Telephones, Competition, and the Candice-Coated Monopoly

Peter W. Huber

Call it the Candice-coated monopoly. AT&T faces tons of competition in the long-distance industry, right? After all, when she's not debating former Vice President Quayle, Candice Bergen (Murphy Brown) is doing all those ads for Sprint. In truth, however, Bergen works for a bunch of regulatory wonks in Washington. Competition in the long-distance industry has failed.

Much the same goes for the local telephone monopoly, except it's the other way around. The monopoly—the unassailable, all-natural monopoly, ordained by the great economist-in-the-sky who draws a declining average cost curve over one industry and not another—is being paid off by the wonks, too. The local exchange monopoly is finished, except in the tenacious imaginations of regulators and antitrust lawyers.

Now I'll grant that the views expressed in the preceding two paragraphs contradict much current thinking on these subjects. Even worse, these views run directly contrary to the wisdom written into the 1982 divestiture decree that broke up the old Bell System. But then, mistakes do happen, and economic theories, even if quite popular for a time, do sometimes turn out to be wrong.

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The Mistakes of the AT&T Breakup

Begin in 1982, the dawn of today's telecommunications marketplace. On August 24, Judge Harold Greene formally enters the "consent decree" that will break up the Bell telephone system 16 months later. The plan is to separate the competitive sectors of telephony from the local exchange "natural monopoly."

Long-distance communications, the lawyers observe, depend on microwave radio. It has been clear for years that two or more competing providers, and even large private users, can deploy microwave towers as cheaply (if not more so) than the monopoly Bell System. The Federal Communications Commission has in fact been saying much the same thing (though less vehemently) since 1949, when it first began issuing private microwave licenses. The basic building block in microwave transmission is a radio capable of handling 12 voice calls. Long-distance networks typically carry a lot more traffic than that, so transmission costs rise as traffic volumes increase. In economic terms, this means that radio-based services are usually not "natural monopolies." MCI—"Microwave Communications Inc."—is feverishly building a full-blown competitive microwave network. The antitrust lawyers have the economic theory all worked out: the local, copper wire network is a

monopoly, but the long-distance, microwave market is competitive. AT&T, the largest corporation in the world, will be carved up accordingly.

Trouble is, as the ink is drying on the divestiture decree, the microwave towers are being dynamited to the ground. Sprint even runs ads showing the spectacle. The long-distance network is being taken over by fiber-optic glass. The telephone industry doesn't need radio any more, except perhaps in a little-noticed new business at the fringe of telephony called cellular telephone.

It isn't so surprising that the fringe is ignored by the master architects of divestiture. In 1981, radio-based telephone systems are almost unknown. The FCC has licensed the very first commercial cellular system just a couple of years earlier, in Illinois. At a news conference announcing divestiture in early 1982, AT&T's CEO, Charlie Brown, doesn't even know who's going to get the infant cellular properties, AT&T or the Regional Bells. The Justice Department's architects of divestiture all but ignore radio in the local exchange. When they think about the local exchange, the legal pundits and theoreticians think about copper wire.

The economists have worked out that end of the network too, of course. The local exchange, being a wireline network, is a natural monopoly. A single telco can serve an entire local market much more cheaply than could two or more competitors. Local wireline networks (the economists explain) typically have excess capacity. A single provider's costs fall steadily as it serves more customers. So competition isn't possible in the local exchange; it isn't even desirable. But here again, there's a fundamental problem: copper wire in the local exchange is about to face a cascade of new competition from radio.

The industry, the FCC, Judge Greene, and legions of state regulators have spent the decade since trying to deny, resist, correct, or fiddle with that first, monumental mistake, the one that drew a lawyers' line in the sand between local monopoly and long-distance competition. More paper has been filed in the eight years since divestiture than in the 10 before. The Department of Justice has issued thousands of advisory letters. Some 6,000 briefs have been filed with Judge Greene. Thirteen groups of consolidated appeals have been brought to the D.C. Circuit. The Supreme Court has received a half dozen divestiture-related petitions. Congress has considered numerous bills proposing changes to the decree. The membership of the Federal Communications Bar Association has nearly doubled.

And now it's 1993: the market has had a decade to pass its own judgment on the lawyers. What's the verdict? There isn't a final one yet—restructuring several hundred billion dollars of telephone company assets takes time. But it's now pretty clear how the market is going to vote. The architects of divestiture got it wrong—fundamentally wrong.

