THE IMPACT OF COMPETITION
ON THE INTERCONNECTION INDUSTRY

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Program of
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ABSTRACT

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The Impact of Competition on the Interconnection Industry

Project directed by Professor B. A. Kolb

One of the most critical problems facing the telecommunications industry is the extent to which competition will be introduced into what has been, for the most part, a regulated industry. In the forefront of the competitive environment has been the telephone interconnection industry. The genesis of this industry was the Carterfone decision by the Federal Communications Commission which allowed competition in the interconnection field. It is the thesis of this project that the most significant factor affecting the telephone interconnection industry today is the continued impact of competition on the industry.

To insure that the project stayed within manageable limits the authors chose to examine the issues dealing with that part of the interconnect industry providing for the connection of answering devices, acoustic couplers, personal custom telephones, intercom systems, key business systems, or private branch exchanges (PBX) to the telephone system. Issues surrounding the competitive interconnect services of
microwave and satellite links provided by the specialized common carriers are beyond the scope of this project. The specialized common carrier area is a critical issue on its own right and should be the subject of investigation by future participants in the Telecommunications Program. An analysis of present, past and potential interconnect manufacturers is provided to show how the lure and promise of competition has affected the industry. Because there are hundreds of companies involved in the manufacture and marketing of interconnect devices, only a limited cross section has been chosen for this project.

This abstract is approved as to form and content.

Signed

Faculty member in charge of Project
PREFACE

During the last decade competition in the telephone interconnection industry has gone from infancy to a billion dollar reality. The Federal Communication Commission's landmark Carterfone decision in 1968 was a significant departure from the monopoly dominated past. This does not imply that the monopoly did not serve the country well, because telephone service in the United States, then and now, continues to be the best in the world. Success is a relative concept, and there are many who believe that competition will make our telephone service even better. However, the implications of competition telephone service remain an unknown.

A number of specific policy issues have surfaced over the last several years from the emergence of competition, and have forced themselves upon the Congress, regulatory agencies and other public institutions charged with protecting the public interest in telecommunication matters. At the time of this writing Congress has just finished hearing testimony on the Communications Act of 1978. This proposed legislation has placed telecommunication policy matters on center stage for the first time in decades. The Act has been called a first step, a beginning, in an attempt to resolve the issues of which competition plays a very substantial role.

This project focuses upon a number of the important
telecommunication issues awaiting resolution by the Congress. We will attempt to identify and explain the policy problems and the implications of alternative solutions for the interconnection industry. In order to reach our project goal we will concentrate on the development of competition via the regulatory, judicial, legislative process, the structure of the telephone interconnection industry, and industry and government reaction to competition.
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Purpose

One of the key provisions of the recently introduced rewrite of the Communications Act of 1934 is that competition in some sectors of the telecommunications field will be adopted as official policy. This is new, but competition is not a new phenomenon in the telecommunications industry. Competition has been with us from the beginning, but it has had its ups and downs since the early days of the telephone. Over the last ten years competition has seen a new dynamism. The status quo of fifteen years ago is now subject to change. The telephone network from subscriber instrument, to local loop, to central office and beyond are no longer the exclusive province of the carrier. The purpose of this project will be to analyze the impact of competition on the telephone interconnection industry, the competitive
CHAPTER I

INTRODUCTION

The Statement of the Problem

The most significant factor affecting the telephone interconnection industry today is the impact of competition.

Purpose

One of the key provisions of the recently introduced rewrite of the Communications Act of 1934 is that competition in some sectors of the telecommunications field will be adopted as official policy. This is news, but competition is not a new phenomenon in the telecommunications industry. Competition has been with us from the beginning, but it has had its ups and downs since the early days of the telephone. Over the last ten years competition has seen a new dynamism. The status quo of fifteen years ago is now subject to change. The telephone network from subscriber instrument, to local loop, to central office and beyond are no longer the exclusive province of the carrier. The purpose of this project will be to analyze the impact of competition on the telephone interconnection industry, the competitive
industry that now supplies the subscriber end of the telephone network.

Definitions

Interconnection is the connection of any device provided by a regulated common carrier, an independent manufacturer, or private citizen.

Interconnection, as used in this project, is the connection of answering devices, acoustic couplers, personal custom telephones, intercom systems, key business systems, or private branch exchanges (PBX) to facilities provided by the telephone common carrier.

Delimitations

The direct connection of microwave and satellite systems to the telecommunications network as provided by the specialized common carriers are part of the broad definition of interconnection. However, they will not be considered in detail in order to narrow the scope of the project.

Judicial and regulatory decisions related to specialized common carriers will be discussed only if there is a parallel impact on the telephone interconnection industry.
Chapter II provides a background to the evolution of competition prior to the introduction of competition to the telephone interconnection industry. It examines the trends that led to the decisions for competition over the past ten years.

Chapter III analyzes the judicial, regulatory, and legislative actions that form the legal basis for the telephone interconnection industry today. An overview of representative telephone interconnection manufacturers, both independent manufacturers and common carriers, is provided to show the evolution of the telephone interconnection industry as a competitive business enterprise.

Chapter IV analyzes industry, government and special interest group reactions to the issues that have resulted from competition in the telephone interconnection industry. Emphasis will be given to the analysis of proposed legislation as it relates to interconnection. Examples are the Consumer Communications Reform Act (CCRA), the Primary Instrument Concept, and the Communications Act of 1978.

Chapter V provides conclusions for the future of interconnection related legislation and regulation. It examines the competitive strategies resulting from the dynamic decade of change we are now leaving and provides
the United States Independent Telephone Association, and the National Association of Regulatory Utility Commissioners were especially noteworthy in the assistance and information they have provided during the project. The questionnaire requested comment on the following topics and questions:

A. **Interconnection**: What are your views on recent FCC and court decisions allowing for increased competition in the telecommunications industry? What is your expectation of success for FCC's registration program? Is the "Primary Instrument Concept" as proposed at AT&T and others a viable concept?

B. **Trends in Regulation**: In light of the recent remarks of FCC Chairman Ferris concerning diminishing regulation, what impact do you project this deregulatory trend will have on the industry?

C. **Communications Act Rewrite**: H.R. 13015, Sections 332 and 333 propose major changes with regard to competition and manufacturing capabilities of common carriers. What is your assessment of this portion of the proposed legislation?

D. **Industrial Innovations**: What industry trends do you project with regard to equipment innovation and pricing if free competition prevails.
CHAPTER II

THE EVOLUTION OF COMPETITION

Introduction

The United States is almost alone among the nations of the world in entrusting the development and operation of its telephone industry to private enterprise. The giant of the industry, American Telephone and Telegraph, proudly notes in their 1977 Annual Report:

That the United States today enjoys the most highly advanced communications service in the world is attributable to the incentives that derive from the now proven concept of private enterprise operating under public surveillance.1

Business Week magazine extolls that, "The U.S., Sweden, and Switzerland now boast more than 60 phones per 100 population, while the world average is just 9.6."2 The Wall Street Journal points with pride to the fact that there are in the United States seven metropolitan areas that have more telephones than people.3 In a span


slightly exceeding 100 years this industry has evolved into a giant of the American economy providing fast reliable service to the ever expanding communication needs of our society.

The world's thirst for communication services seems unquenchable. Jack Eger, former Office of Telecommunications Policy Acting Director, stated,

... the United States has already reached the point where nearly half of the Gross National Product (GNP) is measured in the terms of the production, storage, and dissemination of knowledge. We know the next 10 years will be characterized by an exponential growth in the quantity and variety of information that will routinely be circulated in the blink of an eye.4

The telephone has been elevated from the category of luxury to necessity in American households in little more than one generation's life span. In America one sees that,

In 1934, only one third of homes had telephones, with a total of 17 million in service. Today 96 percent of American homes have phones and the nation has more than 160 million.5

This trend in the acquisition of telephones by the American public is depicted by the following table:


TABLE 1

TELEPHONES IN AMERICAN HOUSEHOLDS

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent of U.S. Households Having Telephone Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920</td>
<td>35%</td>
</tr>
<tr>
<td>1930</td>
<td>41%</td>
</tr>
<tr>
<td>1940</td>
<td>37%</td>
</tr>
<tr>
<td>1950</td>
<td>62%</td>
</tr>
<tr>
<td>1960</td>
<td>79%</td>
</tr>
<tr>
<td>1970</td>
<td>92%</td>
</tr>
<tr>
<td>1977</td>
<td>96%</td>
</tr>
</tbody>
</table>


The implication today is that the recent trend toward competition in the telephone industry is something new. In fact in its birth, growth, and maturity the industry has on numerous occasions survived and thrived on the competitive spirit. Kuehn quite accurately describes the process as,

"... in just a hundred years, the communications industry has gone a circular route from vigorous competition in the late 1800's, to total monopoly in the early 1900's, and now back to vigorous competition in the last half of the twentieth century." 6

A New Industry

The beginning of the telephone interconnect battle goes all the way back to the invention of the telephone. While not all historians are in agreement, Alexander Graham Bell is generally acknowledged as being the inventor of the telephone. Bell's original Patent, No. 174,465, was allowed on March 3, 1876, and issued on March 7, 1876. This patent must surely be considered one of the most valuable ever issued. It became the subject of literally thousands of pages of testimony in hundreds of suits to annul it, and survived.

The controversy over the original patent was predicated by the belief of Mr. Elish Gray, that he in fact was the inventor of the telephone. The battle between Gray and Bell was to eventually be resolved in the United States Supreme Court. Goulden's description of the initial patenting session sets the stage for the numerous challenges that would occur.

The same day that Bell filed his telephone patent, another inventor, Elish Gray, of Chicago, with whom Bell had competed on the harmonic telegraph, came into the patent office a few hours later with his own telephone specifications. There was one significant difference in what they requested. Bell . . . asked for a patent on his model, Gray sought only a caveat, by simplest definition the

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registration of a statement by an inventor that he is working on something that he has not perfected. (Patent Office has since abandoned caveats.)

In his history of the industry, *Telephone: The First Hundred Years*, Brooks adds,

> With the issuance to Bell in January 1877 of his second basic patent, No. 186,787, covering the combined receiver-transmitter instrument and various of its mechanical features—the telephone was protected by a patent fortress that would prove to be impregnable to hundreds of urgent assaults.9

The initial patents were for a 17-year period. During the tenure of the patents, Bell was able to gain a substantial lead in developing a market for his telephones. By late 1877, Bell was involved in one of his first episodes of competition. Utilizing the Gray patent, Western Union had started a rival telephone system. Already having wiring in place gave Western Union a marked advantage over Bell. A suit was successfully filed by Bell for infringement of his patents.

In retrospect an analysis of the motivation of the Bell System during the time period of the original patents is difficult. The profit motive seemed almost exploitive. A thought provoking commentary is provided in Goulden's book, *Monopoly*, when he states,


9Brooks, op. cit., p. 53.
... continuing through the expiration of the basic patents in 1894-1895. The Bell owners, conservative New Englanders, considered the telephone industry a private gold mine to be worked at their leisure, with profits having priority over public convenience and service. Stockholders received annual dividends ranging up to 18 percent of their investment. By 1893, seventeen years after the beginning of commercial telephony, Bell had installed only 266,431 phones, most of them in urban areas, requiring a minimal investment in lines and transmitting equipment.10

This time period indeed was a lucrative period for the initial stockholders but it could not last forever.

Bell himself was an inventor, not a financier or manager. The operational genius responsible for the acquisition of capital and managerial leadership to shape the destiny of the Company was Theodore N. Vail. Earlier in the century, Vail's family had aided Samuel Morse in the invention and development of the telegraph. Vail's obsession, as he constructed the monopoly, was destruction of competition.

The monopoly was firmly established when in 1882, Bell acquired Western Electric. Western Electric would prove to be a gold mine for the company in the future. Items required by the various Bell companies and purchased through Western Electric would simplify the task of maintaining uniformity of quality and compatibility required by the developing network.

The Kingsbury Agreement

In 1913, Woodrow Wilson became the 28th President of the United States. President Wilson entered the White House with strong intentions of nationalizing the telephone system. Although he was unable to generate strong support for his nationalization plan, he was successful in obtaining from Congress a bill granting the Interstate Commerce Commission a semblance of regulatory authority over interstate telephone rates.

It should be noted that, 

... President Wilson ultimately did nationalize the phone system in 1918 as a war measure but turned it back to private ownership as soon as possible after peace came.  

The threat of nationalization of the phone companies was neutralized through negotiations culminating in the now famous Kingsbury Agreement. This agreement was the result of vigorous efforts by the United States Attorney General, George W. Wickersham, in 1913, to pursue the telephone companies for antitrust violations. N. C. Kingsbury, Vice-President of AT&T, acted to stifle the impending threat by establishing a basis for fair commercial relationships in the industry. In a letter to the Attorney General, Kingsbury committed AT&T to the following:

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1. Western Union stock worth approximately $30 million would be sold.

