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PRESERVING POSITIVE COMMAND AND CONTROL

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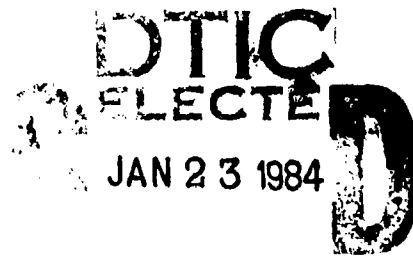
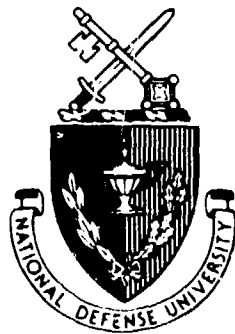
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AT&T AFTERMATH OF ANTITRUST

PRESERVING POSITIVE COMMAND AND CONTROL

by
George H. Bolling

1983



NATIONAL DEFENSE UNIVERSITY
FORT LESLEY J. McNAIR
WASHINGTON, D.C.

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To my mother, my wife, and my children

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FOREWORD

↘ On New Year's Day 1984, the court-ordered divestiture of the American Telephone and Telegraph Company will end universal service by a single system and begin a new competitive era in US communications. The divestiture, which affects every telephone user in the United States, poses a special problem for the Department of Defense, which has relied for decades on AT&T's integrated management and unified network.

~~Colonel George H. Bolling, US Army, in analyzing~~ *The author analyzes* the effects of divestiture, focuses on the strategic communications necessary for positive command and control during national emergencies. That the Department of Defense opposed fragmenting the national network is a matter of record. ~~Colonel Bolling now~~ *Colonel Bolling* points to the task at hand: the planning and management required to reintegrate the separated components into an instantaneously responsive, reliable whole. His examination of defense capabilities, marketplace realities, national communications policy, and legislative needs advances a blueprint for action by Defense managers and all policymakers charged with ensuring the nation's security.

~~Although divestiture~~ *Colonel Bolling* has weakened the national communications network, ~~Colonel Bolling~~ *Colonel Bolling* suggests that the competitive marketplace may well hold the solution for making strategic communications better than ever.

↗ The National Defense University is pleased to publish this analysis of the AT&T divestiture by a veteran defense telecommunications manager. We feel it will assist those who must adapt Defense communications to new realities.



Richard D. Lawrence
Lieutenant General, US Army
President, National Defense University

THE AUTHOR

Colonel George H. Bolling, US Army, holds a Bachelor of Arts degree from Vanderbilt University and a Master of Science degree in Telecommunications Management from George Washington University. He is also a graduate of the Industrial College of the Armed Forces, the Army Command and General Staff College, and a special industrial training course with the American Telephone and Telegraph Company.

Colonel Bolling has served in a variety of roles in strategic and tactical telecommunications organizations in the United States, Germany, Vietnam, and Korea. He commanded the 57th Signal Battalion (Corps) at Fort Hood, Texas, and he has served in the Office of the Chief of Staff and in the Office of The Inspector General, Department of the Army. Colonel Bolling was a Senior Research Fellow at the National Defense University in 1982-83 when he prepared this book while also completing the Industrial College of the Armed Forces.

Colonel Bolling is now serving in the Pentagon as a military assistant in the Office of the Deputy Under Secretary of Defense for Communications, Command, Control, and Intelligence.

PREFACE

As our nation's industries struggle through recovery from a major recession and come to grips with foreign competition, American telecommunications are entering a revolutionary new era. Rapid technological improvements are literally reshaping this industry, bringing about dramatic shifts in Federal policy.

One of the most significant of these policy changes was the settlement of the antitrust suit against the American Telephone and Telegraph Company (AT&T) in 1982. My assignment to the Industrial College of the Armed Forces coincided with the myriad events surrounding this historic judicial decision. As a Senior Research Fellow at the National Defense University (NDU), I was fortunate to have the opportunity to evaluate the effects of the *US v. AT&T* settlement on national security.

The effects are significant. In this book, I endeavor to present an objective analysis and draw logical conclusions in the hope they will assist senior officials responsible for telecommunications in preserving positive command and control as the provisions of the settlement are implemented. The other principal purpose of this publication will be served if it contributes to the education of those uniformed and civilian personnel who fill major roles in delivering telecommunications in the years ahead.

The *US v. AT&T* settlement is complex. Even experienced telecommunications professionals in both government and industry have difficulty understanding its myriad ramifications. A major reason for this confusion is that other policy changes, notably Federal Communications Commission decisions, are being implemented in concert with the settlement. I have therefore structured this book to provide relevant information in separate chapters, each of which builds on those that precede it. The first four chapters establish a baseline, describing the Defense Department's needs, the Defense management structure, the industry and network which fulfill Defense needs, and the evolution of

national policy affecting the telecommunications marketplace. Chapter five discusses the shaping of the *US v. AT&T* settlement, including the Defense Department's actions to influence it, and chapter six describes the plans for implementing it. The last chapter is more speculative because I discuss the probable consequences of the settlement, offering suggestions for coping with those consequences in the next two decades.

Having submitted this original manuscript for final editorial touches in early June 1983, I recalled it a month later in order to incorporate the results of final judicial decisions made in early July 1983. As this update was being accomplished, AT&T suffered a nationwide labor strike, congressional interest in subscriber rates intensified, the Federal Communications Commission revised its share-cost formula, and additional modifications were made to the court's decision. Consequently, the revised manuscript was frozen at the end of August 1983, when most major issues were settled. Nonetheless, as the 1 January 1984 deadline for divestiture closes, new concerns and impacts are certain to emerge, and congressional actions could well delay or alter the divestiture of AT&T and its substantial effects on the American telecommunications marketplace.

I was fortunate to complete this book while concurrently attending the Industrial College of the Armed Forces, where the curriculum is oriented to national security, mobilization readiness, and industrial preparedness. Such a setting was ideal, and the enormous insights gained from classmates, the faculty, and guest speakers are embodied in this product with grateful acknowledgment. The support received was overwhelming, and those who rendered it are literally too numerous to cite individually. Most of the source material was obtained from key managers and staff associates in the Department of Defense, its supporting contractors, and major telecommunications corporations, including AT&T. Their help was so significant that I consider them contributors rather than individuals who provided assistance and support.

The manuscript reflects the marvelous gifts of editorship generously devoted by Ms. Evelyn Lakes, Major Dennis Goldston, US Air Force, and Colonel Fred Riley, US Air Force, and the exceptional environment for generation of ideas created by Lieutenant General John S. Pustay, US Air Force, former President of the National Defense University, and Colonel Frank Margiotta, US Air Force, former Director of Research. I am also grateful for the work of five dedicated ladies in NDU's Research Directorate whose patience and endurance in typing and retyping the manuscript were extraordinary. The artwork for the figures

and the cover reflects the exceptional talents of the artists in NDU's Visual Communications and Printing Division. The unfailing encouragement and understanding of four wonderful family members, for whom the author is particularly thankful, were pivotal in the timely completion of this work. To all, my deepest gratitude. If the words you're about to read don't reflect objectivity or truth, don't blame the sources. Mea culpa.

George H. Bolling
Colonel, US Army

PROLOGUE

Concern about "command and control" has increased markedly since its recognition as a central part of our national policy of deterrence. The Defense officials responsible for providing the communications that make command and control possible now have high-priority marching orders—strengthen communications capabilities at every level, from the White House to the battlefield. In many ways, the prospects for success are excellent. The assurance of sufficient funding has never been better, and the technological base has produced an extraordinary array of new capabilities. Never before have more alternative transmission paths and techniques been available for delivering reliable, redundant, enduring, and survivable telecommunications.

But a cloud of uncertainty darkened these optimistic skies in August 1982, when Federal District Judge Harold H. Greene approved the modification of final judgment (MFJ) for settlement of the Federal antitrust suit against American Telephone and Telegraph Company (AT&T). The Bell System is being judicially dismembered, and, now, both providers and users must endure the birth pains of the unknown entities that emerge to replace it. Such uncertainty threatens the command-and-control capabilities comprising the nervous system of national security.

Some would argue that the government is its own worst enemy for creating this turbulence at a time when Federal demands and dependence upon the industry are greater than ever before. Although such a view is understandable, it fails to recognize that the changes in the telecommunications industry and the marketplace are the inevitable consequences of technological progress in a "high-tech" industry. It also falls short of acknowledging the basic political realities that more competition and less government control are almost axiomatic in the nation which epitomizes democracy and capitalism. In essence, these Federal policy changes move telecommunications commodities from the public-utility status in which regulated monopolies thrive, into the competitive marketplace in which price controls supply and demand.

2 Prologue

Every American who uses a telephone is affected. Homeowners and tenants must shop around for their telephone instruments, select a carrier for their long-distance calls, arrange for interconnection to this carrier, obtain maintenance support, and render separate payments for each of these services. These new user requirements take on far larger implications for businesses, industries, and government, reflecting an often unrealized dependence on the extraordinary services provided at reasonable cost for many years by "the telephone company"—Ma Bell. The settlement requires AT&T to divest its operating companies and create wholly independent corporate entities to provide subscriber interconnections and access to long-distance services. What this means is dissolution of the vertically integrated corporate structure that enabled AT&T to be almost everybody's manager, engineer, integrator, controller, restorer, and maintainer for telecommunications services. These important functions represent manpower and expertise that must somehow be replaced, and they won't come cheap. More crucial than cost, however, is the loss of a single organization in the private sector with the clout and resources necessary to assure delivery of sustained telecommunications services from user to user.

Telecommunications managers, private and public, now face the task of filling the void created by the divestiture of AT&T in January 1984. At the same time, they must prepare to deal prudently with a variety of companies in a competitive marketplace. They must create and innovate as never before in coping with the rapid, unprecedented changes taking place in American telecommunications. Costs for this adaptation will be high, and justifying them to top management will be tough. For the Federal agencies whose roles include national security, emergency preparedness, and national defense, these tasks are complicated by the potential for reduced responsiveness from a variety of suppliers during both initial employment and periods of breakdown. The lack of end-to-end control by a single organization jeopardizes effectiveness. When the effectiveness of command-and-control communications is in jeopardy, so is the ability to handle emergencies, the capability to prosecute war, and the credibility of deterrence.

For the remainder of this decade, Defense communicators face their biggest professional challenge since World War II. The demise of AT&T creates the need for innovative adaptation—the development and execution of a strategy for change. The strategy must be, in part, *reactive* to the changes in industry and the marketplace. But, it also must be *proactive* to ensure that Defense can capitalize on the abundant opportunities expected to emerge in the aftermath of antitrust.

THE ESSENTIAL MEDIUM A FOOLPROOF CAPABILITY

If you ain't got communications, you ain't got nothin'

So said an anonymous but perceptive commanding general about the tactical effectiveness of his airborne corps. The general was talking about the medium that enables messages to transcend distance—*telecommunications*. He was a commander who needed positive control to succeed on the battlefield.

On the global battlefield of tomorrow, the corps commander's observation describes precisely the state of national strategy. Unless effective telecommunications are established and sustained, execution of national strategy cannot be accomplished.

In the past five years, the nation's Executive leaders have recognized the pivotal importance of command-and-control communications. This chapter describes briefly the objectives prescribed and capabilities required for strategic telecommunications during the remainder of the twentieth century.

MANDATE FOR DETERRENCE

Lest there be any doubt about either the essentiality or the priority of command-and-control communications in national strategy, President Reagan's statement on 2 October 1981 regarding the US strategic weapons program eliminates misunderstanding. Spelling out the five keystones of the program for the strategy of defense, the President directed the Secretary of Defense to revitalize our bomber forces, strengthen and expand our sea-based forces, complete the MX missiles, bolster air and civil defense, and

4 **The Essential Medium**

strengthen and rebuild our communications and control system, a much neglected factor in our strategic deterrent. I consider this decision to improve our communications and control system as important as any of the other decisions announced today. This system must be foolproof.¹

Foolproof. That's a tall order. It means elimination of the potential for failure; the messages must get through. The costs are substantial—about \$89 billion is programmed for strategic (nontactical) telecommunications in the Five Year Defense Plan for Fiscal Years 1983–1988. Of that, \$18 billion is devoted exclusively to foolproofing critical strategic command-and-control communications.²

Strengthening national telecommunications was also recognized as a high priority during the Carter administration. The last of a series of Presidential Directives (PDs) issued by President Carter was PD-59, *Flexible Response and Nuclear Targeting*, which became particularly significant because it introduced the much-debated "counterforce" or "countervailing" strategy. Announced in July 1980, this reshaping of existing deterrent strategy included requirements for increased survivability and endurance in the command-and-control communications used by the nation's leaders during a prolonged nuclear exchange.³ PD-57, *Mobilization*, released in March 1980, sought to revise the nation's capability to mobilize manpower and the industrial base.⁴ As a part of its program to strengthen national defense, the Reagan administration undertook a high-level review of mobilization capabilities and found them to require more intensive and definitive action. On 22 July 1982, President Reagan rescinded PD-57 and widened the application of mobilization to include two types of emergencies—national security and domestic. His directive includes principles governing mobilization preparedness which generally encompass those stipulated in PDs 57 and 59, and it establishes twelve separate programs, each with specific objectives for developing an effective capability to harness the mobilization potential of the nation. Today, mobilization responsibilities are identified in virtually every element of the Federal government, and the renewed emphasis on preparedness for emergencies has increased the demand for responsive, reliable, sustaining, and enduring communications capabilities.

The clear mandate from two successive Commanders in Chief is to strengthen national telecommunications. But the marching orders are even more explicit. They establish specific objectives for the essential medium.

OBJECTIVES FOR STRENGTH

Emergency Communications is the title of one of the twelve programs directed by the President. The program's objectives reflect an endorsement of President Carter's PD-53, *National Security Telecommunications Policy*, released in November 1979. The first definitive and comprehensive policy statement regarding telecommunications in more than a decade, PD-53 establishes these specific objectives:

- Provide connectivity between the National Command Authority and strategic and other military forces to support flexible retaliatory strikes during and after an enemy nuclear attack
- Support operational control of the Armed Forces, even during a protracted nuclear conflict
- Assist military mobilization in all circumstances
- Support the vital functions of worldwide intelligence collection and diplomatic affairs
- Provide for continuity of government during and after a nuclear war or national disaster
- Promote national recovery during and after a nuclear war or national disaster²

PD-53 was also endorsed and strengthened by the Reagan administration. Even though White House mandates require that the Federal government rely heavily on industry's resources to meet emergency telecommunications needs, the Federal initiatives leading to the *US v. AT&T* settlement and other policy shifts have made such reliance far more difficult.

As PD-53's list of objectives reflects, the strategy for national defense began to evolve in a new direction in the late 1970s. Significantly, PD-53 was issued *before* President Carter delineated his countervailing strategy, continuity of government and mobilization directives, and it foretold the content of each of these new mandates. For once, telecommunications was the first consideration, not an after-thought.

CAPABILITIES FOR CONTROL

As national strategy has shifted from the short-war orientation to a global conflict of extended duration, virtually every telecommunications capability used by the Department of Defense can be legitimately labelled "command and control." Moreover, recent revisions of national policy objectives and emergency mobilization principles and programs

place unprecedented demands for responsive telecommunications on some nondefense Federal agencies. The message from the White House clearly calls for unprecedented unity of effort among the Executive Departments in preparing for national emergencies. The supporting telecommunications must enable the cohesive effort to respond effectively during those emergencies.

Today, virtually all the telecommunications used by the Federal government, including those for military command and control and managing emergencies, depend wholly or partially on the same commercial resources used by all Americans. However, the current plans and programs for fulfilling the "foolproof" mandate reflect a small increase in government-owned telecommunications facilities over the next several years. According to Defense Department officials, these austere facilities, capable of operating independently of public networks, represent the minimum essential capabilities for sustaining continuity of government and control of strategic forces under all of the various states of emergency. They constitute the medium of last resort, assuring continuous connectivity after commercial capabilities are no longer available. For the vast majority of its needs, the Federal government will continue to rely upon the enormous capabilities of the commercial telecommunications industries, and these same resources will be used until they are exhausted during emergencies.⁶

Colin S. Gray, Director of National Security Studies at Hudson Institute, sees the necessity for strategic command-and-control communications "which could survive and function for as long as six months," and which "permit genuine political direction on an hour-by-hour and day-by-day basis."⁷ President Reagan's foolproof dictum reflects "a vigorous and comprehensive R&D program leading to a communications and control system that would endure for an extended period beyond the first nuclear attack" and the use of "mobile command centers that could survive an initial attack," including the effects of electromagnetic pulse.⁸

American political and military leaders are committed to sustaining control over strategic forces. The threat of loss of control is not purely a matter of military strategy; it is a concern running deeply within American society. Even those who accept nuclear deterrence as a necessary evil express the view that anything short of absolute positive control is unacceptable. Those who oppose use of nuclear weapons cite the inevitability of loss of control as one of the bases for their position. The second draft "Pastoral Letter on Peace and War," published by the National Conference of Catholic Bishops in November 1982, includes

just such an argument in expressing the need to reconsider national strategy.⁹

Secretary of Defense Caspar Weinberger, in his Fiscal Year 1983 *Annual Report to the Congress*, expressed the Reagan administration's determination to strengthen strategic command-and-control telecommunications. Calling these systems "the most urgently needed element of our entire strategic program,"¹⁰ Weinberger summed up the requirements succinctly:

We must have survivable systems that would, under all circumstances, detect, identify, and report a nuclear attack. We must be able to communicate with our strategic forces before and after such an attack, so as to control and coordinate our response. Our command and control systems will need major improvement if they are to survive, endure, and be usable.¹¹

Control of strategic forces at the national level is just as important in peace as in war. It enables deterrence. This "preventive" control capability also provides opportunity for frequent exercising, thereby ensuring positive control should the use of strategic forces become necessary.

These minimum essential capabilities must be augmented to enable communications with foreign governments and the American people, the key functions of Head of State and Chief Executive, respectively, performed by the President, or his successors, when necessary. Although they are not included in the foolproof mandate, the Reagan administration is committed to making them substantially more reliable and effective than they are today.¹²

Under current, highly demanding mobilization policy directives, the telecommunications needed for handling domestic emergencies are, in themselves, substantial. Localized disasters, both natural and man-made, often require services that exceed local capabilities. In such emergencies, the capability must exist to shift telecommunications resources rapidly. A nationwide emergency, like mobilizing for war or recovery from a massive nuclear attack, would tax existing telecommunications capabilities beyond their capacity without carefully orchestrated Federal control. The nation's commercial telecommunications resources must be robust and redundant enough to assure the capability to react effectively under the most stressful conditions.¹³

An exhaustive study by the Stanford Research Institute International in 1981 concluded that six technical attributes are essential in

8 The Essential Medium

the national commercial network to meet Federal needs:

- **High Network Availability**—Measure of any given user's ability to gain access to and successfully use the system at a given moment
- **Broad and Controllable Network Access**—Broad distribution of access points with ability to control based on priorities
- **Responsive Network Control**—Ability to re-allocate network resources quickly and easily
- **Extensive Interoperability Among Members' Networks**—Ability to interface with other networks
- **Flexible Degree of Dedication**—Ability to preempt shared resources in emergencies
- **Wide Range of User Services**—Including encryption, media variety, and directories¹⁴

Although more detailed technically, these attributes reflect basically the same conclusions reached by the key telecommunications professionals in the public and private sectors. The consensus is that the national commercial network must evolve to be capable of the following:

- **Surviving** a nuclear attack, a conventional attack, and sabotage in conjunction with both
- **Enduring** extended conflict, including repeated nuclear strikes
- **Sustaining** critical links during any type of emergency
- **Accessing** a variety of locations
- **Interoperating** with other systems, including those enhanced capabilities evolving from development
- **Responding** promptly to changing priorities and authorities, including direction by a joint government-industry team¹⁵

Today, throughout the Federal establishment, communications staffs are developing plans for improving response to emergencies ranging from natural disaster to nuclear war. But the extraordinary changes taking place in the telecommunications marketplace will complicate these undertakings, particularly the task of integrating the myriad Federal networks and facilities into a cohesive national emergency telecommunications system. That task falls to the Department of Defense.



THE MANAGEMENT STRUCTURE A CHALLENGE FOR COHESION

A bureaucratic hodge-podge of misguided ambition and misplaced authority

This caustic description of Defense Department efforts to develop and manage worldwide communications for command and control appeared in an *Armed Forces Management* editorial. The pages of that periodical are now musty and yellowing; it was 1964. In the midst of tumultuous reform wrought by Secretary of Defense Robert McNamara, at whom the condemning editorial took aim, Defense was reacting to the terse directives of a courageous, but shaken, President who had taken the nation to the brink of global nuclear war. The era of centralized command and control through the modern medium of telecommunications had arrived, hastened by the sobering encounter between President John F. Kennedy and Soviet Premier Nikita Khrushchev during the Cuban missile crisis.

The President gave Secretary McNamara a two-pronged command—develop the capability for rapid strategic communications with US military commanders around the globe and strengthen the emergency communications support for all major Federal functions. This dual role of Defense, now two decades old, has not changed. Over time, the “hodge-podge” became streamlined into distinct organizational entities that share a common core—the national telecommunications network.

Today, the dual emphasis is at least as strong as it was in the Kennedy administration, and that poses an enormous challenge. Meeting that challenge will be complicated by the dramatic changes taking

place in the telecommunications industry, particularly those resulting from settlement of the *US v. AT&T* antitrust suit. The divergent dual roles represent a potential for another "hodge-podge" unless strategic and emergency telecommunications plans, programs, and resources are effectively integrated. Unprecedented unity of effort within the Defense telecommunications community is essential for fulfilling the responsibilities described in this chapter.

CONFEDERATION FOR EMERGENCIES

The need for unifying Federal telecommunications capabilities during emergency situations became vividly apparent to President Kennedy in 1962, during his traumatic confrontations with the Soviet leadership. This classic example of a national emergency dramatized the President's need to execute simultaneously his three roles as Commander in Chief, Head of State, and Chief Executive. Having separate messages to transmit to three distinct audiences—the Armed Forces, the Soviet Premier, and the American people—President Kennedy was dissatisfied with the responsiveness of existing capabilities. Thus, in the aftermath of these dramatic events, President Kennedy created a unique organization to unify Federal telecommunications and make them more responsive during emergencies.

In his 21 August 1963 Presidential Memorandum, the President established the National Communications System (NCS) as a "confederation" of departments and agencies whose responsibilities included reacting to domestic and national emergencies, and he designated the Secretary of Defense as executive agent. Subsequently, the Secretary assigned the Director of the Defense Communications Agency (DCA) as manager of the National Communications System.¹

The National Communications System is a participatory organization with working staff representation from each of eleven Federal agencies:

- Department of Defense
- Department of State
- Department of Transportation
- Department of the Interior
- Department of Commerce
- Department of Energy
- General Services Administration
- National Aeronautics and Space Administration

- Central Intelligence Agency
- Federal Emergency Management Agency
- US Information Agency²

Each of these agencies manages its organic telecommunications resources on a day-to-day basis. But, when national emergency situations dictate, any or all of these resources are called into a collective Federal emergency network consistent with the nature of the emergency. Managing these emergency capabilities is one of the principal responsibilities of the National Communications System. As the single point of contact, the System receives policy direction from the National Security Council. That direction includes responsibility for planning and overseeing the implementation of the extensive provisions of mobilization preparedness and emergency communications programs. Indeed, the NCS Manager is designated as the official responsible for fulfilling national telecommunications policy objectives.

Because of this overlapping NCS structure, the functional scope of the Secretary of Defense and the Director, Defense Communications Agency extends beyond the military into the civil and diplomatic sectors. By definition, the National Communications System must concern itself with the entire national network. Sparsely staffed with a mix of civilian and military professionals, the National Communications System is busily engaged in actions designed to strengthen nationwide telecommunications capabilities. For example, the System is responsible for such functions as administering the system for assigning restoration priorities to critical Federal circuits, conducting studies aimed at reducing vulnerabilities of national telecommunications, and evaluating telecommunications requirements for supporting mobilization.³

This nationwide orientation has also involved the National Communications System in proposed policy changes, regulatory decisions, and court actions that might affect emergency communications. For example, the System maintains continuous watch over implementation of the *US v. AT&T* settlement in an effort to ensure that emergency telecommunications capabilities are not degraded.⁴

A noteworthy NCS initiative reached fruition in mid-September 1982, when the White House announced formation of the National Security Telecommunications Advisory Committee (NSTAC). This thirty-member presidential advisory group includes the chairmen and chief executives of each of the nation's principal telecommunications, computer, and information-processing companies. The purpose of the NSTAC is to provide advice to the President and executive branch agen-

cies in planning for emergency telecommunications.⁵ Creation of a high-powered presidential advisory body for telecommunications had been an objective of Army Lieutenant General William J. Hillsman, former Director, Defense Communications Agency, and Manager, National Communications System, since PD-53 was in development. He and his NCS staff had foreseen the disruptions in the national network. Presidential directives mandated unprecedented cohesion in telecommunications required for national security and emergency preparedness, yet simultaneous Federal actions—the Computer II decision and the antitrust suit against AT&T—spelled fragmentation of those resources. Establishment of the NSTAC gave the industrial captains affected by these Federal actions a share of the responsibility for preserving capabilities for serving the national and public interests.

Whatever added burdens the stewardship of the National Communications System places on the Defense Department, they are offset substantially by the benefits. The ability to influence actions that affect national telecommunications capabilities in both government and industry is particularly important in preserving national security and in assuring responsiveness during emergencies.

HIERARCHY FOR C CUBED

Under the same Kennedy directive, the Defense Department also established the National Military Command System (NMCS), the entity that unifies strategic command, control, and communications functions. This action, together with other changes in management structure, transformed the traditional ways of doing business in the military. The Navy's frustrations during the Cuban missile crisis included establishment of a new command-and-control precedent made possible by new telecommunications capabilities. In *Essence of Decision*, Graham T. Allison provides this account of President Kennedy's order for a naval blockade:

A problem loomed on the horizon. . . . For the Navy, the issue was one of effective implementation of a military mission—without the meddling and interference of political leaders. For the President, the problem was to pace and manage events in such a way that the Soviet leaders would have time to see, think, and blink. . . . This operation was complicated by (a key) factor—one unique in naval history and, indeed, unparalleled in modern relations between American political leaders and military organizations. Advances in the technology of communications made it possible for political leaders in the basement of the White House to talk directly with commanders stationed along the quarantine line. . . . Thus, for the first time in US military history, local commanders received repeated orders about the details of their military operations directly from

political leaders—contrary to two sacred military doctrines. This circumvention of the *chain of command* and the accompanying countermand of the *autonomy of local commanders* created enormous pain and serious friction [emphasis in original].⁶

These were the days when young ensigns and lieutenants, struggling to make teleccommunications work, overheard their seniors predicting that tomorrow's war would be directed from Washington with "White House to foxhole" communications. They watched their seniors fight and lose battles to preserve their authority from incessant encroachment by increasingly higher levels of command. Those ensigns and lieutenants saw these predictions become reality as commanders and colonels in Viet Nam. Today, wearing broad stripes and stars, some of them are responsible for delivering the telecommunications capabilities foretold by their predecessors. They, and the users they serve, have grown accustomed to the micromanagement from above made possible by modern telecommunications technology, and they have adjusted. Now, their challenge is different, but at least as difficult—they must cope with imminent change in the medium they manage, finding ways to capitalize upon competition and maintain continuity amidst discontinuity.

Today, the Defense telecommunications management structure is at once centralized and decentralized, owing to national policies governing command structure and functional responsibilities. In the nation's organization for war, the President, as Commander in Chief, exercises command and control through the Secretary of Defense and the Joint Chiefs of Staff to the Commanders of Unified and Specified Commands. For administration and support associated with wartime operations, the President and Secretary of Defense command through the Secretaries and Chiefs of the Services. The *strategic* telecommunications enabling exercise of these command authorities extend down to the *tactical* level—the Air Force wing, the Navy fleet, the Army corps, the Marine amphibious force, the joint task force.

The strategic-tactical interface point, sometimes blurred beyond clear discernment, is also the break point between centralized and decentralized management. Tactical units have organic telecommunications assets, controlled by the tactical commanders. Their management is decentralized.

Strategic telecommunications, however, are "centrally managed" by two distinct organizational structures. They are installed, operated, maintained, and funded by the Army, Navy, and Air Force communications commands, each of which has global responsibility. Collectively, these assets are unified into a joint, worldwide entity called the Defense

Communications System (DCS) under operational direction and management control exercised by the Defense Communications Agency. This cross-hatched central management accomplishes a multitude of desired ends for Defense, including joint standardization, interoperability, and prioritization. Unlike tactical assets, strategic telecommunications are not wholly organic, independent capabilities. In fact, very few DCS services are capable of user-to-user operation independent of commercially leased facilities. Some switching and transmission equipment is government-owned, as are many terminals purchased by the communications commands. But, a considerable amount of equipment and most transmission paths are leased from commercial carriers, largely because Federal acquisition policy mandates it.⁷

At the Pentagon, a similar kind of "central" management exists. Each Service oversees its own resources and fulfills the demands of cyclic planning, programming, and budgeting essential for securing congressional appropriations each year. The Services respond to both the Joint Chiefs of Staff (JCS) and the Office of the Secretary of Defense (OSD) in fulfilling these responsibilities. Within the Office of the JCS (OJCS), the Command, Control, and Communications (C³) Systems Directorate, fulfills the JCS Chairman's responsibilities for telecommunications, including the NMCS network which interconnects the President and Secretary of Defense with the medium for global command and control over military forces—the Worldwide Military Command and Control System (WWMCCS).⁸

The focal point of the Defense telecommunications management hierarchy is the Office of the Deputy Under Secretary of Defense for Communications, Command, Control, and Intelligence (C³I), the largest element of the Office of the Under Secretary of Defense for Research and Engineering. The C³I staff, headed by Mr. Donald Latham, is the Secretary's proponent for management of all command-and-control assets, strategic and tactical, and promulgation of master plans, policies, programs, and guidance related thereto. The key decisions, including assignment of tasks and allocation of resources to the Defense Communications Agency, the National Communications System, and the Services, are made at this level.⁹ Policies governing how these resources are used in executing command and control are the responsibility of the Under Secretary of Defense (Policy).

One fundamental reason for this variety of management structures is the nature of telecommunications resources. They exist for their users and are defined primarily in terms of those users. At every level within Defense, telecommunications managers necessarily focus on the needs of the users they serve. This kind of parochialism is clearly advan-

tageous for the users, but the disadvantages have been obscured because the principal medium—the national network—has been unified under the Bell System. As that commercial network loses its unity, requirements will be more difficult to satisfy, and the potential for conflicts among communicators will increase. Communicators at every level must be more *interdependent* than ever to compensate for the disunity taking place in the industry. Both organizational structures and the individuals who man them must adjust to meet the need. The needs of all users will best be served by a commitment to cohesion in advance.

PROCESS OF ACQUISITION

Defense telecommunications resources are acquired through contracting procedures outlined in the Defense Acquisition Regulation. Because strategic and emergency needs depend upon commercially owned assets, a substructure for acquiring these leased assets has evolved within the Defense Communications Agency and the Services' communications commands. In addition, because a substantial quantity of Defense telecommunications emanate from and terminate in Washington, DC, the Defense Telephone Service-Washington (DTS-W), administered by the Office of the Secretary of the Army, manages and acquires the facilities and services required by all Defense activities in the Washington, DC, metropolitan area.¹⁰

In each of the Services, acquisition responsibility is split at the *installation* level; that is, post, camp, station, base. The boundary is the local area—the communities surrounding the installation, generally that area served by the local telephone company's exchange. Telecommunications which interconnect military installations—that is, extend *beyond* the local area—are acquired by the Services' communications commands. The Navy provides this service to the US Marine Corps. Generally, the separation parallels that existing between the local and long-distance components of the national network, which is described in the next chapter. Over the years, each Service has considered eliminating this arbitrary boundary and consolidating management into a single entity within each communications command. Only the Army has moved in that direction; it manages installation communications regionally by geographic area. Like the boundary between strategic and tactical telecommunications, the point of demarcation between local and long-distance is not absolute. Some services offered by the local telephone company are actually long-distance capabilities; for example, Wide Area Telecommunications Service (WATS). All the communications commands permit the installation managers to lease these capabilities.¹¹

The Army's semiconsolidation of installation telecommunications

management is rooted in a more significant departure from the policies of the other Services. The Army Communications Command is responsible for resourcing all strategic telecommunications, including those *within* the installation domain. This manpower-saving arrangement entails designation of a single manager at major commands and installations responsible for both external (strategic) and internal (command-unique) telecommunications. The single manager is both the provider and a user of the assets under his/her purview. Although this unique "dual-hat" arrangement has created conflicts in serving two masters, it has facilitated intercommand relationships, and thereby responsiveness, in meeting Army needs. It also has yielded significant cost reductions through application of standardized criteria and rapid resource augmentation. The Air Force also uses the "dual-hat" arrangement wherein the Air Force Communications Command operates base telecommunications and supplies capabilities for trunking and switching, but the supported major commands control the funds for these resources. The Navy and Marine Corps assign telecommunications management responsibilities to the command that operates each base. The rationale for base-level management controls is that it prevents fragmentation of single management at the installation level and assures responsiveness to local needs.¹²

Separate acquisition of commercially leased services complicates the inventory and costing processes for each Service and the Defense Department as a whole. Recent efforts to determine total costs of commercial telecommunications within Defense required considerable extrapolation of data and exclusion of some services in order to obtain meaningful estimates. Long-haul costs are simple to track because they are centrally managed, but the decentralized installation telecommunications are spread across funding documents to the point that they cannot be retrieved without substantial manual effort. For long-haul services, Defense mandates central acquisition because of the economic benefits. Each Service's communications command includes one or more Telecommunications Certification Office (TCO) that controls the funds appropriated for long-haul telecommunications. The TCO evaluates each user's need from both technical and financial standpoints. Requirements are forwarded to DCA's telecommunications leasing organization, the Defense Commercial Communications Office (DECCO), which validates needs and commits the government to pay for the services. Both DECCO and the TCOs interact with the commercial common carriers and equipment vendors, but the formal acquisition of long-haul circuitry is performed by DECCO. This centralized arrangement has been so successful that other Federal agencies, such

as the Federal Aviation Administration, have decided to participate. This acquisition management structure provides such services as the Automatic Voice Network (AUTOVON) and the Automatic Digital Network (AUTODIN), as well as critical dedicated networks throughout the Department of Defense.¹³

The DCA policy governing DECCO's acquisition reflects the heavy dependence on the commercial carriers' circuitry. Since it was formed, the Defense Communications Agency has adhered to an acquisition policy that mandates single end-to-end management of long-haul telecommunications comprising the Defense Communications System. This 1968 DCA policy is still basic guidance for DECCO:

DECCO will procure private line circuits on an end-to-end basis from a single communications common carrier, except in those instances where it is in the best interest of the Government to accept separate billing . . . rates. Competition will be exercised to the extent practicable . . . with the selection being made on the basis of lowest cost, assuming operational considerations are equal. The carrier selected will be responsible for overall circuit engineering, for establishing and maintaining the circuit within the parameters ordered, and for billing the through circuit, except for those portions of the circuit that may be covered separately.¹⁴

This policy minimizes the need to separately acquire and integrate each portion of a circuit's path. In effect, Defense activities deal with a single contractor, not subcontractors, thereby reducing in-house manpower needs.