In 1987, in *The Geodesic Network I*, I argued that competition was coming to the local exchange. Telephone networks are assembled from wires and switches, and you can always slash the amount of wiring used by introducing more numerous and sophisticated switches. Switches are just computers, and microprocessors (I predicted) would in time rip apart the local telephone exchange much as they have shredded the mainframe computer. It would be cheaper to deploy more switches and nodes and use relatively less of the antiquated copper wire that still dominates the last mile of the network. I also voiced some early doubts about the viability of honest competition in the long-distance market.

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Recently I completed a follow-up report, *Geodesic II*. Six years after the first study, and 10 since divestiture was formally set in motion, I'm as convinced as ever that the picture I painted in 1987 is correct. Despite superficial appearances, competition in the local exchange is taking root and will soon be flourishing. In the 1990s, competition is going to sweep through the local exchange. Meanwhile, competition in the long-distance market today is an illusion, a triumph of yesterday's elegant theory over today's economic fact.

Both of these claims will be greeted with many howls of denial. How can anyone doubt the health of competition in the long-distance market when every householder knows he can choose among AT&T, MCI, Sprint, and a host of smaller resellers? And how can anyone doubt the permanence of the local exchange monopoly when that same householder has exactly one choice for his local exchange connections? I've done consulting work myself for a law firm that represents the Regional Bells, so my answers to those questions are undoubtedly biased. But let the facts speak for themselves.

The Realities of the Long-Distance Market

To begin with, there is a whole lot less competition in the long-distance market than meets the eye. Candice Bergen puts on a good show, but she isn't fooling market analysts or even Sprint, her own employer. AT&T isn't going to lose any more market share. Sprint has conceded that in papers filed with the FCC. So has CompTel, the trade association that represents the long-distance industry. AT&T has suffered only modest losses in net revenues since divestiture. Rising calling volumes and declining access charges have maintained revenues despite AT&T's decision to give up some market share.

A deregulated 60 percent share of the market may be vastly more profitable than a regulated 100 percent, at least in a market where competition consists of one whale sheltering two pilot fish.

AT&T's competitors are consolidating fast. Allnet and Lexitel merged at the end of 1985; GTE Sprint and US Telecom merged in 1986; and in 1990, MCI purchased Telecom*USA, which at the time was the fourth largest interexchange carrier. Telecom*USA had itself been formed by the 1989 merger of Southland Fibernet, SouthernNet, and Teleconnect. There have been a slew of other mergers among smaller players as well. There are lots of resellers around, but they are simply small-time bartenders, selling a house brand light beer by watering down brew sold wholesale by Anheuser Busch.

Investment analysts almost uniformly agree that this augurs well for both AT&T and its sheltered siblings. Donaldson, Lufkin & Jenrette finds it unlikely that AT&T would start a price war because it "has too much to lose by cutting prices aggressively: financially (it would destroy margins), politically (political backlash at a time when the company is seeking deregulation) and legally (fear of an antitrust suit)." Other analysts at Oppenheimer & Co., Paine Webber, and Sanford C. Bernstein & Co., among others, all see much the same picture—a stable, complacent oligopoly settling down under a pricing umbrella maintained by AT&T. AT&T voluntarily cedes a certain market share (by keeping prices high) to increase short-term earnings and to win regulatory flexibility. In an age of rapidly declining costs, it is more important for AT&T to break free from regulation than to protect the last 10 or 20 percent of its market share. Costs in the industry are dropping rapidly due to advances in fiber-optic technology. It may be well worth surrendering 10 percent of market share if regulators can then be persuaded to disregard 20 percent of reductions in cost. A deregulated 60 percent share of the market may be vastly more profitable than a regulated 100 percent, at least in a market where competition consists of one whale sheltering two pilot fish.

But if all this is true, *why* is it true? Why has competition in effect failed in the long-distance market? The answer brings us back to radios and wires. The Justice Department economists in 1982 weren't completely off the wall. Wireline networks are sometimes "natural monopolies." That, in fact, is the root problem in the long-distance market today.

Competition in the long-distance market could have blossomed with the advent of microwave radio in the 1950s, and would have if regulators and AT&T itself had been more forthcoming. By the early 1980s, however, when the lawyers finally got into the act, microwave was finished and glass was taking over. The key fact is the switch from radio to glass.