2. No new competing telephone companies would be acquired, except as required by regulatory agencies.

3. Arrangements for long distance toll interconnections with independent telephone companies would be provided.

Regulation of the Industry

Growth would continue for the telephone industry until the Great Depression. During the depression, AT&T and many of the Independents, used their financially stable positions to acquire numerous companies in financial trouble. The Interstate Commerce Commission (ICC) offered little restraint to the telephone industry. Goulden points out that,

The ICC's version of regulation is what AT&T had in mind. During its more than two decades of jurisdiction over interstate telephony the ICC never instituted a proceeding aimed at reducing rates. . . . the ICC's sole positive act was to establish a uniform system of accounts and rules for depreciation accounting for companies engaged in interstate business.12

President Herbert Hoover recognized this problem and proposed that the solution was a separate regulatory agency for communications. In 1934, Congress created the Federal Communications Commission, under whose

authority rested the telephone industry. The new agency did little to interfere with development of the industry. Any actions that the FCC contemplated toward the telephone industry were thwarted by the impending national preoccupation with the Second World War. The resources of the telephone industry proved to be a true national resource during the war engendering itself as a national asset to the American people.

The Antitrust Compromise

Following the war, in 1949, antitrust actions were again thrust at AT&T trying to force divestiture of the company's manufacturing capability, Western Electric. The efforts to sever Western Electric proved unsuccessful after several years of expensive court battles. In January of 1956, a Consent Decree with the U.S. Department of Justice was agreed to by AT&T in settlement of the antitrust suit initiated in 1949. Mathesion described the agreement as,

... AT&T retained ownership of Western Electric but was no longer permitted to engage in any business activity other than the furnishing of common carrier communication services. Nor was Western Electric permitted to manufacture any equipment of a type not sold or leased to Bell operating companies for use in furnishing common carrier communications service.13

Since the Consent Decree, AT&T has for the most

part continued to operate in the same manner as it did before the decree. AT&T has tended to consider the Consent Decree as somewhat of a license to protect its monopoly position. In November of 1974, once again, the Department of Justice filed suit against AT&T and its subsidiaries. The basis for this action is the alleged violation of the Sherman Antitrust Act of 1890. The Department of Justice is seeking an injunction against further antitrust violation, divestiture of AT&T's capital stock interest in Western Electric, and divestiture by AT&T of some or all of its holdings in the local operating companies. AT&T is vigorously pursuing dismissal of the action but an expeditious resolution is not expected. The recently proposed rewrite of the 1934 Communications Act (H.R. 13015) specifically addresses the problems attacked by the Justice Department.

The Status of the Common Carriers

An examination of the industry today would reveal it to be a solid ingredient in the U.S. economy. J. Edward Hyde, describes the composition of the telephone industry in his recent book, The Phone Book, as,

If the industry is represented by the face of a clock, 9 hours and 50 minutes constitute the Bell System's share. The remaining 2 hours and 10 minutes belong to the other 1,832 telephone companies.14

Phonefact '78, published by the United States Independent Telephone Association (USITA), describes the industry as of December 31, 1977, as indicated in the following table:

### TABLE 2

**COMPOSITION OF THE U. S. TELEPHONE INDUSTRY**

<table>
<thead>
<tr>
<th></th>
<th>Independents</th>
<th>Bell</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephones (ooo's)</td>
<td>$29,675</td>
<td>$132,018</td>
<td>$161,693</td>
</tr>
<tr>
<td>Companies</td>
<td>1,556</td>
<td>25</td>
<td>1,581</td>
</tr>
<tr>
<td>Exchanges</td>
<td>11,045</td>
<td>6,711</td>
<td>17,756</td>
</tr>
<tr>
<td>Plant (ooo's)</td>
<td>25,174</td>
<td>103,576,259</td>
<td>$128,750,259</td>
</tr>
<tr>
<td>Operating Revenues (ooo's)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td>3,200,</td>
<td>17,481,512</td>
<td>20,681,512</td>
</tr>
<tr>
<td>Toll</td>
<td>3,765,</td>
<td>18,468,132</td>
<td>22,233,132</td>
</tr>
<tr>
<td>Other</td>
<td>169,</td>
<td>1,310,762</td>
<td>1,479,762</td>
</tr>
<tr>
<td>Total</td>
<td>$7,134,</td>
<td>$37,260,406</td>
<td>$44,394,406</td>
</tr>
<tr>
<td>Employees</td>
<td>168,</td>
<td>785</td>
<td>953</td>
</tr>
</tbody>
</table>


Bell Telephone describes its own organization in its recent publication *Engineering and Operations in the Bell System* as follows:

... the American Telephone and Telegraph Company, which is the parent company; the Western Electric Company, which is the manufacturing and supply branch of the Bell System and which is wholly owned by AT&T; Bell Telephone Laboratories, which does research and development and which is owned half by AT&T and half by Western Electric; and 24 telephone companies, commonly referred to as operating companies, which
provide service to customers. There are also a number of subsidiaries, companies owned by AT&T and Western Electric, such as Nassau Recycle Corporation and Teletype Corporation.15

Fortune magazine points out that "Bell's assets are three times those of IBM, Xerox and Proctor and Gamble combined."16 The company reported a net income of $4.5 billion for 1977, with operating revenues of $36.5 billion.17 As a point of reference when one examines the magnitude of the capital involved in AT&T's operations, Hyde points out,

In 1973, Chrysler A & P, RCA, Phillips Petroleum, S.S. Kresge, Boeing, International Harvester, Woolworth's, Greyhound, Firestone, Litton and General Foods among others each reported annual profits of less than $150 million. In that same year the Telephone Company wrote off—as being uncollectable—debts of $150 million.18

Currently the largest component of the Bell System is its manufacturing arm, Western Electric. In 1977, Western Electric's sales totaled $8.1 billion.19 If Western Electric were not wholly owned by AT&T, it would be the twelfth largest corporation in America.20


16 "Ma Bell Faces Life," Fortune, November 1, 1977, p. 50.


During Congressional testimony in July 1978, J. Phillip Bigley, President of the United States Independent Telephone Association (USITA), described the profile of the independent telephone companies. In his testimony he stated,

... there are about 1550 independent telephone companies in the United States providing service for more than 51 percent of our country's geographical area having telephone service. The independent companies operate in 48 of the 50 states and provide the only telephone service in Alaska and Hawaii. We serve over 11,000 communities through more than 30 million telephones.

... independent companies have a plant investment of over $25 billion with current annual construction expenditures of $3 billion. ... Our annual operating revenues are almost $7.2 billion. We employ 168,000 people, and more than 1.1 million people own shares in the independent telephone companies which are publicly held.

Additionally, the independent companies are growing at an annual rate of approximately 5 percent compared with a growth rate of about 4 percent for the Bell System companies.21

It is noteworthy that 384 independent telephone companies grossed more than $1 million in 1977, with the largest reporting $862,000,000.22 Bigley has further


noted with regards to the financial positions of the independent telephone companies that "... our top six companies reported increases in earnings per common share ranging from 10 percent to 19 percent."23

Most people are surprised at the number and locations of the independent telephone companies. Phonefacts '78, published by USITA, lists the breakdown by states of independent telephone companies follows in Table 3.

The evolution of the telephone industry has been the result of much conflict and compromise. Its genesis has been based on successful competition. The period from the Kingsbury commitment (1912) to the mid 1960's, was relatively stable, in which the industry proved its flexibility in adapting to government regulation. As shall be further examined, the industry after the mid 1960's is about to be forced into a new era. If history provides any clues, the industry is capable of meeting the challenge of competition, since no other regulated industry has had as much success in neutralizing attacks

23 Opinion expressed by J. Phillip Bigley, President, United States Independent Telephone Association, in an address ("A Report From Your Neighbors") at the Canadian Independent Telephone Association Convention, Edmonton, Canada, September 12, 1978.
### TABLE 3

**INDEPENDENT TELEPHONE COMPANIES BY STATES**

<table>
<thead>
<tr>
<th>State</th>
<th>Companies 1977</th>
<th>State</th>
<th>Companies 1977</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>33</td>
<td>Montana</td>
<td>16</td>
</tr>
<tr>
<td>Alaska</td>
<td>22</td>
<td>Nebraska</td>
<td>53</td>
</tr>
<tr>
<td>Arizona</td>
<td>6</td>
<td>Nevada</td>
<td>4</td>
</tr>
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</tbody>
</table>

**TOTAL: 1,536**

from government and in getting what it wants from regulators. The next chapter will examine the recent developments that are reshaping the industry.
CHAPTER III

THE STRUCTURE OF THE INDUSTRY

Introduction

Theodore N. Vail, AT&T's first president, accepted government regulation to keep antitrust eners from destroying AT&T and fragmenting the industry. He did this by fashioning an approach that turned the regulatory process to the advantage of the industry. The industry has remained relatively stable since Vail's time, operating as a protected monopoly regulated by the government. The mid 1950's signaled a change that would rattle the industry.

Hush-A-Phone

AT&T defines interconnection of customer provided equipment in their book Engineering and Operation in the Bell System as follows:

... there are three classes of customer-provided equipment: (1) equipment that has an electrical connection to the network through a protective connecting arrangement, (2) equipment that is acoustically or inductively coupled to the network, and (3) certain types of equipment for which a guarantee of technical integrity can be made through "attribution" or conformation.¹

Devices not provided by the telephone company were protected by tariffs from being connected to telephone company lines until the historic **Hush-A-Phone** decision of 1956.\(^2\) AT&T has always attempted to strongly enforce the tariff restrictions against foreign attachment to the telephone system by threatening both customers and vendors with service suspension. The Hush-A-Phone device was simply a cup-type device which was fitted over the transmitter end of the telephone instrument to funnel the speaker's voice into the telephone. It was an acoustic coupling device, requiring no electrical connection, which greatly aided the user when operating in a noisy environment. It allowed for greater privacy of telephone conversations in a crowded office.

In December of 1948, the manufacturers of the device filed a complaint with the Federal Communications Commission demanding that AT&T be ordered to cease threatening Hush-A-Phone users with service suspension. Seven years later, in December of 1955, the Commission dismissed the Hush-A-Phone complaint.

The Commission's decision was appealed to the U.S. Circuit Court of Appeals for the District of Columbia. In November of 1956, the Court overturned the Commission's ruling. The Court decreed that tariff prohibition of

customer supplied "foreign attachments" is "an unwarranted interference with the telephone subscriber's right to use his telephone in ways which are privately beneficial." The decree did bar electrical interconnection to telephone equipment. The importance of the Hush-A-Phone decision was that it marked a significant departure from traditional policy, and it paved the way for subsequent decisions which had far reaching consequences for the telephone industry.

Carterfone

The historic Carterfone decision of 1968, completely changed the interconnect market. Telephone company tariffs continued to carry a general prohibition against connecting customer-provided terminal devices. In 1966, AT&T threatened action against customers utilizing a customer-provided device called a "Carterfone" which acoustically interconnected mobile radio systems to the telephone network. The manufacturers of Carterfone filed a private antitrust suit against AT&T. The U. S. District Court determined that the Federal Communications Commission had jurisdiction over the disputed tariff provisions and while reserving final judgement on the antitrust issue, referred the case for Commission proceedings. In March of 1968, the Commission stunned the industry with its

3Hush-A-Phone Corp. v. United States, 238 F.2d, 266, 269, (1956).

decision. The Commission ruled that devices, such as the Carterfone, satisfied an unmet communications need and did not adversely affect the telephone network.

The door for competition was now fully opened since customers no longer had to lease equipment from the telephone companies and were in fact free to purchase whatever auxiliary attachments needed from independent suppliers. The most significant aspect of the decision was that it did not limit its findings to just the Carterfone device. It instead established a general policy that tariffs such as those before it were unlawful.

The Industry Reacts to Carterfone

The telephone industry was thus thrust back into the competitive environment. The reaction by AT&T to the prospect of competition is best indicated by a statement of H. I. Romnes, then Chairman of AT&T's Board of Directors, in the 1968 Annual Report.

Since customers now have options in using the network, this should further increase usage and enhance the growth of our business. Competition in providing communications equipment that may be connected to the network will no doubt accelerate, but we are confident of our ability to meet the tests of the market. In the expanding structure of communication there is room for all.5

Unfortunately Mr. Romnes' statement appears to be only lip service to the cause of competition in the industry

when it is compared to the comments of his successor, Mr. John D. DeButts.

