INCIDENTAL PAPER

Open Access in the Local Telephone Loop: A Grand Tour of the Entangled Issues

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Executive Summary

Cable and telephone companies are building high-speed Internet connections to the home. It's a nascent but frenzied market. Should governments force the companies to open their lines to competitors? Should the companies open them up even without coercion? This paper rounds up the issues involved in these decisions, such as public interest rights versus the drying up of capital investment. It looks at the precedents of governance, namely, the traditions of common carriage, public utility, interconnection, universal service, and open networks, and examines some of the issues of corporate strategy, including the following:

- the clash between the common carriage telco tradition and the exclusive deal cable one;
- conflicts for traditional carriers when they try to compete with their traditional customers;
- competition between companies that use traditionally priced capital and those that use "dot.com"-priced capital; and
- bundling and branding in an increasingly fragmented marketplace.

Note

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Contents

Introduction

by John Burke

John LeGates is the cofounder and managing director of the Program on Information Resources Policy at Harvard University. The Program, dating from 1973, is the oldest and largest independent policy research centre in this field in the world, to our knowledge. He brings therefore a significant background in engagement with these issues over that period of time. Prior to that he was in the private sector, where he was a pioneer in networking applications and a member of the ARPANET (now known as the Internet) core design team, which places him in the context of the many discussions that we're now going to have.

Today's topic is what John and I arrived at in a very brief discussion of issues that are key to him at this point in time, in examining the interactions between telecommunications carriers and the vertically integrated pay television networks, et cetera, in the United States as well as the initiatives of those organisations basing their activities on Internet protocol. John will provide an introduction to these issues and will welcome the opportunity for discussion, but I'll leave it with him to organise that process. John will probably be speaking till half past five on that basis and then will lead a more informal discussion subsequent to that.

Well, John, I invite you to present these issues.

I appreciate your coming here to listen to my analysis.

Let me suggest some rules for this discussion. First is that I presume I know less about Australia than anyone else in the room. I'm going to talk mostly about the United States rather than other places. I'm trying to get at some of the underlying forces, trends, issues, and pressures. They are global. I hope to hold up a mirror in which you'll be able to see yourselves. Second, I'll be making a lot of over-simplifications. There will be subplots and side channels that I don't follow up. There'll be alternative explanations that you're welcome to bring in at any time. But the idea here is to get at the essence of a very complicated situation.

All issues in telephony and the Internet are connected. Wherever we start, we can go on forever without finishing. What I intend to do is to start with the issue of open access to the local loop, then tour the main issues. Along the way, I will digress into a few alleyways where I think the American experience may foreshadow matters to come in Australia.

Internet frenzy has struck in the United States, and the race is now on to bring high-speed Internet access to the local loop. There is little in the air in Australia to give you a feel for what the Internet and access frenzies feel like. But I am sure they are coming.

With them has come a particularly thorny question—one that has surfaced in Australia. Suppose I invest the capital and build a high-speed loop. Must I open it up for use by the competition? If so, at what level? At what price? The traditions that feed into these questions have become tangled and confused. I will try to describe them and to unconfuse them for you a little.

Common Carriage

Let us go to a place far, far away and long ago. In the beginning, in a sense, there was the concept of common carriage. Our Program has looked at the history of this notion, what it is, and where it comes from. In my view, common carriage is the closest thing in this slippery business to a physical law or a constant of nature. It keeps coming up. It gets invented, reinvented, transferred, incorporated, or otherwise carried forward. Other ideas may be layered onto it, but at the core is a very simple concept.

It says that if someone wants to use my service, I have to supply it. But common carriage doesn't apply to all services—at least, historically. If a gardener refuses to mow my lawn, the state does not usually step in. The service has to be important.

We should note not only what's in this idea but also what's not in it. The idea of common carriage has nothing to do with government ownership. It has nothing to do with price. It has nothing to do with what we now describe as open access. It's a very, very simple concept.

The earliest we know of it was in Britain in the eleventh century, where it was applied to ferry boats. The idea migrated from ferry boats to ox carts, canal boats, stagecoaches, and toll roads. At one point, it was even self-applied to foxhunting. In the modern era, the idea was reinvented, or incorporated into, the regulation of postal services, telegraph, railroads, canal boats again, airlines, and telephones.

A different collection of industries provide both the carriage and what is carried. In those industries, carriage obligations have been applied, if at all, much more ambiguously and with more uncertainty and hand-wringing. Such industries include radio, television, newspapers, magazines, moving pictures, and cable TV. We'll come back to them later.

Public Utility

Another idea frequently confused with common carriage is public utility. Public utility overlaps and often coincides with common carriage but is fundamentally different. Our Program has not attempted to trace its history, but it is even older. For instance, the Roman Empire created the first known fire brigades. Initially, these were private and funded by subscription. If you did not subscribe and your house caught fire, you and the fire brigades stood around and watched while it burned down. Eventually, the Roman government assimilated the brigades and made them available to all.

A particularly eloquent argument for public utility was penned by George Bernard Shaw, of all people. He used the example of lighthouses. First of all, they are essential for the functioning of society. Something important but not essential will not usually become a public utility. Second, lighthouses have to be available to everybody. In other words, common carriage is bundled into them. Third, though not everyone may use them directly, they benefit everyone or society as a whole. And, last—this is not essential, but is an important derivative concept—the owners and the operators can probably charge a great deal more than their costs. Consequently, public utilities everywhere have wound up being owned and operated—or highly regulated—by governments, in order to ensure that they are not predatory.