With radio, a carrier's costs added up as traffic volumes increased. Not so with glass. The up-front costs of deploying the fiber-optic cable are very high. Rights of way must be secured, and deploying cable is horribly labor-intensive. They are also largely the same whether the

fiber-optic cable contains one pair of optical fibers or a dozen, whether the fiber is "lit" (*i.e.* connected to functioning electronics) or "dark," and whether the lit fiber carries a million telephone calls or none at all. Costs are incurred at the front end and are fixed. Wire networks have almost zero (or even negative) salvage value; costs are irrevocably sunk before they generate a single dollar of revenue.

So AT&T, for example, lays a 1,000-mile cable containing 12 fibers, which currently can provide 100,000 voice circuits. The investment per circuit is about $1,000. The cost is pretty much the same whether the cable contains one pair of glass fibers or a dozen, so it makes sense to lay lots of fiber "dark" to begin with, and then light it up later as needed.

Now look at the picture from AT&T's perspective once the cable is in place. To recover $300 per year per circuit, AT&T need only charge about a quarter of a cent per minute, per circuit, during eight-hour business days—if it can fill the pipe. Even this number is misleading: once the up-front cost of deploying the cable is sunk, the marginal cost of actually carrying an additional minute of traffic is vanishingly small.

Moreover, once fiber is in place, its carrying capacity can be increased almost indefinitely at very little cost. Every few years Bell Labs engineers double the carrying capacity of that cable. In one recent breakthrough, for example, they managed to pump light at multiple wavelengths down the same fiber. The capacities of the long-distance fiber-optic networks already in place *vastly* exceed demand, and carrying capacities are being increased year by year at very little cost. A couple of years ago, an FCC study found carriers other than AT&T (which collectively, recall, serve less than one-third of the market) are capable of supplying 146 percent of the market. Sprint alone has "far more capacity than it could possibly hope to utilize in the near-term" and "full provisioning of Sprint's fiber network" would allow it to serve demand "well in excess of AT&T's total switched traffic volume for the year 1990." There is, in short, every reason to believe that the fiber-optic long-distance transmission in operation today is characterized by sharply declining average costs over the whole range of demand. Economists call *that* a "natural monopoly."

The result of all this is reflected in the structure of long-distance prices. Ordinary customers pay around 20 cents a minute for long-distance calls, but big customers pay closer to 10 cents or less. Carriers have embraced postage-stamp pricing: a single rate for calls anywhere in the country. Once they have a nationwide network in place, carriers don't much care whether they have to carry a call 100 miles or 1,000, and they can offer discounts of almost any size if the customer is important enough. Volume is everything in the business, because glass is so extraordinarily capacious. Each carrier has plenty of capacity to serve the entire market, and the more traffic a carrier captures, the lower its average costs. That again, in economic jargon, is a "natural monopoly."

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So why hasn't AT&T wiped out the competition? Because the FCC won't let it. And because AT&T knows full well that behind the FCC lurk new legions of antitrust lawyers.

The FCC takes care of the industry in the way government bureaucrats usually do, with stacks of paper so impenetrable that very few outsiders know what's going on. The Commission did its duty again most recently on September 17, 1992, when it made noises about getting rid of the "equal charge" rule, but then decided not to do so right away. Never heard of the rule? Few people have. The rule is typical of Washington—numbingly complex, but also big enough to pay Candice Bergen's rent and define the whole industry.

Here's how. Long-distance companies pay an average of about 36 percent of their revenues to the local telcos for first- and last-mile transport. Providing "access" to AT&T costs least, because AT&T is by far the biggest and its network runs right to the doorstep of local telco switches. How big an edge on costs should that give AT&T? At least 16 percent, and probably more like 25 to 40 percent of access costs, according

to papers filed with the FCC by both AT&T and its competitors. In other words, something like 10 percent of each carrier's total costs.

But, in fact, all long-distance carriers pay the same rate. The divestiture decree created the equal charge rule as a transitional measure, and it was supposed to expire on September 1, 1991. AT&T's competitors begged the FCC not to let that happen, and the FCC didn't. For all practical purposes, the "equal charge" gimmick thus remains a direct subsidy from AT&T to its rivals. But it only illustrates the fundamental problem in the fiberized long-distance market.

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Once traffic volumes get high enough to make glass worthwhile, glass is fantastically efficient. No airline or trucking company could afford to operate at one-quarter or less of full capacity year after year, yet long-distance carriers can hardly help it.