Structurally and procedurally, the acquisition process appears to provide tight control over Defense telecommunications services. Unfortunately, the process is not as effective as it needs to be. A Federal policy overlap provides a loophole for acquiring telecommunications associated with interconnected computer systems. The dilemma, created by technology, is pinpointing the line between computers and telecommunications. This problem expands as more and more computer-based management systems are introduced, merging computers and telecommunications into "communications," a term applied to the hybrid by Robert H. Klie in a research project for Harvard's Program on Information Resources Policy.¹⁵ As discussed in chapter four, the Federal Communications Commission has had considerable difficulty in addressing the same dilemma and specifying regulatory policy for computer-oriented telecommunications. For Defense activities, the problem is compounded by Federal policies governing contracts wherein telecommunications are intrinsic to the computer systems and

the contractors' performance is evaluated on the total-systems basis. While such arrangements may serve the computer managers' needs, they preclude the economic gains made possible by centralized acquisition, they create excessive duplication of networks, and they prevent accurate inventory and effective control of Defense resources.

For the vast majority of its telecommunications needs, Defense depends on commercial carriers and vendors. Management structures and acquisition procedures are just beginning to be tested by changes in the commercial marketplace. Efforts are underway to strengthen policies in terms of both responsiveness to users and resource control. The need for adjustment will intensify substantially as the medium for strategic command and control—the national telecommunications network—is altered. The nature of that network is the subject of the next chapter.



THE NATIONAL NETWORK A NATIONAL RESOURCE

One Policy, One System, Universal Service

That goal for the nation's telephone network, set in 1909 by Theodore N. Vail, AT&T's Chairman of the Board, was then the dream of a visionary businessman. Today, universal service is a reality. In virtually every American home and business, telephones and more sophisticated instruments are connected to a network providing access to every part of the world where telephones exist. During the past century, the American telephone network became unparalleled anywhere in size, capability, and efficiency. It is a valuable national resource.

But major changes are underway. When AT&T divests itself in 1984, the network will have multiple owners, managers, operators, and providers. Theodore Vail's "one system" providing "universal service" under "one policy" will be history. Yet, the product of that vision must be understood before speculating on the aftermath.

ANATOMY OF THE NETWORK

The national telecommunications network is at once a single functional entity and a composite of legally separate entities. Operationally, the multiple array of hardware comprising the national network is just as Theodore Vail envisioned it—one system—designed and engineered to function effectively on a nationwide basis. But, legally, the national network consists of three distinct components that reflect both the regulatory controls to which it is subject and the subdivisions of the marketplace. Figure III-1 depicts these components graphically.

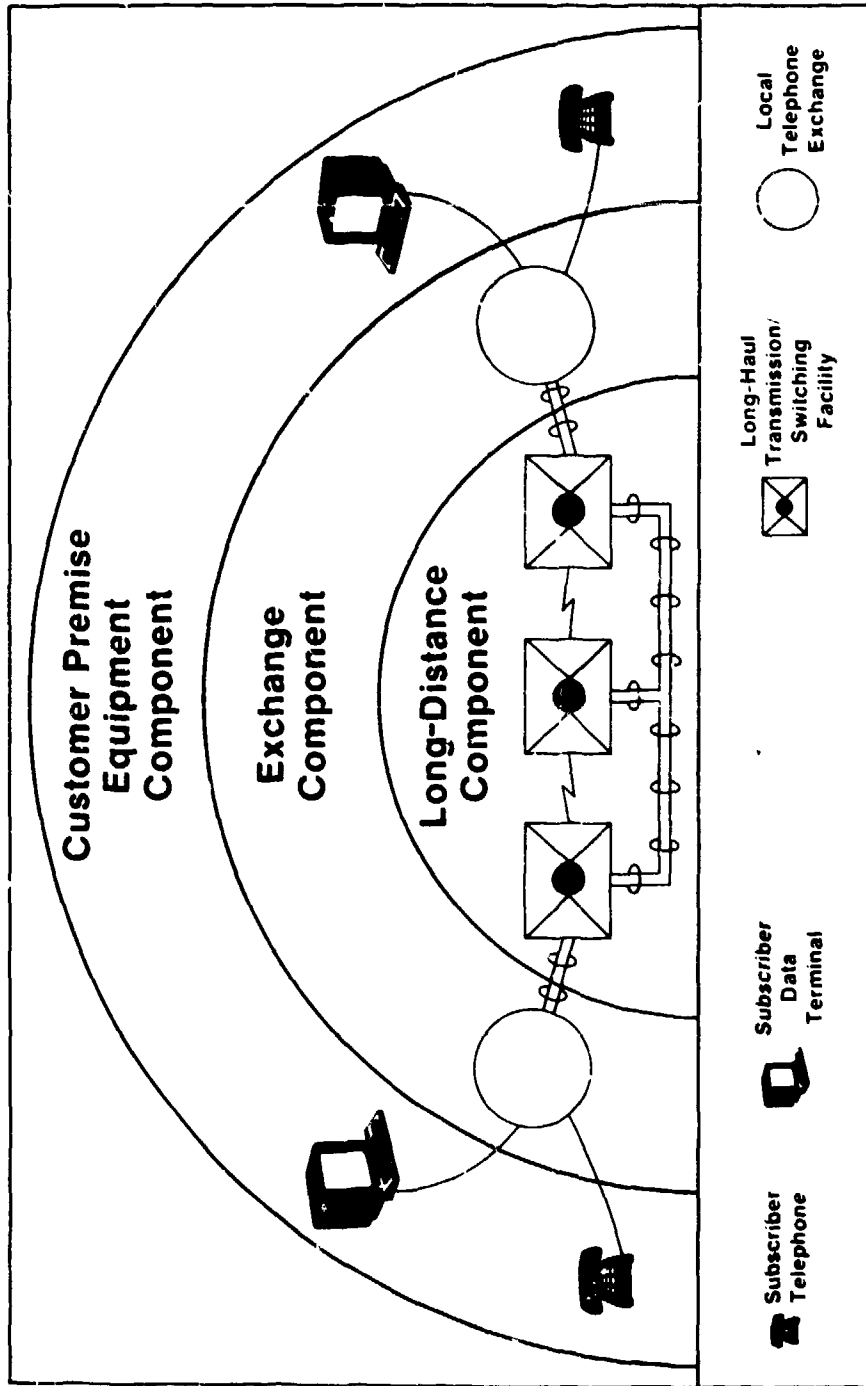


Figure III-1. Components of the National Telecommunications Network-1982

Where subscribers live and work, a telephone provides access to the nationwide network. In some homes and in many businesses, an enhanced instrument, even a computer, and sometimes an automatic switching device, enables entry into the network. Generically, these end instruments are the first component of the network, called, in the jargon of telecommunications, customer premise equipment (CPE).

Inside the customer's premises, CP equipment connects via wires and cables to one or more central offices constituting the second component—the exchange, usually identified by the prefix (the first three digits) of the subscriber's telephone number. Serving a group of subscribers in a specific geographic area, the exchange is basically a switching device enabling one subscriber to call another connected to the same exchange, and, through interconnecting trunk lines, for subscribers to call others served by different exchanges. The smallest local telephone companies consist of one exchange; most local companies own and operate large numbers of exchanges covering geographic regions ranging from a few counties to several states.

The local exchanges converge on higher-order switching centers in a distinct hierarchy that comprises the long-distance component. Interconnected with high-capacity trunking links, these switches provide capability to route both dialed calls and dedicated lines both within the nation and overseas. The commercial companies that provide the long-distance component are known as "common carriers."

The boundaries separating the components of the national network have been widened and hardened by the Federal Communications Commission's (FCC) Computer II decision and the *US v. AT&T* settlement. These are discussed in chapters four and five, respectively.

HEART OF THE SYSTEM

The heart of the national telecommunications network, and most of its arteries and veins, is AT&T's Bell System. Since its birth more than a century ago, the Bell System has become "the telephone company" to millions, "reaching out and touching" almost everyone. As Ma Bell grew, she absorbed the smaller companies that had served cities and towns across the country, creating her own research-and-development and manufacturing elements. When the government dissuaded AT&T from further absorption of smaller companies, Ma Bell formed alliances with them, cementing relationships so solid that these independent companies, for all practical purposes, became part of the Bell System. Compared with enterprises like oil companies, airlines, and trucking firms, the Bell System has had no real competitors. With

sanction and support of the Federal and state governments, AT&T became a nationwide public utility, a virtual monopoly whose prices are controlled by government regulatory agencies based on a fair rate of return on investment. In this protected environment, AT&T thrived, and, in the process, produced the world's best telecommunications system.

Ma Bell's portion of the national network includes more than one *trillion* miles of circuitry interconnecting equipment and facilities exceeding \$148 billion in value. Her annual plant improvement expenditures comprise nearly 10 percent of the total spent for construction each year by all American industries combined. Her annual revenues represent about 2 percent of the total US gross national product, exceeding \$65 billion in 1982. The Bell System employs more than one million people who, together with a massive amount of automated capabilities, install and maintain 80 percent of the terminal instruments, interconnect 85 percent of the subscribers, and route 83 percent of all long-distance calls. These statistics¹ reflect the magnitude of the corporate empire owned by more than three million stockholders.

As massive as the Bell System is, the national network would not be capable of universal service without the more than 1,500 Independent Telephone Companies that extend interconnection service to 15 percent of the network's users. Independent companies, such as United Telecommunications and General Telephone and Electronics (GTE), along with a variety of retail stores like Radio Shack and Sears, provide 20 percent of the customer premise equipment used by subscribers. And the 17 percent of the long-distance calls not routed by AT&T are carried by fast-growing companies like Microwave Communications, Incorporated (MCI) and Southern Pacific Communications Company (SPCC), the operator of SPRINT, collectively referred to as "other common carriers."

The term "vendors" is used to describe CPE suppliers. Prior to 1983, competition grew moderately in the CPE and long-distance components. Once the Computer II decision became effective on 1 January 1983, growing numbers of vendors made steady inroads into the CPE market. And, as implementation of the *US v. AT&T* settlement approached, more and more common carriers began advertising substantially better prices than AT&T's. But, virtually no competition exists in the *exchange* component. The nation's local exchanges are regulated monopolies wherein *both* the Bell System and the Independents serve subscribers under long-standing cooperative arrangements in each geographic area.

ACCOMMODATIONS FOR PROGRESS

Over time, the Bell giant and the Independent telephonians developed mutually beneficial arrangements enabling expansion of the network nationwide. Three of these accommodations are particularly important:

- *Standards.* National standards and technical specifications have long been prescribed by AT&T to enable interoperability throughout the network. Although these standards are not officially sanctioned, the non-Bell companies as well as Federal, state, and local governments have readily acceded to AT&T's leadership in this critical aspect of quality control and economy, advantageous to both the industry and its subscribers. Because Bell standards are effectively the American telecommunications standards, they are a pivotal consideration in any Federal, state, and industry actions affecting the network.

- *Network planning.* A second service rendered by AT&T is continuous refinement of the network's capabilities and capacity. Using actual data, plus probability distribution standards of demand and calling patterns, Bell engineers have maintained high quality in spite of substantial increase in user demand. Working closely with affiliated companies, AT&T network planning has made potentially difficult tasks, like the national numbering scheme for area codes, relatively simple. Like technical standards, this service is vital to the effectiveness of the national network, and thereby represents an important consideration in the *US v. AT&T* settlement.

- *Revenue flow.* Perhaps the most complex arrangement between Ma Bell and the Independents is the distribution of revenues. Based on complicated formulae involving, among other data, careful measurement of actual use of facilities and tracking of individual calls by destination to achieve a nationwide averaging of subscriber rates, the division of revenues is particularly important because it directly influences the cost of local service. As a consequence, this process is a continuing concern of individual Congressmen and state regulatory agencies and is one of the most significant issues in the antitrust settlement. The consumers' pocketbooks are a primary concern in both the nation's capital and each state house.

The nation's Independent Telephone Companies are not only heavily dependent on Ma Bell, they are the beneficiaries of a variety of her services as well. Indeed, if they were truly *independent*, their subscribers could call only each other, and universal service would not exist. As will become evident later, the existing relationships between AT&T and the independents are notably significant in assessing the full implications of the *US v. AT&T* settlement.

STRUCTURE OF THE GIANT

The corporate structure of AT&T has been described variously as an "octopus," a "multifunctional giant" and a "corporate collage." Perhaps an apt description is that AT&T is a large umbrella *under* which several scattered storms take place simultaneously! Indeed, the combination of AT&T's functional diversity, size, and scope of operations constitutes a vertically and horizontally integrated corporation unparalleled in the private sector. The company may not have been so successful without the regulated monopoly environment in which it has blossomed, but its succession of executives has delivered substantial dividends to stockholders while under continuous government scrutiny for most of the twentieth century. In the process, AT&T has funded the nation's foremost electronics research organization—Bell Laboratories, which made microelectronics possible through invention of the transistor, and shared its technological developments with numerous other companies.

Organizationally and functionally, the predivestiture AT&T mirrors the relationship between the Federal and state governments in that each of its several activities "enjoys substantial autonomy in handling its own local affairs but is also part of a larger federated system in which central agencies supply overall guidance and planning."² The organizational arrangement in figure III-2³ includes the major elements which perform the functions described below:

- *General Departments*—The classic corporate staff that provides planning and guidance for integrating the various AT&T activities into a cohesive whole.
- *195 Broadway Corporation*—Basically, a holding company for AT&T's extensive real property. Named for its address, this company relocated elsewhere in Manhattan during the summer of 1983.
- *Western Electric Company*—The manufacturing activity for the Bell System which also operates a smelting activity, a separate corporation for manufacture and marketing of record traffic terminals, and Sandia Corporation, a Federal contract activity.
- *Bell Telephone Laboratories*—The research and development arm of the Bell System. Ownership is split between AT&T and Western Electric Company, each with 50 percent.
- *Long Lines Department*—The operating activity of the interstate long-distance portion of the Bell System.

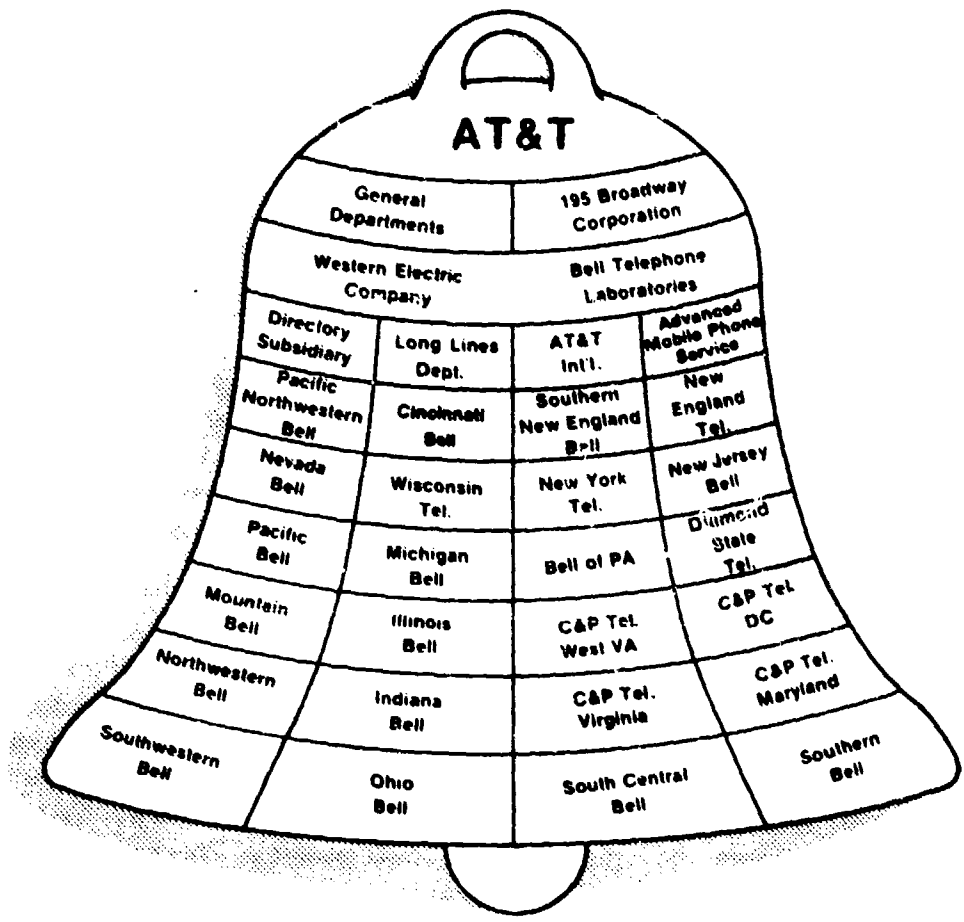


Figure III-2. AT&T Corporate Structure-1982

- *Associated Companies*—The 24 regional telephone companies that provide most subscribers with exchange interconnection service, access to the long-distance network, and customer premise equipment. AT&T controls at least a majority of the stock in all but two of these companies.
- *AT&T International*—As implied by its title, this entity operates and markets all services outside the United States.
- *Directory Subsidiary*—The central activity for developing the "Yellow Pages."⁴

Viewed vertically, AT&T effectively uses the classic production loop in that it develops, manufactures, installs, operates, depreciates, and disposes of the bulk of its products *within* the organization. It is a virtually self-sustaining, service-oriented corporation. Horizontally, the separate activities under Ma Bell's umbrella are substantially interdependent; both demand and supply are generated from within. The intersection of those curves is controlled in harmony with continuous central oversight of financial transactions. The combination of vertical and horizontal integration within AT&T provides enormous flexibility for realizing economies of scale.

PERSPECTIVE OF THE USER

Although invisible to the user, a principal characteristic of the Bell network is its *homogeneity*. The Bell System has been engineered to meet two principal objectives—universal service and minimum cost. Continuous orientation on those twin precepts meant consolidation, collocation, and sharing of functionally similar assets between the Associated Companies and Long Lines wherever possible. This resulted not in mere integration, but intermingling of facilities and technical hardware based on design and engineering criteria for *one* system. The result is like scrambled eggs. Discerning white from yolk is a substantial challenge even for the master chef.

Typically, the user interacts with a local office of one of the 24 Bell Associated Companies; for example, New England Bell and Southwestern Bell. The telephone in a home or office, most likely leased from an Associated Company, is connected to wires *within* the home or office which are routed via cables to interconnect with the local exchange, all of which are under control of the Associated Company. Once the subscriber lifts the telephone, the sound of the dial tone signals connection with the local exchange switch, which is interconnected with other switches from which radiate mirror images of these cables, wires, and telephones. The digits the subscriber dials set into motion one of

numerous routing options designed to complete the call. Normally, dialing seven digits will establish conversation capabilities with another local subscriber served by the same or an adjacent Bell exchange. And, usually, any ten-digit call will be routed through the local exchange into a hierarchy of trunking and switching facilities controlled by the Long Lines Department. But, there are numerous exceptions to these norms, owing to engineering economies that capitalize on use of available facilities, irrespective of which Bell activity controls them. For example, in some locations, the user must dial "1" to obtain long-distance routing, thereby avoiding use of scarce local circuits. In some cases, the subscriber's local call may transverse trunks of another Associated Company in reaching a subscriber served by a different Associated Company. Similarly, a call from Washington to Los Angeles may be routed through trunks and switches operated by Associated Companies in addition to those owned by Long Lines. Conversely, sometimes local calls are carried by Long Lines between two towns simply because these facilities have capacity for them.

Although Ma Bell gave "autonomy" to her operating companies, she maintained sufficient central controls to avoid unnecessary duplication of facilities. Today, within many AT&T buildings, hardware such as main frames and switches is shared between an Associated Company and Long Lines on a joint ownership basis. Such mutually beneficial arrangements have helped AT&T keep costs, and thus subscriber rates, as low as possible. The settlement means unscrambling these facilities, a tough task for Ma Bell.

BENEFITS TO DEFENSE

Thus far, the national network has been depicted in terms of its ordinary utilization—dialed calls, but this basic service is just a part of the network's capability. The transmission systems also include considerable additional capacity for dedicated (private line) services such as computer-to-computer connections and various Defense services such as AUTOVON and "hotlines" between operations centers. In fact AT&T's enormous capacity for providing such services has become a vital element of national defense. Today, about 85 percent of Defense strategic telecommunications are routed over AT&T facilities.⁵

Unlike her competitors, Ma Bell has in place the resources necessary to fulfill virtually any requirement and to provide "end-to-end" management on a continuous basis. With alternative paths to virtually every telephone exchange in the nation, she and her sister Independents extend Defense circuits over what Lieutenant General Clarence E. McKnight, Jr., US Army, Commander of the US Army Com-

munications Command, calls "the last mile"⁶—the wire lines that reach missile silos, airfields, tactical unit commanders, and military installations throughout the world. When necessary, AT&T can employ transportable facilities to provide emergency service to remote areas like Mount Saint Helens. Thus, the AT&T network already embodies the inherent diversity to fulfill at least some of the requirements for survivability, endurance, and sustainment described in the first chapter.

For nearly a century, Ma Bell has unfailingly delivered and has become to Defense what she is to her other large customers—the manager who integrates the circuits and keeps them working. When these circuits fail, AT&T restores them, even if portions are furnished by other carriers and vendors. When more capacity is needed, AT&T designs, obtains, and installs it. When emergencies occur, the entire Bell System is mobilized to support them. Virtually every long-haul leasing contract AT&T obtains with Defense is won through DECCO's competitive bid process. Often, AT&T won because it was the only bidder; in other cases, it was the only source. AT&T emerged as the winner because of its size, capabilities, and demonstrated responsiveness. Moreover, other carriers and vendors who win Defense contracts usually turn to AT&T for some or all transmission capabilities. For telecommunications, the nation's defense relies heavily on Ma Bell, and the extent of this reliance matches precisely the amount of service she provides to the nation as a whole.

Given AT&T's pivotal role in the national network, the effects of major changes in policy, such as the *US v. AT&T* settlement, are bound to be dramatic. Thus far, national policy has enabled Ma Bell to serve her users effectively and efficiently. Yet, the same policy has also fostered functional integration of her elements, thereby drawing fire from every quarter of the Federal establishment. In the American democratic system, the epitome of capitalism, the Bell System engenders ambivalence. It is simultaneously loved and hated; it is a vital but vulnerable national resource.

IV

THE POLICY BASE A SHIFTING FOUNDATION

Create a competitive, unregulated marketplace environment

This goal articulated by Mark Fowler, Chairman, Federal Communications Commission (FCC) in 1981 reflects the mounting pressures to unleash the "invisible hand," to let competition, not government regulation, control the marketplace.

Like most public utilities, telecommunications have been carefully regulated to minimize user costs. Today, those regulatory controls are rapidly giving way to free enterprise.

While Congress has stayed on the sidelines, Executive initiatives, FCC decisions, and Federal court judgments have created a policy patchwork for American telecommunications. This chapter provides a reflective look at how national policy has been reshaped, creating fertile ground for the *US v. AT&T* settlement.

STALLING ON THE HILL

In telecommunications, technology has leaped while Federal law has crawled. The principal legislation is still the Communications Act of 1934, "a recodification of existing law" which separated telecommunications from transportation and postal services but did not materially change the rules for their regulation.¹ Enacted at a time when many Americans did not have a telephone, and all calls were switched manually by central operators, the Communications Act of 1934 established the Federal Communications Commission, directed it to introduce competition when it served the public interest, gave it regulatory jurisdiction over interstate telecommunications, and assigned

intrastate regulation responsibilities to the states. The Act also mandated the Commission to ensure the sufficiency of communications for national defense.²

Since then, Congress has enacted very few substantive amendments. Passively allowing AT&T and the Independents to shape themselves into a regulated utility cooperative, Congress has been understandably reluctant to tamper with an entity that serves the public efficiently at reasonable costs. However, lack of legislative success does not signal lack of effort. Some Congressmen recognized the necessity to update national telecommunications policy as early as the mid-1970s, when disaffection with Federal court actions generated loud protests from a variety of constituents.

In 1976, the telephone industry proposed draft legislation that was introduced in both houses of Congress as the Consumer Communications Reform Act (CCRA). This bill would have reversed emerging trends toward increased competition and perpetuated the regulated public utility status of the industry. The CCRA generated much opposition, and it never went beyond the hearings stage.³ Even so, the CCRA triggered bipartisan awareness that the antiquated 1934 Act must be rewritten "to deal with the problems created in all parts of the communications industry by the new technology."⁴ Every year since then, in one or both houses of Congress, efforts to enact new legislation have failed. Most draft bills did not progress to the mark-up stage, and those that did died.⁵

Ironically, these various draft bills differed markedly in substance from the clearly anticompetitive CCRA. Increasing competition and reducing regulation became more than goals. They were here to stay. The corporate giant—AT&T—had to be dislodged from its position of dominance to make way for new technical and marketing enterprises. The hopes of deregulation advocates peaked when the Republicans won a Senate majority in 1980. Now, draft legislation contained explicit language about reducing Federal controls and increasing competition:

(a) It is the policy of the United States to rely wherever and whenever on marketplace competition . . . thereby to reduce and eliminate unnecessary regulation. . . . Marketplace competition will result in technological innovation, operating efficiencies, and availability of a wide variety of telecommunications technologies that are now or may become available in the future. . . .⁶

(b) The purpose of this Act shall be—(1) to make available to all the people of the United States efficient nationwide and worldwide telecommunications at reasonable and affordable charges; (2) to rely, wherever possible, on competition, rather than regulation, to determine the variety, quality, and cost of telecommunications . . .

(3) to promote the development of competition and the development and use of new technologies by users and suppliers of telecommunication to increase the variety and efficiency of services and facilities.⁷

Although bipartisan in sponsorship and support, thoroughly grounded in extensive research and broad-based hearings, and philosophically ripe for consensus, these draft bills did not progress to joint mark-up during the 97th Congress. Had they survived and become law, the *US v. AT&T* settlement would not have been so momentous. Their revival during subsequent sessions, planned by the principal sponsors, must now deal with the effects of divestiture, particularly the increased rates for local service. In the absence of congressional action, the provisions of the 1934 Act have been stretched to new limits by nonpolicy-makers, giving the invisible hand substantially increased freedom of movement. The patchwork remains, awaiting legislative remedy long overdue.

JUDICIAL INTERVENTION

Among the variety of policies established in the Communications Act of 1934, Congress included direction to the newly formed Federal Communications Commission "to investigate the common carriers' structure, internal dealings, and the range of competitive activities."⁸ The report of that four-year investigation became pivotal to AT&T's corporate domain for more than 30 years. In 1949, using the FCC's investigation report and a variety of complaints against Ma Bell, the Justice Department filed an antitrust suit against AT&T. Like its recent counterpart, that suit was settled through agreement in 1956.

The provisions of the 1956 agreement are particularly significant because they constitute a monopolistic interpretation of the 1934 law, which existed for almost three decades.

- The operating companies of the Bell System were restricted to offering common carrier communications services and services incidental thereto.
- The Western Electric Company was restricted to manufacturing equipment of the types sold to Bell's operating companies.
- As an exception, AT&T was allowed to do contract work for the Defense Department.
- Another exception permitted AT&T to continue "directory advertising" (today's "Yellow Pages").

- AT&T was required to cross-license its patents and to share some of its technological information with other US-owned companies.⁹

Even though Congress provided for competition in the 1934 law, the Bell System had long been established as the dominant common carrier. Thus, the agreement effectively gave AT&T monopoly power. Limited to providing only the medium, AT&T was free to focus on that service. Sanctioned as a public utility, AT&T became "the telephone company" to almost everybody.¹⁰

For Defense, the 1956 Consent Decree made providing telecommunications relatively easy. Ma Bell effectively controlled the long-haul national network and most of the local exchanges. Where she did not control, her technical standards, practices, and engineering principles were operative, and her established agreements with the Independents made coordination automatic. AT&T was able, and willing, to act well beyond the normal contractor's role in providing priority service to Defense users.

As the effects of the 1956 Consent Decree became clear, opposition mounted, and the agreement has been the prime target of most proposed legislation since the CCRA. It also became the baseline for the changes emerging from the 1982 landmark settlement of *US v. AT&T*. Yet, the 1956 settlement did not stop antitrust actions, and AT&T has been the defendant in numerous cases since the decree was issued.¹¹ These suits were spawned by relatively new competitors, and as Ma Bell has learned, such suits can be extraordinarily expensive. Under Federal antitrust law, a guilty verdict mandates tripling of the adjudged monetary damages. For example, in a suit brought by Microwave Communications, Incorporated (MCI) against AT&T for \$600 million in damages, a guilty verdict, now under appeal, can mean a \$1.8 billion judgment.¹² Meanwhile, other actions against AT&T threatened more than just money.

REGULATORY EVOLUTION

When Congress formed its telecommunications regulatory arm in 1934, it knowingly or unknowingly created a heat shield for itself. The Federal Communications Commission was formed to provide a Federal forum to regulate interstate communications and to enforce national telecommunications policy. But the congressional inaction discussed previously forced the Commission to formulate policy, and, as a consequence, it has taken heat aimed at its progenitor.

Until the mid-1950s, FCC decisions reflected clearly that the telephone industry was a utility, carefully regulated to keep costs to the

minimum and to safeguard its characteristic ability to provide universal service. But, in 1956, when a Federal Court of Appeals reversed an FCC ruling in the Hush-A-Phone decision, the Federal Communications Commission was forced to re-examine the policies and tariffs potentially affected by this judgment. In 1963, when AT&T challenged use of a "foreign attachment" terminal instrument manufactured by Carterfone Incorporated, the Federal Communications Commission issued a landmark ruling allowing technically sufficient non-Bell terminal devices to be connected to the nationwide network. Although AT&T acted quickly to offset the potentially adverse effects, these decisions cracked the tightly sealed door leading to competition.¹³

Competitive probes were also being made in the long-distance component. Noting that the Commission assigned some radio frequencies for private use, a few pioneering businessmen sought an opportunity to reduce operating costs by establishing their own long-haul transmission systems. After three years of heated deliberations, the Commission, in the 1959 "Above 890 Decision," released frequencies for operation of these private microwave systems. Encouraged by this decision, a small new carrier, Microwave Communications, Incorporated, applied in 1963 to provide specialized common carrier service to businesses. It took six years for the Federal Communications Commission to approve the MCI request, but that 1969 decision provided the long-sought precedent for FCC recognition of specialized common carriers which came in 1971.¹⁴ Thereafter, in rapid succession, came decisions from the Federal Communications Commission and the Federal courts that incrementally made room for a few lilliputians to ease through the crack in the door.¹⁵

By the mid-1970s, the Federal Communications Commission was gradually moving toward an increased competition policy. In 1976, when the telephone industry's draft CCRA was being debated on the Hill, the Commission revealed its new position by strongly opposing this anti-competitive legislation.¹⁶ This action signalled the smaller companies that the door to competition had been pried open; they had realized a moral victory with considerable potential for greater economic gains.

American Telephone and Telegraph endeavored to minimize the effects of these victories, but the door barring competition could not be closed. Additional decisions by the Federal Communications Commission and the Federal courts in the latter half of the 1970s added significant impetus to the drive for increased competition.¹⁷ In response, AT&T opened Phone Center Stores to counter Radio Shack and Public Phone Stores' offerings of less expensive telephones. The advertising media boomed out catchy messages from MCI's EXECUNET and

Southern Pacific's SPRINT, urging consumers to join them in beating Ma Bell's prices. Ma Bell replied with sentimental appeals "to reach out and touch someone" through THE telephone company which had faithfully served the American people for a century. Theodore Vail's "one system" was in trouble.

REVOLUTIONARY REFORM

Competition had intensified considerably in December 1980, when the Federal Communications Commission issued what is probably its most far-reaching and controversial decision ever—Computer II, the Second Computer Inquiry. Computer II was a follow-on inquiry to the First Computer Inquiry (Computer I) which began in 1966.

Discerning the boundary between computers and communications, the same dilemma Defense faced, was a nationwide problem. The enormous expansion in computer capabilities and capacity in the 1960s increased the demand for the Federal government to define the break point. The Commission dealt with that differentiation problem by "establishing a dichotomy between data processing and message or circuit switching," depending on the "orientation" (that is, communications or data processing) of the service offered.¹⁸ The results of the Computer I inquiry were effectively nullified within a few months by the introduction of distributed data processing technology, which reduced reliance on the central computer and shifted the bulk of basic processing functions to "smart" terminals. Now it was impossible to discern the medium from the message; communications and computers had converged. The 1956 Consent Decree became a counterforce, and Computer I was overcome by events.

If the Computer I decision amounted to nothing more than a series of short-lived ripples, Computer II was a tidal wave. Now that the medium had become the message, the Federal Communications Commission faced the challenge of meeting the needs of data processing users without impairing the politically volatile protection of the telephone rate payers. In Computer II deliberations focused on "the establishment of a regulatory structure under which carriers could provide 'enhanced non-voice' services free from regulatory constraints as to the communications or data processing nature of the service."¹⁹ In the "Final Order" for Computer II, the FCC decision reflected the now familiar theme—increased competition and reduced regulation. Computer II resulted in three major decisions, implemented on 1 January 1983:

- The customer premise equipment (CPE) component became

wholly competitive, and tariffs including existing CP equipment were "unbundled," reflecting CPE devices as separate entities on customer bills. New CPE products were no longer regulated through tariffs. Ownership of the wires on the customer's premise remained unsettled, possibly creating a fourth component of the national network.

- "Basic services," such as traditional telephone service, continued to be regulated, but "enhanced services," such as interconnecting communications circuitry and devices for "smart" terminals, were deregulated.
- As the dominant carrier, AT&T was required to establish a wholly separate subsidiary for marketing new CP equipment and "enhanced services." Regulation by service offering was replaced by structural regulation of Ma Bell.²⁰

Now the CPE component was no longer a part of the national telecommunications network. As figure IV-1 illustrates, CP equipment became not only a separate entity, but it also was divided into two distinct segments. Network fragmentation had begun.