We enter modern times, then, with two governance mechanisms that are well established. We are now ready to bore in on telephone companies, particularly local exchange. New governance concepts are on their way.

Universal Service

A new idea came into legislative being in the United States in the language of the Communications Act of 1934. This act, until it was amended in 1996, was the legal foundation of the industry. It included some vague and pleasant words to the effect that telephone service should be available to all citizens of the United States. In hindsight, that notion has the full force of a mandate. Certainly, it has grown into a centerpiece of both industry and government thinking in all countries of the developed world. At the time, however, it was more like a vague politically nice-sounding platitude. It was admittedly a nice goal if you happened to be a telephone company. In 1934 it was unimaginably out of reach. Even in the United States a quarter century later, telephones had come to about 50 percent of the population. But after the Second World War, things were happening, specifically to promote that end.

There was, as might be expected, plenty of money available to AT&T, and the market could produce more if a way were found to justify it. A series of meetings was convened for the purpose of promoting universal service. Or perhaps of expanding the industry. Or of justifying high prices for prime customers. All these purposes were well served. The results were named for the meeting places—such as the Denver Plan and the Ozark Plans.

Seen with contemporary eyes, these meetings were quite extraordinary. Something happened that could never happen today. A tiny clique of telephone companies and their regulators met in closed session and set policy and prices. There were no public hearings, no formal proceedings, no consumer interest groups, and no user representatives. Hundreds of billions in today-size dollars changed hands, and nobody outside the room noticed.

What they created could be called a subsidy scheme. Language can play tricks, however. In a few short years, what they created would be adamantly both defended and denied as a subsidy scheme. Regardless of the language, what they did was allocate costs.

The industry set its prices to recover the costs of its services. But the industry contains a very high proportion of joint and common costs. Things like the chairman’s salary and the headquarters building, for example, are only arbitrarily apportionable among the different services. How much should be paid by local and how much by long distance? Joint and common costs came to roughly 50 percent of total costs. A vast and flexible pool of costs was available for allocation.

What these meetings did was to load joint and common costs onto commercial customers and long-distance traffic, raising the price. Fewer costs were thereby assigned to local telephone service, bringing down the price. The telephone companies went forth into the world and said, “You can now have local telephone service at this low price, because you are paying what it costs.” It was a price-based costing scheme masquerading as a cost-based pricing scheme.

Amazingly, you will still hear people in political debates and elsewhere say, “Let us just arrange this so that people can pay the true cost of....” Let us be clear: In any joint and common environment, there is no such thing as the true cost of anything. The true total cost of all the services is known, the true incremental costs of a particular service are known, but there is no measure of the true total costs of a particular service.

The closed-door cost-allocation mechanism rolled forward fairly nicely for a while. But, at the same time, the development that would kill it was gaining momentum. The club started to grow and get out of hand. New players emerged on the scene that were not traditional carriers and not traditional regulators. They had stakes that conflicted with those of the incumbents and with one another’s. The system broke down, because not everyone could get everyone together at the Lake of the Ozarks and agree. The second Ozark Plan, unsuspected at the time it was created, was the last.

I believe that one of the important issues facing Australia is what will happen when the same change happens here. You have a smallish number of players that traditionally set telephone policy and pricing. How will you cope when they expand into a crowd that no longer agree with one another? What was once a consensual process must evolve into an adversarial one. That change happened to us in the ‘70s. When I first came to Australia four years ago, I was told it hadn’t happened here yet. On each of my subsequent visits, it has looked suspiciously more like it’s happening.

Consensus broke down in the United States in the 1970s, because competition got rolling. The political milestone was the failure in 1976 of the Consumer Communications Reform Act of 1975. It was introduced into Congress by AT&T as a kind of counterattack on all the little ways in which competition was getting its nose under the tent. Decisions like Carterfone and Hush-a-Phone had already permitted non-Bell gear (called “foreign attachments” by AT&T) to be connected to the telephone line.[1] Before then, all gear was owned by the company and came as part of the service. Next, new long-distance companies like Datran and MCI came along and demanded connection to the AT&T network.

The Reform Act was introduced with overwhelming support by members of Congress. In response, the industry orchestrated a massive letter-writing campaign. The act might have slipped through but for the fact that the matter was no longer unobserved. The competition rose up and said, “No, you can’t do that. You have to have competition.” After a year and a half of bitter contention, the act failed. The public still didn’t notice. But the competition and the large corporate users threw their weight around big time. MCI became informally known as the law firm with the antenna on the roof.

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[1]Carterfone (1968) 13 FCC 2d 420; Hush-a-Phone (1956) 383 F2d 266.

From then on, competition was accepted as the fundamental governing mechanism for telecommunications—at least, as a goal. I can scarcely overstate the profundity of that change. Let me elaborate a little.

Price Control

The telephone business, from the beginning, had been considered a public utility. It was presumed to be able to overcharge but had been kept under control by regulation, specifically by something called Rate Base/Rate of Return (RB/ROR) regulation.

RB/ROR uses a formula that specifies the amount of earnings, which is to say, profits, that a company can keep as a percentage of the value of its plant. The concept is pretty straightforward. You have an income stream, and from it you pay your people, you pay your taxes, and you take your depreciation. That leaves a pot of money left over for profits. However, the amount that you can keep (profit, earnings) is set by the government by multiplying the book value of your plant by an earnings factor. You then adjust your prices so that you make, but don't exceed, that amount.