... we have made no secret of our conviction that the public interest is not served by the introduction of competition in a business that owes its progress and its present advanced states of development to the principle of undivided responsibility for service to the public.6

It should be further noted that although Mr. DeButts does not seem to enjoy the prospect for competition within the industry, the 1977 Annual Report of AT&T reflects the realities of the world today. The report states,

... we recognize that the world of telecommunications is not "ours" and that today there are a great many organizations besides our own whose talents can efficiently be brought to bear on the growth and improvement of the nationwide telephone network.7

AT&T's battle cry is further elaborated in the report,

We shall compete vigorously. To this end, we shall continue to urge that the public interest requires that regulators impose no arbitrary hindrances that might bar us from the timely introduction of new services that meet our customers' needs or preclude the realization of the full potential of our technology.8

While the majority of the emphasis counter to industry competition has been originated by AT&T it must also be noted that the independent telephone companies

6 John D. DeButts, Chairman of AT&T's Board of Directors, Letter to the Shareholders of AT&T, November 26, 1974.
8 Ibid., p. 23.
for the most part share the position of the industry giant, J. Phillip Bigley, the President of the United States Independent Telephone Association (USITA), representing the more than 1600 Independent telephone companies in the United States, recently stated,

We recognize that new technology makes possible some types of competition, such as private line service and customer provided. . . . We intend to prosper and to serve our customers well under competition. But we still believe our traditional system was better.9

The position of General Telephone and Electronics, the second largest telephone system, is consistent with Bell's position. GTE's 1976 Annual Report states,

Our position is simply this: Congress should reaffirm the national communication policy of "universal service"--the provision of high quality, low cost service to the maximum number of people. We oppose the introduction of "contrived competition" which would necessarily result in higher rates for local telephone service.10

Opposition to competition within the telecommunications industry is not universal. Another major participant, Western Union, qualifies its position favoring competition in its 1977 Annual Report.

Western Union favors competition in telecommunications. However, the development of effective competition requires the removal, by legislation if necessary, of many of the regulatory restraints imposed only on existing common-carriers such as the telegraph company. We feel that electronic

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9Opinion expressed by J. Philip Bigley, President, United States Independent Telephone Association, in an address ("A Report From Your Neighbors") at the Canadian Independent Telephone Association Convention, Edmonton, Canada, September 12, 1978.

transmission, which uses limited natural resources in the form of radio frequencies and orbital slots in space, must be regulated. On the other hand, we and our competitors should have equal flexibility in providing services which employ new technology and equipment such as computers and communications terminals.\textsuperscript{11}

The trend toward deregulation has been firmly established at the Federal Communications Commission. The former Chairman of the FCC, Richard E. Wiley, commented in a letter to Representative Lionel Van Deerlin, the Chairman of the House Subcommittee on Communications,

\ldots in a competitive marketplace, there are no artificial barriers to anyone ready, willing and able to meet the specialized, diverse, or unfilled communications needs of the public.\textsuperscript{12}

The present Chairman of the Federal Communications Commission, Charles Ferris, gives no indication of any policy change. He recently stated that he believes the future of the communications industry should rest on "entrepreneurial initiative" rather than the decisions of the Congress or the FCC.\textsuperscript{13}

The International Communications Association (ICA) consists of representatives of the largest corporate, financial, governmental and educational institutions from all regions of the United States and several foreign

\textsuperscript{11} Western Union Inc. Annual Report, 1977, p. 3.

\textsuperscript{12} Richard E. Wiley, Chairman of the Federal Communications Commission, Letter to the Honorable, Lionel Van Deerlin, Chairman, Subcommittee on Communications, United States House of Representatives, September 23, 1976.

governments such as Canada and Great Britain. The member companies of the ICA claim to account for approximately 13 percent or $4 billion of the total gross annual revenues of the Bell System. Member companies on the board of governors of ICA include Monsanto Company, Ashland Oil, and Martin Marietta Corporation. In a recent letter to the authors, Mr. Phillip R. Evans, the technical director of the ICA stated,

Competition is the essential ingredient of our free enterprise system; it responds dynamically to economic factors such as style, demand, availability, price, and application.

AT&T’s immediate response to the threat of competition is that competition will immediately force an increase in rates to local subscribers. Bell is quick to point out the advantages of rate distribution plans that favor the residential customer.

To the degree that competition forces us to relate our rates for these services more directly to the costs involved, local exchange rates will rise, thereby jeopardizing the historic trend that has brought telephone service to 95 percent of American households.

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Goulden describes the historical precedence in his book, Monopoly.

Until the early 1920's intrastate and interstate rates generally were at the same level, based solely on mileage. Reductions in both categories between 1926 to 1946 generally left the per mile interstate rates lower than those for intrastate calls. Since the Second World War, interstate reductions have continued. Intrastate changes, however, are on the rise.\(^1\)

Goulden further notes,

Although no one talks about it publicly, the Commissions permit the intrastate long-distance charges to underwrite local exchange service on the assumption that long-distance calling is still a "luxury" when compared to home phone service.\(^2\)

The scare tactic on Bell's part is to raise residential telephone rates if forced into competition. The notion that telephone rates must rise is strongly refuted by the findings of FCC in its docket 20003 inquiry which states in part,

\[\ldots\] there is no apparent basis for the telephone industry's claims that private line and terminal equipment competition either have had or are soon likely to have any significant adverse impact on telephone company revenues or on the rates for basic telephone service. Specifically, we find no evidence to support the industry's claims that these services currently provide any contribution or excess of revenues over costs, which helps maintain low rates for basic telephone service. Indeed, we find much merit in the study findings before the New York, Massachusetts, and Vermont public service commissions that precisely the opposite may be true i.e., that terminal


\(^2\)Ibid., p. 307.
equipment and private line service may be earning less than their full costs, and thereby imposing a burden on basic telephone rates.\footnote{19}

The Wall Street Journal provided an analysis that strongly supports the position taken by the FCC,

\[\ldots\] there is some question about whether the telephone industry revenues in these submarkets actually cover their full costs. If they don't, loss of business to their competitors would obviously benefit rather than harm the users' other services \ldots even if the submarkets are profitable, the net income effect of any business diversion would be small.\footnote{20}

The industry's vulnerability in the telephone equipment market is based on the fact that the telephone companies own most of the equipment that competitors will be trying to displace. Only a small percentage of telephone equipment is protected by long-term lease agreements. In his book, The Phone Book, J. Edward Hyde humorously comments that "Customer Owned and Maintained Equipment is looked upon by the Phone Company in much the same way men lost in deserts must view buzzards."\footnote{21}

\begin{footnotes}
\footnote{19}{U.S. House of Representatives, Subcommittee on Communications, Committee on Interstate and Foreign Commerce, Agenda for Oversight: Domestic Common Carrier Regulation, April 26, 1976.}
\footnote{20}{"FCC Study Contends Telephone Rivalry Won't Hurt Industry," The Wall Street Journal, May 18, 1976, p.22.}
\end{footnotes}
Kolb points out,

A public utility usually faces severe competition only twice in its life, once when it rises to prominence and again when it is superceded by a superior technology.22 In the face of competition brought on by the changes of technology, AT&T has had to increase its own rate of innovation. Historically AT&T has lagged behind the independents of the industry in applying changes. Table 4 illustrates how the innovative approach taken by the independent phone companies has contributed to the Bell System.

**TABLE 4**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Independent</th>
<th>Bell</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Automatic Central Office</td>
<td>1895</td>
<td>1915</td>
</tr>
<tr>
<td>Feature PBX</td>
<td>1914</td>
<td>1924</td>
</tr>
<tr>
<td>Unattended Exchange</td>
<td>1916</td>
<td>1930</td>
</tr>
<tr>
<td>Handset Telephone</td>
<td>1916</td>
<td>1926</td>
</tr>
<tr>
<td>Ringer in Telephone Base</td>
<td>1916</td>
<td>1928</td>
</tr>
</tbody>
</table>


With the advent of competition, the Bell System's responsiveness to customer requirements is showing some improvement. For example, developmental time for PBX's has declined to one year whereas before competition took six years. In July of 1976, the FCC standardized plugs and jacks for use in connecting equipment into the telephone network. This modularization has significantly reduced equipment installation time and the associated costs. Installation times of some business communications systems have been cut by as much as 60 percent. This was accomplished by Bell buying standard packages from suppliers other than Western Electric and then subsequently modifying them for each customer as opposed to the previous practice of individually engineering each system as a customized job.

Mr. Robert E. Bennis, President of the International Communications Association (ICA), noted in Congressional testimony on the rewrite of the Communication Act (H. R. 13015),

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Ibid., p. 38.
A good deal of the innovative advanced business and scientific systems utilized by users today have come about as a result of the freedom of choice provided by an unregulated competitive environment.25

The technical director of the International Communications Association (ICA), Philip R. Evans, further elaborates, "If free competition continues prices will be driven down, a la electronic calculators and digital watches."26

An examination of the present and projected future market for telephone equipment manufactured by the independent telephone interconnect manufacturers was recently presented in a special report in Communications News. The figures are included as Table 5.

Competition continues to spur rapid growth in the telephone equipment industry for both Western Electric and their competition. The independent interconnection equipment industry has grown to an estimated $700 million annual volume in 1977, from $70 million in 1972.27 While this market is by its nature dominated by the Bell System, industry sources estimate that the independent


<table>
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<th>1978 Units (Million Dollars)</th>
<th>1980 Units (Million Dollars)</th>
<th>1983 Units (Million Dollars)</th>
<th>1988 Units (Million Dollars)</th>
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<tbody>
<tr>
<td>Standard Telephones</td>
<td>250,000</td>
<td>300,000</td>
<td>325,000</td>
<td>300,000</td>
</tr>
<tr>
<td>Premium Telephones</td>
<td>230,000</td>
<td>700,000</td>
<td>2,000,000</td>
<td>3,000,000</td>
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<tr>
<td>Decorator Telephones</td>
<td>260,000</td>
<td>400,000</td>
<td>325,000</td>
<td>350,000</td>
</tr>
<tr>
<td>Cordless Telephones</td>
<td>12,000</td>
<td>20,000</td>
<td>1,000,000</td>
<td>1,200,000</td>
</tr>
<tr>
<td>Speciality Telephones</td>
<td>12,000</td>
<td>55,000</td>
<td>115,000</td>
<td>150,000</td>
</tr>
</tbody>
</table>

interconnection equipment manufacturers' share of the telecommunications market will only amount to $3 billion of a total projected market of $85 billion by 1985.\textsuperscript{28}

The independent telephone companies aspire to capture a much bigger portion of the market. General Telephone and Electronic's Automatic Electric recently announced that it intends to capture 20 percent of the interconnect market by 1982.\textsuperscript{29} While this aspiration seems noble, challenging the industry leader, Western Electric, to unregulated marketplace competition would be extremely difficult. Western Electric produces 10 million telephones per year while GTE's Automatic Electric, Stromberg-Carlson, and ITT produce approximately 2 million sets a year.\textsuperscript{30}

All of Western Electric's phone sales have been within the Bell System but the independent telephone companies have been establishing extensive marketing capabilities to sell their instruments. GTE for instance, the nation's largest independent phone company, has


responded to the interconnect challenge by increasing its emphasis on marketing. In the residential market, GTE established a Phone Mart telephone sale system with approximately 100 outlets.

An organization as large as Bell does not change rapidly. Jarred at the prospect of mounting competition and well aware that its mammoth organization could not immediately change course, AT&T in 1972 called in consultants McKinsey and Company for help. The decision reached at that time was Bell must create a marketing organization. Bell broke with tradition and hired top-level marketing experts from outside the company.

With regard to Bell's new found marketing policy the 1977 AT&T Annual Report states,

> Basically the aim of the Bell System's marketing program is to respond to our customers' needs by developing and offering communications services that meet those needs. In the Bell System marketing is service.

This position is in sharp contrast to the precompetitive days. Richard K. Kuehn quite accurately notes:

> The first purchasers of interconnect, or user owned equipment were telephone company customers who were so dissatisfied that they would have sought service from an outside supplier regardless of cost.

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To purchasers and users of interconnect equipment
the world has undergone dramatic changes. A special
report in Communications News provides a summary of
current FCC regulations concerning customer owned
equipment attached to the telephone network. The summary
is included here to clarify the customers' present
position.34

1. Customers must notify the telephone company
   of any customer-provided equipment they plan
   to connect to the network.

2. Customers who purchase or lease their own
   phone equipment will be responsible for
   its repair and maintenance.

3. Customer-provided equipment must be connected
   to the network by a standard telephone-
   company provided receptical or "jack." FCC
   rules require the phone company to install
   the jack and a charge may be levied by the
   company. Customers may not install jacks.

4. When a customer asks the telephone company to
   make a repair visit, there will be no charge
   if the service problem is traced to phone-
   company provided facilities. But there will

34 "Recent Regulatory Decisions Encourage Inter-
causing the problem. In addition, it will be the owner's responsibility and expense to repair his equipment.

