

Chapter 4

Did regulation keep pace with technology?

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I approach the question of whether or not regulation can keep pace with technology by relating two familiar stories. My justification for using these tales is that they were critically important in the development of modern telecommunications policy.¹ However, I begin by briefly considering the question: What standard are we to use in evaluating the behavior of a regulatory commission? It is not fair to use perfect hindsight in looking at this question because there is no reason why any contemporary should be able to understand the implications of a new technology. Instead, I propose to compare the regulator, the Federal Communications Commission (FCC), with the regulated, AT&T, in order to rank the regulator's actions in relation to the opinions of contemporary participant-observers in the regulatory process. Moreover, I wish to emphasize that new technology does not appear in isolation; its introduction is always mixed up with other issues. Paramount among them is the matter of price: What should customers be charged for a new – or possibly an old – service? Regulators and firms, I submit, have an easier time dealing with new technology than they have with establishing prices.

Soon after being appointed director of the FCC's Common Carrier Bureau in 1963, Bernard Strassburg instituted an inquiry into the use of computers in telecommunications. The Commission's attention had been called to this nascent issue by complaints from computer users who could not understand why the Bell System did not immediately reconfigure the entire telephone network to deal with their very particular needs. AT&T, taking an equally extreme position, did not want to bother with the myriad demands from these tiny – relative to the Bell System's national market – and obstreperous customers. The age of computers was just dawning; at that time only a few people were experimenting with new ways to use them in communications and even fewer were

protesting to the agency about the Bell System's performance in this regard. But Strassburg moved out ahead of the specific complaints coming into the Commission in an attempt to formulate a general policy for the new technology. The problem Strassburg had to deal with derived from the 1956 Consent Decree. It made no sense to bar AT&T from supplying telephone terminal equipment for computer users. Under the terms of the decree, however, AT&T could supply this equipment only if it were regulated. But it also did not make sense to extend regulation to all terminal equipment. A computer with a modem connects to the telephone network. Should it therefore be regulated? Should all computers be regulated? IBM, just bringing out its 360 series of computers, was not amused by that prospect. But the FCC lacked a logical formula for defining the limits of the regulated monopoly.²

AT&T's opposition extended to the 'Carterfone,' even though the phone did not make an electrical connection with the telephone network. The sound of conversation from an ordinary telephone handset activated the switch of a radio which then communicated with the user of a mobile radio/telephone. The Carterfone thus allowed the mobile radio/telephone to be patched onto the Bell System Network, albeit not electronically.

AT&T, reaffirming its end-to-end responsibility for the network, refused to permit the innovation to be used. But Thomas Carter of Carter Electronics was not awed by the telephone giant. He sold his device to customers in defiance of AT&T's tariff, and when AT&T discontinued his customers' service, he filed a private antitrust suit against the company. The Court decided that regulation under the Communications Act and not prosecution under the Sherman Act was still controlling. It referred Carter's complaint to the FCC under the doctrine of primary jurisdiction.³

For Strassburg, in the midst of his computer inquiry, this was a marvelous opportunity to welcome a new technology. In addition, he could lend a hand to a small entrepreneur and make the giant Bell System more responsive to its clientele. AT&T argued to the Commission that the Carterfone should be proscribed because it was manufactured by an unstable firm, not useful, and could not be guaranteed to work properly, thus casting blame on the telephone company from customers who could not differentiate between the Carterfone and the Bell System. These tenuous arguments had eagerly been accepted by the FCC in the 1940s and 1950s, but Strassburg no longer found them appealing in the context of his computer inquiry. He required that AT&T explain exactly how its network would be damaged (not just how

customers who used the Carterfone might be inconvenienced) before the agency would prohibit the device.