In releasing the Computer II decision, FCC Chairman Charles D. Ferris intoned these dramatic words:

Today we have removed the barricades from the door to the information age. The supply of communication products and services will be limited only by the ingenuity of businessmen and scientists. Government will no longer be a barrier that prevents or delays the introduction of innovations in technology. [Computer II] is a giant step forward for consumers and for the industry. Faced with the choice of solving a problem by either extending or reducing government regulation, we have chosen to reduce regulation.²¹

Computer II's effectiveness in meeting the needs of the telecommunications industry and its consumers cannot be fully evaluated until the myriad issues it generated are settled in the courts and the Federal Communications Commission. But the substance and impacts of Computer II far exceeded those of any previous FCC action. Computer II opened the CPE component to unprecedented competition, as the lilliputians now challenged Ma Bell's new baby—American Bell, today called AT&T Information Systems, Inc.

REACTION TO REFORM

Except for the 1956 Consent Decree, AT&T had never been so dramatically affected by any government action. Computer II succeeded

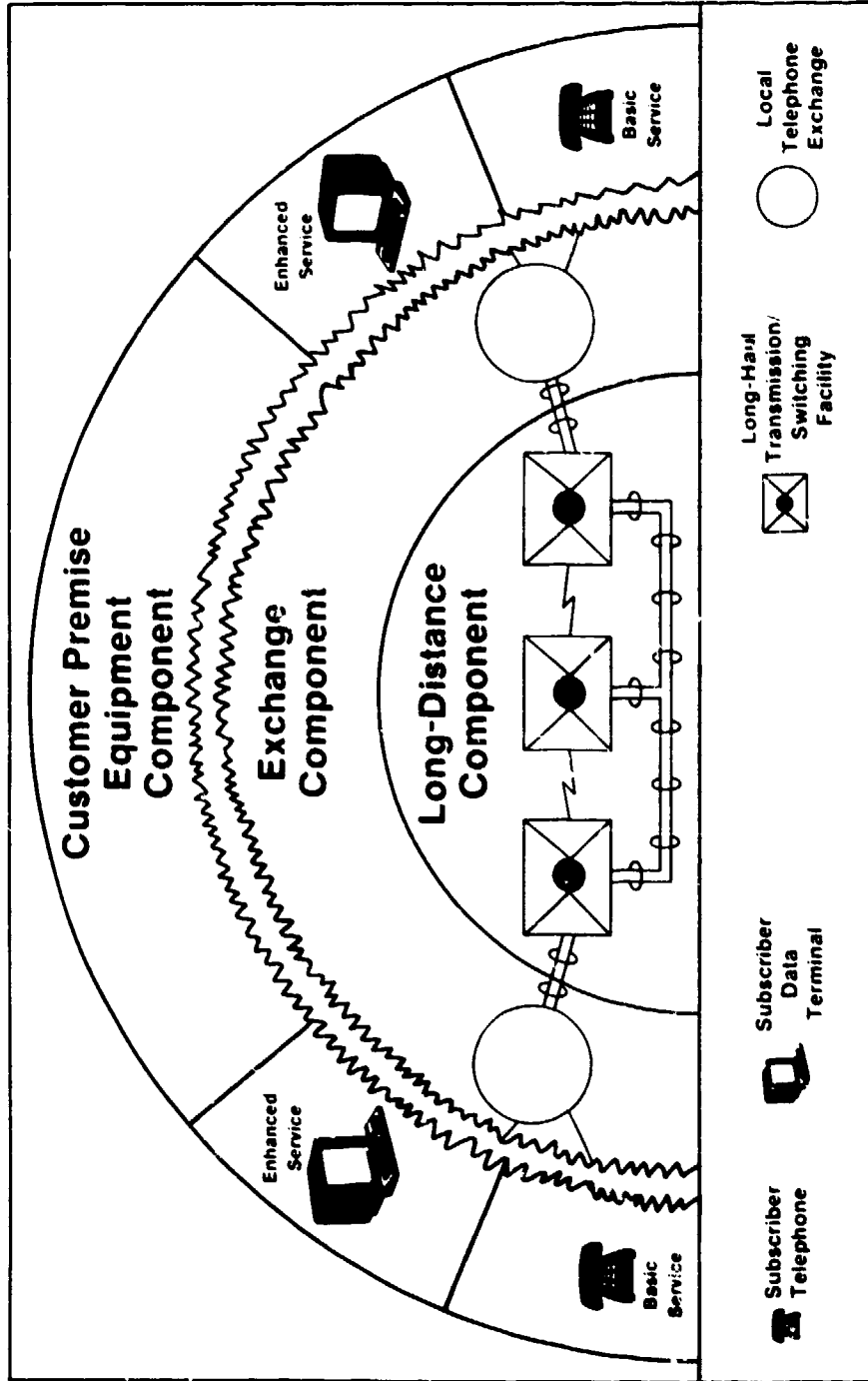


Figure IV-1. Impacts of Computer II on the National Telecommunications Network-1983

where repeated attempts in Congress and in the courts had failed—the 1956 Consent Decree was modified.

Now, AT&T's operating arms—Long Lines and the 24 Associated Companies—were prohibited from selling new customer premise equipment. In effect, Computer II made Long Lines an interexchange long-distance carrier exclusively and restricted the Associated Companies to providing interconnection among subscribers in the local exchange component and providing interconnection to the long-distance component. The decision also invoked "arm's length" safeguards between the new subsidiary and other AT&T entities. Computer II focused on the CPE component of the national network, breaching AT&T's "end-to-end" management capability, if only slightly.²² Ma Bell was no longer "the telephone company," in either the figurative or literal sense of that term. Computer II mandated new relationships within her corporate structure and with her subscribers, a new marketplace for her products, and a substantive realignment of her resources.

During 1982, while the terms and conditions of the *US v. AT&T* settlement were being developed, AT&T completed the many actions required by the Computer II decision. Among those efforts was a massive media campaign focused carefully at Ma Bell's millions of customers—those basic telephone users for whom "the telephone company" is a public institution. Computer II had drawn a definitive boundary between AT&T and its users, yet the Bell System was still able to fulfill *all* their needs for telecommunication services. In parallel with the advertising campaign to launch American Bell, AT&T gingerly approached its users on two fronts with subtle messages in newspapers, periodicals, and direct mail brochures. A series of "Let's Talk" messages in *Time*, *Newsweek*, and other magazines during the last quarter of 1982 invited America to dial an 800 number to get answers about on-going changes. With carefully phrased and sequenced advertisements, Ma Bell expertly conveyed the Computer II impacts to her millions of subscribers:

October 1982:

Where is the Bell System going?

The regulators and legislators of this country are looking more to the marketplace and competition—rather than regulation—to decide who will provide competitive services and equipment and how they will be priced.

We are on the threshold of a new era—the Information Age. The technology of communications has gradually merged with that of computers. And the marriage of these two technologies offers the potential for an impressive array of new customer services.

However, the blending of these two technologies has also blurred the boundaries between a traditionally regulated business—communications—and the unregulated data-processing industry.

This circumstance has led to some major rethinking of public policies on telecommunications; Policies to which the Bell System must conform; And in order to conform, the Bell System must change . . .²³

November 1982:

The Information Age is calling

As the Information Age begins to change the way Americans live and work, some major changes are taking place in our industry; changes in how we're organized; changes in the way you do business with us.

We think these changes are for the better. And we agreed to them because we're looking to the future. Ours and yours.

The only way we could move ahead was to change. Because of the many regulations and restraints the telecommunications industry in this country was forced to operate under, many technological advances were held in check.

The new telecommunications policy of this country, with the resulting changes at the Bell System, will remove most of those barriers to new users of technology. Even now, this new technology is helping to usher in the Information Age . . .

The ability to expand technology and make telecommunications a more important part of your life than ever before is a direct result of the changes taking place at the Bell System . . .²⁴

December 1982:

What isn't changing at the Bell System?

You've been hearing about the big changes coming to the Bell System. Changes in the way we're structured and in the way we do business.

These changes will help us usher in a whole new era in telecommunications: the Information Age.

But in the midst of all this change, the Bell System is also committed to seeing that certain things remain unchanged.

This country now takes dependable telephone service for granted. It's probably hard for you to remember the last time your telephone service was interrupted or you couldn't get a dial tone.

The fact is, America has the best telecommunications system in the world. And that will remain unchanged. Your telephone com-

pany will still have the same dependable people standing behind it. And their goal will continue to be the same: providing the best telephone service at reasonable rates. So what will change? In the future, there will be new places to go for new kinds of telephone equipment. Probably some changes in how you get a telephone repaired. And how you are billed.

These changes will take place gradually, so at first you might not even notice them. And they certainly won't affect the most important thing for you—your ability simply to pick up your telephone and get in touch with anyone you want to, whenever you want to. . . .²⁵

As these messages were reaching users nationwide, each of Ma Bell's Associated Companies used a combination of advertising and direct mail to explain the changes brought about by Computer II. Their job was tougher; they have to deal directly with the customer who must now pay for what have long been perceived as "free" services. One Associated Company—Chesapeake and Potomac—initiated their customer information campaign in January 1983, using this brochure message:

We know there's been talk about changes at the phone company. And Federal regulators have ordered us to change some of the ways we supply equipment since January 1, 1983. But as far as most of our customers are concerned, very little has changed.

We're still your phone company. We still provide you with the kind of service that makes your telephone system the best in the world.

Okay. Then what is changing?

Well, many Bell Phone Centers have gotten a new name. They're called C&P Telephone Service Centers. But they offer most of the things you used to get at the Phone Centers.

You can pick up or turn in phones, and lease or buy phones as long as our inventory lasts.

And the rest of the Phone Centers?

They're operated by a subsidiary of AT&T called American Bell.

They do not take orders for new phone service or repair or replace phones you get from us.

They do sell phones.

Well, who's going to fix my phone?

If you got your phone from us, a Service Center will repair or replace it.

Just remember to call Repair Service first. . . .²⁶

If Computer II brought about trauma and turbulence within AT&T, these messages don't reflect such difficulties. Had AT&T potentially lost major revenues, the messages to America would have differed substantially in content and tone. Indeed, Computer II widened AT&T's commodity horizon, permitting it to enter the marketplace heretofore forbidden by the 1956 Consent Decree; Ma Bell was no longer restricted to the basic service business. Free from tariff regulation for the first time in her history, she could now provide "enhanced services" in the booming digital telecommunications market. Now Bell Laboratories could unshelve advanced technology and make it available to the public. When American Bell was launched, terms like "Advanced Information Service (AIS)" and "Net 1000" were part of the \$30 million advertising package. With Computer II, Ma Bell fell heir to the mixed blessing of diversifying into new products and thereby competing, not just with competitors, but with herself. Now, her new subordinate would provide terminal equipment which served the same purposes as that sold by her Associated Companies. Indeed, a new telecommunications era had arrived, and both Ma Bell and her customers were faced with substantive adjustments to cope with the changes brought by Computer II.

Ma Bell's adjustment created a new organization to compete in the CPE marketplace—American Bell, immediately tagged "Baby Bell" by the press. It died as an infant, owing to both management decisions and additional changes to the modification of final judgment (See chapter 6). Figure IV-2 reflects the addition of that new company to the AT&T structure as of 1 January 1983, when Computer II was implemented. This organization represents the baseline structure for negotiating the settlement of *US v. AT&T*.

The Computer II decision also created an unusual inventory and accounting problem for Ma Bell. AT&T's equipment was divided into two groups: "new" products (marketed exclusively by the fully separate subsidiary) and existing, that is, "embedded," equipment (controlled by the Associated Companies). For AT&T, this meant maintaining separate sets of records for each group and managing by exception the equipment that would be phased out of the inventory over the next several years. This aspect of Computer II was a major difficulty as the *US v. AT&T* settlement severed AT&T's corporate structure.

For Ma Bell's users, adjusting to Computer II was a new experience. The typical American family was only marginally affected, but business, industry, and government—the large users—faced complex adjustments. One phone call to the local Bell Company was no longer enough. Planning and integrating systems, as well as determining responsibility for malfunctions, were confusing new experiences for large

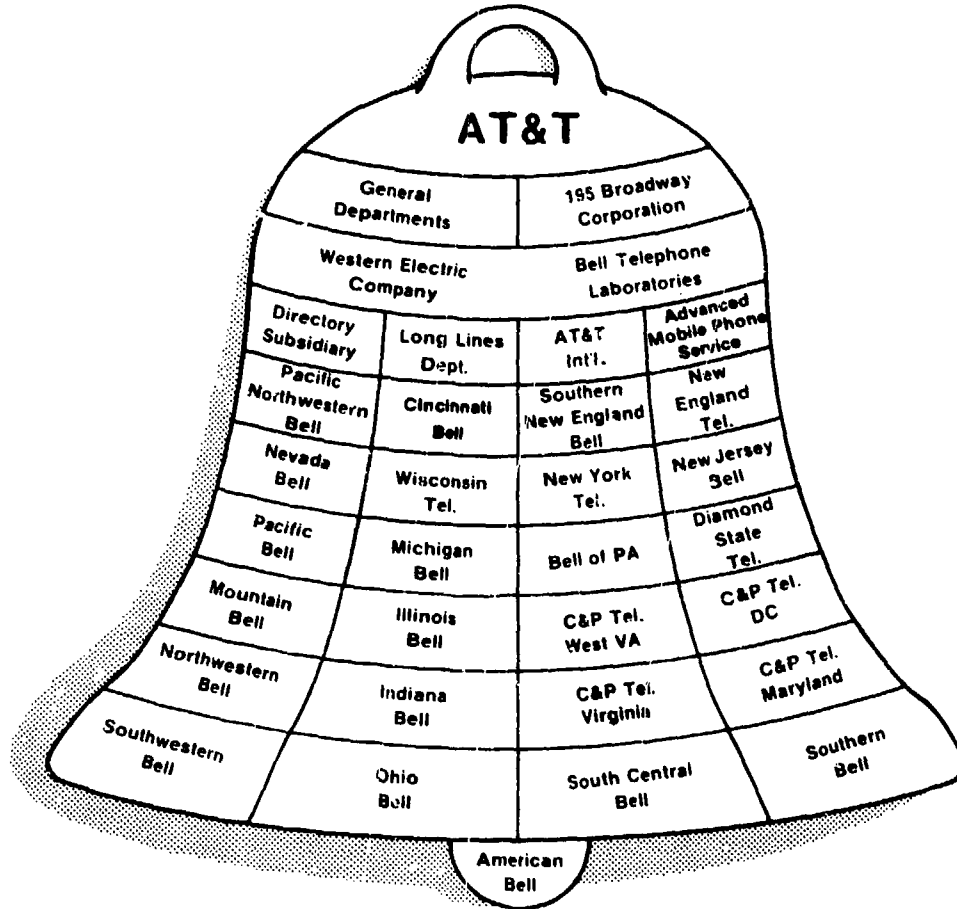


Figure IV-2. Impacts of Computer II on the AT&T Corporate Structure-1983

customers. The workload and paperwork multiplied according to size and extent of the organizations and requirements. The recent increase in help-wanted advertisements seeking "communications managers" and "telecommunications coordinators" resulted, at least in part, from the Computer II decision.

DIFFICULTIES FOR DEFENSE

Within the Defense Department, the inevitable manifestations of Computer II became apparent even before the decision became formally effective. As more competitors entered the CPE marketplace, the Defense Commercial Communications Office (DECCO) found it necessary to provide more specific engineering data and technical specifications in extending offers to potential contractors. This, in turn, placed a heavier workload on the Telecommunications Certification Offices and thereby increased processing time for all requests for service. Ultimately, the user felt the impacts by not only having to provide more detailed technical information, but also having to develop and document it much earlier.²⁷ In a June 1983 memorandum, the Director of the Defense Communications Agency (DCA) summarized the additional impacts of Computer II five months after its implementation. "In a word, our military communicators who do the C³ work supporting our CINCs, combat commanders, and support forces are having an extremely difficult time getting their requirements met."²⁸ He further cited three principal impacts:

- *Growing pains in the CPE component.* Inaccurate inventory lists, slower technician response, some defective and/or incomplete equipment, late deliveries, nonstocking of some essential items and longer lead times.
- *New policies and confusion in the exchange component.* Delayed deliveries, confusion over installation responsibilities, loss of some temporary services, and decreased responsiveness.
- *Increased costs of services in the CPE and exchange components.* Reclassification of some equipment into more expensive categories, elimination of some leasing options, and extended leasing periods.²⁹

In short, for Defense, Computer II meant reduced responsiveness to users and more work for managers. But, perhaps fortuitously, the impacts of Computer II signalled the coming of even tougher consequences just a year later.

The implementation of Computer II spelled additional trouble for users of emergency services who could ill afford the delays inherent

in doing business with more than one supplier. Presidential communications were also jeopardized, particularly during trips. In the two years between the announcement and implementation of Computer II, the National Communications System (NCS) and the Defense Communications Agency developed proposed legislation giving the President sweeping authority for ensuring prompt provision of required telecommunications "to avert public peril or disaster or to ensure the continuity of telecommunications essential to the national defense and security."³⁰ Enactment of such legislation would have essentially exempted strategic telecommunications from the provisions of Computer II. Moreover, it would have enabled both Defense and most NCS affiliates to avoid the severe impacts of the *US v. AT&T* settlement. However, these fond hopes faded when the legislation died in the 97th Congress.

Congressional inaction prompted a new initiative in the fall of 1982. AT&T petitioned the Federal Communications Commission for waiver of Computer II's provisions when "necessary to meet critical national security and emergency preparedness"³¹ requirements. Supported strongly by the Department of Defense, the Nuclear Regulatory Agency, and seven NCS member agencies, the proposed waiver filed on 5 January 1983, was limited to telecommunications required for disasters, emergencies, and crisis situations that either had the inherent recognition of Federal restoration priority recognized by the Federal Communications Commission or could be justified for sole source procurement under existing Federal regulations. The provisions of the waiver were also limited to the period between the date of its approval and implementation of the *US v. AT&T* settlement. Although the proposal was opposed by AT&T's competitors and only lukewarmly supported by the Federal Emergency Management Agency,³² the Federal Communications Commission ruled favorably on 12 April 1983.³³ For emergencies in 1983, Defense and other government agencies could still rely on Theodore Vail's "one system."

Essentially silent on the issue since 1934, Congress has allowed others to move national telecommunications away from a tightly regulated, almost monopolistic utility toward a more competitive, less regulated marketplace. Such a situation elicits the question, "Who's in charge?" That's what Colonel Robert A. Reinman, US Air Force, asked in his 1982 monograph after his research revealed that development of a comprehensive policy for national emergency telecommunications has been and continues to be crippled by fragmentation of responsibility within the executive branch.³⁴ Given no legislation to bring national policy into sequence with technological progress, the Executive unleashed its antitrust watchdog and forced the issue in the Federal courtroom.

V

THE ANTITRUST SUIT A CLASSIC COMPROMISE

As remarkable a resolution to a major competitive controversy as the antitrust laws have produced. . . . There has never been an institutional change which approaches its magnitude and its implications.

Philip L. Veveer, former Department of Justice lawyer, made this assessment of the *US v. AT&T* settlement, writing for the *Federal Bar Journal* in November 1982. Eight years before, he had filed the original suit.

The business world was stunned by both AT&T's willingness to agree to a settlement and the enormous consequences it entailed. The world's largest corporation must divest itself of more than three-quarters of its assets and the source of almost half of its annual revenues. It would be the most massive structural change ever undertaken by an American corporation.

The actual settlement and its attendant terms and conditions were approved in the modification of final judgment issued by Judge Harold H. Greene of the US District Court for the District of Columbia on 24 August 1982. Legally, the modification of final judgment changes rather dramatically the conditions of the final judgment issued 26 years earlier—the 1956 Consent Decree. During the seven months between announcement of the proposed settlement and issuance of the judgment, Judge Greene placed himself in the role of guardian of the public interest. Opting to invoke provisions of law that enable review and comment by interested parties, the Judge provided a public forum for airing the multiple implications of the proposed settlement. Then, he ob-

tained consensus between the plaintiff and defendant for substantive revisions to the agreement and a timetable for execution, retaining the prerogative to approve each step of the implementation process.

The bell now tolls for the American institution it has symbolized for more than a century. By 1 January 1984, AT&T will cut itself away from 22 Associated Companies, thereby exchanging the monopolistic shield for the competitive saber.

This chapter explores the roots of the antitrust suit, describes the Defense Department's involvement, provides insight into events shaping the final settlement, and outlines the conditions imposed by the modification of final judgment. It chronicles the events leading to a major shift in American telecommunications policy whose repercussions will be felt for the remainder of this century.

POLAR PUBLIC INTEREST

In his 11 August 1982 *Opinion*, Judge Greene concluded that "the divestiture from AT&T of companies providing local telephone service is in the public interest."¹ If nothing else, the Judge was courageous. His subjective judgment raised an enduring, perhaps unanswerable, question—just what is "in the public interest?"

There had been no public outcry about outlandish costs of Ma Bell's services. Americans got the benefits of the world's best telecommunications system. They could call almost anyone, anytime, anywhere, and periodic cost increases were a small price to pay. The national network served well, sustaining national security and defense, and contributing measurably to peace and prosperity. Clearly, "the telephone company" served "in the public interest" if any corporate entity ever did.

But Adam Smith warned us in *The Wealth of Nations*: "It always is and must be the interest of the great body of the people to buy whatever they want of those who sell it cheapest."² Exercising that economic principle is impossible when a commodity is offered by only one seller. Few living Americans have enjoyed any freedom in choosing a telephone company. Like electricity, telephone service has been a necessity—a fixed entity—in corporate overhead expenses and family budgets. But, during the past two decades, Americans have seen that better can be cheaper. They watched products like radios, televisions, stereos, calculators, and countless others become increasingly affordable while also becoming substantially more capable. They concluded that when control is concentrated in a single source, the controller has little incentive to make the product better. Such a judgment can sound harsh when reviewing the enormous contributions of Ma Bell to the

nation, but critics can still speculate on how much more impressive those achievements might have been if competition had existed. It is tempting to believe that increased competition in telecommunications will accelerate the pace of technology and reduce the costs of service. If so, such benefits are clearly "in the public interest."

The basic question facing the court was whether AT&T had violated antitrust laws. The competition had no doubts.

ALLEGED MONOPOLY ABUSES

"Mr. McGowan is not exaggerating,"³ said Orville Wright, President of Microwave Communications, Incorporated (MCI), when asked about the validity of MCI Chairman of the Board William McGowan's allegations of AT&T's "wholesale violations of the antitrust laws to the detriment of many competitors and the public."⁴ Both McGowan and Wright feel strongly that AT&T has abused its privileged position as the dominant telecommunications carrier. Having won a major antitrust victory against AT&T plus some favorable FCC decisions which AT&T opposed, MCI sees AT&T as Goliath and itself as David among the other Israelites. In speeches and interviews, McGowan conveys his conviction that AT&T uses the Associated Companies "as weapons to cover up their inability to compete."⁵ In one interview record, he enumerates the anticompetitive actions which, in his view, form the basis for the Department of Justice's 1974 suit against AT&T:

The message from Bell to its subsidiaries has always been obvious.

1. Don't interconnect with MCI at all.
2. When the FCC and the courts say we must interconnect, give MCI lousy service and facilities to restrain their growth.
3. Overcharge MCI at every step of the way to obscure their greater efficiency. . . .

[This settlement] means an end to the 22-digit dialing which discourages our customers. It ends our lack of access to customers with rotary-dial phones. . . .

They've used the local exchange to keep competition at bay.⁶

Public accusations like this one translate into less inflammatory legalese in the courtroom and FCC hearings where MCI alleges that AT&T and its Associated Companies "have engaged in a concerted course of conduct in violation of the [Communications Act of 1934] to impose upon MCI charges for local exchange service that are unjust and unreasonably discriminatory."⁷ The leaders of MCI believe that Ma Bell treats

them purely as a subscriber rather than a common carrier and charges them a disproportionate fee for connection to Bell facilities. MCI has contended successfully that it should be able to offer equivalent service from any type phone and that subscribers should be able to gain access by dialing an equal number of digits. Because Ma Bell owned the Associated Companies, she has been able to prevent MCI from having equal access.⁸ The MCI position is representative of that of all non-Bell carriers serving the long-distance component of the network.

The accusation of thwarting interchange competition was but one of several aimed at Ma Bell. Because of AT&T's vertically integrated structure, Long Lines and the Associated Companies were supplied equipment by Western Electric Company under "license contracts." AT&T's competitors alleged that such arrangements precluded the benefits of competition from other suppliers and thereby resulted in the Associated Companies' paying more for the equipment than necessary. Logically, if that is true, AT&T's subscriber rates, even though regulated, may have been higher than necessary.⁹

Another allegation is that AT&T routinely engaged in predatory pricing wherein the price of one service is reduced below actual cost and the price of another is increased to compensate. Most often, this allegation was directed at higher than necessary long-distance rates. One congressional staff attorney estimated that the subsidy of local rates from long-distance revenues amounts to \$5 to \$7 per month for *each* American subscriber.¹⁰

The same individual also estimated that local subscribers' fees are subsidized another \$2-\$3 per month from "Yellow Pages" revenues.¹¹ But, the reverse of such practices is revealed in yet another allegation against AT&T, summarized in *The Case for Divestiture of AT&T*, published in 1981 by a coalition of companies called "Fair Opportunities for Competition in the United States (FOCUS)":

Because some but not all of AT&T's undertakings are subject to rate of return regulation, AT&T has an incentive to allocate costs to its regulated networks that, in the absence of those regulated activities, would be allocated to unregulated activities. Costs diverted to the regulated activities ordinarily increase the revenues permitted to be earned from the networks in order to achieve the allowed rate of return, thereby increasing AT&T's firm-wide profits.

Once costs have been diverted away from the unregulated sector, AT&T has a choice. It can effectuate a double recovery of those costs (once in the regulated and once in the unregulated markets) simply by holding its price in the unregulated markets to the levels

set by its independent competitors. Those competitors must sell at prices sufficient to recover their costs which, unlike AT&T's, have not been diverted and recovered through a regulated subsidiary.

This strategy results in needless rate increases for regulated offerings. The excess revenues resulting from such double cost recoveries can be used to increase the profitability of unregulated undertakings. Even inefficient unregulated undertakings can become profitable where portions of their costs can be allocated to, and subsidized by, regulated activities. Any increased profits from unregulated activities increase AT&T's firm-wide profits, since there is no profit or revenue ceiling on unregulated activities.¹²

The foregoing are but a reflection of the numerous, repeated allegations against AT&T in the Federal Communications Commission, the courts, and Congress over the past 15 years. Moreover, other companies allege that competitive efforts were met with full resistance at every turn by AT&T's awesome power, embodied in her vertically integrated corporate structure.

The repeated allegations that AT&T blocked competition were given credence by the Department of Justice in November 1974, when *US v. AT&T* was filed in the US District Court for the District of Columbia. Civil Action Number 74-1698, *United States versus AT&T, Western Electric and Bell Telephone Laboratories*, included the following alleged violations in the *Complaint*:

For many years past and continuing up to and including the date of the filing of this complaint, the defendants and co-conspirators have been engaged in an unlawful combination and conspiracy to monopolize, and the defendants have attempted to monopolize and have monopolized, the aforesaid interstate trade and commerce in telecommunications service, and submarkets thereof, and telecommunications equipment, and submarkets thereof, in violation of Section 2 of the Sherman Act. Defendants are continuing and will continue these violations unless the relief hereinafter prayed for is granted.

The aforesaid combination and conspiracy to monopolize has consisted of a continuing agreement and concert of action among the defendants and co-conspirators, the substantial terms of which have been and are:

- (a) That AT&T shall achieve and maintain control over the operations and policies of Western Electric, Bell Laboratories and the Bell Operating Companies;
- (b) That the defendant's and co-conspirators shall attempt to pre-

vent, restrict and eliminate competition from other telecommunications common carriers;

(c) That the defendants and co-conspirators shall attempt to prevent, restrict and eliminate competition from private telecommunications systems;

(d) That Western Electric shall supply the telecommunications equipment requirements of the Bell System;

(e) That defendants and co-conspirators shall attempt to prevent, restrict and eliminate competition from other manufacturers and suppliers of telecommunications equipment.¹³

Framed in language that reflected AT&T's separate elements engaged perpetually in a collective conspiracy, the Department of Justice's brief enumerated three "effects" of these alleged violations of antitrust law:

Defendants have achieved and maintained a monopoly of telecommunications service, and submarkets thereof, and telecommunications equipment, and submarkets thereof, in the United States.

Actual and potential competition in telecommunications service, and submarkets thereof, and telecommunications equipment, and submarkets thereof, has been restrained and eliminated;

Purchasers of telecommunications service and telecommunications equipment have been denied the benefits of a free and competitive market.¹⁴

More than seven years would pass before a decision came. Six years were consumed in a variety of legal maneuvers. Then, during the transition period prior to President Reagan's inauguration, the parties to the suit initiated discussions for a possible settlement. But, these talks broke off abruptly on 23 February 1981, when Department of Justice lawyers advised Judge Greene that Justice could not meet the court's deadline of 4 March 1981 with an approved settlement. The Department of Justice had already secured a continuation of the recess because the new principals in Justice had not yet determined who among the new Reagan appointees would be responsible for the *US v. AT&T* suit.¹⁵ While the Department of Justice was in transition, from across the Potomac, the Pentagon spoke.

POSITION OF DEFENSE

A day or two before the Department of Justice informed the Judge that Justice could not meet the agreement deadline, the new Secretary

of Defense, Caspar Weinberger, sent a letter to the new Attorney General, William French Smith. The 21 February 1981 letter contained these weighty messages:

The purpose of this letter is to express the deep concern which the Department of Defense feels over the reports of the proposed settlement of the government's old antitrust suit against the American Telephone and Telegraph Company. . . .

Our concern is based upon the fact that a great deal of the current capability for communications command and control of our strategic weapons depends upon the continued existence of the only communications network in the United States capable of providing the services required. . . .

The Department of Defense recommends very strongly that the Department of Justice not require or accept any divestiture that would have the effect of interfering with or disrupting any part of the existing communications facilities or network of the American Telephone and Telegraph Company that are essential to defense command and control.¹⁶

Reports vary about the effects of the Weinberger letter at the Department of Justice. The new Justice team was still not fully staffed, and both the Attorney General and the Deputy Attorney General were required to disassociate themselves from *US v. AT&T* because of past affiliations with AT&T. The Secretary of Defense had asked for an opportunity for discourse among Justice lawyers and the attorneys and communications experts from Defense. Mr. J. Randolph MacPherson, Regulatory Counsel for the Defense Communications Agency (DCA), recalls that after the letter was sent to the Attorney General, "there was a void, almost a vacuum, between Defense and Justice until the Secretary [Weinberger] testified before the Senate Armed Services Committee."¹⁷ Indeed, Secretary Weinberger's response to Senator Strom Thurmond's fears about the inability "to move data around the battlefield and in the air,"¹⁸ reflected an even stronger view by Defense:

I agree fully with you on that, and I have done one thing initially which seems very essential to me. *The American Telephone & Telegraph network is the most important communications net we have to service our strategic systems in this country. Because of the discussions I have had concerning the effect of the Department of Justice suit that would break up part of the network, I have written to the Attorney General and urged very strongly that the suit be dismissed, recognizing all of the problems that might cause and because of the fact it seems to me essential that we keep together*

this one communications network we now have and have to rely on [emphasis added].¹⁹

Upon learning of Secretary Weinberger's Senate testimony, newly appointed Assistant Attorney General William F. Baxter, head of the Antitrust Division and the principal Federal official in the AT&T antitrust suit, promptly attempted to contact the Secretary. In Mr. Weinberger's absence, Deputy Secretary of Defense Frank C. Carlucci reaffirmed the Defense Secretary's position that the suit be dropped and confirmed that oral statement in a brief letter to Baxter the same day, 8 April 1981:

With reference to our telephone conversation today, this is to advise you that because the American Telephone and Telegraph network is the most important communications net we have to serve our strategic systems within the United States, severe problems will confront the Department of Defense if this network is broken up. Accordingly, it is the position of the Secretary of Defense that the pending suit against the American Telephone and Telegraph Company be dismissed.²⁰

Assistant Attorney General Baxter held a press conference the next day, 9 April 1981. When the Defense Secretary's recommendation for dismissal was surfaced by reporters, Mr. Baxter stated that he would take the Defense position seriously, "but I do not intend to fold up my tent and go away because the Department of Defense expresses concern."²¹ Then, under rapid-fire questioning about the historic stand of the Department of Defense against breaking up AT&T, Baxter confessed lack of awareness of the 21 February 1981 Weinberger letter and the Defense position.²²

The next day, 10 April 1981, apparently after reviewing his comments, Baxter released a public statement revealing his recent interaction with Deputy Secretary Carlucci and reflecting new-found concern about the Defense view:

The Justice Department is interested in vigorous enforcement of the antitrust laws. The Department of Defense is interested in maintaining maximum integrity and efficiency in the nation's defense communications network.

I think it is entirely possible to satisfy both interests without conflict. In any case, the concerns of the Department of Defense will be fully taken into account in connection with any divestiture order that the Department of Justice might seek in the case.²³

But, however hopeful this Justice-Defense interchange seemed at the time, the strong assertion of Defense that the suit must be dismissed in the interest of effective national defense was not sufficiently convincing to alter the course of Justice. Indeed, despite his concession that Defense views would be considered, Assistant Attorney General Baxter made headlines nationwide when he told the press he intended "to litigate it to the eyeballs."²⁴

FIRST STRIKE BY DEFENSE

Meanwhile, in a scurrying attempt to influence Justice's views, a small group of lawyers and telecommunications staff officials in DCA and the Office of the Secretary of Defense held a series of meetings to develop a formal Defense position. Armed with the then current Justice position in the case, and alternative scenarios, which included divesting AT&T's Associated Companies, the group pieced together a comprehensive assessment with the help of AT&T and other companies. Its strong language reflected chagrin at the Justice Department's attitude. Near the end of the working group's report, these sentences were included: "DOD must conclude that the Justice Department does not seriously seek to address national security/emergency preparedness issues in this litigation. Instead, it is apparent that [Department of Justice] will accept this study but is unlikely to actually use it."²⁵

It is unfortunate that grounds existed for such perceptions, particularly because this 30 June 1981 Defense Department position clearly articulated some valid arguments. Indeed, irrespective of the impressions gleaned from dealing with Department of Justice lawyers in 1981, the hastily developed DCA product had a far more substantial influence on the settlement of *US v. AT&T* than was expected. The significant points raised included these excerpts:

DOD can unequivocally state that divestiture . . . would cause substantial harm to national defense and security and emergency preparedness telecommunications [because it] would substantially reduce, or eliminate entirely the incentives . . . to engage in that prior joint network planning and preparation [necessary] to conduct centralized network management . . . No contractual arrangements can be made to overcome the resulting severe degradation of timely response capability which currently exists.

From our perspective, the most critical element . . . has been the ability of the Government to rely upon the Bell System, as a regulated communications monopoly, to provide the required planning, design, standards, operations and maintenance, reconstitution, and

overall network management necessary to assure a high quality, interoperable, redundant, credible, and rapid telecommunications response to all types of emergencies or disasters.

