $16-, $1,700 range. So they are probably somewhat above the reproduction costs of assets, but not much.

The cable companies are far above the reproduction costs of assets. Their key ratios have always been very high, as economists refer to it. The $4,000 number is a reflection of what was paid for TCI or MediaOne--I can't remember which--back in the end of 1996. There have been a lot of transactions in this business. The $5,000-plus number essentially mirrors what Comcast is worth today. Now, Comcast does have some programming assets. They all have some other assets, but that, for the most part, is how the market evaluates those companies per subscriber, where the cable companies now are delivering not just video, but of course high-speed cable modem access and now they are beginning to offer Voice over Internet Protocol, and some of them have offered switch voice for some time.

My conclusion in all of this, and sort of an analysis I'm doing for a book here at Brookings, is that these three sets of companies have survived the turmoil pretty well. There sure as heck is no need for a bailout here, that there is increasing doubt about the survivability of independent long distance companies in large part because the wireless companies have taken away so much of their business and because, essentially, the death of distance is gripping telephony, and, finally, VoIP, of course, is gripping telephony.

And then, finally, the new competitive local entrants, we are eight years passed the 1996 act almost, have not yet found a business plan that works. It seems to me it is doubtful that simply reselling incumbents' narrow band services or broadband services is likely to be a successful business strategy.

The only place in the world where I know a firm is growing using unbundled network elements of the incumbent company is in Japan. Yahoo Broadband has now 3.2 or 3.3 million subscribers using NTT's unbundled loops to sell broadband,

and Yahoo Broadband is making money doing it. A small problem: Softbank, who funds them, is losing a billion dollars a year or about $300 per subscriber.

So that, as of yet, does not prove that there is a workable model using unbundled network elements of an incumbent monopolist or an incumbent telephone company to deliver a broadband service by itself, and yet Yahoo is also offering Voice over Internet Protocol to about 90 percent of its subscribers.

So, at this juncture, I think we can say that there is no successful business model that I'm aware of in the world for these new competitive local entrants, but that what we're seeing is a shake-out to three groups of players who are going to compete head-to-head in a variety of different telecomm markets, and they're the ones up there right now: the wireless carriers, of whom we have six; the incumbent local exchange companies; and the cable television companies.

I'll stop there.

MR. NOLL: That's not fair.

[Laughter.]

MR. NOLL: First of all, I would recommend that all of you immediately throw away this. This is about a 3-week-old version. There's a much better version that will be posted on the Brookings' website by the beginning of next week, which contains a lot more facts and references in it.

So, having said that, I would like to blame Bob Litan for all of the remaining errors in this project, since he's not here to defend himself. First of all, Bob, relax. We're not advocating subsidies.

The point of what Bob wrote in the beginning paragraph of this paper was actually derived from a series of newspaper articles that we read over the late summer

and early fall, and indeed they persisted because they continued on until just last week in the New York Times, which is business page, financial press analyses concluding that some combination of subsidization and mergers of various forms of access providers were necessary. And, indeed, apropos Bob's presentation, where the big growth sector of the industry is wireless, last week, the New York Times' business page contained a long article, reproducing some material from some Wall Street firms, advocating that the number of wireless carriers be allowed to merge to three.

So the motivation for our paper, and for our analysis to follow, is to deal seriously with the policy issue. Bob has actually presented a lot of the material that will be in the final version of this paper, and I would just like to emphasize two or three major points.

Obviously, in order to make policy that makes sense, regulatory policy and any legislation that might be passed to amend the Telecommunications Act of 1996, one has to keep their eye on the ball with respect to what's actually going on in the industry. And the interesting fact about the industry, if you think carefully about what Bob's slides showed, is that, number one, real output has grown enormously rapidly in the telecommunications industry since prior to the Telecommunications Act, actually, since the U.S. adopted its policy of promoting competition in the industry. Real output in the telecommunications sector has been growing at double-digit rates. That's Fact No. 1.

Fact No. 2 is, if Bob had taken his investment data back into the 1980s, it would have been even more dramatic than the picture he showed you. The picture he showed you showed that between 1995 and 2000, capital investment in the telecommunications sector more than doubled. Had he taken it back another few years,

he would have shown that by 1995-'96, it had doubled since the late 1980s. In other words, in the year 2000, total investment effort in the telecommunications sector was between four and five times what it had been 10 years earlier.

Now, we can just use some simple Economics 1 here. On the one hand, we have fairly rapid growth--10 percent a year or so. On the other hand, we have growth in capital facilities substantially greater than that. And because of the activities of the FCC, beginning all the way back in the 1970s and continuing through to the present, ever-increasing competition in every segment of the industry, with two major exceptions: ordinary wire line access and cable television. Everything else, by any reasonable index, one would say the industry has gone from something like a monopoly or a duopoly or a very tight oligopoly to bordering on the edges of being genuinely competitive. So you combine excess capacity, despite growing demand, with increasing competition, and the result is enormous price reductions.

The FCC official statistics on prices for long distance, for example, show that prices have been dropping by half, roughly, once every 10 years during the past 25 years. That actually understates the price reduction because it doesn't take into account all of the free calling that goes on from single-billing programs, which are increasingly important in wireless and are beginning to be important in wire line access.

So bottom line here is we have an industry which is characterized by extraordinarily rapid growth, extraordinarily impressive improvements in the quality of service, as well as the quantity, which we don't know how to measure very well, and so all of our measures of productivity, such as Bob showed you, actually understate the rate of technological progress in the industry because of our inability to measure quality.

We know, from our own personal experience, that a wireless telephone today is infinitely better than a wireless telephone of 10 years ago, but we don't have a mechanism for quantifying that. So, therefore, Bob's impressive productivity statistics for the telecommunications sector understate what actually happened.

So everything looks really great, except for the fact intensive price competition in the face of excess capacity has meant that a substantial number of firms now have market capitalizations below their reproduction costs.

Go back to the picture that Bob showed. After a substantial flop in the stock market, after this excess capacity has worked its will on long distance telephone rates, wireless telephone rates, Internet access providers, all of the parts of the industry that are potentially competitive, it still is the case, for most of the industry, it's essentially being priced at reproduction costs, in terms of its market capitalization, which means that investors in those firms, at current stock market prices, are earning a competitive rate of return on investment. It could be a little low; it could be a little high. We can't tell from his data exactly what it is, and indeed I wouldn't know how to estimate it precisely.

