The Telecommunications Industry in the U.S. and International Competition: Policy vs. Practice

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Executive Summary

This study provides an overview of opinion and perception designed to help decision makers in industry or government by highlighting viewpoints and approaches while boiling down the information or identifying specific connections or threads within the information. The question of international competitiveness of the telecommunications equipment manufacturing industry in the U.S. is at the center of a maelstrom of many viewpoints, opinions, political objectives, and contentions. Few factual data exist, and they can have broadly differing interpretations.

This study investigates views of knowledgeable people in the industry and U.S. government regarding four general competitive issues. Summarized below are some viewpoints from the beginning of the '90s.

What Is a U.S. Company?

- Traditional and intuitive means of identifying a corporation's nationality at the dawn of the '90s are increasingly unsatisfactory. Perhaps the most common test of corporate nationality is and has been the nationality of the ownership. Multinational and global corporations now challenge such easy definitions and cause increasing confusion in these areas: the eligibility for government trade promotion services, applicability of laws and regulations, perceptions of a corporation's national loyalties, differences between corporate and national competitiveness, and political influence of "foreign"- or "internationally"-owned corporations on national policy formulation.

Are Telecommunications Equipment Manufacturing Companies in the U.S. Really Having Difficulty Competing Internationally?

- The most difficult problem in answering the topic question may be to first identify exactly what competitive factors should be considered when judging the success of competition in the international telecommunications equipment market. Some believe that Customer Premises Equipment (CPE) should not be considered part of such a market but would be better identified as "consumer" products, and they suggest that CPE should not be a factor to determine success in competition.

  It is generally agreed that the U.S. telecommunications equipment market has been globalized. Due to that globalization, some believe that when measuring the international competitiveness of U.S.-based telecommunications equipment companies, consideration of their success in the U.S. market may be called for.

  Consolidation forces must be looked at in some segments of the market. Some believe that since parts of the international market can support only a dwindling number of manufacturers of high-development-cost equipment, the shrinking number of U.S.-based competitors in those market segments throughout the '80s should not be considered a function of competitive failure, but rather a necessary outcome of international market forces that are affecting all competitors more or less equally.

that the "separation of powers" doctrine of the Constitution keeps the branches independent while dealing with economic as well as political issues, and that the "interagency forum" within the executive branch is the best way to deal with all aspects of a particular issue. Concerning industrial policy, the Reagan and Bush administrations have been adamantly opposed to any such thing; yet, not only does Congress as a whole appear to be less ideologically committed to avoiding industrial policy, but some in Congress also believe that the only way to compete in a world full of industrial policies is for the United States to have one, too.

The U.S. government is engaged in active negotiations with foreign governments to reduce trade barriers and to open markets closed to U.S. participation. Some progress in the U.S. Trade Representative's (USTR) negotiations with Japan has been made, and the USTR is focusing on other regions of the world as well. Many in foreign governments and industry believe the U.S. government also provides active support to U.S. industry, especially in the realm of R&D. There is a general feeling, both in the telecommunications equipment manufacturing industry and in parts of the government itself, that the U.S. government must do more. Few are willing to have the government target industries and provide direct, specific funding, but many believe that government sponsorship of fundamental research, increased trade promotion activities, and increased investment incentives through lower taxes and government spending are essential.

What About Industry?

- The telecommunications equipment manufacturing industry in the U.S. has been accused of a number of failures that have contributed to that industry's perceived difficulties in international competition. While one may be tempted to think only of AT&T when discussing the telecommunications equipment industry in the U.S., it is not the intention of this study to attribute any purported failure to any particular company; thus, the general applicability of the reported comments should be kept in mind. Various critics of the telecommunications equipment manufacturing industry in the U.S. have made these charges against the industry: that it is U.S.-ethnocentric and does not understand the international marketplace; is dominated by the financial aspects of business, which leads to short-term planning and operations horizons; has been lulled into complacency by the size of large markets, especially the U.S. market; is passive in the search for new technologies, markets, and products; is selling off current "technological assets" through technology transfer, which results only in developing future competitors; and is unwilling to spend the necessary R&D resources to modify equipment for market differences.

  In rebuttal, various people within the telecommunications equipment manufacturing industry point out that international competition is relatively new to that U.S.-based industry. The realities of a globalized U.S. market and of international manufacturing possibilities have opened up only since Judge Greene's 1984 decision. A huge amount of learning must be accomplished, especially in the areas of modifying equipment, bridging cultural differences, finding markets

suitable for the type of equipment being sold, and pursuing competitive R&D strategies. They go on to point out that a great deal of that learning already has been achieved and that the U.S.-based telecommunications equipment industry's record of successful competition is growing dramatically.

There is a general acceptance of the charge that short-term business horizons have hurt the industry's competitiveness, especially in the '80s; but some say those days have ended and the possibilities are much better in the '90s that an appropriate balance between long-term and short-term perspectives will emerge. In response to the view that technology transfer damages competitiveness, many in the telecommunications equipment manufacturing industry claim that technology transfer not only is not damaging but also is the only way business can be conducted in the '90s.

Certain insights can be gained from the opinions expressed in this paper. Although not exhaustive, a few of these insights are listed below:

- The debate over the issues, whether in industry or government, is haunted by ill-defined terms which lead to extreme misunderstandings. It is very difficult to know how any resolution can come about until agreement is reached on the meaning of the most fundamental terms, such as *U.S. company, competitiveness, manufacturing, industrial policy, telecommunications equipment, telecommunications market,* and *international.* To illustrate the problem, how can we answer the question, Is the U.S. telecommunications equipment manufacturing industry competitive in the international market? if we have no real sense of the meaning of the terms used?