The splitting of the Bell System Operating Companies into one or more completely separate entities with no provision allowing, encouraging, and mandating and enforcing their participation in the complete network planning system would have the effect of intentionally ignoring the vast bulk of the network users and contributors. . . .

The Defense Department totally disagrees that divestiture would have no adverse effect on the Nation's ability to rely upon the nationwide telecommunications network. Instead, we believe that it would have a serious short-term effect, and a lethal long-term effect, since *effective* network planning would eventually become virtually non-existent [emphasis in original].²⁶

Talk about settlement waned while the Defense impact was being developed, and it died completely by the time the position was transmitted to the Department of Justice. However, the position of Defense received more attention from Judge Greene than was anticipated by Justice and Defense lawyers as a result of an unexpected development. During AT&T's presentation to the court, AT&T's lawyers produced a surprise—a copy of the 30 June 1981 Defense Department position paper prepared for Justice—for introduction as an evidentiary exhibit. Initially, Judge Greene was sharply critical of Defense for interacting with the defendant. But, once he had reviewed the document thoroughly and held a separate hearing on its relevance, he concluded that it represented the views traditionally held by Defense regarding AT&T and permitted its introduction.²⁷

The trial continued with occasional recesses until 31 December 1981, when the Department of Justice announced that discussions about a possible settlement of the AT&T suit had resumed.

PROPOSAL FOR SETTLEMENT

On 8 January 1982, reporters gathered at the National Press Club in Washington, DC, for the joint announcement by Assistant Attorney General Baxter and AT&T's Chairman of the Board and Chief Executive Officer, Charles L. Brown, about the landmark settlement of the *US v. AT&T* antitrust suit. The announcement highlighted the keystone of the provisional settlement—the complete divestiture of the 22 Associated Companies that AT&T controlled through either full or majority ownership of stock. Mr. Baxter termed the settlement "very good," one that "completely fulfills the objectives the antitrust division had been

pursuing."²⁸ Mr. Brown called the agreement "a historic decision" and added: "I believe we have chosen the right course, although clearly it was not the solution we sought."²⁹

Indeed, the solution sought by AT&T was the status quo, keeping the corporate empire intact. The Department of Justice moved well away from the pole of "litigating it to the eyeballs" to reach the historic compromise. Two bargains were made. First, Justice no longer pressed for AT&T's divestiture of Western Electric Company and Bell Telephone Laboratories since AT&T agreed to divest the 22 Associated Companies. In terms of both the historic stand of the Federal government and the strength of the Justice Department's case, such a shattering change was entirely possible had the trial continued. Second, Justice agreed to modify the provisions of the 1956 Consent Decree to lift the restrictions it imposed on the types of services and markets AT&T could enter. The Federal government had unharnessed Ma Bell, allowing her to enter the lucrative, rapidly growing computer and digital telecommunications fields.

Although both parties had reason to claim victory, and perhaps admit at least some defeat, the settlement was facilitated by recognition that the seven-year case had dragged on too long. Moreover, the parties had spent an estimated \$365 million in legal costs since the trial began.³⁰ And, each had reason for concern that a Judge who assumed the role of guardian of the public interest just might find evidential grounds for ruling in favor of either one or the other. In short, settlement seemed the best course to take for both parties.

The settlement agreement proposed would vacate the 1956 Consent Decree, replacing it with wholly new provisions:

- AT&T's 22 Associated Companies, termed "Bell operating companies (BOCs)," were to be divested, within 18 months after court approval, as wholly separate business entities, forever independent of AT&T, without binding license and supply contracts, and fully capable technically, financially, and otherwise, of operating alone.
- The Bell operating companies were to be established as purely "natural monopolies," situated between the customer premise equipment (CPE) and long-distance components, serving solely as interconnectors of subscribers with each other and with "inter-exchange" carriers providing long-distance service, only within the exchange component.

- The Bell operating companies were to furnish their local subscribers with access to any interexchange carrier completely equal in type, quality, and price, under regulated tariffs.
- The Bell operating companies were to be prohibited from operating in the long-distance component, providing information services not directly related to telecommunications, manufacturing products, and selling customer premise equipment (except under emergency conditions).
- The Bell operating companies were to be prohibited from discriminating between or among competing entities in procuring required equipment and other goods and services, establishing and disseminating technical standards, pricing, and charges for services offered, and provisioning existing or new facilities necessary to fulfill prescribed functions.³¹

No other provision dictated or restricted the BOCs' organization and ownership. They could become one company, 22 companies, or arrange themselves in any other way.

Focused largely on the Bell operating companies, the proposed settlement masked other significant implications. Because it was designed to replace the 1956 Consent Decree, the proposed agreement contained very few restrictions on AT&T's remaining entities. Having lost her local exchange service business—three-quarters of her assets—Ma Bell had been soundly stripped. But, she enjoyed several offsetting benefits. She would be freed from her 26 years of confinement to the telecommunications "pipeline" role. She would be constrained only by the Computer II requirement for marketing CP equipment through a fully separate subsidiary, and plans for that new "Baby Bell" were well underway. Unlike her BOC orphans, Ma Bell could not only manufacture equipment but also expand her research, development, and sales efforts toward new product and service horizons. Her dominance of the long-distance component was assured for many years, and she would no longer have to subsidize the costs of local service. She was the beneficiary of the lucrative "Yellow Pages," the largest publishing business in the nation, and this income no longer had to be shared. But, amidst these rosy prospects, the proposed settlement contained provisions that extracted more flesh from Ma Bell's corporate body.

One of them was the major provision in the proposed settlement which reflected partial recognition of Defense concerns about network integrity. Although a far cry from what Defense would like to have seen,

the proposed agreement offered a glimmer of hope for preserving engineering and technical standards and meeting some national security and emergency preparedness requirements. Although combined into a single provision, two distinct terms of the proposed settlement were to be implemented under different conditions.

The first was optional for AT&T: "Notwithstanding separation of ownership, the BOCs *may* support and share the costs of a centralized organization for the provision of engineering, administrative, and other services which can most effectively be provided for on a centralized basis [emphasis added]." ³² Now, AT&T had the authority and opportunity not only to determine how the Bell operating companies would be organized, but also to sort out the most efficient method for fragmenting the massive, intertwined support base that had been concretely centralized for decades. This option made AT&T the architect of the destiny of both the operating companies and the parent company from the *supporting*, or overhead, standpoint. It also provided built-in antitrust protection for whatever organizational choices were made. From the Defense perspective this provision, although left to AT&T, included the implicit assumption that standardization in the network would be sustained, particularly inasmuch as the proposed agreement also prohibited the Bell operating companies from discriminating between AT&T and its competitors in establishing and disseminating technical and interconnection standards. ³³ Clearly, the proposed agreement did *not* mandate continuation of Bell's traditional role in fulfilling these functions. Instead, it implied that the operating companies have responsibility for them. At best, continued standardization of the network was mentioned, albeit weakly.

The second provision was more on target—relevant to the needs repeatedly voiced by Defense and mandated for AT&T's implementation. "The BOCs *shall* provide, through a centralized organization, a single point of contact (SPOC) for coordination of BOCs to meet the requirements of national security and emergency preparedness [emphasis added]." ³⁴ Although the proposed agreement directed the SPOC's formation, it did not spell out its functions, authority, size, and source of revenue. The proposed agreement included more than four pages of definitions, but neither "national security" nor "emergency preparedness" nor "emergency" was included in this glossary. Defense could discern that the SPOC was a BOC responsibility and that it would be centralized. The absence of words in the proposed settlement describing the nature of this new entity left it open to speculation. Since the words were affiliated physically with the optional BOC centralized staff, the implication could be read that the SPOC was expected to be

an affiliate of the centralized staff if such a staff entity was formed. The proposed agreement did not fail to make provisions for national defense telecommunications requirements. Rather, it failed to provide information substantive enough to provide even minimum assurance that national security and emergency preparedness needs would be met.

Other provisions of the proposed agreement were largely administrative guards, but some of these were significant with respect to future operations:

- AT&T, Western Electric, and Bell Laboratories were required to provide "priority" support to the Bell operating companies in implementing the agreement through 31 August 1987.
- The Bell operating companies were required to make equal access available to all interchange carriers by 1 September 1984, to provide access at larger exchange offices (switches) by 1 September 1985, and to *all* exchange offices by 1 September 1986.
- Sharing of facilities between AT&T and the Bell operating companies was permitted, but only under "lease back" arrangements after ownership was determined.
- AT&T was required to submit to the Department of Justice a reorganization plan within six months of approval of the agreement. The same requirement was imposed on the Bell operating companies, but their submissions were due within six months of implementation of the agreement.³⁵

Only 22 of Bell's 24 Associated Companies were identified as Bell operating companies in the agreement. The other two—Cincinnati Bell and Southern New England Bell—are AT&T exchange component affiliates in which AT&T does not hold more than 50 percent of the stock.³⁶ There was no restriction on continued affiliation, but a move by AT&T toward majority ownership of these companies would undoubtedly raise Department of Justice objections.

The closing provision of the proposed agreement stipulated that the court approving it would retain jurisdiction and that all parties subject to the agreement, including the Bell operating companies, could seek further orders or directions or modifications at any time relevant to implementation and enforcement.³⁷ This standard stipulation became more significant than it sounded at the time.

DEBATE IN PUBLIC

In arriving at the proposed settlement, the two parties may have forgotten Judge Greene's concern for "the public interest."

"C. L. Brown is a negotiator who favors the word *consensus*" (emphasis in original) said *Bell Telephone Magazine* in its first 1982 edition covering the proposed settlement agreement. In this revealing interview, AT&T Chairman Brown ventured the view that "it wasn't really until the new Administration came in that there was a completely observable shift in preference for divestiture on the horizontal side."³⁸ In other words, Brown perceived that the Department of Justice backed away from insisting on vertical divestiture, which would have included Western Electric and Bell Laboratories. In any case, Mr. Brown cut his potential losses adeptly. He negotiated far more successfully than seemed possible given the evidence presented by Justice and the nature of legislation pending at the time.

On the other side, Assistant Attorney General Baxter also had reason to be content. Described by the *New York Times* as a conservative economist who "practices the 'efficiency' principles that he preaches,"³⁹ Baxter responded with an unequivocal "yes" when a reporter asked if the proposed settlement effectively ended the seven-year-old suit. He elaborated, saying that the agreement was in accord with the spirit and intent of Federal law governing antitrust settlements, and implying that all that Judge Greene was expected to do was to approve the agreement with his signature.⁴⁰

The Judge surprised Mr. Baxter. He invoked the Tunney Act, a law empowering the court to serve as an independent check on the government's antitrust actions and determine if the provisions of the settlement are in the public interest. Within a few days, the agreement was back in Judge Greene's court where the carefully crafted compromise would be modified substantially.⁴¹

Amidst a flurry of special hearings on the Hill and intense activity at the Federal Communications Commission, Judge Greene forced the proposed settlement into the public arena. His decision initiated a lengthy process involving comments from interested parties and responses thereto. The process began on 17 February 1982, when Justice filed the *Competitive Impact Statement*, which provided sufficient information for interested parties to develop and submit comments for review by the court.⁴²

What the Tunney Act proceedings did was force clarification by the negotiating parties. Consequently, the divestiture and its probable impacts received widespread press coverage. Parties directly affected,

such as Bell subscribers, Independent Telephone Companies, newspapers, television cable vendors, and AT&T's competitors, reviewed the settlement and speculated about its consequences. And they took advantage of the invitation to influence the Judge's decision. More than 600 separate comments, including more than 8,500 pages, were filed.⁴³

SECOND STRIKE BY DEFENSE

Defense concerns were conspicuous by their absence in Justice's *Competitive Impact Statement*. The conditions under which the Bell operating companies could provide customer premise equipment were "confined to disaster situations," and limited to restoral of service and repair of equipment when time constraints precluded competitive acquisition. For military and public safety agencies the operating companies could furnish CP equipment "where the independent supply . . . is not practical."⁴⁴ They could also participate in a "centralized coordinating body" which might be established by the communications industry.⁴⁵

The Defense response was succinct and articulate, reflecting reluctant acceptance of the settlement. Published on 20 April 1982, it left no room for compromise on the basic issues. Calling "emergency response capability" the "paramount concern" for "national defense and security and emergency preparedness," Defense cited network fragmentation as the basis of its position. Network integrity—centrally directed engineering and development of technical standards—could be degraded in a fragmented industry. "End-to-end" management, which enabled responsive installation, rerouting, and restoration, would disappear. The proposed settlement did not provide sufficient assurance that the most critical needs of the nation would be met during emergencies, and it failed to specify both resources and authority for the SPOC. Defense questioned the responsiveness of an entity so vaguely described, especially since the remnants of AT&T were not required to meet Defense needs. The proposed agreement failed to delineate the meaning of "emergency" and related terms, defined customer premise equipment too vaguely to apply effectively to military installations, and contained provisions that potentially conflicted with other Federal laws and policies. In short, Defense argued, the proposed settlement appeared to degrade national security and these issues had to be clarified.⁴⁶ Defense closed out its impact statement with reminders to Justice and Judge Greene that settlement would be costly for the government in terms of both telecommunications reliability and the additional manpower and money required to absorb the workload that AT&T had performed for many years.⁴⁷

The Department of Justice had unmistakable messages from the Pentagon that proceeding with the settlement would jeopardize national defense and enlarge the bureaucracy. Defense was in the awkward position of convincing the lawyers from Justice that, in their zeal to achieve a partial victory, they were damaging the capabilities of their clients—the nation and the people. Surely, if nothing else, effective national defense was “in the public interest.”

Yet, these arguments seemed to fall on deaf ears at Justice. National security and emergency preparedness were limited to about a third of one legal-sized page in the Justice Department's 142-page response:

The Department also received a submission from the Department of Defense setting out that agency's concerns that the modification's provisions be implemented in a manner that will maximize the responsiveness of the industry to national security and emergency preparedness interests. *Because the Department of Defense is a part of the Plaintiff, the Department will not address the issues raised in its comments in this Response.* The Department of Justice will, however, work closely with the Department of Defense to ensure that its concerns are fully taken into account in the implementation of the modification's various provisions [emphasis added].⁴⁸

Judge Greene, however, took a keener interest in the Defense position. Citing Defense Department concerns as the first of five “special provisions and concerns” in his 176-page *Opinion* of 11 August 1982, the Judge identified three of the impacts expressed by Defense as “legitimate subjects of concern.” All three pertained to the SPOC, matters which the Judge clearly indicated that he would review when AT&T submitted its plan of reorganization:

(1) the lack of requirement in the proposed decree that the Operating Companies commit specific resources to this point of contact; (2) the question of funding and regulatory treatment for this facility; and (3) the degree of authority the facility would possess to instruct the Operating Companies to cooperate in emergency situations, particularly in regard to the assignment to each other of necessary resources.⁴⁹

Beyond these important concessions, the Judge's *Opinion* reflects that Secretary Weinberger's efforts to drop the suit had been neutralized by the actions of his predecessors. Judge Greene described in some detail how former Defense Secretaries Robert A. Lovett and Charles

E. Wilson tried to dissuade Justice from pursuing antitrust actions against AT&T and how one former Attorney General—Herbert Brownell—used Defense Department objections to support his view that “a way ought to be found to get rid of the [1949 antitrust] case.”⁵⁰ Judge Greene also cited evidence that Defense Secretary Wilson’s 10 July 1953 letter to Attorney General Brownell urging Justice to drop the 1949 suit “was actually prepared by AT&T.”⁵¹ Then, in closing his *Opinion*, the Judge returned to these historic examples to address the credibility of both Justice and Defense in dealing with AT&T:

The Court has recounted how AT&T and various departments of the government, in particular the Department of Justice and the Department of Defense, have cooperated since the 1950s in a manner that does not instill confidence that their sole motivation and purpose was the protection of the public interest. . . . In view of that history, and in view of the mandate of the Tunney Act, the Court would be derelict in its duties if it relied upon Department of Justice enforcement alone for the protection of the public interest following the signing of the judgment itself.⁵²

MODIFIED JUDGMENT

Besides the voluminous records reviewed by Judge Greene, media coverage of congressional and FCC hearings and analysis by experts in the private sector could hardly escape his attention. The *Opinion* made two conclusions painfully obvious to both parties: the Judge intended to oversee both the consummation of the agreement and its implementation, and he would ensure that all the resulting actions and consequences were “in the public interest.” In closing, Judge Greene proposed a number of modifications, giving the parties the clear choice of accepting them fully or returning to trial:

- The Bell operating companies would be permitted to provide, but not manufacture, customer premise equipment.
- The operating companies would be permitted to produce “Yellow Pages.”
- AT&T would be forbidden from entering the electronic publishing business using its transmission facilities, except for electronic directory services and existing audio recordings for time, weather, etc., for seven years after approval of the settlement.
- The operating companies that might provide customer billing services for AT&T could do so only if a clear statement was in-

cluded regarding the lack of association between them and AT&T.

- Each new BOC entity must have a debt ratio of about 45 percent upon transfer of ownership from AT&T.
- The court retained jurisdiction over the implementation of the agreement, including approval authority over AT&T's plan of reorganization.⁵³

Judge Greene's modifications reflected his strong concerns for Ma Bell's users. The Judge read the proposed agreement as restricting too severely the opportunities open to the Bell operating companies, and he found ways to keep costs of basic local telephone service down and thereby avert some of the major objections to the settlement. The *New York Times* reacted favorably, citing unanimous acclaim from the financial, business, and public utility communities. One consultant put it this way: "Judge Greene's ruling is designed to make the BOCs independent operating companies as opposed to shells. This is a kind of new breath of life to them. This means they will not have to raise rates as much to get the same rate of return."⁵⁴ The *Washington Post*, the *New York Times*, and the *Wall Street Journal* endorsed the modified agreement, and Congressman Timothy E. Wirth from Colorado, the sponsor of the 1981 bill strongly opposed by AT&T, praised Judge Greene's decision.⁵⁵ Both Justice and AT&T had some reservations, but they weren't major enough to endure returning to the courtroom.

The final order—the *Modification of Final Judgment*—issued on 24 August 1982, was anticlimatic. Its contents had become known through extensive debate in the public arena. When both parties agreed to all of the Judge's modifications, the long trial ended. Besides being the official implementing order for settlement, the most significant aspect of the modification of final judgment was that it established the date the clock started ticking. Within 18 months from that date, the divestiture of AT&T must be accomplished. The first milestone was 24 February 1983, when AT&T submitted its plan of reorganization to Justice, and, as Judge Greene had ordered, the court. Now, as illustrated in figure V-1, AT&T's corporate structure was strikingly different, and it was to change again in August 1983. The network was now totally fragmented as reflected in figure V-2.

Despite the loss of unity in the network which carries its vital information, Defense had gained some ground in this tortuous process. The Judge had sanctioned some of the national defense concerns as "legitimate" and placed the burden on Justice and AT&T to ensure that they

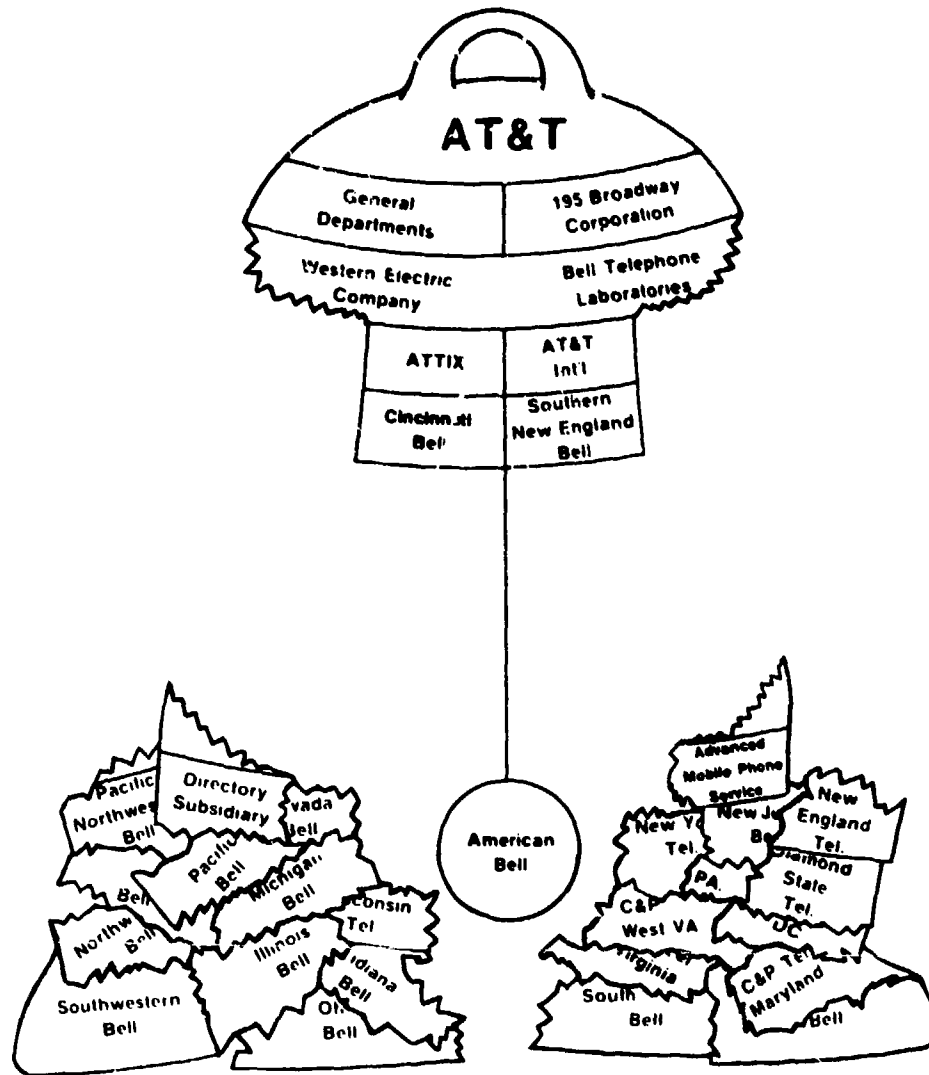


Figure V-1. Impacts of the US v. AT&T Settlement on the AT&T Corporate Structure-1984

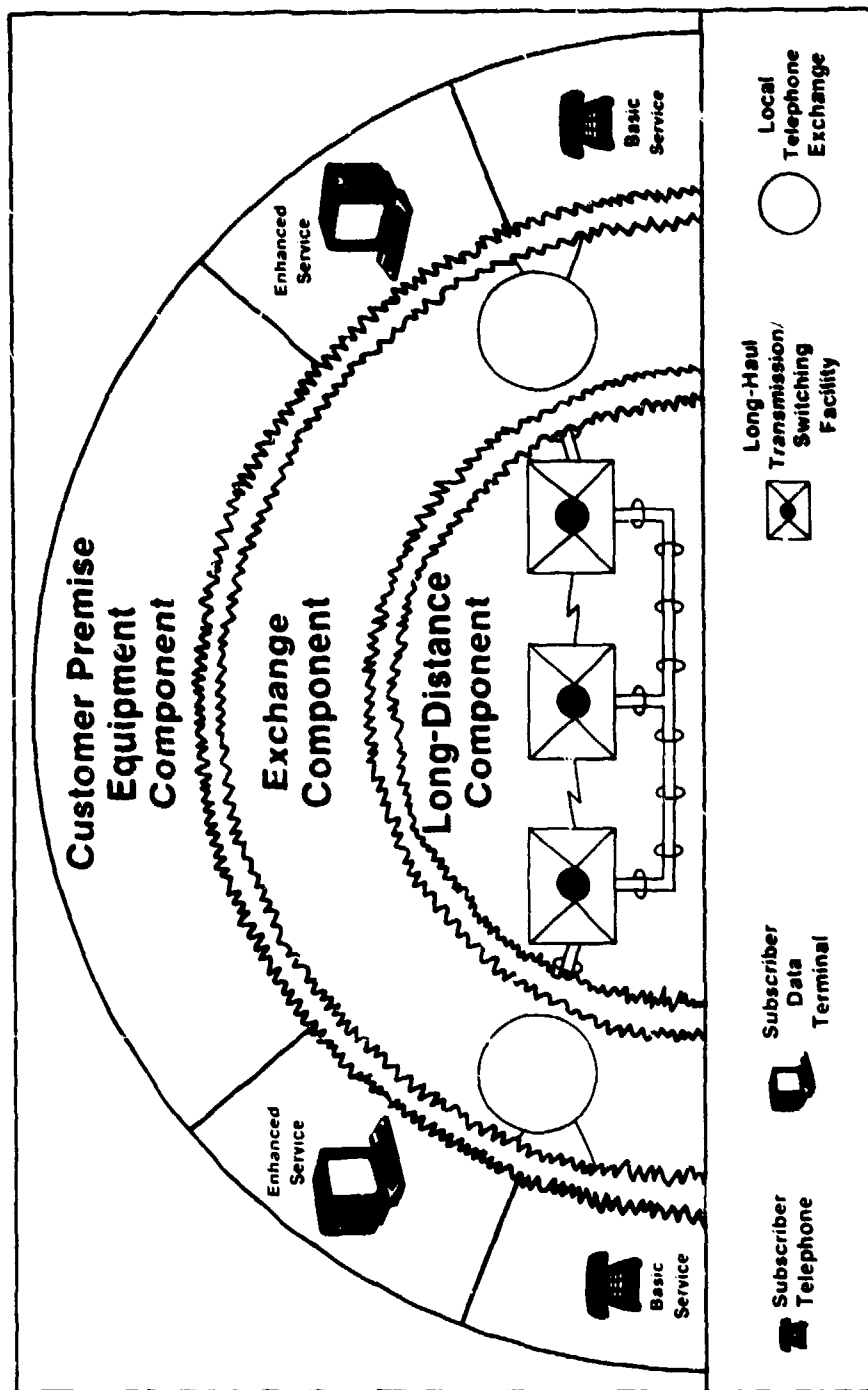


Figure V-2. Impacts of the US v. AT&T Settlement on the National Telecommunications Network-1984

were accommodated in development of AT&T's reorganization plan. Thus, the challenge for Defense at this juncture was to carefully ensure that its interests were served. The task was made easier because AT&T Chairman Brown had made a commitment to the Secretary of Defense that the needs of Defense would be met.⁵⁶

The *US v. AT&T* case was a milestone by almost any standard, but Judge Greene's active role was especially significant in light of the two powerful alternatives that he rejected. The record shows convincing, even compelling reasons for both alternatives—dropping the suit altogether or deciding wholly in favor of the government. Judge Greene sought the optimum middle ground where "the public interest" would be served best. The result was neither guilty nor innocent, but rather a historical compromise that opens a new era for telecommunications. Whether that compromise will work remains to be seen.

VI

THE IMPLEMENTATION PLAN A BLUEPRINT FOR FRAGMENTATION

Ma Bell, if the mythical lady ever truly existed, wouldn't know what to make of it. . . .

That seemingly apt description from the *New York Times* of 9 January 1982, did not recognize the foresight of AT&T executives. Long before the compromise was reached, they were preparing for reorganization. Having begun partial restructuring to comply with the Computer II decision, and having crafted a basic divestiture concept during previous attempts to settle the 1974 litigation, AT&T was able to hit the ground running. Chairman Brown set the goal—complete the reorganization by 1 January 1984. "One-one-eighty-four" became the cadence count for AT&T's march to implementation of the modification of final judgment (MFJ).

Yet, AT&T faced a more extensive restructuring than any undertaken in the Federal government. Even the break-up of the Standard Oil trust in 1911 did not entail a structural change affecting virtually every home and business office in the country. What AT&T had to do is roughly comparable to what the Army would have to do if ordered to make each of its divisions capable of wholly independent operations in both peace and war.

This chapter describes the difficult process of restructuring the world's largest corporation and the changes it creates in the marketplace. AT&T's reorganization effort is literally a blueprint for fragmentation of the national network. The resulting architecture gives rise to new concerns and even more changes as users begin to comprehend the consequences of implementing the divestiture.

GUIDANCE FROM THE TOP

Writing in the *National Journal*, Michael Wines drew this intriguing parallel in describing the gravity of the task facing AT&T during 1982:

In what must have been the most nerve-wracking exercise of a then-young century, a Dutchman named Jan Asscher poised his chisel in 1908 over a 1¼-pound rock, lifted his jeweler's hammer, and deftly delivered a blow. When he finished, the object of his attack—the Cullinan diamond—had been reduced to 105 perfectly faceted, glittering gems. . . .

The object is to cleave Ma Bell into at least two corporate giants, one to compete in the unregulated, high-technology information industry, the other to provide basic regulated telephone service to some 80 percent of the public. . . .

The question now is whether that breakup will produce new corporate gems or a pile of considerably less valuable shards.¹

Some 75 years after Jan Asscher's feat, with hopes for equal success, AT&T began to break up Ma Bell into 24 entities—22 Bell operating companies (BOCs), American Bell, and a new AT&T, each of which must operate almost wholly independently of the others. AT&T Chairman Brown prescribed this approach:

Planning is a symptom of disorder. When the future seems reasonably predictable. . . planning goes by another name: "management." When times are changing, there are planners everywhere. In our current situation *all* of us are planners. . . . We have set about breaking up the Bell System in the same way that we approached the problems in making it work in the past. We are doing it *together* [emphasis in original].²

Strikingly similar to the Pentagon's realignment process, AT&T's reorganization strategy included formation of six study groups, each headed by a BOC president and augmented with task forces. The groups' products were reviewed by an executive body called the BOC Presidents' Study Group. By 19 February 1982, the senior executives announced a "planning model" that grouped the Bell operating companies into seven regions, each of which would serve as a type of holding company "from the standpoint of stock ownership."³ Each operating company retained its identity and service territory as a separate corporation. The regions were designed to be approximately equal in terms of assets, with no corporate linkage between or among them.⁴

REALIGNMENT STUDIES

Against this regional framework, the six AT&T study groups undertook detailed planning to meet the following objectives:

- Establish a corporate structure for the divested companies
- Identify those functions which could best be done on a centralized basis for the prospective exchange companies and the structural arrangements for the provision of those functions
- Identify and analyze human resources and labor relations considerations
- Establish "exchange area" boundaries for the operating companies
- Develop and implement plans for assigning assets between AT&T and the divested companies
- Identify and analyze financial, operational, regulatory, and other issues with respect to access charge tariffs and their implementation⁵

From the outset, the study groups operated under pressure. Internally, the clock was ticking toward a decision on the modification of final judgment. Six months would be the outer limit for planning, and the corporate leadership wanted to beat that deadline. Externally, the plans required approval by Justice, and the Tunney Act requirements meant public scrutiny of every detail. Skepticism about Ma Bell's ability to be objective was increasing, and more than three million stockholders would be affected. But, most significantly, the many more millions of customers represented a constituency holding an image of "the telephone company" that could ill afford to be tarnished as Bell's new entities entered the competitive marketplace.

The Computer II decision was the first major obstacle because it forbade AT&T and the Bell operating companies from selling new customer premise equipment (CPE) for the year prior to divestiture. This meant that while AT&T was still intact, from January 1983 to January 1984, American Bell would market all the new terminal equipment for the Bell System, but after divestiture the Bell operating companies could enter the new CPE market. Although this ruling reduced internal competition, it necessitated a new organization to manage the "embedded base" customer premise equipment, which would exist whenever divestiture was implemented. Lasting only as long as existing CP equipment remained in the inventory, this temporary organization was

described by one AT&T executive as "a wasteful way to have to do business. Having to create an organization that will last only a year or so is tough. People on their way up view the Embedded Base Organization as a terminal assignment."⁶ AT&T has sought FCC approval to eliminate this separate organization by giving American Bell responsibility for embedded equipment, and a favorable ruling is probable.

Division of assets was also difficult. As described in chapter 2, AT&T has focused network engineering on universal service at minimum cost. Bell engineers had developed a single network—more than one *trillion* miles of circuitry consolidated into the minimum essential facilities. Now, each asset had to be evaluated for service as local or long-distance service. Worse yet, values had to be assigned for each asset, because regulatory agencies use these values as one consideration in determining subscriber rates. Mr. L.L. Hendrickson, AT&T's director of strategic planning, called the valuation process an "absolutely impossible" task. Hendrickson told a *Bell Telephone Magazine* writer that "the only practical thing to do" was a statistical sampling approach, validated by spot-checks, that assigned values to types of equipment and subtracted the aggregate from the total assets to arrive at the "book value." State regulators worried about the potential for undervaluing BOC assets, thereby increasing costs of service. They realized that AT&T had considerable incentive to reduce prices for unregulated "enhanced" services while making up the difference by overcharging for regulated "basic" services.⁷

Subdividing human resources was no less complicated. The modification of final judgment specified some of the functions required by the Bell operating companies but left AT&T the option of determining the how and who of allocating personnel to a BOC central staff. Each position added to the BOC segment meant loss of one in AT&T, and decentralization risked a breakdown in corporate continuity. Moreover, the potentially adverse affects on employee morale had to be considered. But, planning strategist Hendrickson articulated AT&T's principal concern in coping with divestiture—black ink at the bottom line:

The allocation of the sales force, for example, "may be the most important factor in determining each entity's near-term financial results." . . . The allocation of software designers at Bell Labs and Western Electric—those "resources who are always in short supply"—could be critical in determining financial results for the new entities in the years 1985 through 1990.⁸

Divestiture also required development of a completely new set of customer tariffs and access charges. Pivotal to financial viability of both

the Bell operating companies and AT&T, these charges require approval by government regulators at both Federal and state levels. This task was particularly difficult because, when planning was underway, the Federal Communications Commission had not yet ruled on how long-distance access charges would be allocated between the users and the providers. Divestiture meant an end to AT&T's subsidy of local rates with long-distance revenues. Without a viable alternative, rates would rise rapidly, leaving the Bell operating companies in a struggle for survival against the wrath of subscribers and state regulators. Bell's monthly subscriber rates, averaged nationwide, include "traffic sensitive" and "nontraffic sensitive" costs, which generally translate into operating and overhead costs, respectively. Costs not sensitive to traffic are those associated with investment in the plant, fixed expenditures incurred irrespective of the extent facilities are used. Traffic sensitive costs, such as charges for long-distance calls, vary with amount of use.⁹

As previously indicated, as much as \$10.00 per month is already credited to the accounts of every telephone subscriber to offset the costs of operating and maintaining the exchange component. During much of 1982, the Federal Communications Commission evaluated four alternatives for resolving this post-divestiture impact, kicking around the same political football that Congress has fumbled repeatedly in attempts to update national telecommunications policy. The cost of service to the basic subscriber, particularly in rural areas, was and remains the major issue associated with divestiture. If telephone charges were allocated based on actual costs per line, all local subscribers would pay much more each month, depending on their proximity to the local exchange. Most likely, before the end of this decade, rates will be based on *measured service*—the amount of time spent in *using* the telephone. But, for now, as the FCC ruling in December 1982 revealed, the shift of costs from the carriers to subscribers will evolve gradually over the next several years. Long-distance carriers will continue to subsidize local service costs through access charges paid to local companies, and each subscriber's monthly bill will include a charge for having access to the long-distance network.¹⁰

Meanwhile, AT&T planners honed the new nationwide structure, a hotly controversial aspect of the reorganization.