But what actually happened in the late 1990s into about 2001 was a bubble, but it was a bubble, in an expectational sense, on behalf of both investors and executives of telecommunications companies. The explanation for the run-up in the stock prices that caused these huge per-subscriber market caps, circa 1999-2000, that psychology of investors in the stock market was precisely the same as the psychology of the people in the industry, which was an expectation that there would be enormous boom in the growth of services, in particular high value-added, high-margin services, the enhanced variety beyond ordinary voice services.

And the essential problem here--it was also reflected, incidentally, in the fees that the wireless companies paid in the FCC auctions for the spectrum, which those fees are essentially, at that moment in history, the capitalization of the discounted future value of the excess profits over the competitive return that were anticipated in wireless telephony.

The reason one bids a billion dollars or two billion dollars for a wireless license is because one believes that after the cost of constructing the wireless network is all over, the returns from that investment, discounted into the future--from the future returns, discounted to the present, are $1- to $2 billion more than the actual cost of the investment, adjusting for the risk. That's why the license fees were so high.

What we now know, retrospectively, is that the events of the current century, thus far, have been inconsistent with that expectation, and that has caused the bubble to burst. That has caused the prices to fall, of course, in the first instance because demand is not as great as people anticipated, but more than that, it's caused the stock market valuation of these companies to fall.

The important fact about wireless, of course, is that, unlike these other sectors, they actually had to pay the spectrum fees to get into the industry of some cost, and if you go back in their books, the value of those assets is much less than they paid for them.

If companies are in the wireless business largely on the basis of borrowing money or is substantially in the basis of borrowing money for paying for the spectrum fees, then their returns may well not be enough to pay a competitive return to investors, plus pay off all of the interest on the debt, plus continue to pay their operating costs.

So the bottom line to it is, what we observe--the right way, economically, to interpret the news stories of the past six months that have favored some sort of subsidization, forgiveness of payment of the spectrum license fees, provision of greater subsidies for bringing broadband connections, through wire line connections, to ordinary residences, bailouts of the interexchange carriers, proposals to advocate mergers, among the remaining Bell operating companies, among the wireless carriers to reduce the number of carriers in the industry, among the interexchange carriers, like the recent proposal to merge MCI and Sprint, what these are about is an attempt to undo the competition policy that has generated a competitive force on prices for the purpose of getting the returns back up to what the expectations of both the industry executives and the stock market investors were during the bubble.

And so the main conclusion to draw, from looking at these facts and looking at these histories, is that would be a really stupid idea. Because, as Bob's data show, for the core players in the industry--the six wireless carriers, the RBACs, the cable television companies, and the main interexchange carriers--it simply isn't the case these are about to disappear.

What we are observing is the bursting of a bubble, and that is not a wise basis for a choice to undo the policy of competition, nor is it a wise basis for a choice to engage in some sort of a bailout subsidy.

The interexchange carriers are probably the most interesting and important part of this because they are the ones that are right on the brink. In fact, several of them, not just WorldCom and MCI, are in bankruptcy. But if you actually look at the financial reports of these companies, you will find that their cash flow is enormously positive.

If you look at AT&T, MCI, Sprint, and then the large entrants, you'll find that only about a third of their revenues is actually the provision of service, another third or so is the payment of interconnection fees for origination and termination of calls, a big hunk of it is debt service, and then of course a big hunk of it is marketing. A very large fraction of the revenues of this industry are spent in marketing.

If you say, well, what determines the fate of a company that is unable to return a competitive return to its investors, that means that it can't raise capital in the capital market for further investment, but if the problem already is enormous excess capacity, in extraordinarily high-quality facilities, which is what's true of the interexchange carriers.

They have huge excess capacity and extraordinarily high-quality facilities, then, there's no problem, there's no social problem associated with the fact that they're not going to raise money on the capital market, on the equity market, to finance further investment. We're in a phase when we should be working off that investment. And if one adds, of course, the maintenance and upkeep expense on that investment, there's more than adequate, much more than adequate revenues in these companies to keep these facilities going, and working, and providing services.

It would take a lot worse of a hit than even what we've experienced in the last two or three years for these companies to be in a position where the operating margins over actual operations costs of these companies got anywhere near zero.

So, from this, we conclude that really there's really nothing to worry about even in that sector, that the best use of the interexchange carriers' capital investments is, in fact, the only use, which is to remain in operation, the interexchange

carriers, and that indeed there's more than adequate revenues to deal with this. That doesn't mean there aren't problems associated IXCs, and I'll get to that in just a minute.

Now, if we say, okay, let's not abandon competition, let's not try to merge back to monopoly, let's not create a tight oligopoly in wireless and go out of our way to protect a monopoly in wire line and to recreate the old AT&T by letting all of the RBACs merge together and then acquire one of the major long distance companies.

If that approach isn't called for by the bursting of the bubble, then what else can we say about policy? Well, it turns out that the Telecommunications Act of 1996 is probably one of the most regulatory statutes ever written. Those of you who are experts in the industry know all of this. It is incredibly long, it's incredibly complicated, it requires enormous amounts of new kinds of regulation that were never done before, and our fundamental belief is that enormous improvements in the efficiency of the industry and the market conditions, the investment conditions for the players in it could be improved by fixing some of the remaining ridiculous problems that arise from the way the Telecommunications Act was written.

Let me sort of go in order, in decreasing order of obviousness, the most obvious first.

The most obvious thing to fix is the interconnection pricing system that exists between long distance carriers and access carriers. What the Telecommunications Act of 1996 did, it created a regulatory system that minimizes the degree to which competition can actually influence the ability of carriers seriously to engage in competition in sort of a comprehensive way, including both access and long distance.

It put a different set of burdens and responsibilities on different players in providing some sort of integrated service, depending on where they start off life,

whether they start off life as a wireless carrier, whether they start off life as a wire line carrier, an incumbent wire line carrier or start off life as an interexchange carrier, with the greatest inhibitions being to the interexchange carriers, and this arises from the interconnection charges.

Basically, what the interconnection charges pertain to is how much, in the amount of money that they bill, does a long distance carrier have to pay for origination and termination of the call? Under current SEC rules, there are over 100 different tariffs, depending on who the originating company is and who the terminating carrier is.

And these are all mindless. They are all there because at different moments in history the regulatory rules were written about how this should be done, and of course these interconnection charges, some of them are relatively low, and you could say are not horrendously distorting. They may even approximate cost, but many of them are way above cost.