5. If customer-provided equipment is defective, hazardous, or harmful to proper network operation, it must be removed. The telephone company may temporarily disconnect the customer's service upon giving notice of interference to the network.

6. Telephone companies will charge a monthly fee for network use for customer-provided equipment. This covers the phone company's costs, for bringing the entire network to the local premise. The charge may reflect some credit for customer provided equipment.

7. Main telephone, extensions, data equipment and devices such as answering machines and automatic dialers may be purchased or leased by the customer and connected directly to the telephone network provided the gear has been registered with the FCC or is grandfathered. Grandfathered equipment is that which was lawfully connected to the network without a protective coupler on October 17, 1977.

8. Until additional details have been worked out by the FCC, PBX's and key systems may only be connected according to existing tariffs.
9. The FCC registration program does not apply to telephone customers with party-line service or to coin telephones. This may not be provided by the public or connected to the network.

10. Equipment for sale and not grandfathered must have a standard registration label indicating compliance with FCC rules. Information from this label must be provided to the phone company by the customer before the equipment may be connected.

AT&T will continue to have an advantage in marketing in that they can offer a total service package to the customer. The innovative technology of the competitors should serve to spur AT&T on in the market instead of inhibiting it.

With the reality of competition now established the industry appears to be successfully responding. The ten year span since Carterfone has required a complete change in strategy for the competitors in interconnect. The transition to less regulation, almost deregulation, in interconnection is occurring now. The future will be the judge of this trend. While the telephone industry may lose the battle of regulation of the interconnect industry, the industry is a long way from losing the market to its competitors.
Competition has put two major interconnect markets up for grabs. Consumer telephones are now in more than 70 million homes in the U.S. Each home averages approximately 1.7 telephones. The new marketing philosophies and the trend to more expensive models with many convenience features are likely to push the phone market to $1 billion per year on its own. With this single line customer market looking so good, there is a fear among present independent manufacturers that development of the electronic chip and its subsequent refinement into telecommunications applications will bring semiconductor companies into the telephone manufacturing business.

In business communications the trend is merging telecommunications functions with data-processing services. It is now hard to distinguish some data-processing jobs from telecommunications jobs.

In the face of these expanding markets much of AT&T's advertising goes into defending the traditional leasing policy. The 1978 advertising budget has been estimated to be $12 million up from $2.5 million in 1977.
The estimates were developed by Advertising Age. AT&T does not release exact figures on advertising cost.

Table 6 illustrates how the independent interconnection market has expanded over the last eight years.

### Table 6

| Value of PBX's and Phones Installed by "Interconnect" Suppliers |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Millions          |       |       |       |       |       |       |       |       |
| 800               |       |       |       |       |       |       |       |       |
| 700               |       |       |       |       |       |       |       |       |
| 600               |       |       |       |       |       |       |       |       |
| 500               |       |       |       |       |       |       |       |       |
| 400               |       |       |       |       |       |       |       |       |
| 300               |       |       |       |       |       |       |       |       |
| 200               |       |       |       |       |       |       |       |       |


Given the ever expanding interconnect market, the authors have chosen a representative number of competitors to survey. There are now hundreds of companies involved in interconnect, but these companies accurately represent
where industry has been and where it is going.

**Arcata National Corporation**

Arcata was an aggressive initial competitor in the interconnect business. The optimism of the organization was reflected in comments included in their Annual Report for the fiscal year ending in 1972. "The communications service group achieved its sales objective by almost doubling its volume of the previous year."\(^{39}\)

It should also be pointed out that these accomplishments were achieved at a much greater cost than was anticipated by the company. In fact the communication service group suffered a pre-tax loss of 2.7 million dollars in the fiscal year 1972.\(^{40}\)

The operating picture for Arcata's involvement in the interconnect market did not promise improvement in 1973. Arcata sustained a $3.2 million loss (after taxes in 1973).\(^{41}\) The severe profit drain caused by the communication group was stopped by the sale of the communication group to Stromberg-Carlson (General Dynamics). Virtually all divisions in consulting and telephone related equipment and services were sold or closed down.


\(^{40}\) Ibid.

during 1973. It is interesting to note the explanation provided to stockholders in the 1973 Annual Report,

Over the years it has developed that the business of installing and maintaining private telephone systems can be profitably exploited on a national scale only by companies with plant facilities capable of manufacturing electronic and electro-mechanical telephone equipment in high volume. As the competition becomes more intense, equipment manufacturers give up their installation and selling profit as a selling cost in order to make the manufacturing profit. Also the manufacturing profit provides money for research and engineering staffs which are necessary to continually develop new proprietary state-of-the-art equipment.42

As of 1974, Arcata was involved in only two basic businesses where they felt they retained management depth; printed products and redwood lumber. The adventure into the telephone industry proved a costly venture for Arcata.

American Motor Inns, Incorporated (AMI)

AMI is engaged primarily in the business of operating motels and restaurants. All of its motel operation is associated with the Holiday Inns chain. Since 1959, AMI, through its subsidiary, Universal Communications Systems, Inc. (UCS), has also been in the business of designing, assembling, marketing and servicing telephone systems, including switchboards and related equipment for hotels, motels, and other institutions and businesses.43

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UCS now claims over 1300 customers with a total of 200,000 lines. UCS has approximately 1000 installations in hotels and motels around the country and claims to be the leader in sales to hotels and motels. Two recent examples of sales to large hotels are the 1800-room Statler Hilton of New York City and the 1900-room Sheraton-Boston. 44

Although the UCS group has shown tremendous potential, motels and hotels will, for sometime to come, remain the backbone of AMI's business. UCS provided 11 percent of AMI's total revenues for the fiscal year ending July 31, 1977, and made gross revenues of $7,345,000 in 1976, and $9,270,000 in 1977. 45

General Telephone and Electronics Corporation

General Telephone and Electronics Corporation (GTE) is a world-wide business enterprise dealing in communications, lighting, consumer electronics, precision materials, and electrical equipment. Their Telephone Operating Group has 20 domestic telephone operating companies that are regulated in the same manner as the Bell System. The Products Group accounts for most of the sales of equipment to the operating companies.

In 1976 the Products Group showed an increase in sales, but net income declined 32 percent. GTE claims that their decreased earnings came from an unfavorable product mix, manufacturing inefficiencies, a switch from electro-mechanical switch gear to electronic switching equipment, and labor and material costs.\footnote{General Telephone and Electronics Corporation Annual Report 1976, March 4, 1977, p. 5.} Indications are that GTE was caught with a large inventory of "old" equipment that had to be sold at less than cost in a rapidly expanding telecommunications equipment market.

GTE's third quarter report in 1977 showed a substantial turn around. Theodore F. Brophy, Chairman, attributed the improvement to the communications products and consumer electronics products businesses. Net earnings for the consumer electronics products business was $444,000, compared with a loss of $4.3 million a year earlier. The communications products business reported earnings of $6.3 million, more than double the earnings of $2.5 million a year earlier.\footnote{"GTE Earnings Increased 20% in Third Quarter," The Wall Street Journal, October 20, 1977, p. 6}

GTE has responded to the interconnect challenge by increasing its emphasis on marketing. In the residential market, GTE established a Phone Mart system with 60 initial outlets. These were increased to 91 in 1976.
The Phone Marts are shopping areas where residential customers may select new or additional telephone instruments from a wide variety of colors and styles.

In the business market, GTE has adopted a systems approach where communications-marketing specialists conduct studies of the requirements of business customers in order to recommend the most efficient and economic telecommunication system to satisfy the customers' needs. In March 1978 GTE Automatic Electric announced that it intends to capture 20 percent of the interconnect market by 1982. The company has formed a new group to handle sales of equipment through distributorships established outside cities now served directly by the company. This move is geared to avoid its distributors coming into competition with its own direct sales effort.

GTE's legal position on interconnect is that "Universal Service" should be reaffirmed. GTE argues that the lowest possible cost to consumers is still through the telephone industry. GTE opposes the introduction of what they call "contrived" competition concluding that this competition will only result in

Common stocks sold at multiples that have not been in vogue since the Great Depression 53

United Telecom remains a holding company. It operates the United Telephone System, the nation's third largest telephone system; North Supply Company, a major distributor of telecommunication equipment and supplies; and United Computing Systems, which offers a broad range of computing services. At this time United Telecom appears to be content to protect its interests in its United Telephone System and not actively exploit the interconnect market.

International Telephone and Telegraph Corporation (ITT)

Telecommunications continues to be ITT's largest and oldest business. ITT is active in telecommunications transmission systems, and it is just beginning to make a significant entry into the domestic interconnect market. ITT's equipment sales have been made primarily to the foreign telecommunications market. ITT's earnings declined slightly in 1976 due, according to the company, to the adverse effect of foreign currency translation and some conservative money policies of European governments. 54 ITT's earnings were up 14 percent ($563 million) in 1977. 55

ITT forecasts that the saturation level of telecommunications in their principal markets is still low and the requirements for equipment assure a continued order input for ITT as more normal economic conditions are achieved. ITT has indicated that the developing nations, primarily the Middle East oil producing countries, will be their prime target for sales.  

**General Dynamics**

Stromberg-Carlson is the interconnect unit of General Dynamics. Stromberg-Carlson is still a very active participant in the market. It acquired Arcata Communications in 1973 and United Business Communication (United Telecom, Inc.) in 1974. It has been difficult to establish Stromberg-Carlson's activities in the marketplace because specific details of its operation are not provided in the Annual Reports of its parent company, General Dynamics. The 1975 Annual Reported stated,  

Stromberg-Carlson's sales and earning were below the record level set in 1974. However the Company maintained its position as the leading supplier of equipment both to the nation's 1,600 independent telephone operating companies and to the interconnect telephone market.  

Improvement did not come in fiscal 1976. *The Wall Street Journal* noted: "Stromberg-Carlson Corp. said it plans to drop 200 employees from its payroll by

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January 1, 1977."

Sales by the company in 1976 were reported down by 14 percent. The recession and the advent of new switching developments were blamed for the company's decline in sales. In 1977 Stromberg-Carlson's research and development work on digital PBX's continued at a high level. Stromberg-Carlson relocated their PBX manufacturing element during 1977. The equipment operation led to a small loss for 1977, but the company attributes the loss to relocation costs and are optimistic for 1978. Stromberg-Carlson possesses the capability for rapid expansion and have the potential to be a leader in the interconnection business.

Executone, Incorporated

From the inception of Executon's key telephone marketing program in February 1974 and through December 1976, the company has delivered more than 31,000 key telephones. Executone started to show significant sales growth in 1976 when the telephone interconnect product line made up 39 percent of their total business volume.


59 General Dynamics Annual Report, 1976, p. 3.

Order input for 1977 showed an increase of 61 percent over the 1976 period. 61

Executone has opposed legislation sponsored by AT&T and other telephone companies. Executone works through the North American Telephone Association (NATA), a lobbying organization that represents the independent interconnect industry. Its main effort is to convince Congress and the FCC that competition is the best way to service the American consumer's diverse and rapidly changing telecommunications needs. 62

The latest statistics available for Executone shows the following financial status for the first nine months of 1977. These figures are compared to the same period in 1976. 63

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<th>1977</th>
<th>1976</th>
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<tr>
<td>Sales</td>
<td>$24,647,933</td>
<td>$18,696,590</td>
</tr>
<tr>
<td>Net Income</td>
<td>644,548</td>
<td>234,060</td>
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</table>

General Electric Corporation

In reviewing industry publications General Electric is always listed as a potential interconnect entrant. The 1977 Annual Report makes absolutely no

62 Ibid., p. 3.
mention of the interconnect market and it has not been possible to document any substantiation that General Electric plans to compete. It is most definitely within their capabilities to enter the market at any time.

**International Business Machines Corporation (IBM)**

IBM clearly has the potential to make a significant impact on the interconnect market, but has not made any move in that direction to date. There are two telecommunications elements in the corporation that could make a significant impact in the future. The System Communications Division has worldwide development and U.S. manufacturing responsibility for communications systems, distributed systems, line switching, and related communications technologies and programming. Satellite Business Systems has filed its first tariff and is proceeding with plans to begin offering commercial, digital, integrated communications systems in 1981. Satellite Business Systems is also engaged in studies with large U.S. corporations to learn more about their telecommunications service needs.64

In a speech before the Hartford Society of Financial Analyst on March 16, 1978, Dean P. Phypers, Vice-President for Finance and Planning for IBM stated that the company believes that the goal of U.S.