Rate base regulation provides incentives—some seen as good, some bad. One obvious worry is the incentive to goldplate the network—the more you build, the more you are authorized to earn. Another worry is the disincentive for innovation. Yet another is unresponsiveness to evolving customer needs. The obvious virtue is the incentive to provide universal service. Cost allocation, as just said, provides the mechanism.

Competition I—New Players

After the 1975 act failed in Congress the following year, regulators proclaimed that what had always been dealt with by regulation would now be taken care of by competition. Prices would be controlled by the market. Investment and innovation will be governed by what the customer wants to buy and will pay.

But with a single player owning 99 percent of the market, competition is far from effective.

Regulators responded with a transition strategy by which they would oversee how the industry would get from here to there. Policies were adopted to encourage competition and discourage predatory behavior by incumbents. Handicaps were put on the incumbents to prevent them from squashing competition. One tool was, and continues to be, the creation of even more elaborate cost allocations. On top of that, there were joint service pools, where money is moved from highly profitable segments to unprofitable segments, on the ground of need. As a result of a transition strategy to end regulation, the amount of regulation has increased dramatically and grown layered, regulation on top of regulation.

Competition was the route forward, and it appeared to work in some places. In particular, competition sprang up in the long-distance business and in services of all kinds for big customers.

The competitors looked at the preexisting cost allocations and said, “Ah! Price umbrella—we can do that cheaper.” They entered the long-distance and corporate markets, creating pressure on telcos’ prices. I’ve talked about those markets before—they were the ones onto which costs were generously allocated, making it possible to price residential service more cheaply. Call it a subsidy, if you wish. Suddenly universal service looked threatened.

Regulatory incentives are designed to foster business models. In this case, a successful business model developed for the (much desired) growth of the competition in long-distance. It was a development path. Competing companies would approach a customer and say, “Here we are. We’re an alternative telephone company. Will you sign up?” And if the customer did, the companies would connect the customer right up to the incumbent telephone company whose facilities they had purchased at a discounted rate, mandated by the government. When the companies had collected enough customers, they would change their internal “make or buy” decision. Now it would be cheaper for them to build their own plant. The companies trotted down to Wall Street. “We’ve now got a good customer base. They will buy our brand. They will buy it at our price. If we had money from you we could build our own plant and serve our customers more cheaply than we do now.” They got the money and they built the plant. They were then providing alternative facilities carriage, which is what the regulators had in mind all along.

Interconnection

I have quietly slipped in another principle of governance—or, perhaps, just an elaboration on common carriage: interconnection. Governments required incumbent telcos to interconnect with the new competitors. Governments not only required interconnection but also bulk connections and high-speed access. Incumbents were required to offer open network access (ONA), at multiple connection levels, sometimes called open network elements (ONE). Government played a role in defining the elements and setting the prices. The descendant of this principle has surfaced as one of the hottest points of contention today—and our central topic—open access to the high-speed local loop.

The deregulatory approach appeared to be working in long-distance markets (though with some worries over universal service). It began to work somewhat later in the other obvious sector of the market, the business community, particularly, the downtown areas. In that community companies sprang up called CLECs (competitive local exchange companies), which used the same business development mode.

We have now reached the mid-1980s in the United States. That means about now in much of the rest of the developed world. I hope I am describing forces and themes that you may see as applicable to your own situation.

In the early ‘80s, through an antitrust suit, AT&T was broken up.

Antitrust can be based on a number of grounds. One is behavioral. AT&T argued that everything it had ever done was mandated by the government. How could these very actions now be declared illegal and cause for breaking up the company? AT&T was perfectly right, but this argument was not carrying any weight. Another antitrust ground was size. AT&T was the largest company the world had ever known, with gross revenues surpassing the GNP of all but thirteen countries. After divestiture, its fragments were the eight largest utilities in the United States. This argument did carry weight.

The company was in theory divided between the competitive and the noncompetitive parts. It created the next generation AT&T, which combined the long-distance business, the manufacturing arm, and the research labs. It created seven new companies out of the local exchange parts, called the “Baby Bells” or regional Bell operating companies (RBOCs).

By the way, I am relying more on theory than is really fair. A lot of these arguments were accepted in order to accommodate the positions of stakeholders. But the theory is useful nonetheless.

Competition II—Incumbent Carriers Unleashed

It was presumed at the time that the new, unencumbered AT&T was free to do more or less anything it wanted to do and that it would go into the computer business. Computers in the mid-1980s had the kind of cachet that the Internet has now. On the day of “divestiture,” AT&T got 50 percent of the revenue of the business and only 20 percent of the costs of providing the business. (The difference was made up by access charges, which were imposed on AT&T by local carriers both to receive and to deliver calls. Access charges were one of those “You can’t throw me out of office because the day after the event things are exactly the same as the day before and by the time they get out of whack I’m no longer in office” moves on the part of the politicians.)

The subsequent history of AT&T was hardly the success everyone thought it was going to be. It tried to get into the computer business three ways—partnered with Olivetti; on its own; and by buying NCR, formerly National Cash Register. All were unmitigated disasters and cost the company tens of billions of dollars.