  We don't know whether the telecommunications equipment manufacturing industry is actually having difficulty with international competition. Putting aside momentarily the semantics discussed above, the evidence is not clear whether what is perceived as difficulty might be nothing but a factor of natural market forces and that the U.S.-based industry is having no more or less trouble competing internationally than any foreign-based industry. Statistics are published but don't really help. How do we categorize the data to get to the true answer? Are the statistics being interpreted correctly? How have the numbers been manipulated? We see perceptions of success and failure, but perceptions are difficult to confirm with fact.

  The one clear factor in all this is that of dynamic and far-reaching change. We are seeing new U.S. competitors, new fields (the transition from product to services) for competition, new consolidations, a new industrial structure, new technologies, new markets opening up, new trade alliances, and new political and business concepts taking root in hitherto unexpected places. Globalization is changing the meaning of "U.S. companies," "foreign companies," and perhaps ultimately the economic role of national governments. Change has its own imperatives and those imperatives are ignored only at great risk.

Many believe that a real factor in the competitiveness of U.S.-based manufacturers are the alleged market barriers erected by foreign governments and the lack of similar protection in the United States. Others claim that while the perceived foreign barriers are more in the open, the United States has similar (albeit less publicized) protections and may even go beyond many countries in fostering and nurturing its industries.

On top of all this, the competitive environment is in a state of dramatic flux. New and newly opening markets (Eastern Europe, China, LDCs); changing trading blocs/cooperative associations (the European Community, APEC); changing technologies, new competitors, and changes in traditional views of the "commodity" (technology replacing product, software replacing hardware, networks replacing equipment) have made assessment of competitiveness throughout the '70s and '80s and into the '90s an extremely difficult task.

What Should the U.S. Government Be Doing About All This?

- Although a certain amount of distrust of and disagreement with government will always exist, over time that distrust and disagreement tends to focus on issues and on the policies government establishes to deal with those issues. At the beginning of the '90s, many within the telecommunications industry in the United States expressed concern about the fragmentation of U.S. government policy making and regulation among government branches and agencies. The view is that important problems facing the industry cannot be dealt with by governmental groups that have different legislative bases, agendas, and constituencies; do not coordinate with each other; and are often involved in disputes over turf.

  Some important issues identified by the telecommunications equipment manufacturing industry in the U.S. for immediate attention are as follow: reduction of the federal deficit, increased support by government for long-term R&D, a simplification and liberalization of export control laws and regulations, greater coordination with industry in policy formulation, greater internal coordination of U.S. government trade promotion resources, and a further weakening of provisions of the Foreign Corrupt Practices Act.

  These issues lead to questions of "industrial policy." Another definitional problem arises immediately since people understand the term differently, but almost all concur that to some degree an industrial policy would remove a certain amount of freedom from the industry to set competitive parameters and to deny the marketplace its role in determining "winners and losers." Such a transfer of power would be accomplished by government "targeting" certain industries or industry segments for government support of one type or another. Most in the industry oppose the establishment of a formal industrial policy, yet others believe that, as undesirable as it is, it may be the only way to combat such policies in other countries. Many in the U.S. government agree with the above industry position, but others have strong, opposing opinions. Regarding fragmentation of effort, some believe it is a strength, not a weakness. They claim

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Preface

Some of the information included in this study has been derived from literature. Due to the volatility and currency of the subject, the primary literature source has been periodicals – journals, newspaper articles, and magazines – although some information has been taken from a few especially relevant books.

The great majority of the information, however, has been obtained from interviews of people who are actively involved with the subject matter. These people represent many different levels of authority or responsibility in the telecommunications industry, government, the financial sector, and trade associations. All who were interviewed have long experience dealing with the subject matter of the study and speak with authority and expertise.

As is often the case in studies that are interview-based, the author, upon deciding to use quotations or information from a given source, must take into consideration the wishes of the source regarding attribution. In some cases, the author has made the judgment that the importance of the information dictated that it be included either as background material or as a direct quotation, while honoring the wishes of the source that there be no attribution.

CHAPTER ONE

INTRODUCTION

1.1 PURPOSE

Any paper on international competition is treading on well-trodden ground. Much literature is available at the dawn of the 1990s that addresses the competitive problems that all industries face. There is also some literature on specific industries (including telecommunications). Many are ready with conventional wisdom and well-meaning but overly general advice that is generously provided if not always cost-free. It is not the purpose of this study to add to this literature; rather, the objective is to document and focus perceptions and opinions for those who are possibly faced with "doing something about it." Thus, no recommendations or "new agendas" are suggested at the end of the paper.

Instead, I have aired several international competitive issues in the specific context of telecommunications equipment manufacturing and engineering services. I also have provided an analysis or, where appropriate, a synthesis of the information. In sum, this study provides an overview of opinion and perception that will help a decision maker in industry or government by highlighting viewpoints and approaches while boiling down the information or identifying specific connections or threads within the information.

While many issues discussed transcend the telecommunications industry and deal with questions of competition in international business in general, this study was not intended to go beyond telecommunications. In all cases, any facts, opinions, or comments that have to do with such general issues were obtained in the context of or from experts (business or government) versed in the telecommunications industry, unless otherwise specified.

1.2 COMPETITION

Competition has many facets. While this study does not look at competition exhaustively, it still could be useful to see how the issues discussed fit in to a more complex picture. **Table 1-1** shows a number of possible contributing factors and influences on competition.