And this is also why no one dares compete for real. Long-distance companies engage in what airlines used to call—in the old days of regulation—the "battle of the sandwich." They offer frequent caller plans, they advertise like crazy, they offer every inducement except a lower price. The three main players are all smart enough to avoid a price war, because they know that at the end of it they would all—in different ways—end up losers.

AT&T's standard rejoinder is that prices for long-distance service have in fact fallen steadily, by roughly 40 percent since divestiture. But here again, virtually all the action has been in regulation, not in the market. Peel off payments from long-distance to local-exchange carriers, and you find that interstate toll rates in fact fell much faster in the decade *before* 1984 than in the decade after. Since 1984, the FCC has slashed AT&T's annual access charge bill by over $10 billion. During the same period, AT&T's annual prices fell only about $8 billion. Once you allow for inflation, AT&T's prices in real dollars have (at best) inched down a couple percent a year. That's laughably small progress for a decade in which fiber-optic technology has supplied thousandfold gains in transmission efficiencies.

Despite all the hype from Candice Bergen, the long-distance industry is now characterized by umbrella pricing, under a canopy maintained by FCC regulation and AT&T. AT&T is ostensibly subject to "price cap" regulation by the FCC, but the cap is really a floor. The Commission spends most of its time making sure that AT&T does not lower its prices too fast; competitors rush to court whenever AT&T's prices seem likely to fall. When AT&T filed a contract to provide Federal Telecommunications Service 2000, MCI furiously complained to the FCC that AT&T's proposed rates included an unlawful rebate. Sprint recently took out a paid advertisement to point out that MCI has consistently objected to AT&T's large-customer tariffs as too low. Sprint, however, reproaches MCI only for hypocrisy in its own regulatory filings, not for the fact that MCI had asked regulators to keep AT&T's prices high. Sprint has itself complained that AT&T is underpricing services to large customers.

According to the FCC's own Office of Plans and Policy, competitors' calls for continued regulation of AT&T "for the most part merely represent self-serving attempts to sustain an outmoded regime of asymmetric regulation that supplies competitors with protection from competition." The perverse upshot, as the chairman of the FCC has acknowledged, is that FCC regulations "limit the ability of a major competitor—AT&T—to compete. Current procedures afford competitors many ways to energize the regulatory process to block price reductions potentially offered by AT&T. Most importantly, this holds prices artificially higher, and reduces customer choice."

The regulatory price floors have had their intended effect: the gap in prices between AT&T and its competitors has steadily narrowed, from 10-20 percent in mid-1984 to about 5 percent in 1987, to smaller margins still today. Have you seen AT&T's recent ads showing a penny of difference between its prices and Candice Bergen's? The ads aren't lying. Price competition has all but disappeared.

Even more tellingly, long-distance prices have

remained remarkably stable. This is extraordinary for an industry characterized, as the long-distance industry is, by high fixed—but very low marginal—costs of operation. The airline industry, with a similar cost structure, has had far more frequent and violent pricing upheavals. AT&T, by contrast, has begun slowly raising its prices once again, and, as Comptel sees it, is "apparently confident that doing so will not cause it to lose business to its rivals."

What would competition in the long-distance market look like if it were ever unleashed? The FCC would immediately adjust access charges to reflect actual costs. Then, for a short while, competition in the industry would look very much like competition in the airline industry, only more so. There would be fierce price cutting, and prices would be very volatile. As the weaker players became desperate, they would resort to massive, destructive giveaways, two-for-one coupons, frequent-callers-call-free, and so on—anything to generate new trickles of revenue out of the massive excesses of capacity in their networks. The slaughterhouse scenes of the airline industry would look gentle by comparison. While it lasted, competition in the industry would be a glorious price-cutting feast for consumers.

But it wouldn't last. The competition would first consolidate, then fold. AT&T would be reregulated. And AT&T would then spend the next decade or two defending itself in the antitrust courts. And oh yes, the Regional Bell Companies might then be cut loose to compete with AT&T, and there would be another round of bloodletting.