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telecommunications policy should be to provide a broad range of reliable telecommunications services to all the people as economically as possible. He continued that the objective could best be obtained through maximum use of the competitive marketplace. The only exception that Phypers allowed for was the regulation of pure transmission services. Beyond that he favored open telecommunications services and equipment leading to a greater benefit to the public through more varied products and services, greater innovation and lower costs.\(^6^5\)

IBM may not be in the interconnect market now or in the future. However, it is clear that IBM will give AT&T little comfort by encouraging open competition in the interconnect market.

**Racal-Milgo, Incorporated**

Racal-Milgo, Inc., formerly Milgo Electronics, was purchased by Racal, a British electronics manufacturer, on August 11, 1977.\(^6^6\) The company designs, manufactures, markets and services equipment utilized to communicate computer data and voice over the telephone network. The company supplies a line of private automatic branch


exchange (PABX) systems including a telephone instrument package. Systems being presently sold and installed utilize components and products primarily manufactured by other companies. Prior to the take-over Milgo believed that its eventual success in the interconnect market depended on its ability to develop a highly competitive PABX system. Until such time as the company is able to manufacture its own product line, a capability Racal will bring to it, it will depend on the products manufactured by others over which it has been unable to exercise effective cost control. This lack of cost control along with inexperience in the interconnect market resulted in losses of $1,141,000 in 1974 and $578,000 in 1975.

Prior to Racal's purchase of Milgo, the management of Milgo made a public disclosure of its projections of profit and sales for the next four years. Net profit is projected to rise to $7 million in fiscal 1978, $9.3 million in fiscal 1979 and $11.5 million in fiscal 1980. From $11 million in fiscal 1976, sales are forecast as climbing to $52.7 million in fiscal 1977, $61.6 million in fiscal 1978, $74 million in fiscal 1979 and $85.4 million in fiscal 1980. The manufacturing capability

68 Ibid., p. 5.
of Racal may be the essential ingredient Racal-Milgo needs to make that forecast come true.

Litton Industries, Incorporated

Litton's major emphasis is in the supply of tactical command, control, communications and electronics support systems for the U.S. Government and other foreign nations. Sales of electronic and electrical components were emphasized instead of interconnect items. The company's "state-of-the-art" electronic technology and systems engineering capability gained from the experience developing sophisticated defense communications systems give LII the potential for growth in the interconnect market.

One change Litton has made that is common to the interconnect market is the adoption of electronic switching systems. Litton discontinued the sales of all electro-mechanical products in 1976. This conversion resulted in earnings of $196,663 for 1976, a loss of -8.6 percent from the previous year for the Communications and Electronic Data Systems Division. Earnings improved to $203,809 in 1977, a 3.6 percent increase.

RCA

RCA Communications presently operates three


71 Ibid., p. 32.
separate subsidiaries: RCA Globcom, RCA Alascom, and RCA American Communications. In reviewing RCA's Annual Reports, no evidence is presented that RCA is presently interested in entering the market. With regard to the interconnect market Business Week magazine quotes an unnamed RCA official as saying, "So far this affects only a small part of our business directly. We are hardly into it yet. AT&T is a big company, and we'd rather not provoke a fight." In the event that the market opens up the potential exists for rapid movement of an organization like RCA into the business. At this time RCA still appears to be maintaining a wait and see attitude.

American Telecommunications Corporation (ATC)

ATC specializes in decorator handsets, automatic dialers, and central office equipment. ATC claims to be the leader in decorator handsets which accounted for nearly half of 1977's revenue of $26.4 million. ATC has placed its primary emphasis as a supplier to the telephone companies rather than compete with the manufacturing elements of the telephone companies. Approximately 73 percent of its total output is sold to the Bell System or General Telephone and Electronics.

72 "AT&T's Bold Bid to Stifle Competitors," Business Week, March 15, 1976, p. 84.

It has been reported that ATC supplies the Bell System with more decorator sets than does Western Electric. ATC is the company that introduced the popular Mickey Mouse phone. They have phones under production now that feature the characters from the Peanuts comic strip. ATC's most serious competition in the decorator phone market is expected to come from Sears.  

In 1976 ATC formed a joint venture with Fujitsu Ltd., a move that will give ATC added strength in the market because of Fujitsu's manufacturing capability. Fujitsu is one of the largest Japanese computer and telecommunications concerns entering the U. S. interconnection market.  

The first products to be turned out by the joint venture involve switching, transmission, and fiber optic products. The most competitive item is an electronic switch called Focus II. This switch provides all the features of the Bell System Dimension Switch at a highly competitive price.

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75 Ibid.

76 Ibid.
Northern Telecommunications of Canada

Northern Telecom (69 percent co-owned by Bell Canada) is estimated to be the strongest foreign competitor entering the U. S. interconnect market. According to Robert C. Scrivener, the Chief Executive Officer of Northern Telecom, the U. S. will be their fastest growing market. Scrivener stated that regulatory and judicial decisions in the U. S. are creating an environment for intense and extensive competition in a market once served by the Bell System.

Northern Telecom is causing some consternation among some of the U. S. interconnect businesses. In its efforts to penetrate the interconnect marketplace Northern Telecom has established a headquarters in the heart of the independent telephone company industry in Nashville, Tennessee. According to David Perdue, President of the Northern Telecom Systems Division, the company now has 20 so-called factory-authorized contractors and eight direct sales offices around the country.

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Rochester Telephone Corporation

Rochester Telephone Corporation is a small operating telephone company that has decided to make its own way in the interconnect market. The company broke with the rest of the nation's telephone companies in June 1977 when it decided to let residential customers hook-up their own telephone equipment and install inside wiring. 80

AT&T's New York Telephone Company immediately took action to stop Rochester's plan before the New York Commission. However, in a surprise move, the New York Commission went further than the FCC in allowing customer hook-ups. The New York Commission allowed customers to install their telephones without protective devices currently provided by the phone companies. 81

Rochester Telephone's proposal to allow customers to do their own wiring is still under consideration by the New York State Public Service Commission. The Commission restricted customer hook-ups to switchboards and telephones attached to one outside line. Systems servicing multiple outside lines require protective devices. 82

81 Ibid.
82 Ibid.
Independent Retailers

Sales of standard decorator phones have not been exceptional with many retailers, such as Macy's in New York, who are considering withdrawal from the market. It is believed by some, however, that the introduction of "smart" phones featuring extra-cost gadgetry such as automatic dialers and digital displays that show elapsed time of a call will open up the market dramatically.

International Competition

Imports of interconnection equipment into the United States represent only a small percentage of total shipments from foreign countries, but the volume is growing rapidly according to a study recently completed by the International Trade Commission. The statistics indicate that imports of all telephone equipment represent just over 2 percent of domestic shipments, while private branch exchange imports are in the range of 8-12 percent of U.S. shipments. Telephone equipment imports increased from about $49 million in 1972 to $87 million in 1976, then jumped last year to nearly $128 million. U.S. exports increased from $62 million in 1976 to $68 million during 1977.

84 Ibid.
CHAPTER IV

INDUSTRY AND GOVERNMENT REACTION TO COMPETITION

Common Carrier Proposals

The common carriers have not quietly accepted competition in the telephone interconnection portion of their business. They have attempted to introduce legislation and regulatory changes in two particularly significant instances that would have preserved their former market position. In terms of service, the carriers subscribe to a universal, all embracing concept. They chose to treat telecommunications in the broadest sense possible. The proposals support a definition that allows for no substitutes, no fragmentation, no segmentation, no specialization, but rather assumes a homogeneous universal offering.¹ These two proposals, the Primary Instrument Concept (PIC) and the Consumer Communication Reform Act (CCRA), represent the common carriers' most recent attempts to control the industry.

Primary Instrument Concept

On February 1, 1978, the FCC opened the inquiry in the telephone industry proposed amendments of the Commission's telephone equipment registration program (CC Docket No. 78-36). The telephone industry defines the primary instrument concept as,

... requiring the telephone company to provide as part of a single line basic telephone service, one company owned and maintained instrument associated with the central office and loop plant serving the subscriber.\(^2\)

This industry generated proposal would have required residential and business subscribers to single-line telephone service to obtain one carrier-owned and maintained telephone terminal—the primary instrument (telephone). This concept is based on the belief that it is in the public interest for one serving entity to be responsible and accountable for complete basic telephone service in those situations where the customer has only single line communication service.

The basic objectives of the industry proposal were outlined in a special report in Communication News to include the following:

1. To make one serving entity (Telco) responsible and accountable for providing complete basic telephone service for single-line subscribers;

\(^2\)Victor Block, "Coordinating Committee Backs the Primary Instrument Concept," Telephony, September 5, 1977, p. 16.
2. To assure continuity of such service;
3. To facilitate testing;
4. To serve as a reference set to allow the customer to independently diagnose where trouble lay;
5. To permit and encourage customers to make prompt repairs to malfunctioning equipment without interruption of basic telephone service; and
6. To permit the orderly introduction of technological innovations in the network.

Furthermore the industry alleged that the proposal would provide numerous social benefits. The social benefits claimed include continuity of service, reliable maintenance and accessibility of the latest services provided by the carrier.

Bell's normal adversary, labor unions, engaged in a program oriented at calling attention to the detrimental effects on the labor market brought about by the interconnection boon. The Communications Workers of America (CWA) sought, "... an avalanche of mail, asking Congress to protect the world's best system of telecommunications."

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5"Unions Scramble for Power in Communications," Business Week, May 1, 1978, p. 82.
The union also requested that the International Trade Commission and the FCC identify and label all foreign-made parts of telephone systems as a step toward limiting imports. Electronic News reports that the country-of-origin labeling on telephones and parts imported was rejected by the FCC.6

The Telecommunications International Union, which represents approximately 60,000 telephone workers in the United States and Canada, held their first annual convention in May of 1978. The TIU adopted a resolution strongly in support of the Primary Instrument Concept. The resolution stated in part,

The TIU endorses the Primary Instrument Concept as a workable and practical means of maintaining employment in the telephone industry, protecting the technical integrity of our public telephone network, and ensuring the continuance of a major national asset, our telephone system.7

This union activity really shows how much weight the economic issues have on the PIC question. The main issue here is maintaining their present market share, not improved service to the customer. A potential loss in market could represent a loss in jobs. In this case the PIC serves the interest of the telephone companies and the unions, but not necessarily the overall public interest.

The National Association of Regulatory Utility Commissioners (NARUC) supported PIC before the FCC. Their support was based on the premise that many state commissions regulate the full service provided by telephone companies under their jurisdiction. In a letter to FCC Chairman, Charles D. Ferris, NARUC President, Alexander J. Kalinski stated,

... telephone companies should be responsible for end-to-end service in all cases where the customer cannot reasonably be expected to provide for his own trouble shooting and maintenance. Naturally in PBX and Key systems, which are installed and maintained by capable firms, this presents less of a problem than in single line service situations where a residential customer or small businessman has no means of knowing whether a malfunction is the fault of his equipment or of the telephone company's service lines. This would frequently result in unnecessary and costly service visits by telephone company personnel who could only determine if the cause was the customer provided equipment but would not be authorized to make necessary repairs.

Firms distributing single telephone sets may not have the service and repair capabilities of the larger PBX and Key system companies and State commissions would be unable to require compliance with minimum service standards. The only requirements under the present registration system relate to protection of the telephone system and not to protection of the public. Only where the ultimate responsibility to provide basic and complete service to single line subscribers is placed on the telephone company itself can the State commissions assure adequate service to the general public.

The NARUC believes that the Primary Instrument Concept is necessary for the protection of the individual subscriber and will foster the goal of dependable universal service. However, if the status quo is not preserved to this extent pending Federal Communications Commission review, it will be both difficult and confusing to the public to reimpose this duty on the telephone companies. Further,
temporary postponement of the registration program as it applies to single line subscriber service would probably not cause substantial inconvenience to anyone if review is expeditiously undertaken and pursued.8

The North American Telephone Association, representing the independent telephone manufacturers, was initially neutral in response to the FCC Notice of Inquiry concerning the Primary Instrument Concept. In their newsletter, NATA Reports, a significant shift in their position was reported.