1.3 KEY ISSUES

For more than a decade, in academic circles, within government and, most notably, by segments of U.S. industry itself, the perception that U.S. industry is finding it very difficult to compete in the international marketplace has found general acceptance. This perception is especially keen in the telecommunications industry within the U.S. But while the perception of the problem is generally accepted, the very elements that specify the issues are contentious. It is thus an essential starting point of the study to identify the players, the real issues, and the stands of the players. The following breakout provides an initial identification of the players and elements of the debate.

1.3.1 What Is a U.S. Company?

Do multinationals, globals, joint ventures, foreign subsidiaries, mergers with foreign firms, and outright buyouts of former U.S. assets by foreigners affect the identity of "U.S. industry"? Does it make any difference whether one can tell what a U.S. company is? Judging from the rhetoric of the debate, it appears to be a vital concept – but is it really?

1.3.2 Are Telecommunications Companies in the U.S. Really Having Difficulty Competing Internationally?

Are perceptions of competitive disadvantage accurate? In light of an extensive sales, marketing, and manufacturing presence of successful foreign companies in the "globalized" United States market, can U.S. equipment manufacturers maintain their position? Many believe that protective industrial policies in foreign competitor countries (for example, Japan and the EC) create major competitive imbalances since

The database for this study ends with information obtained prior to August 1, 1990.

Table 1-1

Some Factors and Influences Relating to International Competition in the Telecommunications Equipment Manufacturing and Engineering Services Industry

GOVERNMENTS	INDUSTRY	OTHERS
INDUSTRIAL POLICIES (DIRECT SUPPORT) Targeting Overt financial support Tariffs	**DIRECT OWNERSHIP**	**PRIVATE CUSTOMERS** (NON-PTT) Divestiture (AT&T, BT, NTT) Competition among customers
INDIRECT SUPPORT R&D spinoffs Contracts Foreign trade activities ▪ Trade negotiations ▪ Commercial counsellors Setting technical standards Regulations (protectionist)	**INDIRECT OWNERSHIP/ STOCKHOLDERS** Long-term investment Short-term investment ▪ Pension funds ▪ Insurance companies ▪ Private investors ▪ Corporate raiders	**PRESS**
CUSTOMER Civil (e.g., PTTs) Military	**BUSINESS CONSIDERATIONS** Management ▪ Long-term horizons ▪ Short-term horizons ▪ Golden parachutes Labor ▪ Skills ▪ Availability ▪ Unions Marketing Sales Finance Operations ▪ Product design ▪ Manufacturing ▪ Component supply ▪ Intangibles ▪ Innovation R&D ▪ Ethics ▪ Cooperation (joint ventures) ▪ Reputation	**ACADEME**
LEGAL/JUDICIAL INTERPRETATION Antitrust Regulations (National and Local)	**COMPETITORS' ABILITIES**	

U.S. industry has no similar protection. Are negative forces at play in obtaining or expanding U.S. market share in other foreign countries – especially the LDCs of Africa and Central and South America, the Middle

East, and most especially in Eastern Europe – given the dramatic political changes that have taken place there?

1.3.3 What Should the U.S. Government Be Doing About All This?

Administration after administration has claimed that there is no U.S. government industrial policy. Others claim that there is a "de facto" policy made up of piecemeal "negative policies" which are realized by legal restraints on "unethical business behavior," a consistent lack of government-backed financing, insufficient tax breaks, national security controls on exports, weak trade negotiations, and so on. Even so, it appears that while the benefits of a strong industrial policy are widely desired, few are willing to accept the inevitable on-going government involvement implied by such a policy.

1.3.4 What About Industry?

Is it true, as some think, that inflated pricing, failure to recognize the real needs of the market, non-aggressive sales techniques, and failure to recognize and respect cultural differences in foreign markets worsen the problem? Are telecommunications companies in the U.S. focusing on the domestic market while paying scant attention to foreign markets? Are short-term profit strategies, based on financial considerations, seriously weakening the R&D base of U.S. firms, leading them to fall behind in technology? Do management practices and philosophies damage U.S. companies' performance? Do joint ventures, where U.S. companies are the technology transferring partner, increase foreign capability to compete at the expense of U.S. industry?

1.4 SCOPE OF THE STUDY

The issues that arise out of such a problem are many, varied, contentious and, at times, confusing; but any study on such a broad subject must have some limits. Thus, the focus of this study is on international competition in the marketing and sale of engineering services and telecommunications products. I also have excluded computer terminal equipment (hardware and software). Some may consider that

arbitrary, and I am willing to admit the difficulty of delineating computers from telecommunications; but for the sake of conducting a study that has some reasonable boundaries, I have not investigated "traditional" computer issues.

CHAPTER TWO

WHAT IS A U.S. COMPANY?

Source: "Phoebe's Place" by William Schorr. © 1990 *Los Angeles Times* Syndicate. Reprinted by permission.

2.1 THE DEFIANT DEFINITION

Foreign investment/involvement in the U.S. has made it very difficult to know exactly what is a U.S. company. Is AT&T a U.S. company? Is Northern Telecom a U.S. company? Are Siemens or L.M. Ericsson or Alcatel or NEC or Fujitsu U.S. companies? From at least one perspective, the answer to all of the above questions could be yes. They all have facilities physically located within the geographic boundaries of the United States; they may be incorporated under state laws; they pay U.S. taxes; they have U.S. citizens as employees; and some of their local management (the management of the facilities within U.S. boundaries) may be made up of U.S. citizens.