The local exchange carriers were born with a profound inferiority complex, which was foisted on them not only by their station in life but also by the image they assumed at their creation. They were a plain, old-fashioned, regulated public utility subject to Common Carrier regulation and RB/ROR. What’s worse, they could look forward to declining plant value, which meant long-term profit erosion under the RB/ROR formula. There was hardly anybody around with a worse corporate self-image than the regional Bell companies at the time of their creation.

They did, to their credit, recognize the problem and face up to it. They developed a number of strategies.

The first was simply to get out of the telephone business. By the late 1980s, they had an average of a hundred new subsidiaries outside their traditional businesses. Many of the subsidiaries were built on the theory that “If I can do it as an internal operation, then I can do it in the marketplace.” They were in fleet rental, real estate, electronics retailing, hardware and software maintenance, etc.

The RBOCs’ hundred subsidiaries were gone by 1991. Their failure was partly owing to ineptitude, but it was also for reasons not entirely their fault and which I consider relevant to Australia today.

One reason is that the regulators took one look and said, “Listen, you guys still have a monopoly. And we have to prevent you from allocating costs and adjusting rates so that you stick your monopoly customers with high rates and confront your competitors with low ones. Those people vote and lobby.”

Of course, the governments didn’t think this up all by themselves. They thought it up partly at the instigation of the competitors, which were by now a very aggressive, active, vocal group of characters. Draconian restrictions were put on the so-called free enterprise, unregulated activities of the companies. For instance, if an executive was transferred from the regulated to the unregulated part in California, triple the annual salary had to be allocated back to the unregulated part. Things like that made it difficult to operate in the marketplace.

Another reason, which, I believe, is also very relevant to Australia today, is that telcos tried to move up the value-added chain into niche markets, where found themselves competing with their own customers. The customers responded in two ways: one was to defect as customers; the other was to march down to the regulators and say, “Don’t let them do it.” And the regulators responded.

The RBOCs’ efforts to leave the telephone business were not a happy story.

The second thing that they tried was to get rid of regulations and in particular rate base regulation. It’s hard to measure whether these efforts failed or not. I believe that they did.

More than half of the states scrapped rate base regulation and replaced it with something else. There were, for example, social contract plans—schemes in which the companies guaranteed a low price in rural areas, in return for which they could do anything else they wanted. There were banded pricing and price-cap plans, which allowed a company to raise and lower prices but only within a government-specified range. “Price caps” has become the common name for all these alternatives.

The governments that abandoned RB/ROR put in place monitoring systems that kept track of the same numbers. If the telephone companies were to do much better under the new regulation than they under the old rate base system, then the old rate base system would be reinvoked. The bottom line, in my view, is that RB/ROR is still there.

If the RB/ROR was, then the telcos had one remaining option—grow the rate base. This need led to the "information superhighway" hype of the early '90s. Australia, as you know, suffered as much as any country. You still have several billion dollars in plant standing around unused and costing money. But just as the politicians and business executives of the world were about to suffer a bad case of egg-on-the-face from the collapse of the information superhighway, they were saved by the arrival of the Internet.

The Local Loop: The Limit of Competition?

Governments have had an almost frantic desire for competition in the local loop. The U.S. Communications Act amendment of 1996 finally put congressional blessing and structure on the procompetition thrust of the regulators. Unexpectedly, there has been almost no competition in rural or residential markets. The process of open entry, mandated discounts, and forced interconnection that worked so well for long-distance and business customers has not worked at all for local and residential ones. This failure may be the clearest demonstration of what everyone knew from the beginning: some customers are more desirable than others. If you can get away with it, you go for the more desirable ones. Or, alternatively, it may demonstrate the difference between markets that are and are not natural monopolies (using any of the standard definitions of natural monopolies). Others blame it on foot-dragging by the incumbents.

With no competition, universal service is under pressure, and regulators are therefore very reluctant to let go of it. It's still heavily controlled. It's also considered to merit public utility and common carrier obligations. It's still a principal concern of governments to make sure that people are not over-priced for it.

Note, by the way, that I said "governments" and not "government." In the United States there are fifty-one governments in the business. There are major turf battles among them. Thus far, the fifty states play the bigger role in the local market.

Open Access

What does the local-loop competitive scene look like?

It looks skewed toward the more promising customers. They are served by a substantial array of active or announced competitors.

Numerically, the largest group of suppliers is the pure resellers. They have no plant and, in many cases, no product, only a license. They can provide service only by using open-access and

interconnect rules, which evolved from the ONA rules originating in the long-distance business in the 1970s.

There are also the so-called CLECs, which I have described before. Like the long-distance competitors, the CLECs began each business segment as resellers, then built their own plant as it became expedient. They own some plant, which is serving mostly business customers, in the cities. But they still supply much of their operating facilities through resale. They are almost entirely ignoring the residential and small business customers—which is where governments are so frantically trying to encourage them. To encourage competition, governments have layered another approach (or another interpretation) on top of common carriage, which is called open access. Open access is the descendant of the open network architecture that I have discussed before.

Open access means that telephone companies are not merely obliged to provide competitors a telephone service when they ask for it, but they are also obliged to let them into their own networks at various levels. It's as though a ferry boat were compelled to allow customers to bring their own motor and captain, get a reduced fee, and then sell the tickets under their own name. Governments are very clear about who has the authority to specify the levels of access and the price. They do. The telephone companies do not. The turf struggles are only among governments, about which one has how much of this authority.

How is price determined?