PROVISIONAL STRUCTURE

In describing the limits of each BOC's natural monopoly service, Bell planners coined the new term "LATA—Local Access and Transport Area"—which effectively replaced the term "exchange area." Thus, AT&T's plan, submitted 4 October 1982, became known as the "LATA Plan" designed to meet these MFJ criteria:

1. Any such area shall encompass one or more contiguous local exchange areas serving common social, economic, and other purposes even where such configuration transcends municipal or other local governmental boundaries;
2. every point served by a BOC within a State shall be included within an exchange area;
3. no such area which includes part or all of a consolidated statistical area (or a consolidated statistical area, in the case of densely populated States) shall include a substantial part of any other standard metropolitan statistical area (or a consolidated statistical area in the case of densely populated States), unless the Court shall otherwise allow; and
4. except with approval of the Court, no exchange area located in one State shall include any point located within another State.¹¹

The LATA Plan specified that the new term was selected to prevent confusion between "exchange" and "exchange areas" and to make the LATA conform to the traditional meaning of "exchange area," which consists of one or more contiguous local exchanges.¹² As explained in chapter 3, the exchange component of the national network is the domain served by the local telephone company—Bell and Independents. The LATAs fall entirely within that component.

AT&T opted to make the LATA Plan public well in advance of any other substantive reorganization plans. Weeks before its submission to the court, the LATA was introduced by Bell representatives in updating their customers, including the Defense Department. LATA boundary definition began in February 1982 with a view toward separate, early submission, a pivotal part of Bell's strategy for the reorganization. The LATAs not only defined geographic boundaries, but were the baseline for realignment, prescribing critical demarcation points for dividing Bell's corporate assets and employees between the Bell operating companies and the parent company. Having worked for more than five months to almost full agreement with Justice on LATA boundaries, AT&T submitted the LATA Plan to Judge Greene, hoping for an approval that would provide a basis for proceeding. Their plea reflected the pivotal nature of the LATA plan:

The objective of the LATA is that of the decree itself; to separate predominantly local traffic or service from intercity or long distance traffic, and thus to define the exchange function and area of the divested BOCs (which may or may not be subject to competition), as distinguished from the interexchange function to be provided competitively by interexchange carriers.

An explicit and corollary objective of the decree is the financial and technological viability of the BOCs as providers of exchange and exchange access services—a prerequisite to which is the establishment of LATAs which enable the BOCs to perform their functions economically and efficiently.¹³

Attorneys for AT&T secured only a partial victory—a tentative approval, but enough to continue the divestiture planning process.

AT&T's tactics here were revealing. The modification of final judgment had assigned responsibility for prescribing the exchange areas to the Bell operating companies, not AT&T. In unveiling the LATA Plan, AT&T's General Attorney for Antitrust, Jim G. Kilpatric, emphasized that the "LATA proposals are those of the BOCs."¹⁴ Citing the study group structure in which BOC presidents were the principals, the LATA Plan states that the Bell operating companies, which had the principal stake in the action, prescribed the LATAs. The operating companies have the expertise in their "network planners and operators [who] are singularly aware of the serving arrangements and facilities employed in and required for the efficient provision of exchange service" and were therefore the natural parties for designing LATAs which "minimize disruption of service to the public."¹⁵ But, pivotal as they were to division of resources, the LATA boundaries were certainly scrutinized carefully in AT&T's board room.

INDUSTRY REACTIONS

Reactions to AT&T's new LATAs were mixed. Some called them "too big" and others "too small," leading AT&T's John Christensen, of the Long Lines' Government Communications Office, to describe these judgments collectively as the "Goldilocks syndrome." Yet, sizing was significant because the LATA boundaries effectively defined the limits of competition. For example, competitors of AT&T's Long Lines favor larger LATAs because the fewer their number, the less expensive it is to develop means for accessing them. State regulators prefer smaller LATAs because a greater number in each state generate increased revenues through intrastate toll charges. Smaller LATAs also mean competition for inter-LATA traffic within each state, another potential benefit.

Some competitors spoke out. Chairman McGowan of MCI made it clear that LATAs boundaries would not control MCI's offerings. "If they say Reno and Las Vegas are in the same LATA and that it's a local call," he declared, "I'm going to say, 'Bullshit. It's a toll call.'"¹⁶ McGowan precisely defined the importance of the LATA in the nation-

wide network—it is the line that distinguishes an *intraexchange* call from an *interexchange* call.

Satellite Business System's Senior Vice President, William D. English, urged careful consideration of the LATA's size: "Competitors and consumers alike can be harmed if LATA boundaries are set too large, thus making what are really toll-type calls into monopoly intra-LATA traffic. To coin a phrase, we must be on guard that AT&T not use its 'LATAs' to climb on the backs of its subscribers and competitors."¹⁷

Waiter R. Hinchman, a former FCC official now heading his own telecommunications consulting firm near Washington, DC, is a proponent of small LATAs. In his December 1982 article, "Telecommunications for the Future," he accuses the antitrust watchdog of barking rather than biting:

Given its basic pro-competitive charter in general and its recent antitrust action against AT&T in particular, one would expect the Justice Department to be actively promoting such competitive alternatives while at the same time restricting the spread of existing local exchange operations in order to limit their "essential bottleneck" impact on other telecommunications activities and markets. In fact, the exact opposite is occurring. The Justice Department is supporting, if not actively encouraging, AT&T's plans to establish supersized local exchange areas—up to the size of an entire state—within which its divested "local" operating companies will enjoy what will amount to a government-sanctioned monopoly.¹⁸

The determination of LATA boundaries raises another issue—where and how the Independents fit in. The LATA Plan, which includes maps of each geographical area, reflects purely blank spaces where some 1,500 Independents provide service. Yet, it is the LATA that separates local and long-distance service, a point of vital concern to the Independents. Conspicuous by their absence in a plan bringing about major changes in national telecommunications, the Independents are the centerpiece of an even larger issue. Judge Greene and the parties in *US v. AT&T* have sanctioned a settlement affecting only the Bell System. Indeed, jurisdictionally, the limits of AT&T were the limits of the court; legally, the Independents were wholly untouched by the modification of final judgment. Yet, the impacts on them are enormous. This example of policymaking by the judiciary provides a substantial basis for the pleas of those, like Defense officials, who sought broader legislative reform applicable to all providers of telecommunications services. Although a change in policy affecting Ma Bell, like the *US v. AT&T*

settlement, impacts the entire national network, a court judgment cannot mandate counterpart changes in the other industrial entities vital to its effectiveness.

For the Independents, the LATA Plan meant dissolution or revision of long-standing agreements that markedly affect their financial livelihood. But it also meant that the Bell operating companies were soon to be Independents themselves. Now, the Independents and the operating companies had a common interest—preserving their regulated monopoly with steady revenue streams from the interexchange long-distance carriers. The Independents view the modification of final judgment as treating symptoms rather than the disease, and they believe that national telecommunications reform legislation is essential. Within but a few days after release of the LATA Plan, voices of the Independents' executives raised emotions at the 85th annual convention of the US Independent Telephone Association (USITA).

- Paul H. Henson, Chairman of United Telecommunications Incorporated, keynote speaker, said that the AT&T antitrust settlement "leaves unresolved many issues that can be determined by legislation." He emphasized "the continuing need for modernizing the Communications Act with a simple, clear statement of national telecommunications policy."¹⁹
- Theodore F. Brophy, Chairman of GTE, America's largest Independent, advocated formation of a new coalition—the "U.S. Telephone Association," to "assume the responsibility for addressing the urgent need for national telecommunications legislation."²⁰

The LATAs are the manifestations of the monopoly in the national telecommunications network. They place the Bell operating companies *between* the CPE and long-distance components. In a sense, the "middle" of the network has shifted from the long-distance component, creating a regulated monopolistic utility between two increasingly competitive entities. It is where interexchange carriers establish "points of presence" to gain access to the BOCs' subscribers. Prominent among other observers who question the limitations the modification of final judgment and LATA boundaries place on the BOCs' ability to compete is FCC Commissioner Joseph R. Fogarty. He agrees with Consultant Hinchman that building and sanctioning a monopoly in the exchange component denies users the benefits of evolving improvements in local services.²¹ A darker view of the Fogarty concern was voiced by Harry Shooshan, a Washington, DC, communications consultant who once

served as counsel for the House Telecommunications Subcommittee. Shooshan implies that AT&T actively sought the monopoly restrictions on the Bell operating companies "because they eliminate a major competitor to AT&T. AT&T must have winked as they swallowed hard to accept that one."²² He is but one of many knowledgeable professionals who believe that Ma Bell is creating poor orphans in divesting the operating companies, orphans who will require steadily increasing public support in the years ahead.

DEFENSE REACTIONS

Within the Defense Department, responses to the LATA Plan generally reflected broader concerns. Beyond the few cases where a military installation was split or separated from its traditional local communities, no major issues were engendered by the drawing of new boundaries for the exchange component. But, as the first definitive view of the post-divestiture telecommunications geography nationwide, the LATA Plan triggered expression of several potential problems affecting Defense.

General Bennie L. Davis, US Air Force, then Commander in Chief (CINC) of the Strategic Air Command (SAC), was the adamant spokesman for critical strategic users:

Command and control of [strategic] forces requires continuous, total connectivity. SAC is dependent on the nation's telephone system for a large portion of [this] capability. . . . The single manager structure has in the past ensured that the required. . . capability is continuous.

The modified final judgment issued by Judge Greene on 24 August 1982 portends to hazard that capability.²³

Indeed, there is no better example than the Strategic Air Command for portraying the critical telecommunications needs of national defense and the extent of Defense dependence on the national network. Circuits carrying three separate command-and-control systems extend from Headquarters, Strategic Air Command, to every base where crews await direction to launch. For years AT&T has been SAC's single manager for these end-to-end capabilities. From CINCSAC's perspective, Computer II and the divestiture were, in rapid succession, chopping up his network. The same government that gave him his mission now forced changes that jeopardized his ability to perform it. This is one of the reasons General Davis called command-and-control communications "my number-one priority, my number-one worry, and my number-one concern."²⁴

Elsewhere, the Army Communications Command raised issues that added a new dimension to the earlier realization of the Defense Commercial Communications Office (DECCO) of the workload increase and delivery delays that divestiture would cause. Computer II had already mandated new strategies for acquiring terminal equipment, but after divestiture, installation-level managers would likely lose the ability to acquire Wide Area Telecommunications Service (WATS) and inter-LATA foreign exchange (FX) lines because the BOCs can't provide them.²⁵ In effect, the divestiture that limits the Bell operating companies reinforces the boundaries already defined by the Services between the local and long-distance components. The installation domain is *intra-LATA*; *inter-LATA* telecommunications are the responsibility of the Services' communications commands. Certainly, WATS and FX lines are installation responsibilities, but continued local control of these long-haul services will complicate acquisition at the installation level and prevent collective evaluation of long-haul needs from an economic standpoint.

Another problem cited by both the Army and the Air Force was the cost and workload implications brought about by the fragmentation of the network.²⁶ The cost concerns are based on the length of the wire path within a LATA to reach the interchange carriers' points of presence, that "last mile." The longer the path, the higher the cost. From the workload standpoint, the path of a long-haul circuit would require leasing of individual segments, some *intra-LATA* and some *inter-LATA*, thus increasing the paperwork and lead time for consummating acquisition. Both Services reiterated CINCSAC's concern about the potential for degraded service in the absence of single end-to-end management.²⁷ The Defense Communications Agency's (DCA) single manager leasing policy helped DECCO mitigate the paperwork problem, but a contracted broker owning only part of a circuit path is markedly different from the single end-to-end manager who owns it all. Ownership means inherent clout. Brokership, at best, provides bargaining power.

One other anxious customer is Brig. Gen. John S. Tuck, U.S. Army, Commander, White House Communications Agency, who is responsible for ensuring continuously available telecommunications wherever the President goes. Whatever LATA boundaries exist, they cannot be barriers to his agency's effectiveness. His needs, like those of CINCSAC, boil down to one—a single manager for end-to-end service. After spelling out current arrangements with AT&T in his 28 October 1982 response to the Defense Communications Agency, he closed the letter by saying simply: "After divestiture, we will require this arrangement to continue."²⁸ Tuck speaks for many Defense users who desire the status quo Defense-AT&T relationship. But, as well-grounded as such

desires are in years of success, they cannot be fulfilled unless legislation overrides the modification of final judgment approved by Judge Greene, a possibility that became increasingly probable as users began to understand the inconveniences and cost implications that divestiture will bring.

If nothing else, the LATA Plan was a timely target. It drew fire from AT&T's competitors, critics, and users. Information, newly gleaned, had brought about improved understanding of the divestiture's effects. Defense communicators and users began to realize the inevitable demise of existing management structures important to national defense. The task now was to make the new system responsive in the aftermath.

DEFENSE INITIATIVES

Key people at DCA headquarters and the National Communications System (NCS) took full advantage of the lull in activity while AT&T was drafting the reorganization plan. Each Service and some Defense agencies contributed information and assistance to deal with divestiture developments. The driver was General Hilsman. In his dual role as DCA Director and NCS Manager, he was not just the conductor but the composer; he was the strategist, and often the tactician, in Defense's campaign to preserve positive command and control.

Clearly, building and buying a government network in parallel with the system was not an option. The Presidential NSDDs mandated use of the industry's resources; yet, the President's orders to make command-and-control links foolproof placed unprecedented demands on those same resources. Defense had to face the consequences of divestiture, whatever network fragments it wrought, and make them work.

The first initiative was to seek help on Capitol Hill. Although unsuccessful, the Defense effort to obtain legislative reform was not a total defeat. Both before and after the settlement agreement was reached, Defense telecommunications principals testified repeatedly as to the crying need for updating the Communications Act of 1934. Senator Barry Goldwater's bill (898) demonstrates that some members of Congress were listening:

Sec. 233. (a) The President shall have authority to require appropriate Federal departments and agencies, and any telecommunications carrier subject to the provisions of this Act, to develop and establish arrangements for such mutual backup, restoration, and interconnection of telecommunications facilities or services as

may be necessary to avert public peril or disaster or to ensure the continuity of telecommunications essential to the national defense and security.²⁹

Unfortunately for Defense, this legislation was not enacted.

Still, before Congress recessed for the 1982 elections, Defense lawyers worked with the Department of Justice to hammer out mutually acceptable legislation which could be introduced as a "short form" bill or as a rider on other proposed legislation. This mutual effort resulted in a proposed new section to the Communications Act of 1934 entitled "National Defense and Emergency Preparedness." On 30 September 1982, Defense Regulatory Counsel MacPherson began coordinating the draft, "the foundation for administration-supported legislation in the next session of Congress,"³⁰ which empowers the President to:

- Establish a program which assures availability, continuity, and prompt initiation and restoration of telecommunications "essential to national defense or emergency preparedness."
- Request carriers to participate in meetings related to these needs with assurance by the Attorney General that such meetings are appropriate from the antitrust standpoint.
- Require carriers to provide any telecommunications needed when the requirement cannot be met through any other source of supply, in time of war or emergency or in preparation for them, and to cooperate with others to ensure delivery of required services under these conditions.³¹

The draft "short form" bill would also require the Federal Communications Commission to incorporate the provisions of this proposed law into regulations and technical standards.³² Unquestionably, this proposed legislation, if enacted, would overcome most impediments for Defense created by Computer II and the divestiture. Indeed, it would also smooth the acquisition process for the Telecommunications Certification Offices (TCOs) and DECCO. If and when the bill is introduced, it will elicit opposition because of the provision that enables sole source acquisition during preparation for war and emergencies. But, opposition does not mean defeat, and passage of this or comparable legislation can certainly be seen as in the public interest. Numerous Congressmen would agree with former Senator Harrison Schmitt who made this public statement before the modification of final judgment was approved: "If DOD finds that additional legislative language is required as a result of the decree, our committee stands ready to make any further changes that are necessary to deal with these national security

concerns."³³ Clearly, Defense has not given up on legislative remedies. As recently as late summer 1983, Defense officials sought to amend Senator Goldwater's S.999 bill to include the provisions for national security and emergency preparedness similar to those his earlier bill contained.³⁴

Should legislation not be possible, the best alternative conceived thus far is already reality—the National Security Telecommunications Advisory Committee (NSTAC). Because of its membership (see chapter 2), this presidential advisory body has the horsepower to sustain a responsive national network in times of crisis. Moreover, it provides a forum for expediting solutions to problems through unity of effort in the national interest. Currently, the priority agenda item is developing a "National Coordinating Mechanism" for the post-divestiture environment.³⁵ Assuming continuation of the NSTAC's initial success, this executive body offers considerable promise for meeting Defense telecommunications needs in the future.

Elsewhere, Defense was also taking a renewed interest in the Federal Communications Commission. In the latter part of 1982, the Commissioner responsible for Defense matters, Mrs. Mimi Dawson, was invited to tour some key Defense facilities where she was briefed on the difficulties of fulfilling telecommunications requirements. Since then, her concern about Defense needs has increased noticeably. Such efforts are aimed at reminding the Commission of one of its principal responsibilities—national defense communications adequacy.

In addition to these initiatives, Defense had not forgotten the personal assurances from AT&T Chairman Brown. Although AT&T and Defense officials had maintained cordial business relationships, very little interchange regarding the reorganization was taking place. Moreover, the Justice Department was monitoring the nature and substance of joint discussions. In the fall of 1982, mid-level managers in AT&T's Government Communications Office informally sought and obtained information from the National Communications System about emergency planning and the nature of NCS operations during a domestic emergency. The more formal second meeting included two members of AT&T's reorganization planning study group responsible for building the central BOC staff and the BOC single point of contact (SPOC) for national security and emergency preparedness. As the meeting progressed, it became evident that these planners were gathering information about Defense expectations after divestiture.³⁶ These meetings were not mutual exchange sessions; rather, they were efforts to ensure that Chairman Brown's promise to meet national defense needs was fulfilled.

In September 1982, the time was ripe for influencing the shape of the BOC single point of contact, and Defense went to work. The objective was to capitalize on previous success—Judge Greene's recognition that three Defense concerns about the BOC single point of contact had "substantial merit." The plan was to collect comments from Defense and NCS principals, develop these into a coordinated position, and present that position to Justice and AT&T lawyers. The guiding document in dealing with AT&T reorganization was prepared based on two general principles:

Because most national defense/emergency preparedness (ND/EP) requirements will involve some access to the local exchange network, and because BOCs will remain monopoly providers of such service, the local operating companies and/or the new BOC's National Security Emergency Preparedness (ND/EP) Point of Contact should be the central locus for emergency telecommunications management.

BOCs' ND/EP Point of Contact responsibilities and authorities must address all Government ND/EP requirements, not just those of the Department of Defense (e.g., Federal Emergency Management Agency, Federal Aviation Administration, General Services Administration, critical government contractors).³⁷

The Defense list of specifications for the BOC single point of contact reads like the mission statement for a national control facility. In effect, it sought a commitment to make the SPOC capable of doing what AT&T had done for many years. For AT&T, acceptance of this commitment meant segregating functions, people, and equipment embedded in each of its existing elements and establishing new authority for substantial control over BOC resources. Even if AT&T were able to meet Defense requirements fully, the long-term effectiveness of the SPOC was questionable. Its authority would be derived from separate entities, not from a single source. Moreover, the SPOC would be dependent, not independent, in terms of resources. Chairman Brown could commit AT&T to meet national defense needs and deliver the resources to fulfill that commitment; the SPOC's authority was far less credible. The seven regional and 22 BOC chairmen of the board/chief executives would have to be equally committed. It boiled down to a matter of trust on the part of Defense that industrialists in new positions of authority would perpetuate Ma Bell's traditional responsiveness to national defense needs. Judge Greene had spoken highly of the men and women who had guided the Bell System without taking advantage of the system's central position in American economic life. But then, he

added this warning: "There is no guarantee, however, that future managers will be equally careful."³⁸

Chairman Brown met with Secretary Weinberger on 6 January 1982, two days before public announcement of the settlement. In that meeting, Brown assured the Defense Secretary that the modification of final judgment "would include the necessary provisions for national security."³⁹ Those provisions were embodied in the MFJ's requirement for AT&T to establish the BOC single point of contact for national security and emergency preparedness. With indications that the SPOC was not likely getting the attention that both Chairman Brown and Secretary Weinberger expected, General Hilsman acted decisively—he went to the top. Hilsman recommended that Secretary Weinberger ask Chairman Brown for a status report on the reorganization planning effort, thereby serving two purposes: "One, to have Mr. Brown himself take a closer look with the people in AT&T who understand this issue, and secondly, to give us an opportunity to inject into that planning at an early stage."⁴⁰ One of the concerns General Hilsman wanted to address was the SPOC's effectiveness once the authority of AT&T no longer extended into the BOCs' domain. Secretary Weinberger's 22 October 1982 letter to Chairman Brown made clear the intentions of Defense:

Now that the Court has approved and entered the MFJ, we understand that the responsible Bell System reorganization planners have begun addressing the organization, resources, and functions required to assure that national security interests are protected. Accordingly, I believe it would be useful if the responsible AT&T officials would provide a briefing to us on the current status of your planning efforts regarding national security. Moreover, such a briefing could facilitate a mutual exchange of information and ideas.⁴¹

Within less than a month, AT&T developed a comprehensive briefing which was held in the Pentagon on 19 November 1982. Both Deputy Under Secretary Latham and General Hilsman attended, and AT&T's attendees included executives representing Western Electric, Bell Laboratories, the new Central Staff Organization (now called the "Central Services Organization") and the corporate AT&T staff. The AT&T briefer, Mr. Robert E. Gradle, Vice President for Government Communications, spent much more time answering questions than briefing.⁴²

Mr. Gradle's third slide generated the bulk of the questions. It reflected objectives, agreed to in the AT&T board room, for meeting

national defense and emergency preparedness needs:

- AT&T and BOCs will do whatever is desired by the government and when they want it—if reasonably possible.
- Centralized staff will be given authority.
- Want to minimize effects due to divestiture.
- Payment for unusual and extraordinary expenses.⁴³

Defense representatives probed for details of the new management structure. The AT&T representatives reaffirmed the commitment of both AT&T and the Bell operating companies to meeting defense needs and recommended that the "present chain of contact be continued if possible to do so."

The session certainly satisfied the intentions expressed in Secretary Weinberger's letter to Chairman Brown. It was equally clear that the purpose of refocusing Chairman Brown's attention on the national defense aspects of reorganization planning was also achieved. And, indeed, Defense officials were able to make a timely injection into AT&T's planning process.

Defense accepted the settlement as a fact of life, and by the end of November 1982, unfolding events revealed some encouraging signs for coping with the changes.

STATES' RIGHTS

If Defense saw brighter skies when winter came, AT&T and the Department of Justice encountered a storm of protest about the modification of final judgment they had carefully crafted. The eye of the storm was the time-honored Constitutional provision that leaves important rights and powers to the states.

Soon after AT&T unveiled its LATA Plan in mid-October 1982, several states united in opposition to Judge Greene's decision to approve the modification of final judgment. Their complaint was that the authority of the states to regulate intrastate telephone service had been preempted by the Federal court, but behind that complaint was a perception that AT&T was not allocating resources fairly. Regulation included overwatch of BOC assets, which, under the modification of final judgment, were being divided and valued, thereby affecting the cost of service to subscribers. Eventually 21 parties, including 12 states, joined the State of Maryland in an appeal of Judge Greene's decision to the Supreme Court. Charles O. Monk, II, Chief of the Maryland Attorney General's Antitrust Division, cited several precedents in summarizing the appeal:

Conclusion: The States have indicated, through express legislative command, that intrastate telephone service is to be subject to State regulation. Accordingly this regulation is "outside the reach of the antitrust laws." The Modification, to the extent that it purports to preempt State Law, seeks to achieve by judicial fiat precisely what Congress sought to avoid: interference with State regulation of intrastate economic activity. The Modification is even more problematic because beyond merely seeking to circumvent State authority it seeks to command BOCs subject to State jurisdiction to *violate* State law (for example, by requiring them to transfer assets and cease certain functions without first applying to public utilities commissions as *required* by State law).

Federal Courts are under an obligation to give effect to the provisions of other applicable laws when enforcing the antitrust laws. *United States v. National Lead Co.*, 332 U.S. 319, 334-5 (1947). A federal court may not enter a decree that requires a person to violate State law. *United States v. Terminal Railroad Association of St. Louis* 236 U.S. 194 (1914) [emphasis in original].⁴⁴

Recognizing that a Supreme Court decision vacating the modification of final judgment could be disastrous, Justice and AT&T lawyers took steps to seek a quick ruling. Less than five months later, the Supreme Court decided not to hear the appeal, thereby supporting Judge Greene's approval of the judgment.⁴⁵ The way was clear for AT&T to submit its plan, but public concern was mounting about the unprecedented efforts by Bell operating companies across the nation to increase rates for local telephone service.

PLANS FOR REORGANIZATION

The AT&T reorganization study groups wrapped the results of their massive undertaking into a 471-page book, the *AT&T Plan of Reorganization*, transmitted to Justice and Judge Greene on 16 December 1982. It had been less than four months since the modification of final judgment had been approved; AT&T delivered two months ahead of the 24 February 1983 deadline. Starting early bought AT&T valuable time for creating procedures to carry out the reorganization. Ten days before Christmas, 1982, the 110-day period began during which public comments about the plan would be answered by both AT&T and Justice. Had the court's timetable been followed, Judge Greene's decision regarding the *Plan of Reorganization* would have been made as early as mid-April 1983. But, that possibility disappeared when the Judge announced that he would hear oral arguments on 2

June 1983 before reaching a decision on the *Plan*. Besides counsel for both parties, others scheduled included spokesmen for state regulators, the Federal Communications Commission, one of AT&T's inter-exchange competitors, BOC regional executives, and a consumer advocacy group.⁴⁶

Another situation potentially affecting the reorganization plan is FCC action under the Communications Act of 1934. According to FCC Commissioner Stephen Sharp, the division of assets necessitated by the divestiture resulted in circuit and radio changes requiring FCC approval. Sharp indicated that "the Commission has an independent duty to ensure that the public interest is served by a grant of any applications necessary to carry out the divestiture."⁴⁷ The FCC deliberations will be affected by public and political perceptions such as those by a group of concerned Congressmen. Voicing the interests of the public, they called for keeping prices low for basic service and establishing a "carrier of last resort" for those unable to bear the costs.⁴⁸ As requested by the Commission, AT&T filed the required changes and transfers in early March 1983, with accompanying narrative explanations as to how the public interest requirements of the Communications Act would be met.⁴⁹ Five months later, the Commission was deliberating the issues raised by those who submitted comments, and AT&T was urging prompt approval.⁵⁰ No major obstacles to FCC approval had developed by summer 1983, but Judge Greene's sharp criticism of the FCC's December 1982 access-charge decision will assure full consideration of all issues before a decision is reached.

The foundation of AT&T's *Plan of Reorganization*—the LATA Plan—had not been formally approved by early June 1983. In a 162-page order issued on 20 April 1983, Judge Greene gave "general approval" to most LATAs and clarified the misconceptions about the purpose of the LATA:

Contrary to much popular and even industry understanding, the purpose of establishment of the LATAs is only to delineate the areas in which the various telecommunications companies will operate; it is not to distinguish the area in which a telephone call will be "local" from that in which it becomes a "toll" or long-distance call.⁵¹

The Judge recognized the states' rights by adding: "The distance at which a local call becomes a long-distance toll call has been, and will continue to be, determined exclusively by the various state regulatory bodies."⁵²

FUNCTIONAL BREAKOUT

According to the *Plan of Reorganization*, Ma Bell was to be restructured geographically and functionally, as the LATA boundaries prescribe, by AT&T's 1 January 1984 target for implementation. At the end of June 1983, the divested portions of AT&T entered a six-month testing phase during which they will operate as if they were already separated. But, none of the transfers become effective until 1 January 1984. Immediately upon approval of the reorganization plan, AT&T will incorporate the new Central Services Organization (CSO) and the seven regional holding companies. The *Plan of Reorganization* calls for a variety of actions at each level in the new structure:

- **BOC Level.** Each Bell operating company creates two separate subsidiaries complete with resources and personnel. One is for inter-LATA telecommunications and one is for functions associated with customer premise equipment. These subsidiaries, incorporated by AT&T, transfer intact to AT&T, and the remaining elements of the Bell operating companies shift to the control of the appropriate regional holding companies. Stock held in Bell operating companies becomes regional Bell stock, distributed to AT&T shareholders. Each operating company is assigned responsibility and resources for fulfilling administrative, operational, and business functions and is linked to a new national alert center established at the Central Services Organization. The Bell operating companies do not have a common corporate name, but unless subsequently disapproved, they can use the word "Bell" and standard trademarks of the Bell System. BOC contracts for staff services and supplies from AT&T and Western Electric respectively are terminated. Following implementation of divestiture, the operating companies will provide requested intra-LATA local subscriber service, subscriber access to long-distance service, pay telephone service, cellular radio service, and directory service for both "White Pages" and "Yellow Pages." The operating companies *cannot* supply and service embedded customer premise equipment. Each has the option of marketing new CP equipment after divestiture, but no Bell operating company can manufacture customer premise equipment.
- **Regional Level.** After incorporation, these new organizations are AT&T subsidiaries until divestiture. They become holding com-

panies for the stocks of the Bell operating companies, the Central Services Organization, the separate cellular radio service company, and the property assigned to augment the operating companies. The regional holding companies are small but their power base is substantial. Following divestiture, each region orients on the financial survivability of its BOCs' business, and it contributes one-seventh of the resources to provide the common support necessary for fulfilling BOC operational functions.

- **CSO Level.** The Central Services Organization, owned jointly by the seven regional companies, preserves the enormous AT&T centralized support base for the Bell operating companies. Carved out of AT&T's General Departments, Western Electric, and Bell Laboratories, the Central Services Organization, also incorporated as an AT&T subsidiary until divestiture, consists of almost 9,000 employees. The organization also serves as the control element for the patents, licenses, and AT&T trademarks transferred to the operating companies, and it is the parent organization for the BOC SPOC for national security and emergency preparedness.⁵³
- **AT&T Level.** 195 Broadway Corporation, ATTIX, and AT&T International continue current functions after divestiture, oriented on inter-LATA and international operations. American Bell International serves the market for new customer premise equipment, absorbing the resources remaining in the Embedded Base Organization which will be created upon implementation of the divestiture. General Departments, Western Electric, and Bell Laboratories, reduced in size and scope by creation of the Central Services Organization, continue current functions.⁵⁴

Cellular radio service, one of Ma Bell's extensive research projects not yet offered as a subscriber service, is subdivided somewhat differently to meet requirements imposed by the Federal Communications Commission before the settlement. Cellular radio development is centralized in a separate subsidiary of AT&T called "Advanced Mobile Phone Service, Incorporated," (AMPS). AT&T's plan transitions AMPS resources to the regions as an interim measure until FCC deliberations enable their eventual transfer to the Bell operating companies.⁵⁵

The post-divestiture regions and the Bell operating companies within them are depicted geographically in figure VI-1.⁵⁶ Comparative statistics by region are reflected in table VI-1.⁵⁷

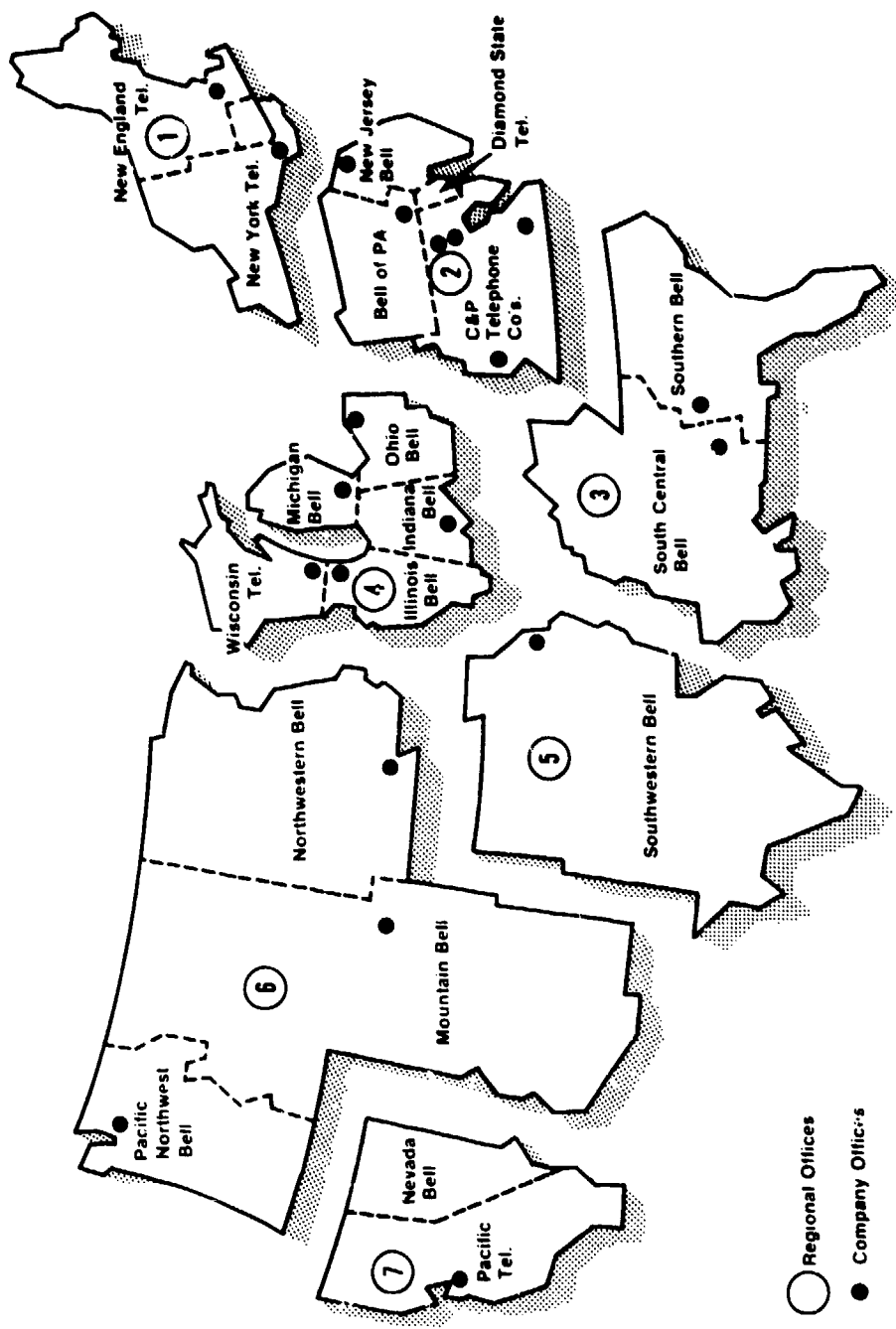


Figure VI-1. Bell Operating Companies and Parent Regions-1984

**Table VI-1. Comparative Statistics,
Post-Divestiture Regions**

Region	Subscribers (Mill.)	Regional Population	Assets (\$ Bins.)	Access Lines (Mill.)	Employees (Thous.)
Northeast	25	92%	17.8	12.5	121.6
Mid-Atlantic	27	84%	17.3	13.7	108.1
Southeast	30	70%	21.8	13.0	137.0
Midwest	30	74%	17.0	14.0	113.0
Southwest	21	78%	15.9	9.8	97.6
Mountain- Northwest	22	78%	16.1	10.4	104.9
Far West	20	78%	16.6	10.4	114.7

DEFENSE CONCERNS

Defense continues to worry that a fragmented management structure threatens network integrity. Capabilities designed to support Bell's single system take on a different complexion in an owner-tenant relationship. For example, the Common Channel Interoffice Signalling system, which provides computerized flexibility in routing traffic nationwide, was designed to control a unified network.⁵⁸ The concern is whether such intertwined functional systems can respond equally well in a fragmented network. Undoubtedly, for the near-term, Bell's time-honored practices and experienced technicians will overcome the dangers inherent in property subdivision. But, with time and personnel turnover, as each new entity develops new priorities, the focus on interdependence will fade, increasing the potential for more frequent interruptions. Failure to service back-up batteries or calibrate test equipment or repair a broken connection on the main frame—those human shortfalls experienced in every telecommunications facility—become more probable when two independent parties share facilities. When owners become tenants, relationships change.