Just to take, as an example, just go onto the website and look at the most recent 10Q reports filed by the major long distance carriers, and you will find that they pay substantially more in interconnection charges still today in the era of deregulation. They pay more in interconnection charges than they do in actually operating their own networks. That is to say, their operation of their networks, plus their own monitoring and billing costs for their own customers, the cost of running those networks exceeds, is less than the amount of money they pay for origination and termination.

So, bottom line, when you place a long distance call, you are paying more for the first and last mile of that call than for the 3,000 miles in between. That is ludicrous. And why we still have this, earlier, before we started today, all you have to do to prove that the marginal productivity of economists is zero is to look at FCC rules

about pricing of interconnection, both local and in long distance, and find--because economists, for 30 years, have been saying this is the singularly most distorting feature of regulation in telecommunications--take a service which has a highly elastic demand, take a service that's crucially important--what we really think is important about telecommunications, of course, is the future of extensive use of the Internet, extensive use of enhanced services--the more you impose non-cost-based prices on utilization of the network, the more you are discouraging the very technologies that through the universal service fund we're trying to encourage.

So the bottom line to all of this is it is time to get rid of this ridiculousness. There are two ways to go. The first best solution is simply bill and keep. You don't have interconnection charges.

The second-best mechanism--the reason that's the best one is because the actual costs of usage on the network now are so low that it costs more to monitor and bill for it than the actual costs of the utilization. So it's less distorting to have a price be zero than have a price be equal to costs because the monitoring and billing costs exceed the cost of making the connection. That is almost certainly politically impossible.

The second-best solution in that domain is simply a universal, this is the same fee for everybody, regardless of where the origination and termination starts, and have it be very low.

Second, somewhat less obvious, the UNEs, as Bob said. The UNEs were a theoretically brilliant idea. They have proved to be, as anybody would have predicted at the time the act was passed, completely impossible to implement, and the reason is a deep reason. It's not just that the RBACs misbehave. They fight everything, they resist everything, everything is fought in court, but that's to be expected because the basic

premise of American regulatory law, ever since the late 19th century in Smith v. Ames is that regulators cannot use regulation to expropriate your capital. They cannot impose a rule on you of any kind that causes you to earn less than a competitive return on your investment. You can earn less, but it has to be because you did something wrong or you made a mistake. It can't be because the regulatory rules did it to you.

Because of that, every pricing rule, in a competitive environment, is going to be fought by somebody who thinks they have been given competitive disadvantage by that rule to the bitter end. That's the problem with UNEs. It's not that theoretically it wasn't a good idea; the attack on it is misguided. Theoretically, it's perfectly fine. It's not the case that it forces firms not to earn their competitive return if appropriately implemented.

The problem is it's unstable. And Bob's story about the CLECs I interpret as being a huge risk on both RBACs and CLECs has been imposed by the UNE rules being unstable.

Our proposal here is very simple--a deadline. From the date that an incumbent LEC stops fighting whatever the UNE rules are in its jurisdiction, the competitors have three years to sell UNEs, and they have to get out of the business. That encourages the use of UNEs in the way they were originally conceptualized--as a way station along the way to becoming competitive, but building out your own network, and eliminates the idea, as Bob showed in his picture, that you can permanently be in the business of extensive resale.

Finally, the Universal Service Fund, and here again we have another joke. Currently, the tax on interstate usage is almost 10 percent to finance the Universal

Service Fund. All of the research that's ever been done on this says that the people receiving this subsidy are, for the most part, the people paying the subsidy.

It is essentially a big Ponzi scheme, and because of the fall in interstate prices, and the fall in interstate usage by residential users especially, the tax base for the Universal Fund is shrinking, but the demand for its utilization to finance investments in particularly broadband access is growing.

We are looking at a prospect in a few years of double-digit tax rates on utilization of the interstate network to finance the Universal Service Fund, which is incredibly distorting. It's probably the single most distorting tax we have in a highly distorted telecommunications system.

Something has to be done to fix this or we are permanently going to put ourselves in the position of the nations that have not experienced the telecommunications revolution in broadband and the Internet, which is that they impose so much cost that isn't based on real costs on Interstate usage and interconnection that people don't do it. They don't use it.

And so what we propose here is, of course, like all economists, get rid of it. But in the absence of getting rid of it, because it's just taking money out of the same person's one pocket and putting it into that same person's other pocket, have it be a line charge, a fee per line, as opposed to a tax on utilization.

MR. FERGUSON: I will try to be brief, and I apologize in advance if my cell phone rings. I'm using it for my clock.

I come at this not from a point of view of regulatory economics, but from the point of view of competitive high technology, and there's a very kind of huge, obvious fact which was not among the very interesting facts that Bob Crandall showed

us in his slides, but I would argue that it's kind of the most important fact about this industry, and in particular about the primarily noncompetitive portions of the industry; i.e., the last mile, local exchange carriers and the cable television industry.

And that fact is that those two sectors, unlike every other information technology sector--computers, software, telecommunications equipment, corporate networking, consumer electronics, systems integration, name them all--unlike all of those industries, these two industries display extremely low, in some cases zero, in some cases even negative, rates of price performance improvement over time.

So, in a 20-, 30-year period in which we have gone from $10-million mainframe computers, of which there were a few thousand in the world, to a world in which 100 million personal computers are produced every year, each one of which is more powerful than those $10-million mainframes used to be.

We have seen a situation in which the prices and performance levels of broadband data services have remained approximately flat for an exceedingly long period of time, and there's a very clear, obvious reason for it, which is that the two industries providing these services are monopolies, and they both have very deep structural reasons to fear large rates of price performance improvement in bandwidth. And that fact is, I would argue, the key to understanding most of the behavior--not all--but most of the behavior of this industry.

The rate of price performance improvement of the underlying technology used to deliver broadband services, indeed, all modern digital telecommunications services, the rate of price performance improvement of that technology is roughly 75 to 100 percent per year. It's roughly the same as--slightly faster than, in fact--the rate at which computers, microprocessors, disk drives, et cetera, get faster and better every

year, in contrast to which, if you have looked at your telephone bill, over time, I think you will have noticed that it's stayed about the same or maybe even increased.