Cost allocation is not dead. It is one of these ideas that won't go away, no matter how irrational it may be or how long-gone the specific purpose for which it was cooked up. The regulatory approach to determining costs has been to start with the desired price outcome and then allocate costs to make that outcome look reasonable. In this case, the idea is to make the prices as low as possible. The current allocation schemes do this by throwing ALL joint and common costs out of the pool. Telcos must price open access at long-range incremental costs. These costing schemes are called long-run incremental costs, or LRICs, charmingly pronounced "lyrics." They include total element LRIC (TELRIC) plans and total service LRIC (TSLRIC) plans. They provide for no recovery of joint and common costs and discounts up to nearly 50 percent over usual telco prices. As you can imagine, telcos complain bitterly about unfair treatment. But, like AT&T and its pre-breakup arguments, they are getting very little sympathy from the governments.

Thus far, it seems that even these terms are not enough to stimulate competition for the residential customer. Would-be interconnect companies assert that the powerful incumbent brand names, combined with their own higher marketing costs, billing costs, servicing costs, and so forth, add up to a bad business proposition. Further, they claim they are getting a hard time with interconnect. They're getting inferior connections, long wait times, and poor or nonexistent plant collocation.

A precedent was set when MCI sued AT&T in the mid-1970s. MCI asserted that it got inferior quality connections. AT&T was compelled to give MCI U.S.$600M with triple damages—a total of U.S.$1.8B in 1975 dollars. A widespread rumor had it that AT&T accepted the penalty rather than admit that all of its connections were that bad! Your choice to believe it or not.

The Internet Arrives

But with the arrival of the Internet, the game changed.

An additional and very different bunch of local-loop competitors are lurking on the horizon. These are companies using different technologies, or coming out of different market traditions, that may suddenly be ready to enter the phone business. They derive their opportunity from the growing demand for high-speed Internet access.

The most conspicuous one is the cable industry. Cable companies do not have a common carriage tradition and have not had that regulation. They have no public utility status—on the presumption that society can do fine without them. They have no universal service obligation. They are vertically integrated. Content is controlled and carriage is owned by the same company. There is no public cost allocation, even between content and carriage. They have never been subject to open network obligations, except for limited rules requiring or forbidding them to carry certain broadcast or public interest channels.

Cable companies have been making noises for some time about getting into the telephone business. They have meant by this an ordinary line or two layered on top of video delivery.

But the Internet frenzy has opened another opportunity for them.

In Australia, the Net is a big deal, but you have nothing here that can prepare you to grasp the frenzy in the States. It’s seen as a socially transforming technology. But compared with, say, the electricity frenzy, the railroad frenzy, the airplane frenzy, or the early telephone frenzy, the Net is even frenzier. You can’t read a newspaper or watch television news without finding a major story about it.

There is no such thing as a major corporation in the United States that is not rethinking its strategy for almost everything because of the Internet. Corporations are using the Internet for internal communications, purchasing, managing just-in-time arrival of parts, advertising, interacting with their suppliers, selling to their customers, advertising—the list goes on forever. New strategy is even more urgent for companies in the information business, no matter how remote. All of Hollywood, all the newspapers, all the magazines are restructuring themselves on the assumption that the modes of communications by which people get their information either are different already or shortly will be. The strategic and structural uncertainty in any of these businesses is at an all-time high.

No one has much sense of what the future looks like. Most now believe that somehow it is intimately bound up in the Internet—which can hardly be called stable. By some measures, traffic is doubling roughly every six weeks.

I'm sure you've all heard tales of the Internet valuation paradigm. It goes like this: A company is two years old, has a hundred employees, and is losing money. It claims to be working in what they called the Internet space and goes for an initial public offering (IPO). Immediately, its founders become multihundred millionaires and the company is worth more on the stock market than Coca Cola. This happens every month.

It is happening on such a large scale that traditional capital markets are being turned on their heads A couple of previously impossible things are occurring.

One is an infusion of a different kind of capital into the communications and information business on a huge scale.

For example, the telephone companies have generally traded at about the same price/earnings (P/E) ratio as the Dow Jones Industrial Average. Both ratios were about fourteen years old when AT&T was broken up, about twenty-one now. Twenty-one is considered to be almost a financial bubble by many experts. But the companies continue to be measured and to invest by traditional ratios; they're working with money that they acquire at traditional costs. The Internet companies, on the other hand, have raised vast amounts of money without revenue behind them—not to mention earnings. They are working with free money. Consequently, they can spend and spend without being called to account for the results. The amount of this capital with dubious promise of return is so large that it became the major topic at a recent global economics summit: Is the entire U.S. economy, which seems so strong, actually only a bubble?

Another previously impossible happening is that Internet capital companies are buying traditional companies with equity. Perhaps the most striking example was the 1999 bidding war for US West between Global Crossing and Qwest.

US West is one of the RBOCs, providing local service to about one-seventh of the U.S. population. It has revenues of roughly U.S.$20B and is a traditionally valued company. Both Global Crossing and Qwest are valued on the Internet model. Both were losing money. Each was less than two years old and had gross revenues of less than U.S.$500M. Not only did they have a bidding war for US West, but it was successful for one of them: Qwest is now closing the deal for all of US West, having acquired it in a stock swap.

Another cute little anecdote about the frenzy concerns a Wall Street reporter who checked out Amazon.com's losses. She discovered that the company had actually made a profit in a quarter about two years ago. She called them up and asked, "What is this? Your books show you

actually made money for one quarter." She was told (and reported): "It was a mistake. It won't happen again!"[2]

Incumbent companies find themselves competing against or being bought by new companies with vast pools of "free" money. They have every reason to be nervous.