Not only has the involvement of "intuitively foreign" companies in the United States produced a "fuzzy view" of the U.S. telecommunications industry, but foreign investment/involvement of "intuitively U.S." companies has also blurred the definition of U.S. companies. For example, Table 2-1 shows AT&T's foreign relationships:

foreign firms, joint venture firms and, perhaps of most importance, multinational/global corporations. For example, how much stock must be owned by foreigners before one considers the company a "foreign company"? Despite the location of so-called headquarters, who owns a multinational/global company? Is a U.S. subsidiary of a foreign multinational "owned" by its U.S. stockholders? What if a U.S.-"owned" company located in a foreign country loses money? In that case, it would seem that the foreign workers, suppliers, and so on are "profiting," whereas the U.S. owners are not. Is that then a "foreign" firm? From all this, it does not seem that "who profits" is a good measure of a company's nationality.

Another suggestion for dealing with the problem of identifying a U.S. company comes from Robert B. Reich, who suggests that we should change the focus by defining competitiveness on a national-benefit basis, not on a corporate basis, presumably thereby removing the problem:

> American competitiveness can best be defined as the capacity of Americans to add value to the world economy and thereby gain a higher standard of living in the future without going into ever deeper debt. American competitiveness is not the profitability or market share of American-owned corporations. In fact, because the American-owned corporation is coming to have no special relationship with Americans, it makes no sense for Americans to entrust our national competitiveness to it....
>
> The only practical answer lies in developing national policies that reward *any* global corporation that invests in the American work force. In a whole set of public policy areas, involving trade, publicly supported R&D, antitrust, foreign direct investment, and public and private investment, the overriding goal should be to induce global corporations to build human capital in America.[1]

If work force, ownership, location, and so on are incomplete or unsatisfactory measures, we are left in a quandary. Perhaps there is no one simple test for the nationality of a company:

Table 2-1

AT&T Now Has a Direct Presence in More Than Forty Countries

AT&T's Global Presence*		
Australia	Hong Kong	Puerto Rico
Belgium	India	Saudi Arabia
Bolivia	Indonesia	Singapore
Brazil	Ireland	Spain
Brunei	Italy	Sweden
Canada	Jamaica	Switzerland
Costa Rica	Japan	Taiwan
Cuba	Korea	Thailand
Denmark	Kuwait	Turkey
Dominican Republic	Malaysia	United Kingdom
Egypt	Mexico	United States
Finland	Netherlands	Venezuela
France	New Zealand	Virgin Islands
FRG	Philippines	
Greece	PRC	

*AT&T also has significant distribution channels in another twenty-one countries.
Source: Adapted from an unpublished AT&T map of September 1990. By permission.

In these cases, AT&T employs local nationals, pays taxes to host governments (perhaps through their joint venture partners) and maintains facilities within the borders of countries other than the United States. Is AT&T a foreign company?

One often-suggested means of determining the nationality of a company complements the investigative reporter's dictum: "Follow the money." In other words, who profits? Once again, we are confounded by foreign vs. U.S. investment (both direct and indirect), U.S. subsidiaries of

> One conclusion is that there is no single factor which can decide nationality. A profile has to be built up from several characteristics....
>
> More important, simple nationality tests are misleading. What matters are patterns of dependence and commitment. An important distinction is whether a company operates in international markets or whether it is dependent upon a single national market. These two types of companies will behave very differently.[2]

Former Undersecretary of Commerce for Trade, Lionel Olmer, discussing the identification of the nationality of a corporation, agrees that there may be no one test, but points out that obtaining relevant data to build a profile of factors can be as significant a roadblock as is finding a single measure:

> I believe that the road to enlightenment will come from a sector by sector analysis of the actual, current situation relative to manufacturing, assembly, exporting and importing of components as well as final products; and, finally, an examination of corporate relationships, manufacturing associations, second and third sourcing, technology associations and the transfer thereof in both directions. Absent that rather detailed, often virtually impossible to come by data, you have a difficult time making the judgment.[3]

Based on the above discussion, we can summarize some of the suggested tests of determining the nationality of a company in chart form (see **Table 2-2**).

2.2 WHO CARES?

A legitimate question at this point may be, so what? Who cares whether a company has U.S. nationality or not? The question, Are U.S. telecommunication companies competitive on an international scale? is meaningless unless one knows what "U.S. companies" are. Based on a recognition of the difficulty of clear definition, Lionel Olmer has characterized the controversy this way: "[T]he debate is largely

Table 2-2

Possible "Tests" of a Company's "Nationality"

- Nationality of the ownership
- Nationality of the work force
- Nationality of managerial control
- Type of market (national or international) on which company depends
- Corporate relationships (manufacturing or technology transfer associations)
- Physical location of facilities
- Physical location of "headquarters"
- National business "culture" followed
- The degree to which a company is subject to national jurisdictions (e.g., incorporation, taxes, etc.)
- Combinations of the above
- None of the above (redefine the problem — e.g., from company to national competitiveness)

uninformed."[4] Nevertheless, that debate is carried on precisely in the terms of corporate nationality.

A good example of how the phrase "U.S. companies" is used can be seen from the following excerpt from a statement before the House of Representatives by Maryland Representative Helen Bentley:

> After years of neglect and stagnation, it is encouraging to see the administration standing up for U.S. companies. Many segments of our economy, including government and the private sector, have ignored the cries of foul play from American manufacturers. Our corporations have been painted as laggards incapable of producing quality goods and services.
>
> No one will deny that U.S. companies have had to restructure and reorganize to meet the challenges of international competition – but

> this is no reason to ignore the large problems plaguing international trade.[5]

The term "U.S. companies" was used twice in the above very short excerpt, and the synonyms "American manufacturers" and "our corporations" were each used once.