As this conflict between Bell and Strassburg was reaching its climax, AT&T's top management changed. H.I. Romnes, who represented the flowering of the Bell System's engineering tradition, became Chairman of AT&T's Board and its Chief Executive Officer in 1967. Shortly after taking office, Romnes expressed an expansive view of the use of computers in communication and of the impending Carterfone decision, anticipating abundant new opportunities in a telephone network with a wide variety of terminals at its ends. His concern, as he expressed it in 1967, was merely that the Bell System's 'prime responsibility for maintenance' of the network be preserved by 'suitable interfaces or buffer devices to keep the attached equipment from affecting other users of the network.' Subject to this safeguard, Romnes accepted Strassburg's initiative.⁴

He appointed an AT&T Tariff Review Committee in mid-1967 to devise alternative interconnection tariffs that would protect the system. The Tariff Review Committee operated in a crisis atmosphere. As engineers responsible for the network, its members were wary of change and of non-Bell outsiders. They advanced scraps of data, exposing minor hazards of interconnection as grounds for caution. They clothed their fear of the unknown in specific scenarios for disaster.⁵ Cooler heads might well have recalled that the Bell System never had included all of the devices connected to the network and that there was a long history of terminal interconnection for those who wanted to see it.

The independent telephone companies, often quite small and primitive, could be thought of as early PBXs. Defense Department equipment on military bases was connected to the network under 'letters of military necessity' without protective devices. The sound in video equipment of the TV networks, increasingly large customers of the Bell System, generated signals sent directly over the network without evident difficulty. It was possible to argue that these were special cases in a controlled environment. But they represented extensive experience with terminal interconnection before the Carterfone – experience that was quite varied and apparently trouble-free.

The Committee, none the less, recommended tariffs allowing ancillary equipment – answering machines or computer modems – to be attached to the Bell System 'only in connection with special interface equipment provided, installed and maintained by the telephone company.' As Strassburg later acknowledged, the idea of a protective connecting arrangement grew out of 'the established regulatory cul-

ture.⁶ It embraced a natural division of responsibility between AT&T and its customers. If these devices were used, the telephone company would not need to tell its customers what they could or could not attach to the network. It would not have to monitor or control what other people were doing; its protective coupling device would simply screen out harmful signals. The Bell System would know what signals it was getting. The vendors of equipment would know the electrical characteristics of the network they were facing. AT&T would avoid all competitive and legal problems attendant on examining plans or equipment of its customers and competitors.⁷

In a decision of June 1968, the Commission rejected AT&T's existing tariff prohibiting the use of non-Bell equipment. The FCC did not deny that AT&T needed to regulate interconnection and to be responsible for network standards. But the Agency repudiated AT&T's customary argument on the grounds that they were imprecise in defining harm. The Commission invalidated AT&T's existing interconnection tariff and approved the use of the Carterfone.⁸

Romnes responded at a gathering of company executives on September 5, 1968. He introduced a small device labeled a protective coupling arrangement (or PCA) through which equipment owned and maintained by Bell's customers could be connected to the switched network. He proclaimed, 'We welcome competition,' and emphasized that 'our intent is to make interface as simple and inexpensive as possible.' In fact, he said, 'The more the merrier.'⁹

Romnes made it clear that he was promulgating a new strategy for the Bell System. He stressed the existence of a new era in telecommunications and a new openness in the network. AT&T had set the stage for an expansion in the use of increasingly sophisticated devices connected to the Bell System. It was starting to do for customer equipment what Strassburg was trying to do for computers: setting a general rule for new entrants. It is ironic that in antitrust suits against AT&T these tariffs would be assailed for being anti-competitive when they were the telephone company's initial opening toward competition.¹⁰

The protective couplings might not have been attacked so vociferously if AT&T had decided to offer them free to customers as a matter of right. The company decided instead to charge the owners of independent terminals for the PCAs through which they would be attached to the network. To do anything else, the Tariff Review Committee reasoned, would be to charge the general rate payers the cost of accommodating computer users and others who were experimenting with new kinds of equipment.

The Committee did not conceptualize the issue as one of protecting the ratepayer's network – in which case they might be expected to pay. Nor of course did the Committee conclude that what was involved was an effort to quiet the Bell System's fears – in which case AT&T should have eaten the cost itself. And even though Carter's initial legal action had been in the form of an antitrust complaint, the group does not seem even to consider the antitrust implications of the PCA charge. In light of the company's background and the amount of attention its every action attracted in Washington, this issue cried out for analysis before the fact.

Both the FCC and AT&T had risen to the challenge of new technology for terminal equipment. PCAs would be shown to be unnecessary in the following few years, and the FCC policy of customer-owned terminal registration would be designed to replace it. But one could not really ask for a clearer or faster regulatory response to a new technological opportunity.