Besides the cable companies, there are lots of other possible entrants into the telephone and high-speed local Internet-access business. They are out there raising money, building facilities, and beginning to compete for the choicest customers.

The list includes fixed wireless competitors (including AT&T with "Project Angel"), local multipoint distribution service (LMDS) and multichannel multipoint distribution service (MMDS) carriers, and a number of satellite distributors, such as Web TV, which broadcast the Internet to the television set. In Europe more than in the United States, the list includes the electric utilities. Some electrics are trying to transmit information over wires; others are looking at ways to lease their right of way (ROW). They, too, have universal connectivity to the household. An interesting possibility is that they can lease their ROW to other companies that will raise money using the "dot.com" model to compete with the incumbents. Whether any of these will succeed is too early to tell.

Is the King Dead?

Now, what is happening in the local loop?

AT&T has just spent U.S.$120B purchasing the largest single stake in the cable television business. They have expressed very little interest in video entertainment. Instead, the company has announced that it is going to become the alternative supplier of high-bandwidth Internet access to the home.

I think that they have bought some culture clash problems that go way beyond just culture and into regulatory clash. The cable companies are vertically integrated and have closed arrangements between their content and their carriers. AT&T comes from the common carrier, public utility, forced interconnect, open access, and universal service traditions.

Cable companies also are a monopoly with a very nasty history of poor service and abuse of their customers. They have a bad image with regulators. But they got the drop on the telcos by announcing around the middle of 1998 the very first experiments in residential high-bandwidth Internet access. Being the first to offer something that the market desperately wanted has helped a lot with their image.

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[2]Lisa Bransten, "A New Model—The Bottom Line," *The Wall Street Journal*, July 12, 1999, R-8.

The RBOCs also are entering the business. They use a completely different technology called asymmetric digital subscriber line (ADSL), whose purpose is to drive the existing copper pairs in the local loop up to Internet high-bandwidth speeds. The first telco offerings were announced in early 1999.

Where are we now? I think that a very important milestone has been reached, one that potentially changes all aspects of the business. I will date it from February 1999, which is simply the date that I figured it out (but let me note that I was ahead of the telcos and the cable companies). That is when the market came alive. Not only was there a market for high-bandwidth access to the home, but there was also a frenzied market, an Internet-style market, a "dot.com" market. If someone sent a truck down the street with a sign saying, "I'm going to sell your house high-bandwidth access," people would have lain down in front of the truck. Bell Atlantic announced ADSL in the small town where my partner, Tony Oettinger, lives—Belmont, Massachusetts—in March. As of September, there were seventy-seven people on-line and 2000 homes on the waiting list. Tony is negotiating with a resale carrier. People are prepared to pay the asking price, at which the companies expect to make money.

What are the implications of this milestone? What is at stake?

Here's what they say in Silicon Valley: "We've picked the winner, and it's the cable companies. In eighteen months the telephone companies are dead ducks—they are out of business. Well, they'll probably figure out a way to survive as something. But as we know it, they're out of business." Why? Because vertical integration is the key to success. The cable companies can fund their build-out from revenue they will make selling football, movies, and other entertainment. They are going to deliver these by the Internet Protocol (IP). They can add Internet access for a good price but at very little cost to themselves. And they can add telephone service at no cost to themselves and very little to the customer. Anyone who wants a second line, sure. The customer can cancel a telephone company account and make the cable buy a very economic proposition.

The sort of package cable companies are offering varies from place to place. A typical one would be about U.S.$60 a month for the cable connection, a basic entertainment package, and Internet access. Then another $5 for a phone line and free local telephone calls (sometimes free long-distance service as well).

In the Valley, companies are investing corporate money and executives are putting their personal money into the cable business. They believe that that's the way the world is going.

Let me introduce another piece of logic that may make this scenario sound plausible. Telephone companies have been aware for at least since the late 1980s of what I call the San

Andreas fault in pricing.[3] Earthquake faults sit stationary for a century and build up pressure. Then all of a sudden they let go. The pressure became evident when the telephone companies tried to get into the "information superhighway" in the early '90s. They aspired to deliver movies, and they knew what the price was going to be: it was determined already by the local video rental store, about U.S.$3 for a movie. If you must charge $3 for a movie's worth of bits, then how much can you charge for a telephone call that's digitized and carried as a stream of bits? It's obvious—telephone calls are not worth the cost of billing them! The fault line lies between unbillably cheap phone calls and the present price.

But the telephone companies do not intend to lie down and roll over. They have a plan as well. It can be called a "bundle of services." The RBOCs are struggling to overcome the last of the three prohibitions put on them by the Justice Department in 1984—long-distance service. They are now allowed to offer the other two, manufacturing and content. They care a lot more about long-distance than they used to, because they see it as the key element of a bundle. They intend to offer a bundle of video entertainment, Internet access, data services, long-distance, and local telephone. The bundle is their answer to the free telephone offered by the cable companies.

Now, let's step back and look at the current scene from the perspective of the regulators. The Federal Communications Commission (FCC) has been very clear that it is facing a dilemma. Should it impose an open access requirement on the cable companies, opening the door to government cost allocation, universal service requirements, public utility status, and common carrier obligations? There is considerable clamor from the competition, and even the public, for such a move. But if it does that, will that move dry up the incentive and the capital for the rollout? For the moment, the chairman is coming down clearly on the side of leaving the cable companies alone—the rollout comes first.