Beyond the semantics, there is the very real question of entitlement to U.S. government trade promotion services. Are the services of the U.S. Trade Representative (USTR), the Export-Import Bank of the United States (ExImbank), the Overseas Private Investment Corporation (OPIC), the Commerce Department or other government agencies, or corporations to be provided to a foreign-owned, U.S.-based company? For example, as part of the U.S. government's ongoing efforts to open Japanese markets to U.S. telecommunications manufacturing companies, USTR had threatened to invoke Super 301 sanctions (as called for in the Omnibus Trade and Competitiveness Act of 1988) against Japan should Nippon Telephone and Telegraph (NTT) not purchase more U.S. telecommunications equipment. NTT negotiated a major contract for digital switching equipment with Northern Telecom. Northern has major investments within the United States and employs a large number of U.S. citizens in the design and manufacture of its equipment.

On the other hand, Northern is a Canadian-owned corporation. The United States government accepted NTT's purchase of Northern Telecom switches as satisfying its requirements, thereby generating a great controversy over the "nationality" of Northern Telecom. If the U.S. government insures, finances, or fosters exports of telecommunications equipment manufactured in the U.S. by a foreign-owned, U.S.-based company, some would consider it a misuse of American tax money. Responses to that charge range from, "Let the foreign owners' government provide those services," to "As long as the American people benefit, why not?"

From a more legalistic view, the concept of "a U.S. person," which includes corporations, is a vital one in U.S. government regulations. It is incumbent upon Federal Agencies to define the terms they use in

regulations to minimize confusion possibly leading to inadvertent violation. Former Deputy Assistant Secretary of Commerce, Lew Cramer, claims to have found more than 27 definitions of U.S. persons or corporations in the *Code of Federal Regulations*.[6] The lengths that are gone to in order to accomplish such a definition are often one of the bases for the accusation of government "double speak" or "gobbledygook":

> Sections 800.210 and 800.211. Section 721 covers acquisitions of "U.S. persons" where the acquiring party is a "foreign person." Under § 800.210, a "U.S. person" includes any entity but only to the extent of its business activities in interstate commerce in the United States, regardless of its form of organization or who actually controls it. Thus, a branch in the United States of a foreign entity is a U.S. person for the purpose of these regulations. However, an entity which does not have a branch office, subsidiary, or fixed place of business in the United States is not a "U.S. person" if its activities in interstate commerce are limited to sales to an unaffiliated company in the United States.
>
> "Foreign person" is defined at § 800.211 in terms of the potential for functional control by a foreign interest, rather than in terms of a more mechanical test such as place of incorporation. As a result, an acquiring entity might be both a U.S. person and a foreign person under these regulations (i.e., if it does business in interstate commerce in the United States but is actually controlled by a foreign interest), in which case it would fall within section 721. On the other hand, it may be neither a U.S. person nor a foreign person under the regulations (i.e., if it does not do business in interstate commerce in the United States and is controlled by a U.S. person), in which case it would fall outside the statute.[7]

The object of citing the above very difficult statement is not to ridicule government or its bureaucratese, but simply to demonstrate the convoluted paths that have been traveled in attempting to define a U.S. person/company.

Adding serious complications to the logical problems of the debate, the question, What is a U.S. company? takes on overtones of emotional,

"national interest" arguments. The basic thrust of these arguments is that U.S. companies will act in the best interests of the United States through strong feelings of national identity, interest, and patriotism. This leads to the comforting idea that the competitiveness of a U.S. company in some way relates to "national competitiveness." Underlying that idea may be the equation that says the aggregate of the "competitiveness of U.S. companies" equals the "competitiveness of the United States" which equals jobs, a generally high standard of living, better lives for our children, and so on. Thus, for those who subscribe to that argument, it is important to know what U.S. companies are so that they know who is working for the good of the United States and its people. The equation, at this point, seems to be of questionable validity.

A whole generation, brought up during the great depression, was told that "The business of America is Business" and "What's good for General Motors is good for the U.S.A." There is thus little doubt that the "national interest" aspect of competition has a strong emotional component and therefore may generate largely emotion-based opinions; but, for that, it is all the more important as a possible driver of policy in a political world. For example, the British telecommunications researcher D.C. Pitt claims that competition from foreign concerns in the U.S. domestic markets as well as the movement of traditional U.S. manufacturing to offshore sites strongly influenced at least one presidential campaign. He goes on to say that the globalization and permeable nature of the U.S. economy is political enough, but, "To add indignity to this process, key US multinationals, in contrast to their Japanese counterparts no longer think 'nationally' in support of motherland interests but have become trapped into advocacy of the economic interest of the countries which host them."[8] Perhaps, then, those who have only slight opportunity for study of the situation and/or subscribe to strong patriotic values can be forgiven for asking, How can a company that advocates the interests of another country be trusted?

For the purposes of this study, then, since universal and accepted definitions elude us, we must content ourselves with the view based on intuition and specific circumstances. When feasible, I have used the phrase "the telecommunications industry in the U.S." in order to avoid an overemphasis on this particular issue.

NOTES

1. Robert B. Reich, "Who Is Us?" *Harvard Business Review* (January-February 1990), 53-64.

2. Charles Leadbeater, "Factors of a National Nature," the *Financial Times*, May 21, 1990, Business section, 32.

3. Lionel Olmer, former Undersecretary of Commerce for Trade, interview with author, May 10, 1990.

4. Ibid.

5. *Congressional Record*, "One Giant Step for America" (July 19, 1989) 101st Cong., 1st Sess., vol. 135, no. 97.

6. Lew Cramer, former Deputy Assistant Secretary of Commerce, interview with author, June 15, 1990.

7. *Regulations Pertaining to Mergers, Acquisitions, and Takeovers by Foreign Persons: Notice of Proposed Rulemaking and Request for Public Comments*, 54 Fed. Reg. 29744 (July 14, 1989) (to be codified at 31 C.F.R. pt. 800).