This potential for interruption is further increased by the separation of functions. The national network will no longer be viewed as a single entity by those responsible for portions of it. Just as management by committee fosters parochial thinking, the multiple managers involved in directing and controlling the national network will necessarily look first at their individual interests. The nationwide orientation of network managers fades all too rapidly with the demise of the single owner. These "worst case" expectations reflect the experience of military telecommunications professionals, experience which engenders their deep concern about SAC's alerting networks, WWMCS, NMCS, and

dedicated circuitry for the National Command Authorities. They know all too well the pitfalls created by lack of cohesion and coordination. They have learned that disunity can result from divergent objectives and different priorities. They want and must have responsive installation, restoration, and rerouting when they are needed, and they know that such capabilities can't be delivered by an ad hoc, part-time entity.

DEFENSE REQUIREMENTS

With these concerns in mind, Defense delivered their SPOC requirements to Justice with the hope that the single MFJ provision dealing with national security would preserve capability for as much central control as possible. In general, most requirements specified by Defense were met by AT&T in creating the SPOC for national security and emergency preparedness. Administratively, from the Central Services Organization to the Local Access and Transport Areas, the structure for meeting Defense needs is sound. The SPOC staff is hand-picked from experienced employees, trained on-the-job for six months or more, and operates in the Central Services Organization itself, located in New Jersey, and in Washington, DC. Specific personnel are designated at each region, BOC, and LATA to handle crisis and emergency situations. Under the *Plan of Reorganization*, the CSO's specialized government communications group has specific responsibilities, authority, and resources:

- *Responsibilities*

- Coordinate the development and implementation of uniform technical standards and nationwide emergency plans and procedures for the Bell operating companies.
- Expedite installation, testing, and restoration of BOC services, if the government desires.
- Assist in resolving billing and other related disputes.
- Serve as a point of contact for other carriers and vendors to arrange for installation, testing, maintenance, restoration, repair, and other operational needs for BOC-provided services in connection with services of other carriers and vendors if the government desires.
- Operate continuously a national alert center, with relocation capability, which is interconnected with continuously operating centers in each Bell operating company, and, using this network, monitor status of telecommunications and alert Bell operating companies during crises and emergencies.

- **Authority.** Contractual arrangements between the Central Services Organization and the Bell operating companies enable full response by the SPOC on behalf of the operating companies to a crisis or emergency, including allocating of personnel and other resources and implementing emergency procedures for initiation, restoration, and rerouting of services required.
- **Resources.** The annual budget is funded as agreed to by the CSO's board of directors, and the CSO contract with the regions must specify that funds cannot be withdrawn and that funding is not less than that determined by the CSO's chief executive as necessary for fulfilling the designated responsibilities.⁵⁹

Although treatment of the BOC SPOC in the *Plan of Reorganization* is generally acceptable to Defense, the plan was less specific than Defense stipulations for some requirements.

Defense identified the following five additional requirements, which were incorporated in a subsequent version of AT&T's reorganization plan:

- More positive assurance that the SPOC had authority to direct the Bell operating companies
- Expansion of BOC and SPOC roles to include coordination with non-BOC intraexchange carriers
- Specific authorization for the SPOC to obtain information relative to resources from the operating companies
- Specific authorization for all BOC activities, including the regional headquarters and SPOC, to participate in exercises and for the SPOC to direct such participation
- Clarification of language regarding emergency situations⁶⁰

Defense could not preserve the old system but perhaps it could be replaced. Meanwhile, Defense and Justice lawyers reached agreement on the definition of "emergency." The following definition is expected to guide post-divestiture decisions about seeking BOC single-point-of-contact support.

***Emergency Communications Requirement
(Emergency Telecommunications Service Request):***

- a. A communications requirement resulting from any of the following circumstances:

- (1) State of crisis declared by the National Command Authorities.
- (2) Efforts to protect endangered US personnel or property.
- (3) Enemy action, civil disturbance, natural disaster, or any other unpredictable occurrence that has damaged facilities whose uninterrupted operation is essential to national security or other ongoing crisis.
- (4) The director of a federal agency, commander of a unified/specified command, head of a military department, or commander of a major command, e.g., TAC, COM 2ND FLT, etc., (CINCEUR ONLY IN THE EUROPEAN AREA), has certified that a communications requirement is so critical to protection of life and property or to the national defense that it must be processed immediately.⁶¹

CONCERNS WIDEN

While Defense concerns were negotiated, other voices spoke out. Judge Greene had left to AT&T's judgment the structuring and resourcing of an entity that would provide the BOCs engineering, administrative, and other centralized services. AT&T's option to create a Central Services Organization with almost 9,000 employees was denounced as inconsistent with the intent and spirit of divestiture. The February 1983 edition of *Data Communications* opened its "Newsfront" section with this headline: "Divested BOCs may dance to AT&T's tune—Critics charge that AT&T's central organization will ride herd on the Bell operating companies."⁶² The critics included a variety of lawyers, telecommunications consultants, and spokesmen for industrial associations who envision the Central Services Organization as AT&T's means to perpetuate control over the national network. They see the Organization as the master of BOC slaves, imposing a high-cost (\$700 million annually) burden which will be borne by the subscribers. A. G. W. Biddle, President of the Computer and Communications Industry Association, was asking Judge Greene "to limit the scope and services provided by the CSO to those activities that are truly necessary for national defense and emergency preparedness."⁶³

Outcries about the *Plan of Reorganization* were louder than expected. At least 46 separate filings protesting a wide variety of its provisions were handed to Judge Greene on 16 February 1983. *Telecommunications Report* summarized the public comments this way:

In its vast divestiture and reorganization plan filed with U.S. District Court Judge Harold H. Greene, the American Telephone & Telegraph Co. is saving most of the desirable aspects of the

business for itself and leaving the soon-to-be independent Bell operating companies under a disadvantage in a friendless, bleak, competitive world, in the view of a substantial group of those filing comments with Judge Greene's court last week.

Another sizable group took the position that instead of really divesting the BOCs and breaking up the Bell System, AT&T is seeking to retain the present structure and retain control in significant areas, in particular procurement decisions to be made with the support of the projected new CSO.

Whether those filings were in the "let the BOCs fend for themselves without the means necessary" or the "keep them under AT&T's thumb" camp, or sometimes both, they found essentially all elements of the big restructuring plan subject to question or criticism. A recurring theme of those commenting was that insufficient specific information has been furnished in critical areas to make interested parties sure they know exactly what is going to happen.⁶⁴

Two additional rounds of public comment between February and June 1983 revealed still more issues, resulting in 36 amendments made in three increments during March and April 1983. Although none entailed major changes, the amendments included those sought by Defense to ensure responsiveness by the SPOC and to strengthen provisions for technical standards among the Bell operating companies. The Central Services Organization was also tasked to administer the national numbering plan, a provision pivotal to network planning and standardization.⁶⁵

The chief executives of the BOC regions were considerably more vocal during this time. Their reactions to amendments regarding the use of the Bell logo and trademark symbols, BOC inter-LATA administrative communications facilities, and equal access within LATAs by interexchange carriers revealed a new independence from AT&T views. The regional executives had become the spokesmen for not just their adopted organizations but also for the subscribers they served.⁶⁶ By late spring 1983, there were plentiful signs that there were more changes to come.

Consumer concerns peaked, due primarily to unusually high rate increases sought by the operating companies. Congressmen, FCC commissioners, and state regulators all spoke out about the threat to universal service as well as the frightening prospect of rising rates. A new round of hearings began on Capitol Hill, fueled by newspaper headlines

like, "Get Ready For Phone Bills to Double."⁶⁷ In early June 1983, House Telecommunications Subcommittee Chairman, Timothy Wirth, accused AT&T of "gouging" the public through a nationwide campaign to increase subscriber rates by an unexpectedly high estimated total of \$7-\$12 billion. Wirth, together with Michigan Congressman John Dingell, were drafting new legislation "designed to ensure universal telephone service."⁶⁸ These two traditional guardians of the public interest engendered substantial support among their peers to stop the escalation of telephone rates.

During July 1983, congressional interest in the subscriber rate issue intensified. At least six bills to mitigate increases had been introduced and more were expected.⁶⁹ But, these normally newsworthy events were overshadowed by alarms sounded by some AT&T executives, government officials, and communications lawyers. Reporting in the *Washington Post* on 3 July 1983, Merrill Brown cited FCC Commissioner Fogarty, Former FCC Chairman Richard Wiley, and an unnamed "top Bell System official" among "the key policy experts" who questioned "the readiness of the Bell System and the government to conclude the reorganization because of unresolved policy issues and confusion in AT&T over its future course."⁷⁰ While AT&T Chairman Brown remained optimistic that the divestiture would be accomplished on schedule, Wiley expressed the view that 1 January 1984 "may just be an impossible deadline."⁷¹

Reflecting on the disparate views of Congressmen, the Federal Communications Commission, Judge Greene, and the Federal executive departments about the divestiture, Fogarty opined: "What concerns me is that government bodies are still contending with one another." With the deadline less than six months away, "my fear and anxiety in this thing is that chaos could result in the telephone industry unless the government makes it work."⁷² Fogarty was forewarning the public that the deliberations and rhetoric of its elected and appointed officials reflected so much disunity that users could be faced with even more uncertainties than those already expected in the aftermath of divestiture.

Facing mounting criticism from public interest groups, the Congress and Judge Greene, the Federal Communications Commission revisited its December 1982 decision, and, in late July 1983, announced changes in its formula for gradually shifting local costs to the user over the next several years. Having to offset about \$10.7 billion in annual subsidy of local rates, the Commission opted to add \$2 to each residential subscriber's monthly bill in 1984, \$3 in 1985, and \$4 in 1986.⁷³ The costs of business lines will increase by \$6 each per month for the three-year period, and each private long-distance line and dedicated data

transmission circuit will cost an additional amount of "about \$25 per month."⁷⁴ When FCC Chairman Mark Fowler could not predict decisively the effects of the Commission's decision, his congressional adversaries became even more convinced that reform legislation was essential to protect the subscribers.

As the voices for competitors and users became increasingly vocal, they were joined by those of another group affected by the divestiture—Bell System employees. They had been unusually quiet as events leading to divestiture unfolded. Pressures began to mount in March 1983 at a special convention of the Communication Workers of America (CWA) when union leaders saw the divestiture as a threat to employment security.⁷⁵ In mid-May 1983, CWA and AT&T negotiators began bargaining about the terms and conditions of a new contract. Joined by two other telecommunications workers' unions, the CWA threatened a strike beginning in early August. That threat became reality when AT&T employees across the nation walked off the job for almost a month until AT&T agreed to both higher wages and an array of unprecedented demands for preserving employment for more than 675,000 Bell workers.⁷⁶ Another cost factor had emerged.

Amidst this storm of protest, Judge Greene made momentous decisions, clearly fulfilling his commitment to remain the guardian of the public interest:

In any event, irrespective of what others may do, the Court will continue to be guided . . . by the objective of achieving fair competition on the one hand, and the protection of rates which will permit all segments of the population to enjoy telephone service, on the other.⁷⁷

DECISION

Having again invoked the Tunney Act, Judge Greene reviewed comments from more than 100 interested parties before reaching a decision on AT&T's *Plan of Reorganization* on 8 July 1983. The Judge approved AT&T's *Plan* but stipulated three major modifications:

- *Equal Access*. Clarification of three controversial questions:
 - What does "equal" mean? AT&T's long-distance competitors' access to local BOCs subscribers need not be technically equivalent to that provided AT&T, but it must be equal in quality from the users' standpoint.

- Which switches should be used for access arrangements? AT&T need not assign additional electronic switches to the Bell operating companies, rather, the BOCs' plans for providing equal access, including switches to be constructed, are adequate.
- How should the operating companies recover the costs of becoming equal access providers and of reconfiguring local networks to conform to LATA boundaries? AT&T is assigned the risk of paying whatever remains of these costs on 1 January 1994.
- *Bell Name and Logo.* The word "Bell" and the traditional bell logo can be used *only* by the operating companies. "Bell" can be used *only* when preceded by the geographical area modifier selected by each region (e.g., Southwest Bell). AT&T's Bell Telephone Laboratories was permitted to continue use of the word "Bell" as were AT&T's overseas organizations.
- *Patents.* Although AT&T retains ownership of all existing patents and those obtained subsequent to divestiture, it must grant royalty-free licenses to the Bell operating companies for existing patents and those issued within five years after divestiture that are related to the nature of BOC services prescribed in the modification of final judgment. The operating companies are allowed to sub-license these patents to other companies so long as their use is clearly related to the intra-LATA domain.⁷⁸

Despite the strong protests about the size and scope of the CSO, Judge Greene ruled favorably on the *Plan of Reorganization's* provisions for it. He also supported AT&T's *Plan* for administering pension benefits, transferring employees between divested elements, and assigning shared responsibilities among all AT&T activities for contingent liabilities associated with pending or future antitrust cases. In addition, the Judge realigned a few LATAs in order to reverse what he saw as unnecessary deprivation of user benefits caused by arbitrary delineation of boundary lines. Finally, he reaffirmed the *Plan's* provisions that permit the Bell operating companies to communicate across LATA boundaries for in-house coordination, testing, and business activities.⁷⁹

These final modifications clearly favored the operating companies just as those the Judge made a year earlier had done. Now those companies had not only the added revenues from the Yellow Pages and new customer premise equipment, but also valuable new cost avoidance capabilities. Judge Greene had heard the cries of consumers, and he

tipped the judicial scales heavily in favor of the Bell operating companies in order to minimize their need to seek large increases in local-service rates.

Judge Greene's decision to give the operating companies near-exclusive "Bell" name and logo was as much symbolic as it was central to the nature of the divestiture. The Judge gave these historical trademarks to the largest portion of the fragmented Bell System. He believed that this choice would foster competition and reduce consumer confusion about Bell services. He reasoned that these symbols belong with the portion of the system with which the users have traditionally been associated. In short, Judge Greene saw this approach as best representative of the public interest.

But, for what is left of AT&T, the loss of the symbols meant loss of not only a significant segment of its corporate history, but also a considerable amount of revenue. As AT&T Chairman Brown put it, "We will accept that. Reluctantly."⁸⁰ "There is no mark like the Bell mark anywhere in the world. It's very important and we're very sorry to lose it."⁸¹ Already engaged in revamping American Bell after spending more than \$30 million in advertising its new role, AT&T found itself with outdated titles for its remaining elements and a structure incapable of competing effectively in the post-divestiture marketplace. More changes in their carefully crafted plan were required, beginning with the new AT&T symbol (figure VI-2), which replaces the traditional bell logo. The black portions are light blue in full color portrayals.

Now the post-divestiture AT&T corporate structure reflects new labels and responsibilities as illustrated in figure VI-3 and rendering obsolete the structure reflected in figure V-2. The new AT&T corporate entities and their principal responsibilities include:

- AT&T Corporate Headquarters—overall management
- AT&T Communications—US intercity and overseas telecommunications services
- AT&T Technologies
 - AT&T Bell Laboratories—research and development
 - AT&T Information Systems—equipment and systems for business customers
 - AT&T Western Electric—network systems, equipment and systems for telephone companies, government sales, processor manufacturing, and AT&T consumer products



AT&T

Figure VI-2. The New AT&T Logo

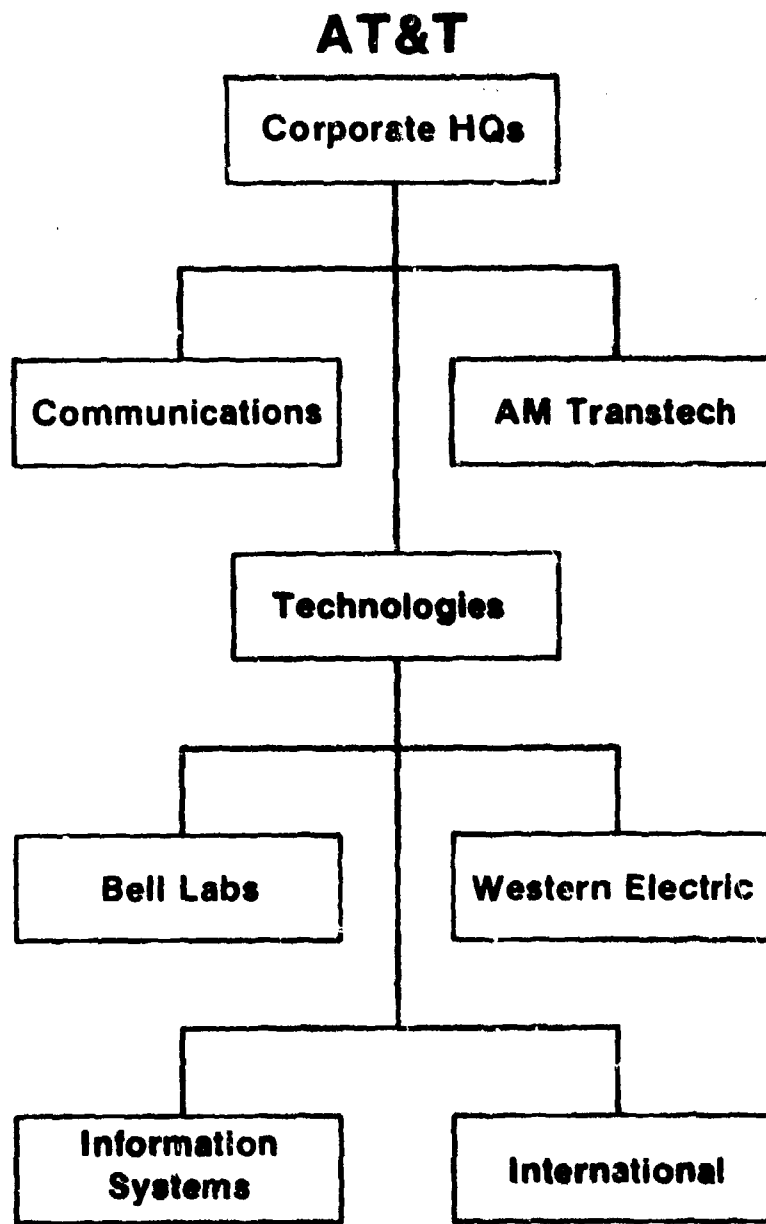


Figure VI-3. AT&T Corporate Structure Post Divestiture

— AT&T International—worldwide sales of AT&T products and services

- American Transtech—services for share owners of both AT&T and the seven regional companies⁸²

The gavel had fallen on the Bell, fragmenting it into separate entities. Now divestiture was only five months away, and both providers and users were faced with preparing for its consequences. Although the decision had been made, its myriad effects were not as definitive. But, speculation about them had been simplified. The user must evaluate a wholly new marketplace, converted overnight from a virtual monopoly to one of intense competition, wherein each entity must consider first its own survival.

VII

THE UNCERTAIN FUTURE A STRATEGY FOR CHANGE

It was the best of times, it was the worst of times . . . it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us.

With those words from Charles Dickens' *A Tale of Two Cities*, United Telecommunications' Chief Executive Paul H. Henson characterized the aftermath of the AT&T divestiture. Henson explained that, like the famous passage from Dickens, the AT&T divestiture had something in it for everyone, some good and some bad. And, in consideration of his audience—attendees at a legal seminar about the divestiture—he added that it was lawyers who reap the greatest benefits.

The quotation from Dickens has deeper meanings with respect to the divestiture. For users much has been made about the benefits of the new competition, but many alarms have been sounded about the dangers of dismembering Ma Bell. For providers, bright opportunities beckon, but a competitive marketplace has sharply increased the risks. Numerous impacts are predicted, yet none are certain.

Defense faces such an environment as it seeks to fulfill its mission. This last chapter attempts to forecast what is likely to occur as the divestiture is implemented and proffers a strategy for change for coping with the consequences.

MIXED BLESSINGS

During January 1983, when the Mississippi River's banks overflowed, flood waters reached the ceilings in homes in

parts of rural Louisiana. When the waters receded, South Eastern Bell Telephone Company discovered that many of the residential telephones ruined during the flood could not be replaced. The inventory had been depleted within a month of the effective date of the Computer II decision.¹

In the fall of 1982, subscribers to Illinois Bell Telephone Company received notice that, effective 1 January 1983, residential customers must pay either 40 cents per month or a \$50 one-time charge for the telephone company to repair the telephone wires inside their homes.²

Times have indeed changed. Across the nation, customers and the Bell operating companies (BOCs) are discovering the impacts of the Computer II decision. But this situation is only the beginning. On the heels of Computer II comes AT&T's divestiture. Indeed, the two are so close together in implementation that, from the users' perspective, they have merged, becoming one set of massive changes to the national telecommunications network. But the divestiture will bring about its own distinct effects. For example:

In March 1984, when Jack Baggett moved into his new home near Fairfax, Virginia, he called the telephone company to arrange for service. The Chesapeake and Potomac Telephone Company (C&P) representative cheerfully responded, telling Jack to plug in his telephones. Ten minutes later, Jack was back on the phone saying he couldn't find a receptacle to plug into. It took the C&P representative several minutes to determine that the company had laid cable and house leads down Jack's street in the fall of 1982. Back went Jack to trace the wires in his new house only to discover there weren't any. The building contractor had forgotten to have the house wired.

In June 1984, Byron Baldwin moved into a previously owned home in Long Branch, New Jersey. He drove to the local New Jersey Bell business office and applied for service. As a part of applying, he had to select one from a group of interexchange carriers for carrying his long-distance calls.

It was August, 1984, in Youngstown, Ohio. Diane DePersig's telephone was dead. After reporting this difficulty to Ohio Bell, she was told that no trouble was found on the line and that the instruments should be checked. She gathered up her phones and took them back to Radio Shack. Tests made there revealed that they worked fine. Eventually, an

electrician found and spliced a frayed wire inside her home, and Diane reluctantly wrote a check for \$70 to pay for this repair.

Dick and Brenda Kail enjoyed their new life in sunny Arizona. In August 1984, while Dick was on a business trip, Brenda was paying the monthly bills. Much to her surprise, she had bills from three telephone companies—Mountain Bell, Microwave Communications, and AT&T Information Services. Her subsequent inquiry to Mountain Bell's business office was a revelation to her—the separate bills were correct.

These fictional happenings to special friends are representative of the changes to come in American telecommunications. Beginning on 1 January 1984, besides having to shop around for telephones and other communications terminals, users must do the following:

- Arrange for any additional on-premises wiring that may be necessary
- Contact the local telephone company to obtain interconnection service
- Select the interstate carrier desired for routing their long-distance calls
- Find a business willing and able to determine why their telephone isn't working and to make the necessary repairs
- Pay separate bills for each of these services

All of these changes apply to subscribers of the "Bell" operating companies. F.L. Lilley of Kingsport, Tennessee, won't be affected at all. He is served by United Inter-Mountain Telephone Company, an Independent. Of course, F.L. and all subscribers to any Independent's exchanges can opt to exercise any of these options, but most of them are probably very glad that they don't have to bother. For these subscribers nothing has changed.

It is an ironic quirk of Federal policy that places users of "Bell" services at a seeming disadvantage. But that's the result of policymaking in the courtroom. The corporate giant has been strapped down, at least temporarily, allowing the competition a year to catch up. When the divestiture becomes effective, each of the Bell operating companies has the option of entering the competitive customer premise equipment (CPE) marketplace, but none can manufacture terminal equipment. BOC handicaps are likely to create customer burdens.

Yet, the new marketplace is expected to meet increasing demand with a plentiful variety of products and services, the costs of which may well be lower than they are today. Indeed, the buyer in the new market stands to gain in terms of both improved capabilities and the costs incurred. But the warning embodied in the timeless Latin phrase, *caveat emptor*, mandates that the users know what they want. New risks and responsibilities now fall in the user's domain.

Although this situation will be annoying to residential customers, it poses a major problem for large users such as business and government. A fragmented network means fragmented acquisition and separate actions to unify components into a single entity. The great integrator has passed away.

Now the lights burn late in the communications manager's office as he or she sorts through options in search of the most economical way to communicate. Monthly access charges for local service are now much higher each year as a result of a December 1982 FCC decision.³ The long-distance service cost projections reflect less definite figures, but they appear to provide some offsetting savings, even with the new surcharges. Proposals of numerous vendors offer a variety of options for new multifunctional terminals, but none assures compatibility and interoperability among the terminals or with the network. A leased on-premises switchboard promises upgrading and expansion capabilities, but a purchased switch with a multiplexer is less expensive. Tomorrow the pressures increase. The comptroller needs a budget estimate for the new telecommunications system, and the system decision summary for the board of directors is due early next week. Tired and frustrated, the communications manager wonders whatever happened to the telephone company as he leaves the office three hours later than the other employees. This was getting to be a habit.

The woes of this mythical manager in the post-diverstiture environment reflect only some of the impacts on large users. Corporate travel managers faced a similar but less complex dilemma when the airline industry was deregulated. In the competitive marketplace, the buyer stands to gain through comparison shopping, but only after he or she understands the needed commodities. For commodities, like flights between cities, the job is easy. For others, like selecting the best way to communicate, the job is tough.

To be sure, large users will discover carriers and vendors beating paths to their doors, each eagerly offering to be the client's telecommunications consultant, promising to deliver a "turn key" system in minimum time and to handle any and all details for the life of the system. However, a decision will not be that easy. The objective is identifying the capability which meets user needs at the lowest possible cost, but that does not necessarily mean selecting the lowest bidder. Telecommunications services are integral parts of numerous other functions within an organization. Sometimes paying more for telecommunications produces savings elsewhere, a net gain at the bottom line. Users must know both what is needed and the track record of those offering to do the job.

The information in competitive offers may well serve as good source material, but the product required must be designed to fit user needs. The large users require expertise, both technical and managerial, not just to determine needs, but also to evaluate the competing proposals. The communications office will become the telecommunications department with responsibilities and staff roughly equivalent to those of the computer manager. In progressive organizations, these two functions will become one, capitalizing on the blending of the two technologies.

The focus of telecommunications competitors will gradually broaden over the next ten years as regulatory bodies adjust to the effects of the divestiture. Initially, the CPE vendors will be in the forefront, spotlighting terminals as the keystones of the systems. Some will be computers with telecommunications capabilities; others will be the converse. What they will be selling is the "enhanced" instrument; the rest of the "system" consists of lines which travel via the exchange and long-distance components, the regulated portions of the national network. To competing CPE vendors, the circuit costs are essentially fixed; the profit is in the terminal equipment. Prominent among those competing vendors will be AT&T's new customer-oriented entities, but the Bell operating companies are free to enter this market as well. A wide variety of customer premise equipment, including many new versions of computer-based equipment, will be offered by a growing number of vendors. In such an environment, the buyer must consider compatibility, both present and future, avoiding the "lemons" and potential obsolescence in products that look good at the time.

Additionally, interexchange carriers will compete vigorously for user revenues. Under FCC guardianship, competition will grow rapidly among the interexchange carriers that serve the long-distance component. The massive investments in fiber optics and microwave transmission lines by Microwave Communications, Incorporated (MCI)

during 1982 and 1983 are vivid testimony to its determination to challenge AT&T Communications' dominance. General Telephone and Electronics' (GTE) probable acquisition of Southern Pacific Communications Company (SPCC) will enlarge its ability substantially. Within five years after divestiture, AT&T Communications' competitors are expected to capture between 25 and 30 percent of the market, some of which will be within Local Access and Transport Areas (LATAs) in competition with the Bell operating companies. Doubtlessly, without FCC protection in the form of tariffs, AT&T Communications could easily "reach out and crush" them all. But, as closely as Justice and the Commission will be monitoring AT&T's conduct, such an attempt is doubtful, at least until the interexchange component is completely deregulated. Thus, users can expect MCI and other common carriers to become more aggressive, gaining as much of the interexchange business as possible before deregulation.

The most hotly competitive business will be long-distance toll service. There will be Mothers' Day sales and Christmas specials. Alliances will likely form between other common carriers and CPE vendors to market package deals. Such ventures will be encouraged by the Computer II provisions that require AT&T Communications and AT&T CPE sales organizations to conduct business at "arms' length" and prohibit their joint marketing.⁴ If the other common carriers sell package deals involving private lines, they must be at least as profitable as long-distance toll, where the best revenues are. Thus, the costs of private lines could well increase in the competitive environment because of their scarcity. When demand for dialed long-distance service is high, like between major cities, leasing private lines will mean paying premium prices in addition to the new surcharge imposed by the Federal Communications Commission. But, in time, the growth of computer networks and the installation of more long-haul facilities will make private-line service available competitively at lower costs.

The most vulnerable point of any telecommunications system is the *interface*—the physical location of electrical connections that enable interoperation between two elements of the system. Just as Computer II split responsibility at the interface of the CPE and exchange components in the Bell System, the divestiture forces a similar severance at the point where the exchange component interconnects with the long-distance component. Moreover, following divestiture, the Bell operating companies are required to furnish equal access to a variety of long-distance toll carriers in addition to AT&T Communications. Such a situation invites difficulties, particularly in fixing specific responsibilities during installation and restoration of circuits. The divestiture will break a

century of tradition wherein detailed coordination was inherent, mandated by the powerful monopolist.

In the competitive arena, the emphasis is on sales. The sales force is the teeth; the tail is support functions like maintenance and technical control. Highly skilled personnel embodied in the support functions are vital to effectiveness, but highly expensive. Few CPE vendors can afford more than minimum investment in these resources, even if their customers contract for end-to-end service. Some customer premise equipment will become disposable when it fails, and not all vendors will be able to fix what they sell. The Bell operating companies, independents, and interexchange carriers must necessarily use technical control extensively, but it will be cut to the bone as competition becomes more intense. Similar cuts will occur among radio operators, multiplex attendants, and others of the invisible workforce who make the network transparent to its users. Degradation in quality and reliability seems inevitable.

Despite the expected paring of all but essential overhead, the user can look forward to products and services galore. The carriers and vendors will invest heavily in research and development in an environment where most of AT&T's patents are no longer gratuities. The focus will be on enhanced capabilities, injection of telecommunications into functional roles in every segment of society. *The Third Wave, 1984*, and *Megatrends* become the roadmaps. Everybody will have a personal electronic mailbox, not just for mail but also for newspapers, magazines, and weather reports. Teleconferences will displace much business travel. Television sets will become transceivers, enabling banking, bill paying, shopping, medical and legal consultation, and, perhaps, even voting from the den. New video networks will provide instant access to stock quotations, movies, ballgame scores, library books, and even social dates. Mobile telephone, packet switching, and cellular radio technology will explode, bringing about societal changes and revolutionary means and methods for human interchange.

These technological leaps emerged before the divestiture, but it is divestiture that makes them pertinent. It will launch the telecommunications revolution by breaking down the door to competition. Leading that revolution will be none other than AT&T itself.

American Bell International (ABI) was launched with vigor unprecedented in the Bell empire, offering promises of bringing the future to the present with Advanced Information Service (AIS) and Net 1000. Despite its short-lived existence, its successors in AT&T, backed by the world's most prominent electronic research facility and supplied by

the massive Western Electric manufacturing organization, will be in the forefront of innovative telecommunications capabilities. In the race for revenue, AT&T has challenged its new rivals in the information industry, including the counterpart giant—IBM. The recent announcement of Bell's development of the 256 kilobit memory chip, capable of four times the data storage capacity of state-of-the-art computers, is illustrative of AT&T's potential to become a giant in the computer industry.

These are not all of the characteristics of the new marketplace; they are the ones that users can use to their advantage. Others represent pitfalls which require new policies to avoid.

POTENTIAL PITFALLS

Even with extensive changes, the modification of final judgment handicapped the BOC's competitive ability, putting their customers at a disadvantage. As Ma Bell entered the "enhanced" services business, she left the BOC orphans to fend for themselves. From a legal perspective, the future of the Bell operating companies was sound; the modification of final judgment gives them the natural monopoly of the exchange component. Intra-LATA telephone service is the BOC domain, and the Independents' territories remain untouched. Together, they share the component of the network regulated by the states, where subscribers are interconnected with each other and with the interexchange carriers serving their long-distance (inter-LATA) needs. Launched with fiscal solidarity and assured revenue flow from both the subscribers and interexchange carriers, the Bell operating companies appeared to enjoy a viable and perpetual business opportunity. For those companies, the modification of final judgment is a sword that cuts both ways.

Part of the problem is definition. As indicated in chapter 4 and alluded to earlier in this chapter, the outer boundary of the exchange component is fuzzy. Most lawyers, consultants, and other knowledgeable observers are certain that the modification of final judgment extends the BOC domain to the junction box at the back of a house or inside a telephone closet in a commercial or public building. However, ownership and responsibility for *inside wire* remain questionable. The controversy has led some lawyers to identify it as a separate component of the network. Clearly, the notice that Illinois Bell gave to its customers reflects that at least one Bell operating company believes inside wire is a user responsibility. Some observers predict BOC subscribers will have to buy it. Others consider inside wiring to be an inherent part of the terminal equipment and therefore the responsibility of the CPE vendor. The problem becomes particularly acute in multisubscriber buildings where cable and wire for sophisticated systems represent a

substantial investment. As of August 1983, the Federal Communications Commission had not yet resolved this significant issue, but the decision will likely result in the customer being responsible for inside wire.⁵ For large users, such a decision entails enormous expense.