So what's going on here? It's really very kind of obvious. The incumbent local exchange carriers, the local telephone companies, still have something like an 85- to 90-percent market share in the provision of voice services and most of the data services that you think about. The cable television companies you can sort of argue that their market share is a little more complicated because you have to think about broadcast television, you have to think about satellite services, and it's a little more nuanced, but by most standards, one would consider them to be something approaching a monopoly, and that appears to be a fairly stable situation.

And if you then look at the behavior of these two industries, you see a lot of things which are consistent with monopoly behavior, also consistent with fear of cannibalization of existing, long-established revenue streams, and which, in some cases, seem to reflect rational, cold-blooded, ruthless monopoly behavior, and in other cases seem to reflect the kind of managerial inefficiency, and slack, and corporate governance problems that long-term monopolies or dominant firms often seem to have.

So what are those forms of behavior? Well, first of all, slow or zero rates of price performance improvement; very slow rates, not just of innovation, but of use of innovations developed by others; commercialization of innovations developed by others. If you look at when the telephone companies entered Internet service or just about anything, you find out that it's far, far later than everybody else--a statement that applies both, by the way, to the services they offer to the public and also to their internal use of technology, which is frequently quite slow in comparison, for example, to the business, corporate networking sector.

Their market shares, speaking primarily of the telephone companies, are declining slowly because, even though their market power and political influence remain enormous, their inefficiencies are so large that inherently inferior technologies, such as wireless technology, are beginning to catch up with them, and so you see the beginnings of substitution into wireless services, with people who no longer use a wire line telephone, and you're also beginning to see the rapid rise of Internet telephony, despite the fact that the telephone companies, extremely carefully and deliberately, priced their broadband services to discourage Internet telephony.

It is absolutely not a coincidence that ADSL is the preferred way that telephone companies offer broadband services. ADSL is extremely convenient because it gives you--for the telephone companies--because it gives you high bandwidth downstream, but very low bandwidth upstream. So that if you're using a personal computer for anything other than making a telephone call, it's very difficult to use Internet telephony.

Even so, the improvements in Internet telephony technology, the underlying equipment and software algorithms have been so fast that Internet telephony is now beginning to make noticeable inroads--some inroads anyway--into the total telephone market.

And I should say also that something very similar is true of the cable television industry, which is not going to come to our rescue in this regard. The cable television industry definitely likes the fact that it has a monopoly on the distribution of video entertainment, and the companies that provide this are, in some cases, as with AOL-Time Warner, also related to larger content and entertainment conglomerates, those companies, like their distribution monopoly, which would be deeply threatened, in

fact, essentially obliterated if there were to be high-quality entertainment video available over the Internet, which is technologically easily supportable, and they are also threatened by potential erosion of the value of their content properties.

They all have content properties. The cable television industry has become a quite tight oligopoly. The top six firms trade content with each other and dominate most of the content that you see, aside from the broadcast television networks, and they would definitely not like content becoming easy to develop and distribute from anybody's website, and they also, of course, don't like piracy.

Their dislike for piracy means that they don't like upstream bandwidth, because the way music, for example, gets distributed on peer-to-peer services is by people sending it from their PCs.

And so, for very similar reasons, the cable television networks don't want to provide video-capable bandwidth, which is, in the case of HDTV, 19.2 megabytes per second, with quality guarantee. If you don't have a quality guarantee, it takes up to 40 or 50 megabytes per second. There is also technology available that does that quite handily. VDSL over the telephone network handles that quite nicely, over about a thousand-foot range.

So you see a set of behaviors related to technology and price performance. You also see a set of behaviors related to priorities. These companies spend enormous amounts on lobbying, on hiring academic and political consultants, on hiring former government officials, on contributing to political action committees, all of those kinds of things.

It is literally the case the telephone industry--the local telephone industry--spends three or four times as much per year on lobbying, politics, regulatory affairs

litigation, and so forth than they spend on R&D. Their R&D expenditures are effectively zero. They're almost not measurable. They're a small fraction of 1 percent of their revenues, which again is completely unlike everything else in American high technology.

The same is true of their capital investment behavior. Their capital investment levels are extremely low relative to just about every other high technology industry that you could look at, and they did rise sharply, for a very brief period--two or three years--in the late 1990s, when the telephone companies felt some degree of competitive pressure from the CLECs and, to some extent, from the long distance companies just after the Telecommunications Act of '96 was passed, but they are now declining again. And in another year or two, they will be back down to pre-1996 levels.

So, when you look at this picture, kind of an unattractive picture, this is a very large industry, you ask yourself what are the economic consequences of this? They turn out to be quite large because what's happening to all computing is that we're becoming part of a global--global in every sense, including geographically--a global-computing fabric.

And as with any system, personal computer, just about anything else, the performance of the system depends upon the absence of bottlenecks. And if you have a single bottleneck component inside a personal computer, if your bus or your disk drive or your microprocessor is too slow, by a factor of 10, then the overall performance of the system is limited to that of the bottleneck component, and the money in technology that you spend on the rest of the system is wasted.

And that is what is happening now in global telecommunications, and it's happening not just in the United States, it's happening in many countries in the world,

many of which still have monopoly local providers. There are a few countries where that is not true, and not surprisingly, those countries display much higher rates of price performance improvement and also of broadband adoption than the United States--primarily, South Korea, secondarily Japan and Canada, to some extent, also Scandinavia.

You can try and make estimates of how large these effects are. It's, of course, impossible to say precisely, but you can convince yourself that this is costing the United States half a percent or 1 percent per year in productivity growth. It's a very substantial economic effect, and it's not the first time this has happened, by the way. The dominance of IBM, the excess momentum of IBM during the period of its dominance of mainframe computing, cost the American economy something like $500- or a trillion dollars' worth of purchases of computers that were dramatically more expensive and less efficient than they could have, and should have, been.

In that case, the rise of a competitive industry changed things. In this case, we face an industry that has much more market power and much more political power. And so the solution that one hopes for, comes to, is forced to believe is necessary is a rather dramatic one, which would involve regulatory, and/or legislative, and/or antitrust actions which would be really quite substantial and would, in some ways, be the largest changes in the structure of an individual industry since the breakup of Standard Oil a century ago.

Let me just conclude by saying that there is also a substantial national security dimension to this. There's an indirect one in the sense that the performance of the technology sector is critical to the performance of the military in some very general, amorphous way. There's also a much more specific one, though, related to homeland security and all of its dimensions.