8. D.C. Pitt, *Government and Industry Relations: Key Issues in the US Telecommunications Industry* (London: Economic and Social Research Council, 1986).

CHAPTER THREE

ARE TELECOMMUNICATIONS EQUIPMENT MANUFACTURING COMPANIES IN THE U.S. REALLY HAVING DIFFICULTY COMPETING INTERNATIONALLY?

3.1 THE TELECOMMUNICATIONS EQUIPMENT MARKET AND COMPETITIVE ISSUES

3.1.1 The Market

In addition to questions about the identity of U.S. telecommunications equipment manufacturing companies, there are even questions as to what makes up the telecommunications equipment market – that is, what makes up telecommunications equipment. One way to divide the telecommunications market could be into the "network equipment" market and the customer premises equipment (CPE) market. CPE includes (but is not limited to) telephone handsets, data terminals, answering machines, faxes, security systems (burglar alarms), key systems, small PABXs, and so on. Network equipment includes equipment that the telecommunications service provider must employ to connect ultimate users so they can communicate with each other minus the human-network interface equipment. Some examples are as follow: circuit and data switches (with the possible exception of small PABXs), transmission equipment, transmission media (such as copper cable, fiber optic cable, fixed and mobile radio relay equipment, communications satellites), multiplexers, and so on.

The argument states that independent of which companies sell this kind of equipment, CPE is no different from television sets or furniture – that is, it comes under the general heading of consumer goods. Network equipment would come under the general heading of industrial goods. Parallels can be drawn to other utilities. Not many people would consider a washing machine or a dishwasher to be part of the water distribution system, but few would have trouble identifying pumps and filtration equipment as being essential items for that same system. Similar analogies can be made to electric distribution systems. Clearly, toasters and electric frying pans are consumer goods, whereas generators and transformer equipment are industrial goods.

The distinctions in the above argument may appear to be of the nature of "angels dancing on the head of a pin" but, in fact, they are more important than that. Traditionally, of course, CPE has been included in the telecommunications market. During the AT&T "monopoly" until after the second world war, "foreign attachments" (including CPE) were not to be made to the AT&T network. Thus, all CPE, in order not to be considered "foreign," had to be obtained from AT&T (Western Electric); usually, a monthly bill or one-time fee was charged to the customer for using the AT&T-owned equipment. As a general principle, whether it was network equipment or CPE, AT&T owned and supplied it.

Starting in 1947, a series of regulatory decisions began to break down the "foreign attachment" rule. In some ways, the advent of "new" technology or broader use of older technology forced some of these decisions. The development of devices such as recorders or office telex machines opened up a new class of products for consumer use that could be attached to the network. Manufacturers of these devices placed the U.S. government under great pressure to change the foreign attachment rule. With the "Hush-a-Phone" decision in 1957 and "Carterphone" decision in 1968, the U.S. government allowed end-user consumers to attach certain mechanical and electrical CPE to the network.

Today, after divestiture, those same consumers enjoy relative freedom to connect items of CPE based on their own choice. The groundwork is thus laid for competition among several suppliers of CPE and is directed toward the ultimate consumers, not the telcos. If, for different classes of products, we have different groups of customers and specialized suppliers, we also appear to have different markets.

If the distinctions in the above argument are accepted, then the CPE market is placed in the same light as the markets of other consumer electronic devices, and any failure to compete in CPE can possibly be laid to the same market forces that affect television sets or VCRs. Far Eastern and other off-shore manufacturers dominate these and, thus the argument contends, today we should look only at network equipment when

we judge how well the telecommunications equipment manufacturing industry in the U.S. is faring.

There are, of course, other views. Just because the Japanese and other Far Eastern manufacturers have a dominant place in consumer electronic markets does not mean that the U.S. should give up all CPE without a fight. Yes, a case might be made for answering machines and faxes because they are very much like VCRs and computer equipment, but there is no reason to give up telephones, key systems, and small PABXs. Thus, according to this view, while there can be a partition of the market that eliminates "appliance-like devices," we should keep the more traditional CPE in the telecommunications world.

In addition to the difficulty of differentiating markets by product, it is becoming increasingly difficult to differentiate markets by nationality or even region. While, for some purposes, we can continue to talk about the U.S. domestic market, there are other purposes for which that concept is disappearing. When one attempts to assess the international competitiveness of telecommunications equipment manufacturing companies in the U.S., the competitive position of those companies in the U.S. market must be considered. The U.S. market is "globalized" and is the single biggest telecommunications market in the world. There is a widespread feeling that any company, to be able to survive, must have a share in this market.

Specifically then, one could argue that it is not fair to measure the international competitiveness of AT&T considering only its estimated 2 percent share of the market outside of the U.S. Based on that argument, then, the only sensible measure would also take AT&T's U.S. market share into consideration since it is this base from which the company will be able to make the necessary investments overseas to improve its foreign position – that is, its international competitiveness.

accommodate only a few active players. Put in Darwinian terms, only the fittest will survive.

There is already evidence of dwindling U.S. participation in some segments of the international telecommunications equipment market due to outright sales or consolidations with foreign-based companies. Beyond losses in CPE (for example, "in early 1986 ... [GTE] abandoned the market for business phones, citing 'tremendously competitive conditions' "[4]), the number of traditional U.S. players in the network equipment market is shrinking. Retaining only a financial interest, ITT merged its network equipment development and manufacturing activities with the French Company CGE forming Alcatel, thereby virtually leaving that marketplace. GTE sold off its PBX business to Fujitsu, its transmission equipment business to Siemens, and its switching business to a new company, AGCS, jointly owned by GTE and AT&T. Thus, with the exception of some satellite earth station equipment, GTE virtually left the manufacturing business. IBM has sold off a major portion of its Rolm PABX manufacturing to Siemens. And Stromberg-Carlson was bought by Plessey ultimately to merge with Siemens.