But let's suppose that the rollout continues. The most current thinking among regulators—this is my own characterization—is that the whole Internet could be served by completely competitive markets.

First of all, nobody owns and controls the IP. No problem there.

What you get over the IP—movies, chat lines, Web pages, Web searches, e-mail (with movies and music as attachments), e-commerce and so forth—seems already to be a wonderfully thriving competitive market. Anything you might want over the Internet, you can find a dozen companies to provide. "Great," say the regulators, "this is what we were after all along ."

How you get to the IP could shape up to be a competitive market as well. Telephone companies, cable companies, MMDS, LMDS, other fixed wireless solutions, satellite solutions, and maybe electric utilities all are taking a run at it. "Great, it's what we had in mind all along—

[3]The San Andreas fault is the earthquake zone that destroyed San Francisco in 1906.

there's no need for regulation." Many regulators are saying that, if this structure comes to be, the dream from 1975 will finally arrive. There will be no need for them any more. (Well, of course, there may be universal service questions, spectrum allocation, open access terms, enforcement, and the like.)

The weakness for telcos in this scenario is that the telcos are predicating their future on service bundles. But if that model materializes, each service will be a competitive market. People can take a piece of this and a piece of that from different suppliers. Telcos will have to hope that a significant customer group prefers bundled service packages to competitive shopping.

The first shots have already been fired. AT&T's first announced plan for its cable companies was to offer free access to the content suppliers that it owned. If a customer wanted to reach any other content, the customer would have to pay an extra price. There has been a storm of protest, with demands from both customers and competitors for government to demand open and equal access.

What is the "right" answer? Obviously, different players will find different answers "right." Different countries or different times will make different accommodations. But I hope that I've provided some tools to help work through the issues. I've described a lot of ways of thinking in the different parts of this tour. Let me now try quickly to put them together in one place.

Recapitulation and Summary

The issue of open access to the high-bandwidth local Internet loop draws in and confuses several governance and business traditions. It may be helpful to unscramble them and to look at the essence of each. They are (greatly summarized) the following:

Issues of public governance:

- Common carriage: requiring that all who come must be admitted
- Public utility: requiring that an essential service be provided at nonpredatory prices
- Universal service: requiring that, in practice, everybody can get one
- Interconnection: requiring that the entire network can be reached through any provider
- Open access: requiring that the incumbent monopoly serve as a vehicle for competitors
- (More generally:) Management of competition as a substitute for regulation

Issues of corporate governance:

- The clash between the "common carriage" telco tradition and the "exclusive deal" cable one
- Conflicts for traditional carriers when they try to compete with their traditional customers

- Competition between companies trying to expand using traditionally priced capital and those using “dot.com”-priced capital
- Bundling and branding in an increasingly fragmented marketplace

Certainly, within eighteen months we’ll know whether Silicon Valley is right. If the telcos are still viable by May of 2001, Silicon Valley was wrong. In any event, we’ll have a complicated and fascinating game to watch.

Let me stop here. Questions? Comments?

Afterword

by Dianne Northfield

Although there are stark contrasts between telecommunications markets and their regulation in the United States and Australia, there are common issues on the agenda in each country. Both countries are strongly committed to the development of sustainable competition and are currently focusing on promoting local loop competition; both are dealing with the regulatory treatment of new players and issues of competitive neutrality; both have major policy agendas focused on broadband access; and, in each country, funding of universal and broadband services and cost recovery by their providers continue to dominate debates. In both countries, demand by residential customers for broadband services is growing, further complicating and placing pressure on business and regulatory decisions.

Some commentators view Australia as “two years behind” the United States in the uptake of electronic commerce. They also refer to greater competition in U.S. markets and its impact on the deployment of technologies to enable broadband access. Since around 1997, the cable television industry has been implementing network upgrades to enable expanded broadband services including digital video, Internet access through cable, interactive cable, and broadband telephony. Spurred by this activity, and by the merger of AT&T and TCI in 1998, incumbent local exchange companies have also been aggressive in DSL deployment.

In Australia, the more recently deployed cable networks have been purpose-built for broadband. Telstra and Optus also have satellite deployment programs targeting the delivery of high-speed services, AAPT (Australian Associated Press Telecommunications) is implementing a high-speed (LMDS) broadband network and building a code division multiple access (CDMA) mobile network, while players such as Macquarie and WorldCom are rolling out networks to provide competing high-speed capacity services, particularly in central business district areas. Meanwhile, the Federal Government Networking the Nation initiative is supporting infrastructure and services development, particularly in rural and regional areas, as are a number of State Government initiatives. On the regulatory side, the ACCC (Australian Competition and Consumer Commission) has declared integrated services digital network (ISDN), analogue cable television, and the local loop as part of efforts to support competition in local access.