If you think that there is a significant chance that over the next 10 or 20 years the United States is going to suffer some kind of serious emergency related to a terrorist attack--chemical weapons, biological weapons, possibly even nuclear weapons--in any such situation, in fact, even in the case of September 11th, you're going to face very sudden and very dramatic interruptions in everyday logistics, and you're going to be forced to substitute communications for transportation in a very dramatic way, in a very unplanned and very sudden way, and the ability to do that is going to be extremely heavily dependent upon the availability of high performance and symmetrically bidirectional broadband services that will enable applications such as video conferencing and video telephony.

So, with that, I will conclude, and we can all take questions, make comments.

MS. RUCKER: I think that ran a little bit longer. We don't have quite as much time for Q&A as we wanted, but it seems like, you know, you guys kind of painted a dismal picture, in terms of the competitive nature. You know, the '96 act was supposed to create all of this competition that was going to light the world on fire. We talk about facilities-based competition, but it looks like, from what you all are saying, we've got a choice between big cable company, big phone company, maybe some wireless substitution.

What does the future of the telecomm industry realistically look like?

MR. NOLL: Well, first of all, we have gotten an enormous increase in competition. The only areas in which we haven't is traditional technologies of the 1960s and '70s. We don't have wire line access competition of any significant amount, only about 4 or 5 percent of the market is accounted for by competitive, facilities-based

access providers. Everything else is either the incumbents or resale of the incumbents and cable TV. But even there, the future looks very bright.

The current generation of satellite distribution of broadcasting and wireless telephony is very close to being cost competitive with these traditional, buried-in-the-ground technologies. The next generation will be cost competitive and performance competitive.

It seems to me that in the year 2010, it's reasonable to expect an oligopolistic competition in the delivering of broadcasting and really atomistic competition of very intensively competitive industry for ordinary telephone access and for Internet access, other than the highest quality.

Apropos the correct observation about cable television, that it's an extraordinarily profitable monopoly, with an extraordinarily high Q. The reality is, in the current environment, DirecTV and dish TV are eating cable's lunch just in the last year-and-a-half, when they started broadcasting local channels. That is very likely to bring some degree of price competition to ordinary broadband delivery of video television channels. The future of cable is not to think of itself as the monopolistic provider of 75 ordinary broadcast channels.

If it doesn't take advantage of its first in advantage and its current market position in broadband Internet access, devote more channels on the digital cable to Internet service that will be both high speed up and down and become the vehicle for the Internet as a competitor to broadcasting. It is toast. That's its future. And I don't know whether they realize that yet.

Comcast doesn't have a big investment in broadcast properties. Comcast has no reason to work for Hollywood, in terms of protecting movies and broadcasts.

Why Comcast isn't investing in technology for extensive development of broadband use, why they're restricting themselves to the old technology is difficult to understand, unless you believe, as Bruce Owens's recent book says, that the whole broadband story is a myth created by technologists and that we don't really want it. That's a few years ago.

[Laughter.]

MS. RUCKER: Charles, you talked about how there just isn't the proper capacity, and there are these bottleneck facilities. How do we get to a good public policy that will enable some of these things to happen? Because the entire public policy debate, you know, while companies say, "Oh, let the markets decide, and don't pick winners and losers," are, in effect, saying, "Pick me. Pick me, and have a policy that advantages me against my competitors."

And the lobbying money is enormous. How do we get to a good public policy on Capitol Hill or at the FCC that will enable some of these things to happen?

MR. FERGUSON: Well, I can't say that I'm entirely optimistic. I'm not entirely pessimistic either. So, on the pessimistic side, I can't say that I totally share Roger's apparently rosy view of what the cable industry is going to bring us. There are a couple of problems with what he said.

First of all, satellite systems are only good for one-way broadcasting. They're inherently bad for two-way services such as Internet access, and they have very serious real-time delay problems for a lot of applications. So I don't think that they are going to save us on the broadband front.

MR. NOLL: We agree. That's what I said, that satellites can take away cable on one-way, but they can't do it on two-way. So we agree.

MR. FERGUSON: Okay. Fair enough. And most of the cable guys, including Comcast, they may not own movie studies--some of them do, Time Warner does, but Comcast doesn't--but they still own a lot of content properties, and they trade each other's content properties, and it's a very clear "live and let live" regime. These guys know exactly what they're doing.

MR. FERGUSON: And then there's the fact that cable systems don't pass businesses and don't provide business services. And right now the business broadband market, nobody talks about this, but the business broadband market is 10 times as large as the residential broadband market. So, yes, the cable guys have two-thirds of the market for residential broadband, but they only have like 0.001 percent of the business broadband market, which is much larger and, in many ways, more important, certainly, than economic productivity. So that's the pessimistic side. I can't say that I think that natural forces in the current system are going to get us where we need to be.

The optimistic side is that I think that there's some reason to believe that in the next five years the political calculus will begin to change because the technology sector is beginning to get pissed off.

Microsoft and Intel do not like the fact that their revenues are now gated by the fact that broadband Internet access is slow and expensive. And so far they've been relatively quiet about this because they've tried to work with these guys, and they've been doing just fine anyway, and so on, but they're beginning to run into growth issues, and so are other people--Cisco and others--and they're getting to be a bigger fraction of the economy and also a bigger fraction of political contributions.

MR. NOLL: But they're not totally quiet. I mean, they've come out in favor of reducing regulation of broadband. I mean, it strikes me that one of the

impediments to the roll-out of greater capacity in cable systems is the fear of regulation which still exists. I mean, they've been litigating state and local regulatory attempts on cable access for some time now.

The matter is now squarely before the FCC. The FCC hasn't moved on it, and the cable guys are still concerned that they're likely to be regulated if they begin to devote more capacity to two-way broadband services, and, similarly, they're concerned about regulation if they begin to move heavily into telephony, as the FCC was discussing yesterday.

So it strikes me that one of the concerns here, on the part of all of the players, is what government regulation is going to be. And if you think you're going to get--you're sure not going to get any antitrust action in this area because you can't--in the narrow-band area you can no longer prove market power, with all of the wireless carriers. In the broadband area, you wouldn't be able to show a monopolization because of the cable guys. And ILEC DSL and, to some extent, CLEC DSL are going at it head-to-head.

And if you think that antitrust action is likely to be the solution, I've got a paper out there on the table looking back at attempts to restructure American industry through antitrust. I don't think it's been altogether very successful.