3.1.2.2 Market barriers

Factors other than market support are, of course, involved as well. Among the reasons cited for the disadvantages the telecommunications equipment manufacturing industry in the U.S. may be suffering in international competition, probably the most frequent is the alleged unfair trade practices of foreign governments. Those governments are accused of protecting their internal markets from penetration by U.S. companies, while substantially encouraging their telecommunications equipment manufacturers to take fullest advantage of the "penetrable," "permeable," and "globalized" U.S. market. Among the specific trade barriers cited are the "buy national" requirements by PTTs or other government agencies and legal/regulatory barriers against foreigners providing telecommunications services, as well as investment restrictions. Some of this may be lessening in the face of a growing tendency toward privatization, moves to separate provision of service

from regulatory powers in PTTs and, in Europe, the "harmonization" sought from the EC in 1992.

A perceived barrier that is particularly vexing from the viewpoint of the telecommunications equipment manufacturing industry in the U.S. is the practice of PTTs (especially in Europe) of setting technical standards that are different from U.S. standards or are difficult for companies in the U.S. to meet. Compounding this is the difficulty some companies in the U.S. perceive in participating in the process of setting those standards. While the PTTs deny a "protectionist" motivation, many U.S. players strongly sense that claimed technical motivations really play only a secondary role, especially when standards barriers are coupled with "buy national" policies.

Crossing borders within Europe used to be extremely difficult given very local and different PTT standards, and thus the *Conférence Européenne des Administrations de Postes et des Télécommunications* (CEPT), headquartered in Geneva, was formed with membership made up of the European PTTs to set European regional standards. From the viewpoints of some in the U.S., however, the standards this group sets remain far enough away from American National Standards Institute (ANSI)/North American standards to perpetuate the competitive disadvantage to U.S. firms. Even with the effort toward European regional standards, local PTTs continued to set some individual standards for their own areas of responsibility.

With the proximity of a "single market Europe" in 1992, the question of what standards are to be adopted in that single market is one of paramount importance for competition. Recognizing this importance, the European Community formed the European Telecommunications Standards Institute (ETSI), which officially began work at its headquarters near Nice, France, in May 1988. CEPT, however, has not totally removed itself from the European-wide standards world. A subsidiary group of CEPT, Technical Recommendations Applications Committee (TRAC), reviews ETSI's recommendations to decide on their applicability to European governments. How will U.S. firms fare with ETSI?

3.1.2 Competitive Factors

3.1.2.1 Market support

Manufacturing some kinds of telecommunications equipment can be a very expensive proposition. For example, for telephone circuit switches, development costs are very high with estimates ranging from $600 million to more than $1 billion. Software updates can add upwards of $100 million per year. New generations of switches, optical and broadband switches, will be even more expensive with estimates of incurred development costs exceeding $2 billion.[1] This high front end investment is very risky since the market may not be able to provide a payback for every company's investment. Dire predictions suggest that the market will be able to support only a dwindling number of competitors:

> [T]he eight manufacturers that now dominate Europe are expected to dwindle to two or three by the end of the century. Another informal estimate by a U.S. manufacturer suggested a 10 to 15 percent share of the world market (i.e., some 2.5 to 3 million lines of switch sales per year) will be required for survival. There were twenty-six manufacturers in the world market when the first digital switching systems came into service in the late 1970s. By 1984 that number had dropped to eighteen. One analyst has predicted there will soon be fewer than a dozen.[2]

Others predict that by the end of the century, the world-wide switching market will be unable to support more than five manufacturers.

Shrinking support for numbers of competitors is a problem that is not unique to switch manufacturers. In discussing the future of transmission equipment companies within the "single market" of EC '92, the *Financial Times* points out: "Small domestic manufacturers are ... likely to find the going hard.... The transmission market could thus follow the switch market, where only a handful of big players are likely to survive in a digital era."[3] Thus, it appears that one factor in the possible difficulties experienced by telecommunications equipment companies may be a sharpening of competition in a marketplace that can

> Asked if manufacturers from the U.S., Japan and elsewhere would be allowed to participate in ETSI, Mike Morris, chairman of the Committee of Directors General, Telecommunications, of the CEPT, said rather enigmatically, "Under the arrangements now envisaged, all companies based in Europe may participate."[5]

In the international arena there is also perceived difficulty. While U.S. companies are broadly represented in the Consultative Committee on International Telegraph and Telephone (CCITT), the international standards set by that body are, like national or regional standards, made up of a mixed bag of political, economic, and technical considerations which may thus result in difficulty for some members. In addition, CCITT standards are formulated as recommendations which leave great leeway for local or national modification. CCITT standards have been accepted widely around the world, so that in order for U.S. companies to do business in China, the Soviet Union, or the Middle East, they may have to build their equipment to standards significantly different from North American standards, whereas some manufacturers in the U.S. believe that non-North American manufacturers may have a much easier time of it.

Manufacturing equipment built to different standards may require establishing separate processes that can drive up the costs of manufacture to a point where competitiveness is seriously threatened. Asians and Europeans respond that in order for them to do business in North America, they must also build to "different" standards and that they are perfectly willing to accept the extra costs involved (often those costs represent the establishment of manufacturing facilities in the U.S. – an option that many U.S. firms are also pursuing overseas). It should also be pointed out that Japan employs several North American standards and thus cannot be entirely accused of that form of protective barrier to U.S. products.