Since 1996, CIRCIT has conducted a collaborative project with the Harvard University Program on Information Resources Policy (PIRP), examining the introduction and management of competition across a range of developed nations. The working assumption behind the research has been that while nations are approaching telecommunications policy and regulation in markedly different ways, they are essentially dealing with a common set of issues. Cross-

referencing of national experiences, therefore, provides valuable insights for nations reviewing their approaches.[1]

As part of the project, John LeGates has joined us in Australia on four occasions since 1996. As a founder of PIRP, established in 1973, John brings extensive knowledge and experience to the table based on U.S. and global developments. The relevance of these developments to Australia's current situation is woven throughout the transcript of his talk and include the following factors:

- the impact of competition and a growing number of players on the scope for industry and government negotiation and agreement;
- ongoing issues surrounding cost allocation arrangements;
- potential threats of competition to the basis of the U.S .universal service regime;
- growing tensions between the highly regulated common carriage model applying to incumbent carriers, the previously unregulated cable industry and new providers of Internet services; and
- regulatory consideration of a key issue—the impact of open access regulation on future investment and high-speed infrastructure rollout.

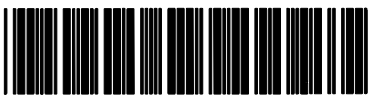
In addition, John provides us with an overview of the key players, and their contrasting market strategies, as the development of local loop competition and residential provision of high-speed services takes off in the United States. Despite the strong focus in the United States on unbundled interconnection, long-distance and large users of telecommunications services have been the primary beneficiaries of competition.

[1]Drawing on the combined experience of CIRCIT in Australia and PIRP in the United States, the project resulted in *The Information Policy Maze: Global Challenges—National Responses* (Melbourne: RMIT University Press, 1999). Information about this book, including how to purchasing it, is available [On-line]. URL: http://www.circit.rmit.edu.au/publics/ipm_book.html

Acronyms

AAPT	Australian Associated Press Telecommunications
ACCC	Australian Competition and Consumer Commission
ADSL	Asymmetric digital subscriber line (ADSL), one of a number of variants of digital subscriber line (DSL) technology (others include HDSL [high-speed DSL] and VDSL [very-high-speed DSL]). Like ISDN, ADSL uses standard local loop phone lines to deliver high-speed data communications. Although the transmission speed of ISDN is limited to 64 kbps, ADSL technology can deliver upstream (*from* the user) speeds of 640 kilobits per second (kbps) and downstream (*to* the user) speeds of more than 6 megabits per second (Mbps). ADSL uses the portion of a phone line's bandwidth not used by voice, allowing for simultaneous voice and data transmission. It is called "asymmetric" because of the difference between the rates of delivery downstream and upstream.
ARPANET	Advanced Research Projects Agency Network, a packet-switching network used by the U.S. Department of Defense in the 1970s (and no longer in existence) that evolved into the Internet.
CLEC	A local exchange carrier (LEC), that is, a local telephone company (for example, an RBOC or an independent operator, such as GTE) that traditionally had the exclusive, franchised right and responsibility to provide local transmission and switching services in a given area. Variations are CLECs (competitive LECs), ILECs (incumbent LECs), and ELECs (enterprise LECs).
CDMA	Code division multiple access, a digital cellular technology that uses spread-spectrum techniques. Unlike competing systems, such as GSM, which use time division multiplexing (TDMA), CDMA does not assign a specific frequency to each user. Instead, every channel uses the full available spectrum. Individual conversations are encoded with a pseudorandom digital sequence.
FCC	Federal Communications Commission
GNP	gross national product
GSM	Global System for Mobile
IP	Internet Protocol, the international standard for addressing and shipping data across the Internet, developed by a community of researchers centered on ARPANET.
ISDN	integrated services digital network

LMDS	Local multipoint distribution service, one of the variety of technologies developed for high-speed wireless access, it offers an ideal way to break through the local-access bottleneck posed by incumbent carriers. Like cell phone networks, LMDS is a wireless system, but it is designed to deliver data through the air at rates of up to 155 Mbps (typical mobile phone voice calls use a mere 64 kbps, or 8 kbps in compressed digital systems). LMDS can support voice connections, the Internet, videoconferencing, interactive gaming, video streaming, and other high-speed data applications.
local loop	A generic term for the connection between the customer's premises (home, office, etc.) and the service provider's local exchange. Historically, the local loop has been a wire connection, but wireless options such as LMDS and cellular mobile are increasingly available for local-loop capacity.
MMDS	Multichannel multipoint distribution service, a form of wireless cable service that transmits signals at high frequencies. When transmitting analog signals, MMDS can handle 33 channels of television or as many as 300 channels when the signal is compressed to be sent as a digital signal.
ONA	Open network architecture describes a broad range of pricing methodologies by which a telecommunications provider (most often an LEC) makes certain elements of its network available for interconnection to other competitors on an equal-access basis.
ONE	open network element
P/E	Price/earnings ratio for a corporation; the ratio of the value of the stock to the company's earnings
RB/ROR	Rate Base/Rate of Return regulation
RBOC	Regional Bell operating company, one of seven holding companies formed by the 1984 divestiture by AT&T of its local Bell System operating companies and to which one or more of the twenty-two Bell System local telephone companies were assigned. The original RBOCs were Pacific Telesis, US West, Southwestern Bell, Ameritech, BellSouth, Bell Atlantic, and NYNEX.
ROW	right of way
TELRIC, TSLRIC	Total element long-run incremental cost, total service long run incremental cost, acronyms that were coined by the FCC in its order dealing with the implementation of the unbundling and interconnection aspects of the U.S. Telecommunications Act of 1996. The FCC concluded that the price for an unbundled network element should be based on the LEC's TSLRIC of that particular network element, which the FCC calls TELRIC, plus a reasonable share of forward-looking joint and common costs.



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