Prices, however, were a different matter. The issue here was not regulation – the FCC did not concern itself with the price of PCAs – but rather with company policy. AT&T unfortunately decided to charge for PCAs on the narrowest of grounds. It did not stop to consider the antitrust implications, even though the 1956 Consent Decree was fresh in everyone's mind. Nor did the company turn a welcoming face toward the private individuals and firms attempting to introduce new terminal technologies.

This company policy is relevant to the question of regulatory pace. It shows that contemporaries could not see clearly the combined implications of a new technology and new prices. The new technology was introduced, but the company understood only some of its implications. The pricing problem was botched.

The results of this clumsiness were momentous. The PCA issue continued to bedevil AT&T throughout the 1970s, first in regulatory proceedings to eliminate PCAs and then in antitrust suits. It is too much to expect that the regulatory and antitrust pressure on AT&T would have gone away with this issue. But its absence would have reduced the force of other issues. AT&T's lawyers understood during the troubled 1970s that the company was fighting on too many fronts. The PCA issue was not connected in any legal sense to other issues; instead it created a context in which AT&T appeared as an opponent of progress and competition.

Pricing and technology also were intertwined in other matters before the FCC at the same time as *Carterfone*, albeit in different proportions.

Microwave Communications, Inc. (MCI) was even smaller than Carter Electronics; it had neither staff nor finances. It had applied to the FCC in 1963 for permission to build a private microwave line from St Louis to Chicago. It proposed a new use for a new technology. MCI clearly was too small to use this facility itself, as permitted by the FCC's *Above 890* decision, and so it proposed instead to sell capacity to others.

Bill McGowan, MCI's head, contended that MCI would exploit the new microwave technology; parallel to *Carterfone*, a small company was asking to introduce new technology into the network. MCI would tailor its services to the needs of customers and provide greater flexibility than AT&T. AT&T countered that MCI was simply cream-skimming.

MCI was cream-skimming in three different ways. It proposed to serve only one low-cost route, avoiding Bell's obligation to support the entire national network. MCI proposed also a bare-bones service; it would attract only the low-cost customers, that is, customers who did not care about the quality of service.¹¹ And MCI argued that it had lowered costs because it was exploiting the new microwave radio technology.

But MCI's construction advantage did not come from the new technology – AT&T had long used microwave radio itself. Instead, the smaller firm used lower quality construction and limited facilities in ways that the Bell System could not. The new firm's crews were nonunion; they were not always careful about obtaining building permits; they did not build carefully designed structures. In fact, MCI argued that its rural facilities did not even need restrooms – technicians could use the fields!¹² The Communication Workers of America, state commissioners, and the FCC surely would not have allowed the Bell System to do any of this. To the extent that MCI's construction costs were below AT&T's for these reasons, the FCC was being asked to change the structure of the telecommunications industry for only a transitory gain.

The FCC ignored AT&T's protests and accepted at face value MCI's claim to be furnishing 'interplant and interoffice communications with unique and specialized characteristics.' On a four-to-three vote – with the Chairman voting against MCI – the FCC found AT&T's 'cream-skimming argument to be without merit.'¹³

The Commission regarded McGowan's tiny business as a fringe firm rather like Western Union. Strassburg in particular conceptualized the *MCI* proceeding as a very specific one, concerned with a small company and a single line. Nevertheless, the FCC's vote was close. It had

required the enthusiasm of the head of the Common Carrier Bureau and of several pro-competition commissioners to get it through. One of these commissioners, Kenneth Cox, found his views so close to McGowan's that he left the Commission to work for MCI shortly after the vote. With only a hair less support, one imagines, McGowan might never have got his fledgling enterprise off the ground.

With this decision to hand, though, MCI's boss quickly advanced on a broad front. He was not about to conduct an academic experiment for Strassburg, to proceed at a stately pace while generating the data needed to evaluate the effect of the Commission's decision on this one specific route. Instead, his affiliated MCI companies immediately flooded the FCC with applications for permission to construct microwave systems for hire all over the country. By mid-1970, the Commission was facing almost 2000 such requests, most of them coming from MCI companies and another firm, Datran, that aspired to construct a digital data network.