Finally, it seems to me, in an area where, a market in which technology is changing so dramatically, the last thing you want to do is start talking about restructuring the industry. What you want to do is allow people to exploit the benefits of new technology, not attempt to hamstring through regulation.

MS. RUCKER: We were talking about the changing political environment over the next few years. Senator Hollings is retiring. It's widely rumored

that House Energy and Commerce Committee, Billy Tauzin, is going to be the next Jack Valenti.

So, if those two guys--

[Laughter.]

MR. NOLL: What does that mean?

MS. RUCKER: --you know are out of the congressional picture, members of the Senate Commerce Committee, they're pretty old, and we're not sure how long they're going to stick around, so how is that changing, you know, the changing players going to affect the industry and regulation?

MR. NOLL: I think it's minimal. We don't have a great Senator or a great representative theory of telecommunications policy. I mean, I think all of us agree, regardless of what we think the solution of the industry is, that for the entire 20th century this was the most politically intense area of policy there was.

The people who become the leadership in this area are people who are closely connected to the industry and who think of the industry in terms of dividing the baby. That's what's wrong. It's every time a new technology comes along that threatens to upset the apple cart, the issue is how do we divide it between the incumbents and the new guys so that nobody gets really hammered? That's the way they dealt with cable television when it came in. That's the way they dealt with wireless when it came in. That's the way they dealt with satellites when they came in.

You have this long, attenuated introduction of new technologies to make certain that they do no instantaneous harm to incumbents. It's not because of Fritz Hollings, it's because that's the nature of the political process that makes

telecommunications policy, and it's not going to be any different when these people retire.

MS. RUCKER: Well, I see some hands up, so maybe we'll go to the audience.

QUESTION: Yes, I wanted to ask, between Professors Noll and Crandall, if I understand your views, it is that we should let things alone, but not allow mergers to result in tight oligopolies. But if I understand Professor Crandall's paper, it is he would not oppose the merger of all of the RBACs, plus their acquisition of MCI, as long as there was an equal access rule; is that right?

MR. CRANDALL: What I said is that you didn't have to break up AT&T to get the result we got, that other countries just simply imposed an equal access rule and got the same sort of price performance in long distance.

Today, whether you'd allow the incumbents to merge or not I think is a more difficult question. Allowing one of them to buy a long distance carrier I think is largely irrelevant because, unlike Roger, I don't think independent long distance companies will survive.

QUESTION: Well, why is it difficult to allow the RBACs to merge, given what's already occurred?

MR. CRANDALL: Well, I mean, I think it will be difficult.

QUESTION: On your theory.

MR. CRANDALL: Yes, it'll be difficult in antitrust policy to block it because the potential competition theory in antitrust doesn't work very well, and that's why there has been a consolidation from 7 to 3.

MR. NOLL: That's not the--

QUESTION: Do you agree, Professor Noll?

MR. NOLL: I agree with the statement of the characterization of antitrust policy. Let's take a step back and not talk about current legal theory in antitrust, but instead talk about economics.

Economics says that potential competition is an important thing to take into account when evaluating any kind of combinations, number one; and, number two, it is the case that a lot of the mergers that took place were motivated by the desire not to engage in competition. At the time that Bell Atlantic merged with NYNEX, Bell Atlantic was beginning to invade Manhattan, and NYNEX was beginning to invade New Jersey, and it was a complete and utter idiocy to say that that potential competition was unimportant, but that's what the law currently says.

Bob's statement of what the law says is correct. I think it's wrong-headed, but it's true. You cannot stop the RBACs recombining to a single nationwide local wire line access company on the basis of current theory regarding horizontal competition.

You can, however, stop it on the basis of monopolization, that most of the long distance service sold by RBACs is resale of wholesale facilities from the Big Three and other long distance carriers.

QUESTION: [Off microphone.] I'm trying as hard as I can to drive a wedge [inaudible] right.

[Laughter.]

MR. CRANDALL: Yeah.

MR. NOLL: You're on the right now, are you?

QUESTION: [Off microphone.] And it seems to me that Crandall is not arguing the law. He's arguing economics.

MR. NOLL: No, he's not. I think he'll agree with me that right now the nature of law is that potential competition doesn't count.

And now we can argue economics, whether it should or shouldn't, but right now, as a matter of launching an antitrust case, saying that you're not going to let A merge with B because A is a potential competitor of B, as opposed to a real competitor of B, that is not going to work in the current legal environment.

MR. CRANDALL: I find myself agreeing a bit with Charles Ferguson. I mean, it strikes me that what you need is new competition from new technologies and probably new firms. The idea that RBACs are going to compete with one another or cross boundaries, I mean, I think it's possible, but everyplace you look in the world, it's not happening. I mean, TELUS is trying to compete with Bell Canada in Canada, and they're both losing lots of money in each other's territory. Telstra and Telecom New Zealand are competing across the Tasmanian Sea and losing huge amounts of money. They're just not very good competitors in one another's market.

The real competition is coming from wireless. It's going to come from cable, and it'll probably come from new forms of wireless and satellite.

MR. FERGUSON: Well, if you might permit me, the proper, and potentially feasible, goal of an antitrust action is not to--or at least the optimal goal is certainly not to get the RBACs to compete with each other. They're pretty hopeless companies, and if you look at their top management, the high-technology talent doesn't exactly leap out at you, to put it mildly--to put it very mildly.

But--but--there are plenty of grounds for an antitrust action against these companies. It really strains credulity that these guys never have conversations with each other. And if we use subpoena power aggressively, I am quite certain we'd find some

very interesting conversations and some very interesting internal calculations by those companies which have, for the last seven years, continuously made public statements which imply very strongly that it would be in their economic interests to compete with each other, and yet they have never done so in a single case.

So, you know, I think that there are plenty of reasons to think that you could start a quite nice antitrust action, the object of which, however, would not be to get them to compete with each other. The object would be to get them to open up their networks for real in a much more serious way than the '96 act requires; for example, requiring open access and collocation rights for everybody, not just for other common carriers, absolutely everybody, including users. That would have a huge effect on this industry and on the rate of technological progress within it.

MR. NOLL: The important answer, though, is that that's exactly, whether he's right or wrong, that's exactly where the antitrust issue is. The antitrust issue is vertical leveraging and monopolization, not horizontal competition, and that, because that's over--regardless of the characterization of the intelligence of the executives of the RBACs, which could have been, you can undo that in just overturning the current executives--the reality is the point in our history when that was a viable way to expect large cities to have competitive wire-line access, that history has passed.