One expected benefit from divestiture was a reduction in government regulation. Yet, regulatory controls appear to have increased. The reason is the complicated jurisdiction between state and Federal governments. As before, states exercise *intrastate* authority, while the Federal Communications Commission regulates *interstate* traffic. However, states will now distinguish between *inter-LATA* and *intra-LATA* traffic, both of which involve the interexchange carrier. For AT&T Communications and its competitors, the result is having to operate under three different sets of regulations (state *inter-LATA*, state *intra-LATA* and FCC *interstate*). For customers, this burden translates into higher costs and increased staff workload. Unquestionably, this complex scheme will be scrutinized carefully as protests increase. The debate about costs of service was raging as this book went to press, and *intra-LATA* toll revenues were among the issues the Federal Communications Commission was attempting to sort out.

Perhaps the most predictable consequence of the break-up is confusion. So far, the best explanations have come from AT&T in advertisements like those included in chapter 4, but these lack full objectivity. Accounts in the print and electronic media are more objective, but are focused on the controversial developments rather than detailed implications. Many individual users will learn through bitter experience, but business and government cannot afford such inefficiency. They will depend on their telecommunications managers to train and discipline users, particularly if measured local service becomes standard. The competitive marketplace will increase the importance of these managers and reward those who adapt quickly.

The most politically sensitive predictable problem is local-service rates. The state regulatory agencies are the users' guardians, assisted verbally, at least, by US Senators and Congressmen. Even the coldest capitalist among them worries about "drop-off." The term represents the user's voluntary act of cancelling telephone service, and when drop-off increases even marginally, it warns that rates are too high and forebodes the death of universal service. A convenient and popular issue for regulators as well as politicians, drop-off will be the most influential factor in controlling rates. Still local costs will increase gradually (at least 40 percent by 1990), but rates will vary both individually and geographically. As indicated in chapter 6, costs will be based eventually on measured use—time spent on the line. Some Bell operating com-

panies are already strongly enticing their customers to switch to measured service to preserve "true freedom of choice."⁶ Long-distance rates will drop, but probably not more than 25 percent in the first three years after divestiture. The intercity routes will be the scene of the competitive battle, creating rate disparity with those on less lucrative routes. It is also the big city subscribers who would enjoy the benefits of a local rate structure based on proximity to the exchange. These potential benefits for living in or near cities are perceived by political leaders as discriminatory against rural subscribers.

Because of its high visibility, drop-off will be controlled, but the price will likely be paid in less visible areas. Lost revenues will delay or cancel modernization of local exchanges. In fact, the threat of reduced capital for system improvement produced a drop in the triple-A bond rating for all AT&T entities by Moody's Investors Service on 11 March 1983. Some BOC ratings were downgraded more than three levels. The divestiture was cited as the basis for this significant change in Ma Bell's heretofore enviable credit rating.⁷ Standard and Poor's ratings, issued after Moody's, were slightly more favorable.⁸

Lost revenue also threatens the resources devoted to network design and engineering and the development of technical standards. If the Bell operating companies are to keep local rates within reasonable bounds, then the overhead embodied in the Central Services Organization (CSO) will eventually fall victim to the paring knife. Even before the divestiture was implemented, pressures to reduce the Central Services Organization were developing. After corporate fat is cut, muscle comes next. When standardization and interoperability deteriorate, universal service declines proportionately. The incentive for developing nonstandard products in the competitive arena is getting and keeping a corner on the market. Here, telecommunications can borrow from the lessons learned by the computer industry. Owing to lack of standardization, computers with extraordinary capabilities must often use paper output in order to reach the common denominator for interoperating with other computers. Disaster could prevail if incompatibilities blocked the medium. It is difficult enough to sustain telecommunications when compatibility exists. Standards are assumptions, inherent in the baseline, shielded from view. When they change, it is too late to reverse course. If they are to be preserved, action is necessary in advance.

Survival of universal service, embodied in the exchange component, is the major concern of those who represent the public interest. Judge Greene forced changes favorable to the Bell operating companies in the proposed modification of final judgment, and the FCC's revisitation of the December 1982 access charge decision reflects concern

about subscriber costs. Indeed, sustaining universal service boils down to one consideration—flow of revenue. Capping rates could mean deteriorating facilities leading to deteriorating service, but hiking rates could set into motion a spiral of drop-offs. For the Bell operating companies and Independents, this means increased regulatory overwatch at the state level, particularly of operating costs. Personnel cuts can be expected and repair and maintenance responsiveness will get slower. Nonresidential subscribers will pay considerably more to subsidize those minimum rates paid by the disadvantaged. "Yellow Pages" advertisers will pay more, and state regulators will encourage local companies to market customer premise equipment with more zeal than ever. The tariffs for all services except the most basic will rise. This means that costs of private lines within and through local exchanges will increase, an effect already prescribed by the FCC decision in July 1983. Certainly, keeping the exchange component alive will require considerable finesse.

The BOCs' struggle for survival is not only against public interest guardians. Tough as it is, that struggle pales by comparison with another threat. The modification of final judgment may have created a natural, regulated monopoly for the Bell operating companies and confined them to it, but neither the judgment nor any Federal policy precludes competition *within* the Local Access and Transport Areas. For businesses and industries, alternatives to using the local exchange for accessing the long-distance network become increasingly attractive, particularly as rates increase. Calls are evaluated in terms of their destinations, and user calling patterns provide important information for network designers. Just as a path through the grass provides both the rationale and the trace for a sidewalk, collective calling patterns point the way to new transmission paths and circuit routes. To an increasing extent, calling patterns of businesses and industries are demanding more long-distance service. Their principal needs are to reach branch offices, suppliers, and customers, not other local subscribers. In a competitive marketplace, engineers will be attuned to finding more economical ways to tailor service to subscriber patterns.

When the calling patterns of users reflect potential for savings, the most dreaded of the divestiture's impacts—*bypass of the local exchange*—takes place. Bypass, in brief, means direct interconnection of customer premise equipment with long-distance service, circumventing the local exchange. Bypass threatens universal service because it creates the same effects as drop-offs. Both threaten the inevitable spiral of increased costs and more disconnections leading to the deterioration or destruction of universal service. Bypass is not a product

of divestiture, but divestiture increases the potential for it. It is not a new phenomenon, nor is it confined to the telecommunications industry:

First and foremost, "bypass" what a name! If the railroads had only thought to call the airline industry the bypass industry, passenger trains might still be the mainstay of intercity travel. And we have cases from communications. Television bypasses radio, cable bypasses television, all three bypass newspapers—it's a mess.⁹

Indeed, bypass has occurred in telecommunications for many years. Satellite antennas on rooftops represent private networks that bypass some or all of the national telecommunications network. Bypass is not always driven by costs. Large-scale computer users find the national network too slow and lacking the quality necessary for their transmissions. The national network is engineered to carry voice transmissions—*analog waveforms* rather than digital pulses. These limitations have spawned growth of digital networks across the nation, some of which will one day be used by the general public. Some defense networks will bypass the local exchange. Indeed, the Defense Switched Network now on the drawing boards will employ transmission paths that will not entail more than minimum use of local exchange facilities. Even before divestiture is implemented, a wide variety of American businesses and industries are installing private networks.¹⁰ Some of them will sell the excess capacity, adding to the growing number of inter-LATA competitors while diminishing revenues of the Bell operating companies.

Nothing can stop bypass; it has too much momentum. Fortunately, bypass customers will still require at least minimal local service. Yet, bypass may still threaten universal service by creating rate increases, thereby setting into motion the drop-off spiral.

Thus far, the effects of the AT&T divestiture are only beginning to come into focus. The breaking-up of the company that "reached out and touched" so many affects everyone it touched, some to a far greater extent than others.

DEFENSE DANGERS

"Readiness" has become an increasingly popular Defense buzzword. In tactical units, readiness is measured quantitatively, with plentiful injection of subjective judgment. At higher levels, these measurements identify shortfalls in capability and thereby determine where the force needs bolstering. The President's assessment of readiness led him to demand foolproof command-and-control com-

munications. But surprisingly, the same administration almost simultaneously insisted on breaking up Ma Bell. The decision to divest AT&T stunned the Department of Defense.

As a large user of telecommunications, the Defense Department will reap the same benefits and endure the same impact as other large users. But Defense differs from other large users in three respects. First, the volume of circuitry used by Defense, exceeding 150,000 separate circuits in peacetime, puts it in a category by itself—the largest of all. Second, and more significantly, telecommunications for national defense and emergency preparedness must be instantaneously responsive and restorable under increasingly intensive emergency conditions. Third, as a Federal agency, Defense must consider the full range of qualified competitors, except under emergency conditions. These differences amplify the effects of divestiture at every level between the White House and the battlefield.

Divestiture affects the Department of Defense in two distinct ways: first, in the conduct of day-to-day business, and second, in planning for the future. Clearly, the demands on the Defense communicator will be intense, and a variety of dangers arise for both operating managers and planners.

OPERATIONS IMPACTS

Often, Defense communicators are their own worst enemies. In their zeal to satisfy the users they serve, they often circumvent established procedures, taking shortcuts to meet demanding deadlines. As a result, they often overlook important aspects of engineering. AT&T has often come to their rescue when an emergency or even a mistake necessitated prompt service. Often without realization by the users, and even those communicators who serve them directly, the Bell System has fulfilled unusual and short-fused requirements that were actually failures within Defense to anticipate a need. The competitive environment leaves far less room for such errors. An emergency is one thing; failure to plan is another. Those watchdogs of acquisition will now look much harder at the legitimacy of any sole source request. Moreover, they will do so more often when AT&T competitors perceive and report favoritism. The leasing of commercial services can no longer be assumed as automatic. Mistakes will be more costly in terms of both dollars and delays.

Today, as a result of Computer II, technical staffs are digging deep into their libraries to locate the detailed specifications that had previously been unnecessary for leasing a circuit or computer terminal. After divestiture, they will have to dig even deeper to ensure that such data

as circuit transmitting and receiving levels are specified so as to interface with each of several modems or smart terminals that may terminate the circuit. The shorthand engineering that characterizes a single provider environment is no longer possible. The days of seeking help from the supplier in engineering a circuit and selecting features are over. Defense technical staffs must now ensure that users define what they *need* within specific technical parameters, not take what the carriers prescribe. As more competitors enter the market, detailed engineering and technical specifications will be mandatory to put all potential bidders on an equal footing. Moreover, Defense must guard against failure due to inadequate design and engineering. The user, the Defense communicator, and all the potential providers must understand the need clearly. Otherwise, aggressive marketing teams will have already convinced the user that a gold-plated private network is the only choice.

Such care in design and engineering is costly. More interaction with users, more frequent on-site evaluations, and more diligent research of existing capabilities will all be required. The inescapable result is increased processing time and therefore longer lead times. In addition, technical staff members will feel more pressure to keep current with rapidly advancing technology.

Divestiture heightens the need for strengthening Defense's corporate technical expertise. The promise of the new marketplace demands a technical capability at least equivalent to that in the private sector. The aging Civil Service workforce is a government-wide problem, particularly acute in technical skills. Lack of incentives prevent many truly talented young people from seeking a government career, and the nationwide shortage of engineers and scientists magnifies the problem. Many of Defense's best technical people have already been lured to industry. Too many staffs have "Communications Specialists" where "Communications Engineers" are needed, and too many officers in engineering positions are forced to substitute experience and energy for education and expertise. These problems are manifest to a greater extent in the Services' communications commands and users' staffs where most requests originate. Old habits die hard, and the monopolistic environment engendered lots of them. Prudent business can't be done "the way we've always done it." Senior leaders face a challenge in recruiting and keeping new talent for staffs at every level.

Divestiture forces adaptation because it creates new problems. One such problem, aptly described by a senior policy advisor at the Defense Communications Agency (DCA), is "integration" of the various components of telecommunications systems or circuits. DCA's domain is strategic telecommunications, but because Defense strategic circuits

extend "the last mile" on both ends, they cross over the exchange boundaries and extend into the CPE component. Because these circuits must be integrated from end-to-end during installation and restoration, they are affected most dramatically by the divestiture.

Spurred by the implementation of Computer II, Defense has acted decisively in addressing the integration requirements. Defense plans to continue the traditional reliance on the private sector and does not anticipate any large-scale increase of in-house technical capabilities and management structures. Defense remains committed to the single manager policy described in chapter 2, wherein one carrier or vendor assumes responsibility for end-to-end management of circuits and networks.¹¹ To that end, early in 1983, the Defense Commercial Communications Office (DECCO) initiated efforts to identify carriers and vendors interested in competing. The interest was substantial. DECCO developed lists of contractors who bid against each other for fulfilling the integration requirements. The winning bidder renders a single monthly bill to DECCO for the service provided, which, before payment, is reduced by an amount representing the time the circuit was out-of-service.¹² These are the new single managers of Defense telecommunications; collectively, they replace Ma Bell.

For the Services' communications commands and users, adapting to this introduction of new end-to-end managers, including several who are unfamiliar with Defense requirements, is a frustrating experience. Although DECCO continually evaluates their technical sufficiency, most of the candidate single managers furnish only one portion of the circuit and act as the Defense "communications representative" in leasing other portions. In effect, single managers are brokers who coordinate among several providers to install a circuit and keep it in service. Delays in both delivery of service and restoration are inevitable in such an environment.

The Bell operating companies and other elements of AT&T are interested in these single management contracts. In fact, ABI eagerly pursued DECCO's invitation and served as the contractor for some services.¹³ Defense users found numerous faults with ABI's work, and those were reflected in General Hilsman's June 1983 report discussed in chapter 4. The *Plan of Reorganization* makes it clear that AT&T Communications will continue to offer its services to Defense and that the BOC SPOC will serve Defense as required.¹⁴ The net result is that three "Bell" entities, two of which remain with AT&T after divestiture, compete with each other, as well as other firms, for Defense business. But the combined effects of the Computer II decision and the modification of final judgment erect barriers between these former "Bell" entities.

AT&T Communications and its CPE vendors must deal at "arms length" and cannot ally to sell package deals. The Bell operating companies can compete with the AT&T CPE vendors, but not with AT&T Communications in the inter-LATA component. Nothing prohibits AT&T Communications from competing with the Bell operating companies in the exchange component, but AT&T Communications cannot market customer premise equipment. The fragmentation of the corporate giant has impaired the capabilities of the fragments themselves. Defense telecommunications managers and users, long accustomed to the integrated structure and seemingly endless resources of Ma Bell, will find adjustment to these new restrictions particularly difficult.

At DECCO, selection of either AT&T Communications or a Bell operating company as a single manager will necessitate more work than selection of a competing bidder unless the *Plan of Reorganization* is changed before divestiture is implemented. If AT&T Communications is to be the single manager, then DECCO must select the CPE vendor. If a Bell operating company is to serve as the end-to-end "communications representative," then DECCO must select both the CPE vendor and the interexchange carrier. These requirements also apply in emergency situations when DECCO becomes involved only "after the fact" in paying the bill. DCA lawyers have secured agreement on procedures which expedite these advance selections, but those who have authority to order emergency service (see chapter 6) must now be prepared to select carriers and vendors competitively before AT&T Communications or the Bell operating companies, or the BOC single point of contact (SPOC), can meet their requirements.¹⁵ Should some of the operating companies opt to enter the competitive CPE business, the restrictions that create those impositions may be modified further. Under the *Plan of Reorganization*, the responsive delivery of emergency services is one of the principal functions of the BOC single point of contact. Thus, for long-haul circuits needed quickly, this entity would be the ideal single manager. But both the interexchange carrier and terminal equipment provider must be selected by Defense officials before the BOC single point of contact can swing into action.

After divestiture, the seven BOC regions and even individual Bell operating companies will effectively be separate entities like the Independent Telephone Companies. Similarly, AT&T Communications is one of several competing interexchange carriers. Although within both groups the "Bell" entities will be dominant for the foreseeable future, the existing restrictions place them at a disadvantage in bidding for Defense end-to-end management contracts. For example, if MCI were selected as a single manager, there would be no need for identifying

the CPE vendor for the circuit. If an Independent were selected as the end-to-end manager, the pre-selection of a CPE vendor and an interexchange carrier would not be necessary. Ironically, the telecommunications providers with the best capability to satisfy national defense and emergency preparedness needs now have the least opportunity to fulfill them. This strange imbalance reflects the disparities inherent in policymaking by the courts and highlights the necessity for equitable policy through legislation.

The multiplicity of single managers with varying degrees of resources, flexibility, and authority, creates problems similar to those in other Defense programs where a service is required from a prime contractor who is dependent on one or more subcontractors.

Once a contract for a circuit is awarded to a single manager, the subcontracting process for portions of the path and equipment begins. Although some of the risks have been shifted to the contractor, he or she must also shop in the competitive marketplace. In the process, he or she may find that delaying delivery is less costly in penalties than paying premium prices for some of the circuit elements, particularly unregulated customer premise equipment. A delay of a month or two might produce profit rather than loss. Moreover, those subcontractors upon whom the contractor is dependent may make similar decisions for the same reasons. Defense is left holding the bag, being told that the equipment needed is not available. Thus, delays in initial installation can be expected, thereby increasing the workload for Defense communications managers called on repeatedly to track down reasons for delays. DECCO's purge of repeated offenders will improve this situation over time, but delays are probable when more than one supplier is involved. The problems faced by each Service today in fielding new systems before the support and facilities for them are in place are vivid testimony to the difficulties inherent in integrating components into a workable whole. Murphy's law applies.

Another contribution to delayed delivery is that some single managers will not have technical capability to verify that the specifications required are provided. While installation is in process, users will be asked to test segments of the circuit path and encouraged to accept them. Eager to communicate, a user may accept substandard circuits. After acceptance, problems become harder to fix. Subsequent quality control checks will also increase user involvement and create the same type problems.

Once the circuit is activated, any failure will require prompt attention. Accustomed to existing capability, the user has little patience with

an outage. The single manager has incentive to restore service promptly; however, unless equivalent incentives exist for each subcontractor, restoration will be more difficult than it was when a single firm controlled all the resources. Restoration entails isolating the causes, which requires sequential testing of each segment of the circuit path. The necessary cooperation will be at least as difficult as during initial installation because individual suppliers may have conflicting priorities. Pinpointing the outage means fixing responsibility; that is important—it means determining who loses revenue. If rerouting becomes necessary, the initial installation process must start again unless the contractor has sufficient resources to provide an alternative path. In most cases, few besides "Bell" entities do.

The largest single effect of employing multiple circuit managers is that no single one of them has records of the Defense circuits that others are managing. Thus, when a major outage occurs, rerouting and restoral efforts create mass confusion for both the contractors and the users. The major problem is getting all the single managers oriented on the same objective: systematic restoral from a single prioritized list. The single managers themselves will need a single manager, an orchestrator like Ma Bell was. In many instances, the single activity holding records of all DCS circuits affected by outage will be the Defense Communications Agency, but no entity in that agency is now resourced or equipped to bring order and discipline to such situations.

This discouraging rendition of potential difficulties is a worst case portrayal reflecting realistic requirements for adaptation. Both suppliers and users must endure growing pains in learning a new way of doing business. But, at least in the early stages, employment of multiple single managers will reduce responsiveness to Defense needs. If missions are jeopardized as a result, the increased pressures on Defense communicators is the least important of several serious potential consequences. Yet, even this least important consideration is sufficient incentive to act promptly to overcome as many of these difficulties as possible.

Cost impacts are uncertain, but even though DECCO will select the qualified bidder with the lowest bid,¹⁶ other factors point clearly toward an initial increase in costs. The Federal Communications Commission has added "about \$25" per month to private lines and data circuits using long-distance carriers. New charges for integrating components and expediting delivery will be added to bids. The expected decision on who is responsible for inside wiring will add still more expense. And, as described previously, the demand for private-line service will increase the basic price of that service disproportionately. On

top of these new costs, local-service rates will increase by 30 to 40 percent between 1984 and 1990. In the long term, long-distance costs will drop with increased competition and private-line rates will also be reduced as more and more paths become available. Before the end of the century, telecommunications costs will likely stabilize at a level parallel to that existing before the divestiture.

Counselor MacPherson described DECCO's new approach to nonemergency acquisition this way: "We have recognized that the end-to-end management by a single owner will largely be a thing of the past. We're shooting for the next best thing—getting candidate single system managers to be responsible for all components and seeing if they can do the job."¹⁷ Dividing requirements between emergency and nonemergency is the next step, and identifying single managers to respond to emergency requirements was underway in June 1983.¹⁸ As with Computer II, Defense may seek waiver of the rules to meet emergency requirements, but for nonemergency services, multiple single managers for long-haul circuits are here to stay.

Administration of the new single manager approach brings additional workload to DECCO and the Telecommunications Certification Offices (TCOs). There will be more billing transactions, disputes, and adjustments. Bookkeeping requirements, audits, and demands for statistics will increase proportionately with the number of single managers. Adjustments in the methods used for performing these functions and the size of the staffs that fulfill them are expected to become essential.

Divestiture does not severely impact the installation level. As indicated in chapter 6, Computer II engendered debates about stockpiling instruments and centralizing acquisition. Most installation staffs can look forward to divestiture because it may well make some tasks easier. For example, acquisition of local service will be simplified in cases where Bell operating companies opt to sell customer premise equipment.

In a sense, the divestiture solidifies the domain of the installation telecommunications manager. That role is *intraexchange* telecommunications which, in all but a few cases, are provided exclusively by either the Bell operating companies or Independents. As pointed out in chapter 6, WATS and most FX lines cross the local exchange boundary, and responsibility for acquiring them is likely to shift to the TCOs. Some comparison shopping will be required for such items as interexchange carriers, maintenance, wiring, and instrument installation. Billing and bookkeeping requirements are also expected to increase proportionately, but unless dedicated circuits extending beyond the local

exchange component boundary are acquired by the installation manager, the divestiture is not expected to create major problems at this level.

Yet, regardless of the level, the experience of those who serve Defense users on a day-to-day basis will be essential to the planners of future Defense telecommunications. In time, the capabilities of the national network after divestiture will become more predictable. But until experience delivers more meaningful data, planners must speculate about the ability of commercial telecommunications to serve Defense in the future.

PLANNING IMPACTS

Physically and technically, the national telecommunications network is improving. Techniques that increase channel capacity and installation of new satellite and fiber optics links represent significant potential gains for Defense. Increased competition in the long-distance component will yield more interexchange paths, and many of them will be more survivable and enduring than ever before. But increased quantity does not mean increased coverage of the nation. Competition drives establishment of new long-distance routes between profitable areas. The competitive race will lead to interconnecting large cities, adding more paths to a limited number of routes. The expected growth of satellite transmission systems will suppress interest in terrestrial media because satellite technology provides more capability and flexibility for less capital investment over the long term. For military purposes, more reliance on satellite radio adds to vulnerability as much as it contributes to providing alternate paths. Moreover, more concentration of physical facilities and minimum manning for their operation are inevitable in the competitive environment.

Concentration itself is a concern. In defining the Local Access and Transport Areas, AT&T has prescribed the points at which all the interexchange carriers can deliver their services. In effect, this reduces the extent of the interexchange network. Unless the interexchange carriers opt to provide more than one point of presence in some Local Access and Transport Areas, many private lines will be routed over single and lengthy paths for that "last mile" in the exchange component. For AT&T Communications, economic considerations may force abandonment of existing transmission paths between some exchanges. Thus, Defense can expect less inherent diversity and redundancy and more paralleling of circuits in the same pipelines. When diversity is desired, it will have to be designed with these limitations in mind. The gains in survivability and endurance seem outweighed by the concentration of

paths and facilities and the reduction in routing options between the user and the interexchange carriers. The use of fiber optics offers new promise for sustainability, but the struggle for survival in the exchange component threatens the modernization necessary to afford equal protection for "the last mile" of the circuit. Nonetheless, fiber optics transmission paths represent a forward leap in applied technology that can only benefit Defense. It is to be hoped that competitive pricing will encourage its use where cable systems are rapidly deteriorating.

Multiple access is substantially enhanced by new products that are not dependent upon wire. Mobile radio CP equipment is expected to be one of the most competitive product lines in the new marketplace. Concern about the bypass is the principal impediment to its extensive spread. Initially, this technology will be available in metropolitan areas, but it will expand toward more remote areas in the years ahead. Mobile radio will be identified with the exchange component as an alternate means to obtain access. For the providers of exchange services, it offers a capability that is at once constructive and destructive. Use of mobile radio CP equipment enables bypass of inside wire and cabling to establish direct connection between the user and the exchange. The competitive environment fosters avoiding manpower-intensive projects like laying cable and installing wire. This means that the Bell operating companies and Independents are more likely to depend on mobile radio, thereby creating new vulnerabilities while neglecting less physically vulnerable cable and wire.

Radio will likely become the basic transmission medium. Subscribers can be served in mobile and fixed locations equally well. Thus, the demand will diminish for terrestrial transmission systems. As technology explodes, satellite transmission systems will become more economical and therefore more extensively used. The commercial telecommunications network will undergo the changes that took place in tactical telecommunications in recent years, as more radios were introduced. As new radio systems were fielded, the increasing electronic warfare threat mandated a return to more dependence on cable and wire, particularly in initial defense positions. Indeed, there is considerable potential for that same threat to endanger radio-based strategic capabilities.

Collectively, the gains in survivability, endurance, sustainability, redundancy, and multiple access brought about by divestiture are offset by the losses. The new medium will have more long-haul trunking, but it will be concentrated at fewer nodal points, and fewer local pipelines will be used for routing circuits. Simultaneously, the network is shifting to the more flexible radio medium, bringing about new

vulnerabilities. The recent renewed emphasis on a government-owned minimum essential network suggests that the network's weaknesses make it too unreliable for the most critical Defense needs. Yet, even after divestiture, the national telecommunications network will still have the capability to meet many Defense requirements. Effective management will be the major challenge for future planners.

Whatever adjustments take place in the physical and technical characteristics of the network, its effectiveness depends on the remaining three capabilities: interoperability, responsiveness, and effective control. Survivability, endurance, sustainability, redundancy, and multiple access are the products of design and engineering. They must be consciously anticipated and deliberately incorporated in the network. Responsiveness and control are human-based functions rooted in policy. Interoperability is a hybrid of the two—it must be designed in order to work, yet making it work is a matter of policy.

The baseline of interoperability is technical standards which, as discussed earlier, are particularly vulnerable in a competitive environment. Cornering the market for a particularly lucrative capability is an almost irresistible temptation. In the national network, interoperability is essential because each interexchange carrier and each CPE vendor must meet the technical parameters specified by the Bell operating companies and Independents that operate exchanges. Here the role of the Central Services Organization is pivotal. If its authority or resources are reduced, standards will deteriorate rapidly, and lack of interoperability is the consequence. The points of presence in the Local Access and Transport Areas and the Independents' exchanges are crucial because they are the points at which alternate paths for rerouting are made available. But, this does not mean that all circuits will have an immediately available alternate route. Using a competitor's path entails time-consuming administrative and contractual arrangements. Moreover, the circuits for sophisticated terminal devices are extensively conditioned and hard-wired to enable compatibility with the network, and rerouting them is a reengineering requirement tantamount to a new installation. Fortunately, the competitors of AT&T Communications are not expected to build products that are technically incompatible with those of "Bell" companies because they risk loss of the capability to interconnect with "Bell" services and thereby lose potential revenue. As MCI President Orville Wright expressed it, "We're ready to interoperate with AT&T anytime and any place; we'll meet them 'in the air' on radio shots. We've gone to great pains to insure that we adhere to prescribed standards."¹⁹ Still, once the interexchange component is no longer under regulatory watchcare, the potential for one or more in-

terexchange carriers to use unique standards increases substantially.

Interoperability is risked most in the private systems that bypass the national network. No policies mandate designing and engineering private telecommunications networks to meet standards beyond those essential for internal operations. Even mobile radio systems for public use may not be designed to access any exchange. Rather, the terminal devices may be capable of reaching only the parent exchange or the group of exchanges using the same range of frequencies. These potential limitations mandate policy decisions on standardization. If Defense must rely on commercial private networks under certain emergency circumstances, then strengthening standardization and enforcing it are essential. Once interoperability is technically possible, interconnection of competitors' transmission facilities becomes a matter of management willingness or Federal direction. But, if they are not technically compatible, neither willingness nor direction can help.

Even if all participants adhere to the same standards, use of the network during crises or emergencies is limited by the necessity for multiple administrative actions. If a disaster should destroy the facilities connecting interexchange carriers with a group of Defense subscribers, rerouting would mandate a single authority to call the shots. If the disaster affected a BOC exchange, the BOC single point of contact would be that authority. If it were an Independent exchange, local management would be responsible. In either case, once the rerouted circuits reached another interexchange access point, new decisions would be required to determine which of the interexchange carriers would carry which circuits. Moreover, preemption of civilian circuits might be required to provide new paths. Here is an unfilled void that divestiture creates—single management of multiple circuits belonging to Defense. This is where policy, provisions, and procedures are needed in advance. The capability to deliver responsive service in an emergency necessitates practicing for it regularly.

From the Defense standpoint, the world's best network has been made considerably weaker and less reliable by the divestiture. Although potentially the divestiture will improve survivability, endurance, sustainability, multiple access, and redundancy, the network becomes more vulnerable and less responsive than it has been. Fragmentation of the network's management structure dilutes responsiveness, reduces management control, and increases at least the potential for departure from a single set of technical standards. Without these basics, the inherent technical capabilities of the network are degraded, particularly for Defense and other governmental bodies whose telecommunications needs are heightened during emergencies.

Divestiture has indeed weakened the ability of Defense to provide the telecommunications required both currently and in the future. But, Defense can ill afford to knowingly allow weaknesses to exist without acting to overcome them. This and other studies can be used to override the adverse effects of divestiture and explore ways to use the competitive marketplace to make strategic telecommunications better than ever. In short, worrying won't help at all. Indeed, "worrying is imagination misplaced."²⁰

THE COMPETITIVE MARKETPLACE

If the foregoing assessment is valid, large users face a challenging adjustment. Top management must recognize the new responsibilities and increased workload their communications managers have inherited. The simple technique of ordering the information pipelines the telephone company deems appropriate is obsolete. Today, telecommunications are integrated into the information processing functions to the extent that the end instrument has become a multifunctional device. The IBMs have entered the race with Ma Bell. Close behind the enhancements in terminal devices follow gradual deregulation and intense competition in the long-distance component. Choices must be made about how to reach that component and the extent to which each user should support the natural monopoly that enables universal service. Long-distance trunks must now be comparatively evaluated in terms of capability, compatibility, quality, and costs. Coping with change means getting smart:

- First, the large user must have a dependable team technically capable of both designing systems and evaluating proposals made by bidders.
- Second, the user must inventory, assess, and understand existing capabilities, including the cost of each component and feature, to establish a baseline for evaluating additional or replacement capabilities.
- Third, a capability is needed to integrate the separate components and install, test, operate, maintain, and restore the system.
- Fourth, a capability for keeping a steady eye on the marketplace is essential to ensure that the organization's needs are met with reliable products and services at the lowest cost.
- Fifth, a strategy must be developed that provides convincing justification to top management for each of the previous actions.

It will help considerably if cost data reflect an overall savings resulting from the proposed strategy.

- Finally, those who use telecommunications in the new environment must be educated and disciplined in order to capitalize on their capabilities and minimize costs.

As for obtaining these capabilities, the choices include developing an in-house team or contracting for equivalent service. The alternative selected is largely a matter of the size of the organization and the extent of its dependence on telecommunications. Although every enterprise will now need a communications manager, only the larger organizations with high-volume, divergent calling patterns will need depth of technical expertise on a full-time basis. For most small organizations, communications management can continue to be accommodated as a part-time, "when needed" function, but such part-timers will be much busier. The prudent manager in every organization must stay current with emerging technology and how to put it to use at the least cost.

The wide range of new seminars, tutorials, and short courses being offered indicates that the need to get smart is being recognized. Institutions like George Washington University are experiencing a growing demand for enrollment in telecommunications degree programs and individual courses. The demand is so large that George Washington University officials and those of several other universities are arranging special seminars focused exclusively on the changes in national and global telecommunications.²¹ Certainly, the divestiture of AT&T is not the only motivation for strengthening staffs, but it is the largest single event thus far in what has become known as the telecommunications revolution.

The foregoing description of the divestiture's impacts and the need to get smart in order to take advantage of the competitive marketplace mandates a series of changes. For Defense, this means actions in two directions—to adjust internally and to alter national policy. In short, the divestiture necessitates a strategy for change.

INTERNAL ADJUSTMENTS

Readying Defense for this revolution gained measurably during 1982 with establishment of the National Security Telecommunications Advisory Center (NSTAC), developing and encouraging new legislation, obtaining an FCC waiver to meet emergency telecommunications needs, and actively shaping the BOC single point of contact for national defense and emergency preparedness. These are efforts in the right

direction—upward, where national policy is made and transformed into standard nation-wide procedures. More such efforts are needed—in the same direction, capitalizing on the successes already achieved. But, there is also a need to look downward and inward at the management structure within Defense with a view toward meeting new needs growing out of the divestiture.

MANPOWER NEEDS

For designing and evaluating telecommunications systems, the Defense team is already smart. Both the Defense Communications Agency and the Services have employees with solid technical credentials and plentiful experience. With augmentation from the private sector, they designed, engineered, and acquired AUTOVON, AUTODIN, WWMCCS, NMCS, and several other major telecommunications systems, each of which is more extensive than those of several commercial carriers. Most notably, it was a Defense team that, together with academic and industrial research groups, pioneered packet switching and cellular radio in the ARPA net and launched industry into rapid refinement of these technologies. Yet, for a variety of reasons already discussed, the need is evident for recruiting and retaining new talent, particularly for organizations like the Services' communications commands which demand the most from commercial companies.

Over the next five years, augmenting from the private sector will be the easiest method. But, for the long term, Defense must develop programs to motivate young people toward technical specialties. A college scholarship for promising students, patterned after existing ROTC and Services' medical plans with respect to obligatory post-graduation service, is one approach. Another is expanding the current civilian internship program into a broader cooperative education program where candidates alternately work and attend college classes. For these and other incentive-based approaches, the trained and experienced servicemen who leave the military are an excellent source. Those without potential for the rigors of an engineering education may qualify as communications technicians or engineering assistants. This use of a captive market of candidates suffers from the disadvantage of creating competition between the uniformed and civilian elements within Defense. But it offers a promising future for some of the Service personnel who choose not to reenlist as well as the activities that succeed in recruiting them. Industry has recognized this important talent pool, making offers every day to Service people just outside the gates of military installations around the world. These young people find offers of triple take-home pay and "less hassle" hard to refuse. Keeping good engineers and technicians for full careers is a more difficult challenge.

Seemingly, the only answer is better pay, comparable to that of industry, which perhaps can be embodied in a separate bonus plan like that for military physicians. To the extent practicable, it will also help to relieve technical staffs of all but essential administrative tasks and select for management positions only those who have both the potential and the desire.