None of this is likely to happen. The market has only three real players, and AT&T is dominant enough to maintain order. Under careful FCC supervision, AT&T pays off MCI and Sprint in market share and subsidized local access, in return for which they shield AT&T from the government. The payoff may seem high—$8 billion a year to MCI alone—but it protects AT&T's $53 billion in assets and $63 billion in annual revenues from further predations by lawyers. No insider is going to be crazy enough to disrupt this cozy little arrangement. What we have here is an umbrella-priced oligopoly, in which everyone is kept calm by the combined wisdom of one market leader and an acquiescent federal commission.

The Local Exchange

Now back to the local exchange. The usual

isn't-technology-keen pictures show a strand of glass beside a huge bundle of copper wires. But that comparison is all wrong. Glass has knocked out microwave radio in one market; radio is now consuming copper in another. The antitrust lawyers back in 1982 weren't completely crazy. Radio is indeed more competitive than wire. What the lawyers missed was that radio was finished in the long-distance industry, and just getting started back in the local exchange.

AT&T doesn't care to advertise the fact, but it understands that as well as anyone. In 1991, AT&T was granted an experimental license to conduct personal communications service (PCS)

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trials in Boston, Los Angeles, and Atlanta, and AT&T recently applied for exclusive ("pioneer preference") licenses to serve the country's 70 largest urban areas. "[T]he land, towers, and buildings used to support the microwave portion of [AT&T's long-distance] network," AT&T cheerfully noted in its application, are now "available to support other services." AT&T declares its "ultimate goal" to be the provision of "affordable, nationwide," radio-based tele-

phones, with "[f]eatures and quality comparable with the wireline network." AT&T's idled microwave facilities will provide "macro cells," which in turn will serve a dispersed set of radio micro cells. Signaling, call security and authorization, and the registration of personal numbers and terminals will be handled by the network database and Common Channel Signaling systems AT&T already has in place for its long-distance network. PCS switches will in turn be linked nationwide by way of direct connections to AT&T's landline network.

AT&T's application is only one among many. In 1991, the FCC granted authority to Fleet Call, recently renamed Nextel, to convert its dispatch networks into an all-digital, cellular mobile telephone service in direct competition with established cellular carriers. The FCC has already authorized over 150 experimental licenses to test PCSs. Millicom, for example, is planning to construct PCS networks in Houston, Texas and Orlando, Florida. McCaw is involved in the development of PCSs in Orlando; in April 1991, the company also acquired exclusive rights to a new PCS system in five West Coast areas. And if AT&T's recent bid survives federal review, McCaw and AT&T are going to be a single entity within a few years.

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In February 1992, the FCC proposed to allocate 220 megahertz of new spectrum for PCS and other "emerging telecommunications technologies." To put that number in perspective, understand that existing cellular carriers—which now serve about 11 million customers—are each licensed to use 25 megahertz of spectrum. And in an August 1992 order, the Commission asked for comments on its proposal to license either four or five providers of PCS in every geographic market. These providers would be in addition to the existing landline telco, two already-licensed cellular carriers, and Nextel. Within the next few years, radio-based services will possess spectrum licenses sufficient to offer as much local carrying capacity as is currently being used by *all* landline customers. The FCC projects "60 million PCS users in the U.S. within 10 years."

The prediction is not as crazy as it may sound at first. Consider the economics of radio versus copper wire in the local loop. The established cellular carriers have invested about $10 billion so far, or about $1,000 per subscriber. But their networks are by no means full, digital radio will boost capacity considerably at little additional cost, and PCS will be even cheaper. By comparison, it costs an average of about $1,500 to $2,500 per subscriber to deploy a local copper loop, and those costs aren't declining at all. The competitive implications are inescapable. Radio is going to put an end to the local exchange monopoly.

Changes of this magnitude take time, of course, but this one now seems inevitable. By 1984, the technical and economic rationale for divestiture was already obsolete. Where radio was really needed now was where Marconi had intended it—on ships. But every human, even the most committed landlubber, is a sailor of sorts, or else a driver, or a flyer, or at least a pedestrian. After almost a full century of development, telephone still had a very fundamental shortcoming: telephone wires don't move. People do.

Marconi solved half the problem in 1895: his radio telephone (originally intended for ships) worked just fine on shore, too. But there wasn't enough spectrum available to serve very many users. A few dozen stations pretty much fill up the dial of a radio, and radio telephone requires radio stations in pairs to sustain two-way conversation. The radio-telephone networks that operated until the 1980s could typically support a total of 25 channels, only about half of which could be used at a time. Since 30 subscribers might be licensed for every channel, calls often could not be completed. Of 23 channels supporting 700 users in New York City, for example, only 12 could be used simultaneously. The available spectrum supported only 140,000 subscribers nationwide, including police and other special users. Demand far exceeded supply. By 1976, Bell mobile service in the New York met-

ropolitan area served 543 customers and had a waiting list of 3,700. Would-be subscribers often waited six years for service.