In an unusual move, the FCC decided that it was unable to deal with this aftermath of its *MCI* decision on a case-by-case basis. The Commission took the initiative in setting out the general issues to be decided. Having dealt with MCI's initial application on highly individual grounds, it then recognized MCI as the forerunner of a class of applicants and approved the applications from the class as a whole, under the title of *Specialized Common Carriers*.¹⁴

The arguments by the applicants were roughly the same as those originally presented by MCI. They would provide a wider range of services than AT&T, and they would open up new markets with new low-cost technology, thereby meeting the criterion of public good.

This argument of course raised the question: Why was not AT&T serving these new markets? AT&T was not lowering its prices enough to expand its private line customer base because that would impact its existing revenue base. To some extent, it was burdened by historical costs and to some extent it was acting like any monopolist faced with a technological change. But even had AT&T wanted to, it was quite clear from the FCC's earlier TELPAK investigations that the Commission would not have allowed AT&T to lower all private line rates. And reducing rates on some routes would have raised the problem of discrimination that the FCC had been unable to resolve in its TELPAK investigations. The *Specialized Common Carriers* decision appears to have been a way for the FCC to allow lower prices for the use of new microwave technology without allowing AT&T to discriminate between different users.

The FCC's procedure, designed to avoid a particular regulatory pothole, brought a rush of new carriers into the market and into the political arena. *Specialized Common Carriers* fundamentally changed the way in which telecommunications services were to be supplied, a radical change that seemed not to have been intended by most of the FCC Commissioners. Intended or not, the decision decisively increased competition in the industry. Insensitive to this larger implication, the agency noted that licensing these other carriers would virtually compel their interconnection with the Bell System; the new carriers clearly needed local distribution facilities that they could not supply. The FCC thus acknowledged that the next assault on AT&T's position would be against its monopoly in the provision of service at the local level.¹⁵

Still the FCC refused to recognize any danger to AT&T from such interconnections. It predicted that the total effect of competition would be slight and that the Bell revenues would not be endangered. Echoing numbers used in *Above 890*, the Commission claimed that only AT&T's private line business, 3 percent of its revenue, would be at risk. Competition from specialized common carriers, the staff asserted, 'can be expected to have some beneficial results without adverse impact on service by established carriers.'¹⁶ There would be no danger of cream-skimming and no threat to the existing rate structure.

This, of course, was nonsense. The danger was apparent to AT&T at the time, but the company's arguments were seen as self-serving (which they were) and therefore incorrect (which they were not). Here the FCC moved in the spirit of *Carterfone*. It quickly changed the regulatory rules to take account of a new technology. But, unlike *Carterfone*, the question in *MCI* and *Specialized Common Carriers* only appeared to be primarily one of technology. It was in fact one of price. The FCC was too fast to take account of only apparent gains.

MCI went on to challenge AT&T at increasingly high levels. Competitive pressure spread from private lines to the switched network. The forum for discussion and possible decision spread from the FCC to the courts and Congress. Independent of the wisdom of the FCC's decision in *Specialized Common Carriers*, AT&T had to live with it.

The pressure from interexchange competition was amplified by continuing controversies over PCAs and terminal equipment more generally. Rapid regulatory action had initiated an unstable process that soon began to outrun the FCC's planned pace and then went to a conclusion that was not foreseen by any regulator of the late 1960s who

was considering whether Carter Electronics or MCI should be allowed into the telecommunications market.

AT&T, as in *Carterfone*, lagged behind the Commission. But since the FCC was in a great rush to exploit what only appeared to be a new technology, the company's resistance appeared insightful rather than recalcitrant. The FCC was balanced on a knife edge in *MCI*. The issue could easily have gone either way, with dramatic implications for the history of telecommunications. But as it turned out, the problem in *MCI* and *Specialized Common Carriers* was not one of regulatory lag; it was one of regulatory lead.

One or two examples do not make a rule. History only illuminates the possibilities in diverse circumstances. And these familiar stories show that regulatory commissions need not lag in their taste for new technologies. In fact, the danger may well be an excess of enthusiasm. AT&T was the laggard in the introduction of new technology, at least in terminal equipment; the FCC was the proverbial fool rushing in with microwave radio. There is no clear preference for private or public action.