The future is maybe some CLECs can survive with a stable regulatory environment for local access competition. Probably not, but maybe--it's not certain--but the real hope for competition in access is wireless. And if that doesn't work, we're going to have monopoly in access forever.

MS. RUCKER: We talk a lot about what benefits companies. What do consumers want, your average consumer? Does it matter if we have a choice of three

local phone providers or the applications there for broadband? There are lots of wonderful business applications, and I think Mr. Ferguson makes an excellent point. That probably is the more important market, but where is the consumer in this, and what do they really want, and what do they stand to benefit, you know, consumers at home, from this discussion?

MR. : Look, I mean, let's take the best, the two best examples of what competition does for consumers.

One is interexchange carriers, long distance tolls, which are now one-tenth of what they were in the 1970s, before AT&T's monopoly was done away with, much, much lower prices and much, much higher quality, and then the other is wireless.

It's now almost to the point of being a real competitive alternative to wire line for ordinary access and substantial improvement in quality. What consumers derive, I mean, the word "choice" is overused. It's not choice per se. Choice among six members of a cartel that charge monopoly prices and had low quality wouldn't be choice. But the right way to think of it is competition is an engine to generate lower prices and higher quality.

And in the two areas where competition has pretty much been uninhibited by regulatory policy, namely, long distance and wireless, consumers have benefited enormously over the past 20 years.

MS. RUCKER: This gentleman here.

QUESTION: So I think this was Professor Noll suggested that if you were a regulatory czar at the FCC with regard to UNEs, you would issue a three-year phase-out and then say you've got to provide your own facilities to compete or you're out of business.

But it seems that if you already have a problem with overcapacity in that market, that that would virtually destroy any CLEC's possibility of surviving after the three years, and you would end up with the elimination of at least that possible competitive threat to the RBACs, which there's a consensus they're rather sluggish, if not slower.

So how do you solve the problem of continuing to have a wire line alternative to the RBACs with this three-year phase-out, which seems doomed to destroy the remaining entrants because of the capacity problem?

MR. CRANDALL: How does this destroy the remaining entrants? I mean, right now about half of all of the CLEC lines are coming probably from this UNE-Platform. The numbers I put up there were for the end of 2002. These are being offered by the major long distance companies, for the most part, as a package with long distance services. This is not going to be a mode of survival for these guys, nor is it supporting small, struggling CLECs. The long distance companies' revenues are falling at 10 to 15 percent per year, despite the fact that they're bringing in this resale of local service.

So I think this is a temporary phenomena. I think Roger would phase it out just to get rid of the regulatory battles, but I don't think anyone is going to survive doing it. No one is surviving anywhere in the world using unbundled network elements competing in the marketplace. I don't know of any success story.

MR. NOLL: Let's rewind the tape. Why did we have UNEs to begin with? We didn't have UNEs because we believe that there's an enormous amount of consumer benefit to pure resale; that is to say, local access is not like long distance. There is a benefit to pure resale in long distance. It's hard to imagine a complementary benefit to pure resale. What we have is the illusion of competition that is a political

salve to people who were the writers, the authors of the Telecommunications Act of 1996. But if underneath this face of you look up in the telephone book, and there's 10 companies providing local access, but every single one of them is just reselling, the UNE-P is just reselling the local loop, and all they're doing is substituting their own marketing and billing costs for the marketing and billing costs of the incumbent wire line access carriers, underneath that facade is still a monopoly wire line carrier. And, indeed, 96 percent of all local telephone calls in the United States are placed over the wire line access facilities of the incumbent local exchange carriers.

MR. CRANDALL: Local wire line.

MR. NOLL: Yeah, the wire line.

MR. CRANDALL: Because quite a few are wireless--

MR. NOLL: No, I'm saying wire line. That's the key fact of life is that the UNEs have not worked as a mechanism to facilitate facilities-based competition.

The original conception of it was that the right entry level for a local access carrier is fairly large. It's an entire city, perhaps an entire metropolitan area because of the nature of marketing. You want to be able to advertise in the local newspaper or local television or local radio stations or in the local phone books.

So you want to be able to go at all of the potential customers in an area. It takes forever. It takes probably a decade to build up the facilities necessary to serve most of that area. So you can use UNEs as a way station or as a way to make a hybrid network that's partly your own facilities and partly resale of the other guy's.

That just hasn't happened. I mean, it was a great idea, and I think it still is theoretically a great idea, that one could imagine a world in which that would work, but unfortunately that world is not the American regulatory system, which is

unbelievably slow in making decisions and unbelievably responsive to rapid technological change.

And the reason the UNE idea hasn't worked, I think, is that, in principle, it can't because of the nature of the regulatory process. And I don't want to get rid of UNEs because theoretically isn't pretty. I want to get rid of it because we're now almost eight years into it and nothing really useful has happened due to it.

QUESTION: [Off microphone.] Well, what bad has happened? Why have UNEs then made the RBACs perform perhaps less efficiently than [inaudible]? It seems to me that if you've got something in place, you should try to demonstrate why it's producing ill effects to justify abandoning expectations [inaudible] over regulatory [inaudible].

MR. : If you're representing the telemarketing industry here, they have a beneficial effect there; that is, they generate lots of telemarketing and SG&A costs in these new companies, but do they generate any increase in output? No. I mean--

MR. : And they clog up the regulatory process and induce enormous amounts of regulatory costs, which some of our friends see as consulting income.

[Laughter.]

MS. RUCKER: But aren't some of these costs and some of this turmoil a self-created thing by the industry? I mean, maybe UNEs would have worked if there hadn't been the endless lawsuits--

MR. CRANDALL: Where are they working? Where in the world are they working?

MS. RUCKER: Well, where have they actually been implemented?

MR. CRANDALL: They're in place in Korea, they're in place in Japan, they're in place all over Europe. There is no country in the world now that seriously believes that using unbundled local loops to offer narrow band service makes any sense at all. The only country in Europe that even tried it was ISCN services in Germany before network unbundling was required in 2001, in December 2000.

No one else is trying it. It doesn't work. It may work for broadband, and the only example where it's working for broadband is Japan, where it's only costing Softbank a billion dollars a year for this experiment. We'll see if it works there, but it's not clear.