The solution to the problem had already been worked out by the same people who had developed microwave radio, and at almost exactly the same time. In 1947, engineers at Bell Labs had hit upon the idea of "cellular" radio networks. Radio telephones would be low-power, short-range devices. The same frequencies would then be used again and again, just as they are today with millions of cordless home telephones. A radio conversation on East 42nd Street would not interfere with another one on the same frequency on West 51st. Any area could be divided into separate cells, each one served by its own low-power transmitter. The capacity of a cellular system could then be increased almost indefinitely by shrinking cells and increasing their number. The only problem was that cellular telephony required highly sophisticated transmitters and receivers, and massive coordination among cells to "hand off" calls and coordinate frequencies as the car phone on East 42nd Street moved toward West 51st. No one had the technology to perform that task until the microelectronics revolution of the 1970s. Then coordination of this kind became perfectly feasible, and an entirely new industry was born.

The FCC correctly understood the competitive possibilities of radio, as it had since the earliest days of commercial radio telephony. The Commission first opted in favor of competitive local radio telephone services in 1949. Thereafter, the FCC either split the allocation of new radio-telephone frequencies between telcos and nonwire lines, or awarded licenses on an "open entry" basis to the best applicants. When cellular telephony finally came of age, the FCC stuck by its pro-competitive policies.

In the next five years, the FCC completed the licensing of cellular systems in both urban and rural areas. Competition in the cellular telephone industry rapidly filled the space the FCC had allocated to it. The cellular industry reached the million-customer mark in 1987; by year-end 1990, there were over 5.2 million cellular subscribers in the United States, almost a million of whom had first subscribed in the first six months of 1990. By 1992, McCaw Cellular—unaffiliated with any local telephone company—was, by any measure, the largest cellular telephone company in the world. There were some nine million cellular telephones in operation.

But this was only the beginning. With cellular technology, and particularly with today's digital cellular technology, old and inefficient uses of frequency can be converted to new and extraordinarily efficient ones. The capacity of the airwaves can be expanded indefinitely, but always at a cost: more users require more cells, and more cells require more radios. In economic terms, that means no "natural monopoly." Quite the opposite, in fact: the more crowded the airwaves, the more economically viable competition becomes.

Still, more than a few local regulators still cling to an outdated economic theory, and insist that the local monopoly is ordained by immutable market forces. Others, better informed or just more candid, concede that the local monopoly is maintained for non-economic reasons: to make sure, for example, that the rural farmer (or owner of a vacation home) pays the same for his very expensive telephone line as the urban apartment dweller pays for his comparatively cheap one. More self-serving considerations may also come into play: if monopoly disappears, so too does the entire business of regulating it. Whatever the logic, there is still much regulation aimed at suppressing local competition. The most glaring example is the National Cable Act of 1984, which for all practical purposes forbids competition between the two most natural of local competitors, cable television and telephone. The technologies of telephone and television are converging rapidly, yet the two industries are kept apart through a process of rigid regulatory apartheid. Each is then declared to be a "natural monopoly" that requires close regulation.

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But the unnatural monopoly cannot be preserved indefinitely in the local exchange. The first key to competition is radio, and the FCC is committed to dividing up licenses among multiple providers. Then there is cable television. Between 1970 FCC regulations and the 1978 Pole Attachment Act, cable companies have secured solid rights to run their lines on or through telco poles and conduits; their wires now in fact run to the doorsteps of over 90 percent of the nation's residences. Meanwhile, "Competitive Access Providers" now snake their technologically advanced fiber-optic networks through many urban areas and business parks. These new local networks have been approved by a growing number of local regulators, and

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are also favored by the FCC, which can preempt obstructive state regulation insofar as inter-exchange access facilities are concerned. The most eager buyers of competitive access provider's services have been long-distance carriers, which account for 60 percent or more of the demand, and may effectively control as much as 95 percent of it.