The new demands for precisely defining telecommunications needs mandate active pursuit of programs to strengthen the competence of the Defense civilian workforce. The principal target organizations are those that directly serve the user. It is at this level where aggressive, intelligent engineers can derive considerable satisfaction from meeting user needs and saving money in the process. But, undertaking this initiative requires an outlay of considerable resources before the return on investment is achieved. In Defense, getting smart also includes increasing the workforce. The amount of increased manpower needed is not easy to measure, but the factors in the equation can be deduced. The time is ripe for making these decisions, before Defense falls behind the "power curve" which will surge substantially as competition increases.

INFORMATION NEEDS

A major factor influencing the size of the work force is the quality and timeliness of the technical information available and needed to do the job. In the Defense Department today, even within each Service, the lack of reliable and current information about existing capabilities generates unnecessary burdens. Indeed, the lack of a complete inventory of leased telecommunications resources has been an embarrassment to Defense.

Perpetuation of the division between long-haul and local services creates frustration at every level. A long-haul engineer needs to know existing capabilities at an installation, and the installation engineer must understand the long-haul network in order to serve users. Moreover, capabilities exist both on installations and in the long-haul network that are not controlled by either the long-haul or local manager. For both sets of managers within Defense, the inventory is incomplete. Even DECCO's consolidated list of capabilities is limited to circuits, trunks, and equipment for the long-haul telecommunications that are comprised in the Defense Communications System, and no central inventory of installation services exists above the major command level.

Defense communicators must have *full* knowledge of *all* Defense capabilities in order to be effective buyers. Otherwise, they could fall victim to the persuasive marketer's pitches, spending considerably

more money than necessary to fulfill users' needs.

The need exists for a management information system that provides timely, accurate, and complete information about existing resources, with separate fields used to reflect capabilities, sources, costs, origins, destinations, routing, terminal equipment, and the additional data required for effective engineering, restoration, and costing. Another category would reflect resources planned for future installation. Such a system can support functions which now entail repeated phone calls and considerable time. Ideally, the system would be user oriented and would include the intercomputer links that are now invisible to all but their private users.

Having developed this important capability, the next logical step is standardization of procedures for its use and update as new telecommunications are added and others deleted. With architecture which captures the advantages of existing capabilities at DECCO, the TCOs, and some installations, the development of standards and procedures does not represent a "ground-up" management information design requirement. The extent to which Defense becomes committed to developing this capability can affect manpower requirements measurably. Without a central inventory of assets, Defense risks even more duplications and gold-plated systems and the added costs that are inherent in them.

MANAGEMENT NEEDS

The new single manager approach of the Defense Communications Agency is a leap in the right direction. It includes the universal incentive for producing reliable service—profit. But, the single manager approach suffers from management weaknesses that can perhaps be overcome through an additional initiative—"capstone control." The term "capstone" is borrowed from the successful undertaking of the Army's Forces Command in the late 1970s to strengthen ties between Reserve Component units and the active units they would augment in war. The approach is targeted largely at worst case situations. Under these conditions, multiple single managers are simultaneously endeavoring to restore individual circuits and progress becomes stymied because no one is in charge. The compelling need at that time is an authoritative director. Capstone control is a small group of experienced managers who are empowered to do that job. Designed to operate around-the-clock, a staff of less than 20 could perform the tasks envisioned. This is the single manager of single managers.

Under the capstone control concept, Defense would provide a military officer to head the entity, but the remainder of the staff would be made up of representatives from each interexchange carrier, the

CSO or BOC Regions or Bell operating companies, and the collective groups of Independents and CPE providers. The members would be rotated at the discretion of their companies. The Independents and CPE providers would use existing association affiliation for selecting representatives. In a very real sense, the capstone control entity is the working man's NSTAC. Its members solve problems that no single company can handle in the interest of national defense and emergency preparedness. The incentives for industrial participation are also akin to those of the NSTAC. Beyond the desire to contribute to national defense, joining capstone control offers potential for added revenues in a number of ways. First, the employees representing each of the companies would learn the nature of Defense business and, possibly, encourage their organizations to compete for it. Second, during emergencies, representatives would not be discouraged from securing resources from their own companies to restore or install the services needed. Third, the companies serving as single managers for circuits would have a representative to facilitate their efforts.

The facilities required would include computer-based display facilities portraying the routing of the circuits and channelization of all interexchange carriers' transmission systems. The proposed Defense telecommunications information system could be one of these basic capabilities. The circuits watched would include all the commercially carried domestic DCS circuits plus those the National Communications System designates from its member agencies' systems. As new circuits were ordered they would be tracked passively through activation in coordination with the DCA Operations Center. Management action by capstone control would be by exception; that is, *only* when major outages occur or an emergency develops. Through formal agreements that all Defense telecommunications suppliers have with DECCO, the carriers and vendors would recognize the authority vested in capstone control or, otherwise, be relocated to the bottom of DECCO's list of suppliers. In this regard, capstone control would be similar to the Civil Reserve Air Fleet (CRAF), a group of airlines that have committed resources for emergency use. Not all airlines participate, but those that do get priority for government business. Of course, close coordination with Justice would be required to charter capstone control, and an executive order would probably be necessary to establish it.

The costs of capstone control would be funded through the industrial fund arrangement which has supported DECCO operations for many years. The per circuit costs would be infinitesimal. Such an arrangement should foster the independence of the entity with respect to the carriers and vendors who support it. The costs to each would

be one employee, and those selected should be among those capable of reaching top positions in their companies. In that sense, assignment to capstone control would be a broadening experience, another incentive for gaining industrial support.

In effect, capstone control is what Defense sought in the BOC single point of contact, with the functions pared down to management by exception. The BOC single point of contact would still have vital functions, including the 24-hour watch and driving installation and restoral of BOC circuits in behalf of Defense. But, the shortfall of the BOC single point of contact is that it handles only circuitry in which a Bell operating company is involved. In the competitive environment, a single manager might use resources owned by an Independent and MCI for Defense circuits. If so, the BOC single point of contact would not have visibility over them, and, moreover, would not become involved in nonemergency circuits unless requested to do so. AT&T Communications will dominate the interexchange market for many years, but its competitors are expected to continue to grow, as evidenced by MCI's early 1983 announcement of plans to install 170,000 miles of fiber optics "cable."²² Although AT&T Communications' competitors are not now actively seeking Defense private line business, in time they will develop excess capacity which they will happily sell to Defense. In the future, Defense circuitry will be spread across more and more interexchange carriers as a result of competition. Using a variety of single managers to subcontract for piece parts of the path will fuel this change. As this spreading occurs, Defense will need something like capstone control, particularly to preserve positive control during emergencies.

Besides the option of creating an in-house Defense capability, an effective alternative to capstone control would be asking the BOC single point of contact to invite Independent representatives to join it. This is an easier action to accomplish, owing to both the past and post-divestiture relationships between the Bell operating companies and Independents. They are in the same business, but not in competition with each other, at least not yet. This approach would place all domestic, commercially carried long-haul DCS circuits and those identified by the National Communications System under the purview of a central control facility. Such an arrangement would improve coordination of restoration and shifting of resources during emergencies. The entity would manage emergency circuits when requested by Defense, but it would also provide authoritative direction of prioritized restoration during major disruptions. The same manning and funding arrangements suggested for capstone control apply, including minimum military presence.

A Defense initiative to advance either of these proposals will help dispel the perception that Defense favors "Bell." That perception is widespread, although most who hold it understand the reasons why Defense must maintain solid relationships with the carrier handling the bulk of its circuitry and furnishing most of its equipment. A genuine effort to establish either of the central control entities will facilitate unity of effort for national defense. A central control facility with adequate resources and authority will improve responsiveness among multiple single managers of circuits. It will accomplish for Defense what the modification of final judgment could not and did not. And most significantly it will provide a solid foundation for future undertakings to restore cohesion to the fragmented national network. It is admittedly revolutionary, but the conditions that give rise to its proposal are themselves revolutionary.

TECHNOLOGICAL WATCH

The third aspect of getting smart within Defense is focused on all types of military telecommunications needs—strategic, tactical, long-haul, and local. The competitive marketplace for telecommunications is expected to yield a continuously improving array of products and services. The employees responsible for circuit and systems engineering would benefit greatly from studying the marketplace, but their roles may not afford the time and opportunity necessary to meet the need. The task is bigger than just reading periodicals and visiting exhibitions, and it runs deeper than evaluating products and services already in the market.

Defense would benefit greatly from establishing a counterpart of the Defense Advanced Research Projects Agency (DARPA), oriented more on development than research, exclusively in the telecommunications technology. Its mission would be to probe continuously into the industrial base and the Services' laboratories, gathering knowledge about forthcoming technology before it is incorporated into consumer products. This group would also be responsible for gleaning conceptual requirements from within the Defense establishment to give direction to its quest for applied technology. This activity would best be staffed with both technical and nontechnical personnel to provide that important balance in determining the practical value of emerging developments. A significant aspect of the group's role would entail attending industrial seminars and interacting with the "futurists" in academe and think tanks. It is even conceivable that the group could be empowered to selectively recommend financial support for developments with potential military value. This support would be in the form of applied research and feasibility demonstration grants rather

than pure research. Perhaps the role of DARPA can be reshaped to meet this need, but the organization envisioned would have a role substantially different from the one DARPA now fulfills. The members of the group must stay continuously abreast of user needs and keep pace with modifications to national strategy and war plans as well as actively pursue ongoing developmental activities.

To derive maximum benefit from this group of technological scouts, the new entity would be charged with spreading knowledge gained through periodic briefings at installations and presentation of classes at the military schools where telecommunications leaders and managers are trained. It is also possible that the group would publish its own periodical for distribution throughout the Defense telecommunications community. If such a group were established and chartered as described, professional communicators, both uniformed and civilian, would hotly pursue assignment to it. If indeed a telecommunications revolution is underway, it behooves Defense to gain and maintain the high ground.

A SELLING APPROACH

Getting smart entails increased expenditures today in order to save larger sums tomorrow. The current political environment favors such Defense efforts. The Secretary of Defense was personally involved enough to publicly oppose the *US v. AT&T* settlement and to ask AT&T to brief Defense officials about its reorganization plan. As a whole, the Congress is well aware of both the AT&T divestiture and the Defense concern about it. Where Congress will scrutinize these initiatives is in the budget, authorization, and appropriation processes. One phone call to Representative Jack Brooks will almost assuredly guarantee support for the management information system.

The costly proposals have to do with improving the technical expertise of the Defense telecommunications workforce. Although Congress could probably be easily convinced of the need, it would likely consider the focus too narrow. Yet, expanding the proposal to encompass either all technical fields, or all technical fields in Defense, or telecommunications in all Federal agencies, and so on, may diminish its chances of survival. It has the disadvantages of setting a demanding precedent and raising outcries of favoritism. But eventually, instituting these kinds of incentives will be essential, and Defense communicators are the ideal pioneers for fostering such programs. The manpower increases are easier to justify on the basis that a competitive market requires more of the user. Creation of the applied technology development watch team could probably be accomplished within the

Defense Department or, if not, with the Office of Management and Budget and the Office of Personnel Management. Both the executive branch and the Congress would likely look with favor on efforts to form a joint government and industry team like capstone control. Certainly, it should be at least as easy to sell as the NSTAC where a similar concept is now being honed into a more definitive structure.

Because of the current emphasis on command-and-control communications and the public awareness of AT&T's divestiture, the time is ripe for advancing these initiatives in the next budget cycle. Conviction about the validity of the needs is the pivotal consideration, and conviction will be the principal ingredient in getting them approved in the Pentagon, at the White House, and on Capitol Hill.

EDUCATING THE USERS

Fortunately, one of Defense's internal needs requires no additional resources other than time. Educating users can begin immediately. The impacts need to be explained in fundamental terms, oriented on their personal communications needs at home and in the office. Users need to know who to call to get information about using products and services as well as repairing and restoring them when breakdowns occur. The education programs should also include reminders of the need for discipline and the costs associated with use of various products and services. As telecommunications are increasingly integrated with word processors and computers, thorough user understanding becomes an important investment in terms of both efficiency and costs. Managers at every level must carefully screen training programs and product orientations offered by carriers and vendors in order to preclude user fixation on unique products and services. Indeed, a captured user, particularly a high-ranking one, becomes the telecommunications manager's worst enemy in attempting to take advantage of the competitive marketplace.

To complement these internal changes, external actions undertaken simultaneously are an intrinsic part of the Defense strategy for change.

EXTERNAL INITIATIVES

New Years' Day 1984 marks a watershed. From that day forward, the users take on new responsibilities while hopefully reaping the benefits of competition. Although this new era is filled with uncertainty, it may well provide a breeding ground for still more changes. Eventually, the interexchange long-distance market will be deregulated, leaving trunking capabilities separate and independent like parallel toll

highways. Each would carry traffic contracted separately, some private and some public, at favorable rates. As the computer and telecommunications technologies become indistinguishable from each other, more and more private networks are certain to emerge, and perhaps interconnect, creating a digital parallel to the analog nationwide network. Meanwhile, the medium is shifting to radio, creating new capabilities with greater vulnerability. As these changes occur, demand for basic cable and wire telephone service will inevitably decrease, spelling degradation, if not demise, of the exchange component as it exists today. If the plentiful indications that feed this speculation are valid, the 1980s could well bring a gradual disintegration of the national telecommunications network and an end to the traditional meaning of universal service. The replacement for the national network would be a collection of separate networks, analog and digital. Universal service becomes definable in terms of each users' needs, and subscription to multiple networks may become a necessity at the user level.

Certainly these potential changes in the wake of divestiture would be neither desirable nor constructive for the user. In particular, national defense would be increasingly jeopardized as the competitive environment fostered independence rather than interdependence among carriers. Notwithstanding all its inherent evils, Federal oversight is the chemical that brings cohesion to the goods and services consumed by the public. As spotty as the evolution of Federal telecommunications policy has been, it sustained unity and continuity in the national network until the divestiture was implemented. Defense benefited greatly from that policy, capitalizing on the enormous capabilities of the integrated corporate monopoly it perpetrated.

The potential long-term consequences of the Computer II decision and the *US v. AT&T* settlement led Defense to take significant steps toward ensuring preservation of critical capabilities. Creation of the NSTAC was singularly important because it provides the ideal body for agreements and actions that recognize national defense and emergency preparedness as the overriding concern. The NSTAC members have a stake in national security and readiness. Although legislation could force the cooperation of carriers and vendors to meet emergency needs, it could never achieve the potential that NSTAC offers. Legislation would be viewed as a matter of compliance, carried out with reluctance, not relish. It would mean willingness, but not eagerness, in preserving positive command and control.

This does not mean that legislation is undesirable. If adopted as Defense desires it, legislation would assure what are mere hopes for actions facilitated by the NSTAC. But, even without legislation, the goals

set for NSTAC reflect the nature of national telecommunications policy desired by Defense:

- Recognition in law that the promotion and support of national defense and emergency preparedness is a goal at least equal to any other.
- Enactment of statutory safeguards authorizing or requiring telecommunications carriers to engage in joint network planning; to develop plans for the projection and restoration of essential communications; and to prepare for the interconnection and interoperation of facilities to meet national defense and emergency preparedness needs.
- Authorization for any communications carrier to provide end-to-end service during times of disaster, war, or national emergency.²³

With these goals as guidance, additional initiatives, like those put forth in the previous section, can preserve positive command and control. The strategy for change includes three distinct actions.

THE STANDARDS REQUIREMENT

The Federal government should have the responsibility for technical standards. If the goals of interconnection and interoperation to meet Defense needs are realistic at all, then the government cannot expect a group of competing entities to make standards for themselves and conform to them. There is no national policy governing those standards. The modification of final judgment assumes that the Bell operating companies will prescribe technical standards, and the *Plan of Reorganization* assigns responsibility for them to the Central Services Organization. But, these documents apply only to "Bell" companies. The fact that private networks are, by definition, excluded from the BOC and CSO domain is the crux of the problem. A marketplace steadily evolving away from regulation and toward full competition holds considerable incentive for developing unique ways to communicate and to avoid adherence to standards. Under such conditions, the Federal government must do for telecommunications what it does for other products—prescribe minimum essential standards that all must meet. Because the need for interconnection and interoperation is the basic requirement for these standards, Defense is the appropriate agency to initiate this action. Seemingly, the National Telecommunications and Information Administration would be the principal Federal agency involved in both the development and execution of the program, and the Federal Com-

munications Commission would provide regulatory oversight. Without solid standards, interconnection and interoperation represent little more than fond hopes.

THE INTEROPERATION REQUIREMENT

In a thought-provoking paper for the Harvard University Program on Information Resources Policy, Lee M. Paschall, Lieutenant General, US Air Force (Retired), a former DCA Director and NCS manager who now serves as President of the American Satellite Corporation, provides insight about the second initiative—the joint efforts needed by Defense and telecommunications carriers to achieve interconnection and interoperation among commercial networks in the post-divestiture environment:

There is much greater diversity of telecommunications routes, facilities, and equipment, all of which would enhance the survivability of the national telecommunications structure if these separate networks could be organized and connected in such a way as to respond to a national emergency. . . . The question now is whether the several competing suppliers of telecommunications will be willing to unilaterally incur added cost, thus weakening their competitive posture.²⁴

Joint network planning is *the* pivotal function for assuring delivery of telecommunications when and where they are needed by Defense and for providing the backup means to get critical messages through. Such cooperative planning is endangered considerably in the competitive environment. The 1981 FOCUS publication, *The Case for Divestiture of AT&T*, contains a ten-page chapter opening with this headline: "Divestiture Will Not Impair and Will Actually Strengthen the Nation's Defense Communications Capabilities." The FOCUS coalition, which includes a number of AT&T's competitors, adopts the position that Defense has made its circuits vulnerable by placing almost all of its eggs in one basket, disproportionately relying on AT&T for telecommunications services. The FOCUS view is that spreading Defense circuitry across the facilities of all the common carriers will reduce the vulnerability of national defense telecommunications. Certainly, there are weaknesses in the FOCUS argument like those regarding reliance on multiple circuit managers discussed in the previous sections. Nonetheless, despite these weaknesses, the FOCUS position addresses some of the considerations relevant to Defense goals:

Divestiture would not jeopardize the joint network planning necessary for the Nation's defense communications system. That planning is conducted because it makes good business sense and

is handsomely rewarded by enormous Federal expenditures
Joint network planning is conducted because the communications
industry could not survive without it.²⁸

If the FOCUS posture regarding joint planning is valid, then Defense stands to gain measurably from its ongoing efforts to catalyze that process. If joint planning is as vital to success as FOCUS says it is, then technical standards would implicitly be followed. The FOCUS publication's chapter on Defense telecommunications concludes with these promising words:

By turning to these multiple carriers, the Department of Defense could reduce the current vulnerability of the defense communications system. Instead of placing almost exclusive reliance on the communications facilities of a single carrier, the Department would have at its disposal multiple long-distance carriers whose geographically dispersed facilities, alternate routes, and innovative technical capabilities would provide a more survivable and restorable defense communications network.²⁹

In the aftermath of antitrust, the government's goals and the industries' intentions seem to be moving in the same direction. It is no easy task to bring about interdependence in an environment favoring independence. But if interconnection and interoperation are to be relied upon in emergencies, provisions for them must be made in advance and exercised regularly to ensure effectiveness when it really counts. At this juncture, Defense has competitively offered its recurring business to any carrier or vendor capable of fulfilling it, and the key leaders of the telecommunications industry have begun to participate cooperatively in the NSTAC. These actions represent two giant steps, and probably the hardest ones, in achieving the overlap between the interests of the public and private sectors. Now the next steps become at least less burdensome and more likely to succeed.

More than two decades ago Ma Bell engaged voluntarily in an extensive program to "harden" facilities, making them less vulnerable to the effects of natural disasters or enemy attack. She went to the extra expense of routing major transmission systems around cities, building underground switching and control stations, and adding spare capacity for augmentation. AT&T kept Defense informed of progress and Defense officials offered suggestions for making the program match contingency priorities. In effect, every American who used telecommunications contributed to these efforts because AT&T money was used to finance them. But when regulatory agencies tightened revenue flow, AT&T abandoned its hardening plans and actions because of the high

costs they entailed. Since then, both AT&T and its competitors have built a variety of new facilities, none of which were sited and constructed with Defense needs or national defense implications in mind. The time has come for Defense to influence the decisions of the common carriers about locating transmitter sites and switches and the physical features needed for some degree of protection and sustained operations. Both the impetus and the means for renewal of efforts similar to Ma Bell's exist. NSDD 95, NSDD 47, and the President's foolproof dictum to the Secretary of Defense are more than sufficient bases for action, and the NSTAC provides the forum for agreement on what needs to be done and when, where, and how. Telecommunications carriers will fulfill Defense requirements provided they are given direction and funds for doing so. Indeed, the top leaders of the telecommunications industry have sought Defense guidance. For example, in an interview in August 1982, MCI President Orville Wright stated, "I've told Defense, and so has Mr. McGowan, that we'll build our transmitters wherever they want them, and, if they want them to be hardened, we'll do that too if they come up with the money for it."²⁷

The major question in strengthening the nation's infrastructure is funding. In this regard, General Paschall set forth five options:

- Use only those networks most nearly meeting the government's survivability goals, relying on the government's market power . . . to cause potential suppliers to make the added investment;
- Direct subsidies to all carriers;
- Reliance upon a "chosen instrument" at the expense of competition and the increased diversity that it brings;
- Government subsidies to provide increased protection to selected critical facilities;
- Require that protection features be provided by all carriers in the national interest and hence indirectly subsidized by all users.²⁸

What didn't exist when General Paschall wrote this paper was the NSTAC. This is the appropriate body to help Defense and industry collectively determine solutions. The government's desires on funding options would seemingly support the last one—build the costs of protection into subscriber rates and thereby achieve at least some protection on all carriers' facilities. If the government is to support funding in any form, then it can legitimately seek to get something in return. Here, again, the CRAF provides a precedent. In an effort to make commercial aircraft capable of meeting national defense needs, the Federal government funds the enhancement of aircraft used for Defense purposes.

The interests of the NSTAC members relate to programs that offer gains for their companies as well as the government. One of these is the capstone control concept or similar joint ventures which relate to the ongoing NSTAC program for developing a "national coordinating mechanism." Certainly the NSTAC would welcome participation in a program for incorporating some level of protection into their facilities and coordinating the positioning of new facilities. Such a program might threaten the privacy of individual corporate strategies, but if the government made funding support contingent upon the carriers' agreement to interconnect and interoperate, then perhaps the incentive for cooperative participation would be more compelling.

Certainly the NSTAC has a pivotal role in developing policies governing interconnection and interoperation. The logical first step in this program is at the exchange level where interexchange carriers' transmission systems are reduced to channel level, and individual circuits can be patched. Patching of larger multiplexed packages would, in most cases, require interconnection of transmission paths between sites of competing carriers, necessitating a far more extensive commitment and likely resulting in requests for funds in addition to those associated with positioning and hardening facilities.

Indeed, there are potential barriers to achieving Defense goals, but pronouncements like those of MCI and the FOCUS coalition have invited the interconnection and interoperation initiatives. The strategy for change proposed for Defense is to call their hand, asking them to cooperate and providing an incentive to do so. The fact that Defense occupies the seat of responsibility for telecommunications supporting both national security and emergency preparedness does not mean that the required funding be a part of the Defense budget. These undertakings are in the public interest, and, therefore, the costs they entail should be borne by the public through subscriber rates or tax increases, or a combination of the two.

THE LEGISLATION REQUIREMENT

The third initiative in the proposed strategy for change is action by the Congress. Unquestionably, legislation recognizing national defense and emergency preparedness requirements has been sorely needed for many years, and divestiture has magnified that need. In light of past experiences, it would behoove Defense to sustain initiative for the short-form bill or similar legislation. The fact that it is oriented exclusively on national defense and emergency preparedness needs would seemingly enhance its chances for success. If Defense is forced to tie its legislative desires to bills like Congressman Wirth's HR No. 4158 or Senator Goldwater's S.999, then the defense and emergency

issues are submerged while more controversial issues reduce the chances of passage. New legislation must take into account the imbalances created by the modification of final judgment and Computer II. Equitable opportunity to compete for Defense business is certainly in tune with administration policies, and it is foolhardy to permit policies to exist which disadvantage the companies that can best meet Defense needs. Legislation also provides an alternative for achieving the interconnection and interoperability goals should the incentive approach fail. Sponsorship of the proposed legislation by the White House would give it the priority it needs on the Hill. Ideally, NSTAC would agree to legislation that sanctions agreements reached among its members, and such agreements would enhance greatly its chances for success.

If these initiatives are to be pursued, Defense must be able to fulfill the requirements they impose. It is no easy task to determine the optimum locations for commercial transmission and switching sites and to provide the detailed specifications for hardening them to the desired level of protection. Preparing to direct the efforts of a capstone control facility will require considerable creativity, and working these initiatives through the NSTAC will not be an easy chore. In other words, if Defense undertakes *any* or all of these proposed actions, acceptance of new responsibilities and roles is automatically implied. The Dickens quotation that began this chapter is again appropriate. Whether future communicators will look back at this era as "the best of times" or "the worst of times" depends on what we do now.

EPILOGUE

This book contains a lot of words meant to convey a simple message—telecommunications have changed and large users like Defense must also change in order to use them effectively and efficiently. There was once a day when one organization could deliver any need. That day is gone, never to return.

In the last chapter of this book, several initiatives are proposed as a part of a suggested strategy for change. Some are internal adjustments, requiring resource increases and new budget entries, which are relatively easy to accomplish. They are adaptive, designed to make Defense telecommunications work effectively after divestiture. The others are external requirements, harder to sell because they are targeted at the national policymaking level. They are proactive, seeking a more favorable operational environment for Defense telecommunications in the decades ahead. All these initiatives capitalize on the already successful actions achieved by Defense telecommunications leaders and the potential success of other initiatives now underway. They are proffered as suggested ideas aimed at countering the threat to the nervous system of national security brought about by the divestiture of AT&T.

The major benefit of the divestiture is increased competition. The principal impact is the breakdown of single management in the national commercial network. For Defense, reaping the benefits of competition may be more difficult than coping with the loss of the single manager. In fact, the major challenge for Defense communicators is adapting to the new marketplace, seeking to understand and incorporate the technological capabilities emerging at an unprecedented pace. By the end of this century, or perhaps sooner, the burdens of installation and restoration of circuits may well disappear. Instead, subscribers will access desired destinations with a portable handset from anywhere in the

nation. Radio waves will carry the messages in tightly compressed digitized packets, minimizing the time and space required on the transmission path and directly interacting with computers. Dedicated circuits will be replaced by override capability on the network, assuring an ever-ready path to key leaders. The national network's components will have disappeared by then, replaced by plentiful passive repeaters on the ground, in the air, and out in space. Once these capabilities arrive, Defense communicators will have forgotten what their predecessors endured in coping with the divestiture of Ma Bell.

NOTES

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12. Interviews with John Grimes, Deputy Manager, National Communications System, Washington, DC, 5 August 1982 and 14 September 1982.
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6. Graham T. Allison, *Essence of Decision: Explaining the Cuban Missile Crisis*, 1971, pp. 127-128.
7. Office of Management and Budget, *Policies for Acquiring Commercial or Industrial Products and Services for Government Use*, Circular A-76, revised, 18 October 1976, p. 1; and Department of Defense, Directive 4100.15, *Commercial or Industrial Activities*, 8 July 1971, p. 3.
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9. The overview of the Defense establishment written by Eston T. White in the 1980 edition of *Department Organization and Management*, one of the texts in the national security management series published periodically by the National Defense University, provides exceptional insight into the evolution of the Defense Department's management structure, particularly the activities responsible for telecommunications. The author is a former Director of C³I Strategic and Theater Systems in OSD.
10. DTS-W is unique in that it is not a part of the communications command of one of the Services. Similar consolidated Defense telecommunications activities have been formed in other metropolitan areas, e.g., St. Louis and Boston, but they are assigned to the communications command of one of the Services.
11. The contents of these paragraphs were drawn from the author's personal experience, updated during visits to the Services' communications commands' TCOs in the autumn of 1982.
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13. National Communications System, *Final Report*, pp. 58-62.
14. Interview with Orville Wright, President, Microwave Communications, Incorporated, Washington, DC, 4 August 1982.
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68. *Washington Post*, 14 June 1983, pp. C-7 and C-15.
69. *Ibid.*, 3 July 1983, p. A14.
70. *Ibid.*, p. A1.
71. *Ibid.*, p. A14.
72. *Ibid.*
73. *Time*, 8 August 1983, p. 53.
74. *U.S. News and World Report*, 8 August 1983, p. 58.
75. *Telecommunications Reports* 49 (4 April 1983): 1-5; 34-35.
76. *Time*, 15 and 22 August 1983, pp. 45, 55.
77. *Telecommunications Reports* 49 (25 April 1983): 2.
78. US District Court for the District of Columbia, Civil Action No. 82-0192, *Opinion*, 8 July 1983, pp. 4-19, 33-73.
79. *Ibid.*, pp. 20-32, 74-159.
80. American Telephone and Telegraph Company, *Press Conference Remarks, Charles L. Brown, Chairman*, 3 August 1983, p. 1.
81. *Washington Post*, 4 August 1983, pp. C1, C4.
82. American Telephone and Telegraph Company, *Outlook*, no. 1, 10 August 1983, pp. 1-4.

CHAPTER VII NOTES

1. This was an actual occurrence related by Mr. Dan Lee, Office of Commercial Policy, Defense Communications Agency, Washington, DC, during an interview on 16 February 1983.
2. This development was related in conversations with personnel who work at the Defense Commercial Communications Office, Defense Communications Agency, Scott Air Force Base, Illinois, during a visit in the autumn of 1982.
3. *Telecommunications Reports* 48 (21 December 1982).
4. The restrictions governing relationships between AT&T Interexchange and American Bell were explained by J. Randolph MacPherson, Regulatory Counsel, Defense Communications Agency, Washington, DC, during an interview on 18 February 1983.
5. *Telecommunications Reports* 49 (24 January 1983).
6. The quotation is taken from a radio commercial for the Chesapeake and Potomac Telephone Company aired on Washington, DC, radio and television stations during February and March 1983.
7. *Wall Street Journal*, 11 March 1983, p. 4.
8. Interview with J. Randolph MacPherson, Regulatory Counsel, Defense Communications Agency, Washington, DC, 5 May 1983.
9. Charles L. Jackson, "New Technology: Some Observations on Bypass," a paper presented during the Practicing Law Institute Seminar, "After the AT&T Settlement—The New Telecommunications Era," Washington, DC, 9–10 December 1982, p. 1.
10. *U.S. News and World Report*, 8 August 1983, p. 58.
11. The intention to retain the single manager policy for Defense telecommunications was reaffirmed by Walter Hogge, Deputy Chief of Commercial Policy; Robert Goodnetter of the Defense Commercial Communications Office; and J. Randolph MacPherson, Regulatory Counsel, Defense Communications Agency during interviews on 16, 17, and 18 February 1983, respectively. Mr. Hogge had indicated that DCA planned to continue the single manager policy as early as August 1982.
12. Telephonic interview with Robert Goodnetter, DECCO, DCA, Scott Air Force Base, Illinois, 18 February 1982.
13. *Ibid.*
14. MacPherson interview, 18 February 1983.
15. *Ibid.*

16. Telephonic interview with Robert Goodnetter, DECCO, Scott Air Force Base, Illinois, 17 February 1983.
17. MacPherson interview, 18 February 1983.
18. Ibid.
19. Interview with Mr. Orville Wright, President, Microwave Communications, Incorporated, Washington, DC, 4 August 1982.
20. This quotation is attributed to Mr. Jim Fiebig in *Reader's Digest* 122 (March 1983): 86.
21. Interview with Brent Weingardt, Center for Telecommunications, George Washington University, Washington, DC, 24 February 1983.
22. This information was related during a series of interviews with Messrs. Walter Hogge, Dan Lee, and Don Havlu, Office of Commercial Policy, Defense Communications Agency, Washington, DC, 16 February 1983.
23. This quotation appears in numerous public documents and congressional testimony, as well as the DCA briefing compiled and presented by Lieutenant Colonel Jerome Landry, Chief, Commercial Policy Office, from which it was extracted.
24. Lee M. Paschall, "C³-Damaged, Intercepted or Blocked," a paper presented at a Fletcher School of Law and Diplomacy seminar held at Tufts University, Medford, Massachusetts, 6 May 1981, pp. 8-10.
25. Fair Opportunities for Competitors in the US, *The Case for Divestiture of AT&T*, 1981, pp. 393-395.
26. Ibid., pp. 298-399.
27. Wright interview, 4 August 1982.
28. Lee M. Paschall, "C³-Damaged, Intercepted or Blocked," pp. 10-11.

GLOSSARY OF ACRONYMS

ABI	American Bell International
AIS	Advanced Information Service
AMPS	Advanced Mobile Phone Service, Incorporated
ARPA	Advanced Research Projects Agency
ASC	American Satellite Corporation
AT&T	American Telephone and Telegraph Company
ATTIX	AT&T Interexchange
AUTODIN	Automatic Digital Network
AUTOVON	Automatic Voice Network
BOC	Bell operating company
CCRA	Consumer Communications Reform Act
CIA	Central Intelligence Agency
CINC	Commander in Chief
CSO	Central Services Organization
CRAF	Civil Reserve Air Fleet
C³	Command, Control, and Communications
C³I	Command, Control, Communications, and Intelligence
CPE	Customer premise equipment
CWA	Communication Workers of America
DARPA	Defense Advanced Research Projects Agency
DCA	Defense Communications Agency
DCS	Defense Communications System
DECCO	Defense Commercial Communications Office
DOD	Department of Defense
DTS-W	Defense Telephone Service-Washington
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FX	foreign exchange
GSA	General Services Administration
GTE	General Telephone and Electronics
ICAF	Industrial College of the Armed Forces

LATA	Local Access and Transport Area
MCI	Microwave Communications, Incorporated
MFJ	Modification of Final Judgment
NASA	National Aeronautics and Space Administration
NCS	National Communications System
ND/EP	National Defense/Emergency Preparedness
NDU	National Defense University
NMCS	National Military Command System
NSC	National Security Council
NSDD	National Security Decision Directive
NSS	National Security Studies
NSTAC	National Security Telecommunications Advisory Committee
NTN	National Telecommunications Network
OJCS	Office, Joint Chiefs of Staff
OSD	Office, Secretary of Defense
PD	Presidential Directive
SAC	Strategic Air Command
SPCC	Southern Pacific Communications Company
SPOC	single point of contact
SRII	Stanford Research Institute, International
TAC	Tactical Air Command
TCO	Telecommunications Certification Office
USACC	US Army Communications Command
USITA	US Independent Telephone Association
WATS	Wide Area Telecommunications Service
WIN	WWMCCS Intercomputer Network
WWMCCS	Worldwide Military Control and Command System

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