We can no longer remain neutral. On the basis of the material supplied by the carriers it is now all too clear that the Primary Instrument Concept is pernicious. No hard data or facts supporting the Primary Instrument Concept has been supplied by the carriers because there is no justification for it; the proposal is nothing more nor less than an attempt by the telephone industry to preserve its monopoly position in the provision of single line sets to the fullest extent possible.9

The report further elaborated,

If the primary instrument concept is adopted and the tariffs are not unbundled, there is a virtual certainty that customers will end up paying for service and maintenance which they do not receive and do not desire. By making the acquisition of at least one instrument from the carrier obligatory, it would provide a regulatory guarantee that the telephone companies will have access to the entire single line telephone subscriber market of the United States.10


10 Ibid., p. 4.
In response to the project survey, the International Communications Association made the following comments on PIC:

Bell's "Primary Instrument Concept" is just another effort by "Maw Bell" to confuse, complicate, and delay competition within her areas of business, and to perpetuate her monopoly to the greatest extent possible. As indicated by the FCC and Congressional leaders in recent decisions, PIC is unacceptable.\(^{11}\)

MCI Communications Corporation provided the following response on PIC: "'Primary Instrument Concept': A transparent attempt to vitiate the registration program, which evoked the derision it deserved."\(^ {12}\)

Two federal government agencies opposed PIC. The General Services Administration said,

The concept (1) is inconsistent with the Carterfone decision, (2) may pose antitrust problems, (3) does not make a compelling argument for end-to-end service, and (4) an extension of the concept to multiline subscribers would have a significant and adverse impact on the executive agencies. The federal government, the country's largest consumer of telephone services, uses both single-line and multiline service. The PIC puts the government in the position of being both a sophisticated operator of a 10,000-line PBX with no primary instrument requirement and a novice not capable of operating a single telephone on a single line.\(^ {13}\)

\(^{11}\)Letter from Philip R. Evans, Technical Director of the International Communications Association, October 4, 1978.

\(^ {12}\)Letter from Robert D. Swezey, Jr., Assistant Treasurer of MCI Communications Corporation, September 28, 1978.

On the whole the PIC, as applied to single-line basic telephone service would have no significant impact upon the consumer interests of DOD and the national defense communications network.\textsuperscript{14}

The Federal Communication Commission has continually attacked the Primary Instrument Concept as being unsound. The Chief of the Common Carrier Bureau, Walter R. Hinchman, stated prior to the recent decision, "The Commission's Carterfone decision and its registration program for direct interconnection of terminals would be substantially reversed if the FCC adopted the Primary Instrument Concept."\textsuperscript{15} The outcome to the Commission was inevitable; the Primary Instrument Concept lacked the timely merit required for passage.

The telephone industry has always been quick to build a defense on protection of the network. PIC was part of the defense against the registration program. The registration program (Docket 19528) established a system to allow telephone users to connect their sets to the national telephone network without carrier supplied protective coupler, provided that such equipment complied with standards in the registration program to protect the network. In 1972, the Commission instituted a joint


federal/state board to explore approaches for simplified technical interconnection of customer equipment. This board recommended in 1975 that a FCC registration program be established for ancillary and data terminal equipment which contained their own protective circuits. The Commission adopted these recommendations in November of 1975. The Commission chose to expand the registration program to encompass all terminal equipment.

The Commission's decision was appealed to the courts and two days prior to its implementation in April of 1976, the Fourth Circuit Court of Appeals stayed execution of the registration program. In March of 1972, the same Court upheld the Commission's registration program, but chose to grant a stay of execution pending an appeal to the U. S. Supreme Court. On October 4, 1977, the Supreme Court denied certiorari to the appeal.

Richard B. Johnson stated the contention of the Commission in response to industry claim of danger to the network,

To carrier claims that carrier-provided connection was necessary to protect the network, the Commission answered that there was no demonstratable harm resulting from network interconnection of nearly 1,600 independent telephone companies, most of which interconnected without carrier provided arrangements, and that a registration program prescribing circuitry and standards would be sufficient protection against technical harm.¹⁶

The loss of both the Primary Instrument battle and the registration program put the telephone industry in the position that required adaptation to the rapid changes being forced upon it. Bell reports,

Although we remained concerned that registration could result in service problems, we will do our best to make it work. Customers who provide their own station equipment will receive monthly billing credits on their bill.17

By maintaining a primary instrument in each customer's residence, substantial equipment remains under industry control. At the present time the average customer is not aware of the availability of telephone terminal equipment, and even if he were aware of availability, the inclination would be to stick with one company rather than going through the aggravation of dealing with two companies for identical service. It is in this way that the PIC limits customer choice and is detrimental to customer ownership of primary instruments.

When the summary of FCC regulations (Chapter III, p. 38) is balanced against the telephone companies PIC (basic industry) proposal, the FCC proposed maintenance and registration contingencies appear more than adequate. They also enhance the open, competitive marketplace. AT&T will continue to have an advantage in marketing in that they can offer a total service concept to the

customer. In the spirit of competition, it is the customer's option to balance the cost of an independent against the total coverage the telephone company may offer. Maintenance problems with basic telephone service seem overstated by the telephone company. The standard telephone instrument is an old, proven technology. Its dependability is not tied to manufacturing by Western Electric. Other independent manufacturers have proven their competence in a wide range of telecommunications products including the basic telephone set.

In the final analysis the failure of the industry to gain favorable consideration from the Federal Communications Commission could probably be blamed on many factors. Its lack of timeliness would have to rank as one of its greatest flaws. It appears on examination that the proposal was submitted only after other options had failed and the pro-competition sentiments totally dominated the Commission and Congress. Congressman Van Deerlin commented on several occasions that he believed, "... the Primary Instrument Concept was a good transitional proposal, but probably came too late for present consideration."  

It appears that the industry totally failed to recognize the changing times. There is a move throughout the federal government to reduce regulation and enhance

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18 "Primary Instrument Concept Turned Down by FCC; Commissioners Go Along with Staff Recommendation; May Be Last Federal Step Toward Competition," Telecommunications Report, July 17, 1978, p. 5.
competition in all industrial sectors and the telecommunications industry is no exception. Current economic issues, consumer rights and technological questions have made the Primary Instrument Concept an issue past its time.

**Consumer Communications Reform Act of 1976 (CCRA)**

The telephone industry has acquired some interesting friends and adversaries as it advanced the Primary Instrument Concept. Concurrent with the efforts to win approval from the FCC for the Primary Instrument Concept, Bell has concentrated its activities in Congress on the passage of the "Bell Bill." The bill, formally titled the Consumer Communication Reform Act of 1976, would concentrate on preserving Bell's monopoly position.

Congress has seldom shown much interest in the workings of the FCC with minimal exception concerning broadcast regulation. Under the leadership of Bell's President, John DeButts, the request was forwarded to Congress.

... to pass a law that would stop competition in long-distance service, permit AT&T or other traditional carriers to acquire the competing companies, revoke the FCC's jurisdiction over technical and operating standards that affect terminal and accessory equipment attached to local telephone company facilities.19

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19"AT&T's Bold Bid to Stifle Competitors," *Business Week*, March 15, 1976, p. 82.
On March 4, 1976 Congressman Roncalio introduced H. R. 12323. The bill was referred to the Committee on Interstate and Foreign Commerce. The bill's purpose follows:

To reaffirm the intent of Congress with respect to the structure of the common carrier telecommunications industry rendering services in interstate and foreign commerce; to grant additional authority to the Federal Communications Commission to authorize mergers of carriers when deemed to be in the public interest; to reaffirm the authority of the States to regulate terminal and station equipment used for telephone exchange service; to require the Federal Communication Commission to make certain findings in connection with Commission actions authorizing specialized carriers; and for other purposes. 20

The bill impacts on competition, in general, for the entire telecommunications industry. For the purpose of this analysis only those sections dealing with terminal and station equipment issues will be considered. Section 2(c)(3) and (4) states,

The Congress finds and declares that--the authorization of lines, facilities, or services of specialized carriers which duplicate the lines, facilities, or services of other telecommunications common carriers--significantly impairs the technical integrity, the coordinated planning, design, installation, improvement, management, operation and maintenance of the integrated nationwide telecommunications network; and ... has an adverse impact on the national objectives of maintaining stability of consumer price levels, conserving national economic resources, improving productivity, and fostering an economy that will maintain adequate sources and reasonable costs of capital; and is therefore, contrary to the public interest. 21


21 Ibid., p. 2.
Section 2(d) states,

The Congress reaffirms its intent that the complete authority to regulate terminal and station equipment used for telephone exchange service shall rest with the States even though such terminal and station equipment also may be used in connection with interstate services. 22

Section 8b states,

The Commission shall not grant or authorize any acquisition or operation of any communication facility that otherwise might be granted or authorized pursuant to any provision of this Act, to any specialized carrier that furnishes or proposes to furnish interstate communication service unless the Commission shall find, after full opportunity for evidentiary hearing on the record, that such permit, license, or certificate, will not result in increased charges for telephone exchange service or in wasteful or unnecessary duplication of communications lines, facilities, equipment and instrumentalities of any telephone or telegraph common carrier, and will not significantly impair the technical integrity and capacity for unified and coordinated planning, management, design, and operation of the nationwide telephone network. In finding that such grant or authorization will not result in wasteful or unnecessary duplication, the Commission shall determine, among other things, that the proposed service or services of the specialized carrier, which are the subject of the requested grant or authorization, (i) are not like or similar to any service or services provided by a telephone or telegraph common carrier and (ii) cannot be provided by available communication lines, facilities, equipment, or instrumentalities of a telephone or telegraph common carrier. At any hearing involving a matter under this subsection, the burden of proof to support the requisite findings by the Commission shall be on the applicant for such permit, license or certificate. 23


23 Ibid., p. 10.
Paul H. Henson, Chairman of the Board of United Telecommunications, Inc., testified before the Subcommittee on Communications in the initial stages of the CCRA review. He emphasized that his testimony was not coordinated with the rest of the common carrier industry or the telephone association. It does, nonetheless, accurately reflect the general views of the rest of the industry. Henson's argument for the bill concerning the terminal equipment market centered around two factors, the integrity and technical functioning of the network and the economic impact of this competition as it affects toll settlement revenues. On network integrity and technical functioning Henson said,

"... It is by means of the telephone set itself that the customer not only receives, but also transmits signals over the network, and therefore the quality of telephone service for all subscribers is affected by the malfunctioning of the terminal equipment for one subscriber. Thus, telephone company ownership and control of terminal equipment has become an equally integral part of the economic structure of the telephone industry."

Henson agreed that competition in the terminal equipment market had two economic impacts. He claimed that the very nature of competition forces prices to reflect costs only and that it is no longer feasible to extract a contribution from any of these services in a competitive

More important to Henson, however, is the economic impact of competition as it affects toll settlements revenues. Henson testified,

When a telephone company loses a customer to an interconnect supplier—a competitor in the terminal equipment market—it loses the revenues associated with that account, but it also reduces its investment and applicable operating costs. This, in turn, causes a reduction in toll settlements revenues received by that company because of the reduction of the investment base to which the separations formulas are applied.

When the "Bell Bill" was first introduced by Congressman Roncalio, the bill had 50 co-sponsors and at least 200 Congressmen that had indicated that they would support the measure. Representative Timothy Wirth released figures showing that AT&T alone spent $527,825 on a direct lobbying effort in the fourth quarter of 1976, and $2.5 million as of the spring of 1977. Despite intensive lobbying and apparent congressional support, the CCRA ran into trouble as opposing views were aired before the Congress.


26 Ibid.

27 "At&T's Bold Bid to Stifle Competitors," Business Week, March 15, 1976, p. 82.

The North American Telephone Association (NATA) representing almost 400 of the country's interconnect firms argued for consumer choice and a continued need for innovation in the industry. NATA questioned why the American consumer shouldn't be able to choose the telephone equipment that met their requirements rather than to be dictated to or restricted by the telephone company. They see the proposal as a fraud against the consumer and cite the result of competition as proof. NATA sees the interconnect industry forcing innovation, but falling well behind in market shares. During the period of head-on competition, the telephone companies have been able to win over 90 percent of the interconnect market. In the year before the introduction of CCRA the telephone companies had gross revenues of more than $3 billion from the terminal interconnect sales and services while the independent interconnect companies had revenues of $143 million.\textsuperscript{29} NATA believes that innovation will be stifled by the bill, because AT&T's interests as a regulated company are best served by maximizing the size of its rate base and retaining existing equipment in service as long as possible. When new equipment must be introduced, NATA contends that Bell

avors long production runs of standardized products. If Bell can persuade Congress that they should be the sole producer of terminal equipment, they will be able to control innovation to suit their own financial and regulatory purposes. 30

E. Lawrence Tabat, President of Dictaphone Corporation commented on the reasonableness of states regulating terminal and station equipment.