Minding the Baby

The people who planned divestiture in 1982 fundamentally misunderstood the role of wire and radio in both local and long-distance telephony. They confused past regulatory policy with future economic reality. It took a decade of litigation to dismantle the old Bell System; it will likely take a decade or more to dismantle the economic edifice erected by antitrust lawyers in its place. But the dismantling now seems inevitable.

This doesn't mean that any particular company is likely to fold any time soon, or that some other company will prosper beyond all expectations. It is, of course, possible to prosper as a me-too player in an umbrella-priced shared monopoly. It is likewise possible to prosper in the hotly competitive circumstances that are now fast overtaking the local exchange. The grand economic theories about viable competition and natural monopoly don't imply a thing about profit or loss until the antitrust lawyers and utility regulators have spoken.

But what investors and regulators alike must understand is this: despite appearances, our $150 billion telephone industry is still largely a Potemkin village of regulation and illusion. Everything is going to change in the local exchange if a lot of new local spectrum gets allocated, and the decision to allocate it is being made now. Everything would change in the long-distance market if competition were ever unleashed. Some day it may yet be, and if it ever is, the airline industry's competitive carnage will look like a tea party by comparison. Until full competition takes hold, winners and losers throughout the industry will be selected by regulators as much, if not more, than by management skills or technical prowess.

For the time being, the contrast between the competition now unfolding among local radio carriers and the competition that is fast subsiding in the long-distance market is striking. The FCC will not be licensing any nationwide fiber-optic networks any time soon; everyone with real money on the line recognizes that three such networks is already two too many. Instead, investment is pouring into new radio technologies and backbone networks in the local exchange. Fiber penetrates quite a distance into what the divestiture decree defined as "the local exchange," and the economics of fiber reach as far as the fiber itself. But the "last mile," the bottom layer of the public network, is not fiber. It is still mostly copper. A significant share of it will soon be radio.

So the destiny of the network is now clear—at least until the next unforeseen technological revolution materializes. The bottom leg of the network will be radio, in microcells and cells, linked to a rich, competitive variety of mobile telephone switching offices and wireless private exchanges. Thereafter, the traffic will move wholesale, in trunks, in fiber-optic glass—glass supplied by local telcos, cable companies, or long-distance carriers themselves. Thereafter, still more glass, supplied by AT&T and—at AT&T's pleasure—MCI and Sprint. The higher one rises in the network, the less competition there will be. Fiber optics have made the wire-

line monopoly more natural than ever at the top of the network, in the long-distance market. The bottleneck, in other words, is now a funnel.

The policy in favor of radio competition is succeeding, just as the 1982 architects of divestiture said it would. But by 1982, as the lawyers were diligently setting out their economic rationale for divestiture, a massive repositioning of radio technology had already begun. In the 1990s, radio competition will succeed where radio belongs, which is in the local exchange.

Lawyers and economists, like aging generals, seem fated always to fight the last war rather than the next, because yesterday is all they can imagine or understand. By 1982, the lawyers and economists had fully grasped the importance of microwave technology in the long-distance market. But they ignored fiber optics. In 1982, the lawyers and economists thought they understood the wire in the local exchange. But they ignored radio.

The result was a divestiture decree that was obsolete almost from the day it went into effect. The economic model that propelled divestiture reflected the regulatory realities of the time, particularly the very different attitudes to competition held by state and federal regulators. But so far as the economics went, the model was wrong from the outset, and so far as regulation goes, divestiture itself has forced regulators into a radical reevaluation of outdated policies.

Until competitors are truly cut loose to compete in both local and long-distance markets, no one will be able to say for sure just which segments of the telephone industry are viably competitive in economic terms. By all present appearances, however, the "natural monopoly" segments of the market are those in which high-volume traffic is trunked over fiber-optic cable—most prominently, the long-distance market.

Regrettably for many economists, academics, lawyers, and other pundits in the business, 1984 in fact marked the beginning of the end of real competition in the long-distance services and the beginning of real competition in the local exchange. If competition in the new long-distance business ever breaks out for real, Bergen will soon be back home minding the baby.

Selected Readings

Galhoun, George. *Wireless Access and the Local Telephone Network*. Norwood, Massachusetts: Artech House, 1992.

Huber, Peter W., Kellogg, Michael K., Thorne, John. *The Geodesic Network II*. New York: Little, Brown, and Company, 1993.

Kellogg, Michael K., Thorne, John, Huber, Peter W. *Federal Telecommunications Law*. New York: Little, Brown, and Company, 1993.