NOTES

- 1 This material is taken from my book, *The Fall of the Bell System: A Study in Prices and Politics* (New York: Cambridge University Press, 1987), where further documentation – particularly to company sources – can be found.
- 2 FCC, *Notice of Inquiry*, FCC Docket 16979, 'Computer Inquiry,' adopted November 9, 1966, 7 FCC 2d 11; FCC, *Report and Further Notice of Inquiry*, FCC Docket 16979, adopted May 1, 1969, 17 FCC 2d 587 at 591.
- 3 *Carter v. AT&T*, 250 F. Supp. 188, 192 (N.D. Tex. 1966), *aff'd*, 365 F. 2d 486 (5th Cir. 1966), *cert. denied*, 385 U.S. 1008 (1967).
- 4 H.I. Romnes, 'Dynamic Communications for Modern Industry,' speech before the American Petroleum Institute, Chicago, Illinois, November 13, 1967; Alvin von Auw, *Heritage & Destiny: Reflections on the Bell System in Transition* (New York: Praeger Publishers, 1983), p. 137.
- 5 For example, the central office might not respond to the initiation of a call if the impedance across the line was too high; the call might be charged to a wrong number on multi-party lines; a wrong number might be reached; all digits might not be registered; the connection might be dropped in the middle if the station opened the line for more than half a second or if it sent a 2600 Hertz tone through the line. Edward M. Goldstein, talk presented to Tariff Review Committee, 'Effects on Switching, Signaling & Charging,' April 10, 1968; *US v. AT&T*, CA No. 74-1698 (D.D.C.), Defendant's Exhibit D-7-1, V.N. Vaughan notes.
- 6 'Illustrative General Exchange Tariff Covering the Provision of Interfaces

- for COAM Devices,' draft, presented at the Tariff Review Committee meeting, April 10, 1968; *US v. AT&T*, CA No. 74-1698 (D.D.C.), Bernard Strassburg, testimony, October 14, 1981, Tr. 17243.
- 7 *US v. AT&T*, CA No. 74-1698 (D.D.C.), Defendant's Exhibit D-T-2, Edward M. Goldstein, testimony, July 8, 1981, pp. 30-31.
 - 8 FCC, *Decision*, FCC Docket 16942, 'Carterfone,' adopted June 26, 1968, 13 FCC 2d 420.
 - 9 H.I. Romnes, 'Connecting with the Telephone Network,' talk on videocassette tape, September 5, 1968.
 - 10 The FCC allowed AT&T's revised tariffs permitting interconnection through a PCA to become effective on January 1, 1969, but noted that it was unable at the time to evaluate the revised tariff fully. The Commission noted that the tariff went beyond its *Carterfone* decision and acknowledged that the question of whether a customer should be able to provide his own network control signaling unit was an open one. FCC, *Memorandum and Order*, re 'AT&T "Foreign Attachment" Tariff Revisions,' December 24, 1968, 15 FCC 2d 605.
 - 11 Larry Kahaner, *On the Line* (New York: Warner Books, 1986), pp. 27, 85-9.
 - 12 MCI's offering of two kilohertz channels is a case in point. The Bell System used four kilohertz voice grade channels as its unit; it had abandoned two kilohertz as substandard. MCI was allowing customers to subdivide these channels in pursuit of lower prices. The service, of course, would be of lower quality, of such low quality that it is not clear that any two kilohertz channels were used. FCC, *Decision*, FCC Docket Nos 16509-519, 'Applications of MCI for Construction Permits,' adopted August 13, 1969, 18 FCC 2d 953.
 - 13 *Initial Decision of Hearing Examiner Herbert Sharfman*, FCC Docket Nos 16509-519, October 17, 1967, 18 FCC 2d 979 at 1006.
 - 14 FCC, *First Report and Order*, FCC Docket 18920, 'Specialized Common Carriers,' June 3, 1971, 29 FCC 2d 870. *Specialized Common Carriers* was 'rulemaking' rather than 'adjudication.' Strassburg's views prevailed none the less. See *US v. AT&T*, CA No. 74-1698 (D.D.C.), Defendant's Exhibit D-7-266; Bernard Strassburg, 'Case Study of Policy-Making by Federal Communications Commission re Competition in Intercity Common Carrier Communications,' Draft, January 14, 1977.
 - 15 FCC, *Further Notice of Inquiry and Proposed Rulemaking*, FCC Docket 18920, June 21, 1971, 30 FCC 2d 288.
 - 16 FCC, *First Report and Order*, FCC Docket 18920, June 3, 1971, 29 FCC 2d 870 at 878-85.