A certification proceeding is a long and costly undertaking. My company has been through several state certification proceedings and I can tell you that no company without the personnel and financial resources of the Bell System can afford to go through 50 such proceedings every time it wants to introduce a new product. . . . This legislation, then, could have the direct effect of preventing small and medium sized companies like Dictaphone from selling to markets big enough to justify the expense of developing new products. 31

The Chairman of the FCC, Richard E. Wiley, set the tone for FCC's response to CCRA with the following statement:

While the Consumer Communications Reform Act purports to advance consumer interests by assuring subsidies to residential telephone service and safeguarding the technical integrity of the network, nothing in the proposed bill leads to the realization of those stated objectives. In fact, the bill is most notable for what it would do to competitors and to effective regulation than for what it would do for consumers. A restructuring of terminal equipment jurisdiction which supplants a single


31 Ibid., p. 638.
national policy with 50 State policies will not only restrict the development of nationwide networks and markets, but also provide competitive advantages for telephone companies which are structured to deal on a State-by-State basis.32

The FCC branded the section on reaffirming Congressional intent that the states have exclusive jurisdiction over regulation of terminal and station equipment as an attempt to reverse FCC and judicial decisions in that area. The FCC cites its authority based on the interpretation of decisions made by the U.S. Court of Appeals for the Fourth Circuit. The Court maintained that the FCC must remain free to determine the manner in which terminal equipment can be connected to the network. The Court also supported the basic premise that FCC maintained jurisdiction over the interconnection of terminal equipment with the national telephone network.33

The FCC's findings and conclusions in its Docket 20003 did not support the bill's assertions that the price levels of interconnect equipment and the technical integrity of the network are harmed by present policies.


The FCC observed that the telephone industry failed to substantiate their claims, because evidence before the Commission indicated that terminals have been priced at noncompensatory rates. Thus those services may have been a burden on basic telephone service, rather than a source of beneficial subsidies.\(^34\) The FCC's registration program has provided for the protection of network integrity. The standards used by the Commission in this program to evaluate the technical acceptability of terminal equipment are to a significant extent the very standards advanced by the telephone companies as necessary to protect the network from technical harm. The FCC has requested that telephone companies cite cases where damage to the network has occurred. To date no telephone company has responded to that challenge. Thus, the Commission's decisions in this area have allowed for innovative equipment services to be available to the American telecommunications customer, while also protecting the network from physical harm and the user from degraded service quality.\(^35\)

In testimony before the House Subcommittee on Communications, Alfred E. Kahn, then Chairman of the New York State Public Service Commission, branded the bill

\(^34\)"Consumer Communications Reform Act of 1976 (H. R. 12323 and Related Bills)," Report by the Federal Communications Commission on Domestic Telecommunications Policies, September 27, 1976, p.3.

\(^35\)Ibid., p. 905.
as anticompetitive, a move generally not anticipated from a state regulatory body which usually supports the telephone company. Kahn said that severe limitations would be placed on competition by returning exclusive control over the market access of nontelephone company suppliers to the several state commissions, many of which had clearly signaled their intention to overturn the pro-competitive policy of the FCC.36

On the relationship between terminal equipment and separations Kahn said that his staff's calculations show that the contribution of interstate service to the common costs of terminal equipment does "not at all" go to hold down the costs of basic service. Instead, it has been totally used up in subsidizing the rates charged for the terminal equipment itself.37

The hearings of the 94th Congress ended without ever leading to a vote on CCRA. At the start of the 95th Congress the "Bell Bill" was re-introduced. As a result of testimony from the hearings conducted during the 94th Congress, CCRA supporters numbered less than fifty. Procompetitive forces in the Congress were making their move. The Congressional Subcommittee on Communications


37 Ibid., p. 1010.
initiated hearings to set policy and define the public interest in the telecommunications field. The subcommittee made two basic assumptions that ultimately doomed the CCRA. The public interest will be served if as much competition as possible is allowed in the telecommunications industry; and competitive forces, rather than regulatory forces should dictate policy in the telecommunications field. Congressman Timothy Wirth, a member of the Subcommittee on Communications, introduced a procompetition resolution in January 1977 designed to educate the Congress on communications issues. Among other things, the CCRA was recognized as not consumer oriented, not reform oriented, but special interest oriented—designed to preclude competition.

Even though CCRA never came to a vote and was, in essence defeated, it did generate congressional interest in a field that had been dormant since the passage of the Communications Act of 1934. Not to be outdone by anyone in the telecommunications field, Bell maintains that CCRA was the impetus for the present telecommunications legislative proposal, The Communications Act of 1978.

Mr. Dick Eckert, Assistant Vice-President of Public

38 Opinion expressed by Congressman, Timothy Wirth, in an address ("The Future of Telecommunications in America: Monopoly or Competition") at the University of Colorado, Boulder, October 25, 1978.

39 Ibid.
Affairs, Mountain Bell, maintains that CCRA only lost out because it looked at a small portion of the telecommunications industry problems. There is no question that the proposed Communications Act of 1978 focuses on the entire telecommunications industry. Congressman Timothy Wirth calls the telephone interconnect business one of the continuing big issues of the new act despite Carterfone and favorable decisions for competition in the past. The next section will examine how the telephone interconnection industry will fare under the proposed Communications Act of 1978.

Communications Act of 1978

On June 7, 1978 House Resolution 13015 was introduced by co-sponsors House Communications Subcommittee Chairman, Lionel Van Deerlin and ranking minority subcommittee member, Louis Frey, Jr. Van Deerlin and Frey stated that the overall objective of H. R. 13015 was to allow the marketplace, rather than the federal government, to determine the future of telecommunications in America. Correlaries to the objective included the

40 Opinion expressed by Dick Eckert, Assistant Vice-President of Public Affairs, Mountain Bell, in an address, "The Common Carrier and Bell Systems Reaction to Forthcoming Proposed Legislation") at the University of Colorado, Boulder, September 27, 1978.

41 Ibid.
intentions of allowing more competition, decreasing the federal presence, and providing the widest possible range of telecommunications services at affordable prices. 42

Four specific provisions of H. R. 13015 are particularly significant in their relationship to the future of the telephone interconnection industry. This discussion will examine the reactions to and the recommendations resulting from the telephone industry's analysis of these four critical provisions. The first major point is found in Title 1, General Provisions. This provision extends federal jurisdiction to regulate any telephone company except those which are strictly intrastate and do not receive compensation from the Universal Service Compensation Fund. Section 331 elaborates on the general provisions by directing the Commission to,

1. place maximum feasible reliance to [sic] marketplace forces . . . .
2. rely on competition to provide efficiency, innovation, and low rates, and to determine the variety, quality, and cost of telecommunications services;

(3) establish full and fair competitive conditions . . . 43

Sections 332 (Common Carrier Holdings in Other Companies) and 333 (Restriction on Manufacture of Equipment) have created the greatest furor within and out of the industry and they are shown in full below:

Section 332. Norwithstanding any other provision of law, or any judicial determination or decree, and except as provided in section 333, any common carrier may hold or acquire shares of any separate company which engages in any activity, provides any service, or offers any product which the Commission, after notice and opportunity for hearing, has determined to be telecommunications or to be incidental to telecommunications. In determining whether an activity, service, or product, is telecommunications or incidental to telecommunications, the Commission shall consider whether its performance by an affiliated company is consistent with the purposes of this part.

Section 333. (a) No person shall provide a non-competitive telecommunications service and also be engaged in the manufacture of equipment used in furnishing any common carrier service. (b) The provisions of this section shall take effect at the end of the 3-year period following the enactment of this Act. 44

The View from the Hill

While H. R. 13015's basic trend toward more competition is favored by the Congress, the sections shown above are still subject to debate within the Subcommittee on Communications. Representative Timothy Wirth stated that he was not convinced that divesting Western Electric, 43 "The Proposed Communications Act of 1978: The Debate Begins," Satellite Communications, July 1978, p. 16. 44 Ibid.
in accordance with Section 333, made any sense at all. Wirth contended that an independent Western Electric would be in the position to completely overwhelm smaller interconnect manufacturing firms. Wirth sees the smaller companies as a primary source of innovation in the industry. He fears that this innovative push against the giants would be lost if Western Electric was completely free to market their interconnect line. Representative Wirth also said that the divestiture section (333) was not the consensus of the Subcommittee on Communications, but only represented the desires of the co-authors of H. R. 13015, Lionel Van Deerlin and Louis Frey, Jr. In the final analysis Wirth feels that Congress is responsible to resolve these complicated issues, but does not foresee successful legislation resulting from the present effort for at least seven to ten years. 45

Another House Communications Subcommittee opinion, divergent from Van Deerlin and Wirth's views on divesture, was reported in the *Electronic News*. It was reported that the wording of the divestiture section of the new bill could allow AT&T to retain ownership of Western Electric, if it is willing to concede that normal long distance

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45 Opinion expressed by Congressman Timothy Wirth in an address ("The Future of Telecommunications in America: Monopoly or Competition") at the University of Colorado, Boulder, October 25, 1978.
In remarks before the American Electronics Association Congressman Van Deerlin indicated that while he favored the divestiture of Western Electric, he had no ready solutions as to how Bell labs should be handled. Van Deerlin claimed that Section 333 of the bill existed because he was following what the courts and the Department of Justice had already started. Van Deerlin stated that he did not believe that competition should be achieved by having Bell equipment offerings tariffed-regulated and competitive equipment untariffed.

In addition to internal subcommittee disagreement over basic issues, another factor that clouds the successful completion of the Communications Act of 1978 is the departure of Louis Frey, Jr. from the Subcommittee. Frey, the co-sponsor and ranking Republican on the subcommittee, is retiring to run for governor of his state. Van Deerlin has expressed hope that whoever succeeds Frey will join in backing the bill.


47 Victor Block, "Van Deerlin Backs Divestiture of Western Electric from Bell," Telephony, June 5, 1978, p. 13.

The Federal Bureaucracy

Charles D. Ferris, Chairman, FCC, testified during H. R. 13015 hearings in August 1978 that he was concerned with three potential problem areas in the domestic common carrier provisions of the bill. The three problems related here apply directly to the general provisions and Sections 332 and 333. In regard to the general provisions Ferris does not feel that H. R. 13015 gives the Commission adequate regulatory authority where marketplace forces are said to be deficient. Ferris is concerned that firms like AT&T, GTE and Western Union will use the same facilities to offer both competitive and noncompetitive services. He sees the bill's provisions to check on these giant firms as inadequate. He also considers the bill vague in determining jurisdictional responsibilities between the federal government and the states.49

Ferris' indictment of vagueness and inadequacy extends to Sections 332 and 333. While Section 332 frees AT&T of the Consent Decree of 1956, it does not clearly define the extent to which AT&T and Western Electric will enter other markets. In the case of Section 333 Ferris believes that the bill does not provide a means of regulating during the transition

period of the bill. Ferris sees AT&T having such a great share of the market in the initial stages of the competition that free market forces will be stifled by AT&T's edge and AT&T's position actually strengthened. Ferris recommended in his testimony that the three year transition period be scraped in favor of continued commission regulatory authority until the market is stabilized.  

Henry Geller, Director of the National Telecommunications Information Agency (NTIA), testified during the H. R. 13015 hearings that the legislation continues the trend of federal pre-eminence over state regulatory authority. From a states-rights point-of-view the action is undesirable, but, according to Geller, the nature of the telecommunications industry as well as the precedent coming from judicial decisions over the last ten years mandates the approach.  

During a telecommunications seminar at the University of Colorado, Dale N. Hatfield, a policy analyst at NTIA, gave NTIA views on common carrier issues related to the Communications Act of 1978. First and foremost NTIA supports the deregulatory and procompetitive spirit of the 1978 Act. Hatfield identified Sections 332 and 333

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51. Ibid., p. 16.
as the most hotly debated items in the legislation. While NTIA supports those sections, Hatfield believes that the lack of definitions for competitive versus noncompetitive guidelines thwarts any hope for immediate passage. NTIA shares FCC's general concern that AT&T may have too much of a share of the market if the bill was enacted now. NTIA favors a longer interim period following enactment of the bill plus increased regulatory authority to the Commission during the interim period. Hatfield forecasts that the Subcommittee on Communications will now "rewrite the rewrite." He does not see passage of a bill in the near time frame, but he does see continued congressional focus on telecommunications.\footnote{Opinion expressed by Dale N. Hatfield, telecommunications policy analyst, in an address ("An Overview of the Proposed Communications Act of 1978") at the University of Colorado, Boulder, October 4, 1978.}

The Common Carrier Point of View

While AT&T clearly welcomes the relief from the Consent Decree of 1956, they do not welcome the provisions of Section 333 requiring divestiture of Western Electric. AT&T believes that vertical integration is the key to their continued viability in the telephone equipment marketplace. Dick Eckert, a public affairs officer for Mountain Bell, called the 1978 Act a series of compromises that offered something that each interest group could embrace. Unfortunately, the negative compromises asked
for by Congress guarantee that the telephone industry will fight any passage of the 1978 Act in its present form. Eckert sees the regulatory environment in the equipment marketplace remaining basically the same. Eckert complains that the present regulatory tariff procedures for equipment pricing give Bell competitors an edge in the marketplace. Eckert reported that Mountain Bell is now losing one half of the interconnect business cases where competitors made a bid.53

The United States Independent Telephone Association (USITA), representing about 1,550 independent telephone companies, provided views similar to the Bell position when their president appeared before the Subcommittee on Communications. USITA re-emphasized their support for the Primary Instrument Concept. Their most fundamental concern with H. R. 13015 is its thrust toward total competition in telecommunications. USITA finds that the bill projects the telephone industry into a future competitive arena in a far more comprehensive manner than the FCC's competition policies ever intended to reach. In what appears to be a pre-Carterfone attitude, USITA maintains that the telephone industry can best meet its basic responsibility if Congress

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53 Opinion expressed by Dick Eckert, public affairs, Mountain Bell, in an address ("The Common Carrier and Bell Systems Reaction to Forthcoming Proposed Legislation") at the University of Colorado, Boulder, September 27, 1978.
defines the balance between the benefits of monopoly and the role of competition and specifies those areas where duplication of facilities is wasteful and where the public interest suffers in a competitive atmosphere. USITA believes that traditional telephone service and its future development can best be handled on a noncompetitive basis. USITA supports the basic thrust of Section 332, if the public interest mandates competition in all telecommunications markets. USITA does not favor Section 333, because it fears that divestiture will destroy the integrated nature of the common carrier industry.  