I mean, Roger thinks it works, in theory, and that the problem is our regulatory system. Well, our regulatory system doesn't exist in Korea, doesn't exist in the same way in Japan. It certainly isn't the same all across Europe, yet you don't see unbundled network loops taking off anywhere.

MR. NOLL: Actually, the Korean system is even worse than ours.

[Laughter.]

MR. : I don't think the regulatory systems are so different, actually, and the industry structures aren't so different either. For a variety of historical reasons, in the late 19th and early 20th centuries, the world's local telephone companies came to be government-run and/or regulated or, in a few cases, private monopolies, and most of them still are, and it's a major global economic problem.

The reason that there isn't much investment in offering conventional telephone service over unbundled network elements is, first of all, there's enormous resistance in the ways that have been discussed, and, secondly, because it doesn't make

economic sense, given the presence of new Internet-based technology to go into the conventional business any more.

What would make sense, however, would be to offer high-speed service, broadband services, using modern technological platforms which could then be used for--

MR. : Over the incumbent's network, you mean?

MR. : It doesn't matter, sure--partially over, partially not.

MR. : Over 20,000-foot loops or 25,000-foot loops?

MR. : Well, you need access to the pedestal a few thousand feet out.

MR. : You've got to build a pedestal. Who's going to build the pedestal.

MR. : The pedestal is already there, in most cases. You need access to them, and that's the critical point. The critical point is that if this were to work, the really critical thing is you need access to the system, and right now access, even in principle, is restricted to common carriers. In fact, it's much tougher than that because of the resistance that the ILECs offer, but a lot of large business users would be very happy to start investing if they really had access, but they don't.

MR. : But this is part of to myth. The myth is that somehow the incumbent LECs will not allow the Covads, Rhythms, NorthPoints of this world to locate at the pedestal. In fact, if you go to the regulatory arenas in the States, what the entrants want is not to have to collocate at the pedestal. Covad will tell you that if they have to collocate at the pedestal, instead of losing whatever the, $100 million a year--

they're losing at a rate of about $25 million--they'd lose a hell of a lot more because they can't afford to go out and collocate at the pedestal.

Somebody's got to build onto the pedestal, and then someone's got to put the electronics in there. They're not going to put it there.

MR. : Well, Covad is a small pitiful company, but--

MR. : They're the only one doing what you suggest.

MR. : Because IBM isn't permitted to because IBM is merely a user. If IBM, as a user, was permitted to build up its own networks by getting access anywhere it wanted, and if the same was true of every large financial services company, I think you'd see a rather substantial change.

MR. FERGUSON: Could I just ask if you made findings with regard to ILECs pricing any discipline imposed by UNE-Ps; that is, have your findings suggested that where UNE-Ps have taken effect and have gained some market share, even though not a substantial amount, that the prices of local exchange have fallen, and to that extent would increase the total usage of the network and would be advantageous?

MR. : Where is this coming from? Given that there's no change in service and that there's a huge increase in cost, the only thing this can do is to just simply come out of the net revenues from local telephone service. Eventually, this is going to have to be paid somewhere else, as we admitted there are not monopoly rents in offering residential local service.

MR. FERGUSON: But if these are below cost, why aren't the RBACs invading each other's territories and poaching--

MR. : Thank you.

MR. FERGUSON: --if you could enter at submarket prices?

MR. : I think you're right. The reality is there's two kinds of service, right? There's business service, which is where the competitors try to enter, and there's residential service, which is still priced--you know, we can argue about what the cost is, but there's obviously not an enormous amount of monopoly profits occurring in residential access service in most of the country.

MS. RUCKER: The lady next to you has a question, and then we probably need to be wrapping up.

QUESTION: Ten years ago, when I came from China and arrived here, and I made phone call back to China through AT&T, I pay $3.70 for the first minute and $1.70 for additional minutes. Now, I'm still with AT&T, and I pay less than 20 cents for one minute, so--

MR. : And you're being overcharged.

[Laughter.]

QUESTION: Yes. And sometimes I use phone card, and it's even less because it's Internet telephony. So I would like to ask the panel, because I realize that you are very critical about American regulatory things about telecomm industry, so how do you explain this? It's just totally because of advance of technology or competition or both?

And another small question is--this is the first one--the second is I really like Professor Noll's very conclusive and insightful observation 10 years ago you made. You said so far as telecommunication is concerned, the situation in developing countries probably is more like that of OECD countries 75 years ago than that in advanced countries today. So you said cross-subsidies and network integration are probably far less important than encouraging network expansion by whatever means are available.

I would like to know whether you have the same conclusion for developing countries.

Thank you.

MR. NOLL: You're reading from a paper that I published a couple of years ago called, "Telecommunications Reform in Developing Countries," and I would love to talk for about four hours on that, but if I did, she'd kill me.

[Laughter.]

MR. NOLL: I adhere to that view that if you're in a world in which telecommunications penetration is in the single-digit percentage of the population, anybody should be allowed to invest in anything because the most important thing is to get the penetration up by an order of magnitude.

To go back to your first question, the reason you face that low price is because the U.S. had the right idea 20 to 30 years ago, which is to eliminate regulation of long distance and substitute competition.

AT&T is charging you those low prices, in part, because they've been extremely aggressive in adopting new technology that's cost-reducing and, in part, because they have to in order to retain their market share, and even they're losing market share.

MR. CRANDALL: Wait a minute. Most of that decline has come because of a decline in international terminating charges in China.

MR. NOLL: About half of it.

MR. CRANDALL: Yes, what--

MR. NOLL: About half of it, but not all of it. It's gone down by an order of magnitude. Half of it is because China doesn't charge $2 a minute for terminating

there, but the other part is the fact that it's highly competitive, and it's not regulated. The only thing that remains regulated is the termination in origination charges, and that's what I said, you're still being overcharged because you're still paying those origination and termination charges which are a few cents a minute and ought to be zero.

MR. CRANDALL: But let's understand what has happened with international calls is the United States no longer subsidizes the development of telephone systems around the world through excessive termination charges in those countries, where we have an excess of outbound calls relative to incoming calls, and that's typically what happened all over the world until we started, through the FCC, putting pressure on countries to reduce the international access charges.

MS. RUCKER: Well, I think that probably we need to wrap up. So thank you all for coming and thanks to our panelists.

[Applause.]

[Whereupon, the proceedings were adjourned.]