The National Association of Regulatory Utility Commissioners (NARUC) president did not directly support the telephone company's position on H. R. 13015 during his testimony. However, NARUC's stand can be classified as noncompetitive, because it continues to favor strong state regulation over the intrastate telecommunications industry. NARUC's principal concern regarding the legislation is that it virtually eliminates State regulation of telephone common carriers. It is the NARUC's position that the very existence of our excellent

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54 J. Philip Bigley, President, United States Independent Telephone Association, Testimony on H. R. 13015 before the Subcommittee on Communications, Committee on Interstate and Foreign Commerce, United States House of Representatives, August 13, 1976.
telecommunications system constitutes irrefutable proof of the effectiveness of the regulatory process. 55

The Noncommon Carrier View

Robert E. Bennis, Director of Telecommunications for Westinghouse Electric Corporation and President of the International Communications Association (ICA), testified before the Subcommittee on Communications that he represented much of the "user" community. ICA's membership comes from a wide cross-section of industry. Firms represented on the board of directors are Monsanto Company, Ashland Oil, and Martin Marietta Corporation, to name a few.

Bennis favored the general provisions of the 1978 Act that call for a heavy emphasis on competition, but he felt that it is important that Congress clearly recognize how users view the competitive environment as it exists today. Bennis sees the user still having limited choices in the equipment marketplace, because the interconnect market is thoroughly dominated by a single supplier, AT&T. 56


56 Robert E. Bennis, President, International Communications Association, Testimony on H. R. 13015 before the Subcommittee on Communications, Committee on Interstate and Foreign Commerce, United States House of Representatives, August 1978.
ICA opposes divestiture of Western Electric under Section 333, but for reasons much different than AT&T's vertical integration argument. ICA sees the three year transition period dangerously brief. If regulatory oversight is prematurely removed, ICA fears that AT&T will still have an overwhelming share of the equipment market and be in the position to dictate market shares and prices for products. ICA concluded that even a "divested" AT&T will create the situation in which the allocation of market shares among the smaller firms will always be tenuous and the definition of what is the relevant market will be unstable. Bennis further testified that it cannot be concluded that competition in the industry will promptly provide self-regulated, lower prices to users with the degree of precision that the Subcommittee had in mind when they drafted the bill. Bennis also testified that the bill does nothing to protect the advances already made in the telephone equipment market since Carterfone. Bennis pointed out that a good deal of the innovative advanced business and scientific systems utilized by users today have come about as a result of the freedom of choice provided by an unregulated competitive environment. ICA recommended

57 Robert E. Bennis, President, International Communications Association, Testimony on H. R. 13015 before the Subcommittee on Communications, Committee on Interstate and Foreign Commerce, United States House of Representatives, August 1978.
that the bill should provide explicit language making it clear that heretofore unregulated services are not intended to be regulated. 58

The computer industry has been very active in the hearings. From IBM and other computer manufacturers point-of-view the problem of co-existence created by Section 332 boils down to the computer manufacturer's fear that AT&T will be able to cross-subsidize their competitive equipment line with the regulated portion of their operation. FCC Commissioner, Joseph R. Fogarty, also has stated that there was some basis for computer manufacturer fears, because there has been some evidence suggesting that local telephone service may be subsidizing other offerings being made to business customers by the phone companies. 59

A representative of the Association of Data Processing Service Organizations (ADPSO) testified that Section 332 would have an adverse impact on competition, because the section grants AT&T immunity from the Consent Decree of 1956 and antitrust laws in general. ADPSO sees

58 Robert E. Bennis, President, International Communications Association, Testimony on H. R. 13015 before the Subcommittee on Communications, Committee on Interstate and Foreign Commerce, United States House of Representatives, August 1978.

Section 332 placing AT&T in a position where they will acquire firms rather than compete with them. ADPSO endorses a regulatory status quo rather than have to compete with AT&T in their own computer services or computer manufacturing activities.\textsuperscript{60}

While the Computer and Communications Industry Association (CCIA) supports divestiture under Section 333, they do it with great reservation. CCIA fears the impact of Western Electric on the competitive market, because of Western Electric's present size and industry position. CCIA opposes Section 332, because they foresee subsidy problems between the regulated portion of the industry and the new areas of business AT&T could enter under Section 332. From CCIA's point-of-view allowing IBM and AT&T into the same equipment marketplace will result in a two-firm oligopoly rather than competition.\textsuperscript{61}

\textbf{The Communications Act of 1978}

The Communications Act of 1978, H. R. 13015, has been called a first step and rightly so. Given the diverse views that have been examined from both sides of the issue, there seems to be no chance for a congressionally sponsored mandate in the near future. No attempt

\textsuperscript{60} Victor Block, "Rewrite Hearings Focus on Diversification, Divestiture," \textit{Telephony}, August 14, 1978, p. 14.

\textsuperscript{61} Ibid., p. 16.
has been made to choose sides on the issue of competition in the equipment marketplace up to this point. In the next chapter the time has come to get off of the fence, and forecast where the interconnect market is going and how it should get there.

CHAPTER V

CONCLUSION

The Evolution of Interconnection

When the Carterfone decision was implemented by the Federal Communications Commission (FCC) in 1968, the FCC may have unwittingly started a change in the structure of the entire telecommunications industry. Certainly the Commission's motivation to assure that specialized and innovative equipment were made available to the public has created a new industry. The FCC has said that this and succeeding decisions have set American enterprise free to develop better and different kinds of telephone interconnection equipment.\(^1\) Hundreds of different companies now manufacture telephone equipment. It is doubtful that AT&T would have ever been willing to meet all the communications demands that have been generated by competition. More and more, the business customer, and in a lesser way, the residential customer now is free to use the equipment that the organization

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or individual feels is best rather than only the equipment that the carrier sees fit to provide. The user now can decide whether equipment meets their needs, and make cost/quality trade-offs rather than entrusting those decisions to the telephone company.

In addition to making more equipment options available to the user, FCC decisions have resulted in economic benefits to the consumer. The Commission's decisions have permitted the equipment market to evolve into a multiple supplier market where competitors utilize state-of-the-art technology and features to capture a portion of the market. In this environment there is no incentive for competitors to build and market terminal devices which are overpriced or so overbuilt that they are not affordable.

During hearings before the House Subcommittee on Communications the FCC provided a statistical example of the economic benefit of competition. Prior to the Carterfone decision carrier provided answering machines cost approximately $500. Information submitted by AT&T in Docket No. 20003 indicated that by 1976 the wholesale price for telephone answering machines was $410. AT&T also observed that the average wholesale cost of answering devices purchased by industrial users was approximately $200 and that answering devices designed for individual consumers cost about $70. In 1974 there was a total installed base of 150,000 answering devices provided by the telephone companies, while 650,000 customer-provided devices were
utilized by businesses and individual consumers. These figures show that the new competitive answering machine suppliers have lowered the price of one class of inter-connect equipment, while at the same time fulfilling the public needs.

The Common Carrier industry counters the economic finding shown above with a two fold argument. First the carriers have emphasized that they provide a communication service as opposed to simply communications equipment and facilities. This service gives the user a guaranteed end-to-end communications capability. Therefore, the carriers argue, in order to ensure the continued quality and reliability of the service, they must have end-to-end responsibility. The FCC has argued that there never has been any demonstratable harm resulting in interconnection of nearly 1,600 independent telephone companies, most of which interconnected without carrier provided arrangements. The independent telephone companies have purchased their switching equipment from the same companies that AT&T would prohibit from the telecommunications business marketplace. There has been


network damage caused by both carrier and independent provided equipment. Both AT&T and the FCC cited examples before the Subcommittee on Communications. However, it is our general belief that the large number of successfully interconnected devices and the accompanying registration program managed by the FCC is sufficient evidence that customer provided equipment has not caused sufficient interference anymore than Bell equipment. Our analysis has found that there is no apparent basis for AT&T claims that competition is or will be harmful to the telephone network. AT&T has also claimed that competition has only gone after the most lucrative markets. While a case may be made for this in the long distance microwave services provided by the Specialized Common Carriers, no evidence substantiates this in the equipment market.

The Future of Regulation and Legislation

The Common Carrier industry has not welcomed any of the changes brought about by Carterfone and the regulatory and judicial decisions that followed it. While the FCC has attempted to broaden interconnect market participation, the Common Carriers have introduced counter proposals of their own that would have restored their own monopoly position in the interconnect equipment business. As stated in Chapter IV, the Consumer Communications Reform Act and the Primary Instrument Concept
helped to escalate telecommunications policy to a national level for the first time since the enactment of the Communications Act of 1934. However, the initiative of the Common Carriers has not paid off for them. While the Communications Act of 1978 is not law and probably will not be for years to come, the spirit of competition has been given increased impetus by the Congress.

The debate over a new Communications Act will continue to be fueled by competing special interests. There seems to be little or no chance that the Act will ever be passed in its present form. Indeed, there is some danger that Congress will attempt to pass some aspects of the Act in a piecemeal fashion. If the problem is approached in a piecemeal fashion, the explosive issues of divestiture and freedom from the Consent Decree of 1956 will be delayed while other less controversial issues are dealt with by the legislators. While there is little or no hope for meaningful legislation in the next five to ten years, there is cause for encouragement. Important telecommunications issues have been surfaced at a national level.

The legislative commitment to competition can only strengthen FCC's position during the upcoming "interim" regulatory period. In the first years after Carterfone, the response of the carriers to competition in the established equipment markets was limited to attempts in Congress, the courts and FCC to protect their traditional
markets. More recently, however, AT&T has spent more effort revamping their marketing strategy and developing or purchasing more competitive equipment to offer their customers. AT&T argues that introduction of new equipment would have happened without the competition. It is hard to prove one way or the other. Evidence has been shown that Bell traditionally lags in marketable equipment innovation. While at the same time, no one can refute the benefits derived from inventions out of Bell labs. Nevertheless, it is hard not to agree with FCC's conclusion that AT&T's actions were either inspired by competition or happened sooner because of the pressure of competition. 4

Without legislation the FCC will continue to regulate as before. The regulatory status of the interconnection industry should see very few, if any, major changes. In situations where FCC's authority over equipment is challenged, the courts should continue to re-affirm the trend toward competition.

The Future of Interconnect

Telephone interconnection equipment is now going through an evolutionary change that may make all previous

definitions obsolete. As communications technology goes digital, the potential for supplying the needs and requirements of digital hardware embraces not only the firms involved in the telephone interconnect industry, but the entire electronic, computer, and related hardware industry. While the definition of what the service will be, telecommunications or data processing, will be troublesome, the equipment features will give the residential and business customers capabilities far exceeding their standard voice and data capabilities.

The digital trend and the impact of competition have made the telephone interconnect market a dynamic one. Our industrial survey has shown that market entries will far exceed market exists. The common carrier manufacturers will continue to maintain their overwhelming share of the market, because of three factors: (1) Their guaranteed business resulting from the vertical structure of the common carrier industry will not change in the absence of a legislative mandate to do otherwise; (2) AT&T, GTE and others have embraced marketing and are determined to make it work; (3) customer awareness. This selling philosophy is bound to make them more attractive to business customers. The competition is not able to generate meaningful advertisement on a national scale. Most people are only aware of one telephone equipment supplier, the local telephone company.
In the final analysis there will be a continued influx of new participants into the equipment marketplace armed with new ideas. Their presence will serve to fuel innovation and keep the carriers committed to their new marketing philosophy. The competitor's small market share and uncertainty over the ultimate structure of the industry will discourage an all out attempt to wrest the market from the telephone industry. The big investment dollars are unlikely to fall until the legislative mandate clearly maps out the future structure of the industry.
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