On the bright side, in 1988, agreement was reached in a CCITT study group meeting for the establishment of Synchronous Optical Network (SONET) standards, generating a great deal of hope that other

international standards may ultimately be achieved. These standards address fiber optic networks; thus, they cover only very broadband, high data rate equipment. While that hope exists for optical equipment, other equipment will continue being manufactured to standards that will persist in adding costs to interoperability.

The view that national protective policies are putting U.S. telecommunications companies at an international competitive disadvantage has been reinforced by statements from some of the prime beneficiaries of those policies. *Telephony* reports on a talk anticipating the "1992" debates given to the EuroComm '88 conference in December 1988 by Philippe Gluntz, the executive vice-president of Alcatel NV:

> "Many of the smaller European companies that service only one or two sectors or that are active in only a few geographical areas could be vulnerable to invasion from outside, especially from North America and Asia." ... Gluntz stated that the "outsiders" are likely to come in through alliances and acquisitions. He said there are "very few" examples of Europe gaining substantial benefits from such alliances in the communications and information technology industries. "The balance of trade has been tipped mostly one way," he said.
>
> Gluntz also stressed the importance of the continued cooperation between industry and the PTTs. "The PTTs must keep an industrial policy," he said. "This policy, previously applied at the national level, has resulted in the strength of our European telecom industry. It must now be pursued at a European level."[6]

Ironically, Gluntz, quoted in the same article, decries industrial policies pursued by others when directed against Europeans:

> Referring to the trade imbalance with Japan in particular, Gluntz said the Europeans should no longer be prepared to accept a "wide imbalance" in telecommunications trade. "The whole [European] Community should press vigorously for the removal of the restriction by international competitors on access to their internal markets. Concrete reciprocity must be sought as a counterbalance to opening European markets to competition from outside."[7]

3.2 THE CHANGING ENVIRONMENT

3.2.1 Changing Markets

3.2.1.1 Eastern Europe

As the events in Eastern Europe unfold, new opportunities for telecommunications companies multiply. There is a general recognition that the Eastern Europeans understand the need for modern telecommunications and that, at the beginning of the '90s decade, there is a great demand due to antiquated equipment and poor performance of the installed telecommunications networks there. An offsetting factor may be the availability of convertible or hard currencies or long-term credit to pay for the major upgrading required by those countries. Another complicating factor may be these countries' desire to develop or modernize their own indigenous manufacturing industry, once again opening the issue of protectionism and "nurturing."

Among the most important market changes that will emerge from the political changes in Eastern Europe will be the continuing changes that are taking place in CoCom* (The Coordinating Committee for Multilateral Export Control) regulations. As the "strategic threat" lessens due to moves toward democratic institutions and continuing weakening of the Warsaw Pact, the need for controls becomes less apparent. As the threat apparently continues to lessen, the attraction of the market has created strong pressure for liberalization of international export controls.

Even before the unexpected turnaround in the political events in Eastern Europe, and despite CoCom's influence, many telecommunications analysts were projecting a vast market, second only to the U.S. market, in the Soviet Union. For transmission equipment, one projection calls for a Soviet market of $4.7 billion in the year 2000.[8] Another projection foresees an increase from a 1980's figure of 36 million lines

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* Founded in 1949, CoCom's objective is to prevent products and technology that would improve the Warsaw Pact's and China's *strategic* military position in relation to the West. Membership in CoCom includes all the NATO countries (except Iceland) as well as Japan and Australia.

installed in the Soviet Union to 100 million also by the year 2000.[9] Barring debilitating Soviet internal political difficulties which would block continuing reform, the opening of the Soviet market to Western firms is becoming much more likely.

3.2.1.2 European Economic Community

Much has been written about the European Economic Community (EEC) and, as we approach 1992, more will be written.* It would be impossible to comprehensively cover all the issues that are involved with this very important event, but we cannot ignore the telecommunications market changes that are likely to come about whether "single market Europe" is established according to schedule or not. As we look at the debate, ranging from "fortress Europe" on the one hand to "unprecedented opportunity" on the other, it becomes clear that there are all shadings of opinion regarding the impact of 1992. The general view among those in the industry appears to be one of cautious optimism leading to competitive positioning for 1992:

> Apart from the standards issue, U.S. and Japanese suppliers do not seem unduly apprehensive. Many of these suppliers already are inside the walls with their local manufacturing and sales subsidiaries, and some anticipate that the benefits of the mid-1990s will not be reserved for the Europeans. Three years ago when Al Stark was the president of the AT&T/Philips joint company, he remarked that it was obviously going to be "...easier to get under one tent than it [was] to get under 20."[10]

3.2.1.3 Asia Pacific Economic Cooperation

A new effort at trade consolidation in Asia took its first step in November 1989 when 12 nations – Brunei, Canada, Indonesia, Japan, Malaysia, New Zealand, the Philippines, Singapore, South Korea, Thailand, the U.S., and Australia – met in Canberra, Australia, for the first Asia Pacific Economic Cooperation (APEC) Conference. Australia was the prime mover behind this meeting, and the group's *raison d'etre*

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* For example, see Morris H. Crawford, *The Common Market for Telecommunications and Information Services* (Cambridge, Mass.: The Program on Information Resources Policy, Harvard University, 1990).

was defined by Gareth Evans, Australian minister for Foreign Affairs and Trade in this way:

> APEC is not, and should not be seen as, an answer to Europe 1992 or other trade blocs.... Its formative instincts are the nondiscriminatory promotion and liberalisation of trade regionally and globally. Nor has APEC been conceived as a tactical manoeuvre if the Uruguay Round of GATT fails and the international trading system degenerates into restrictive blocs.
>
> Not only did we reject the notion of APEC as a trading bloc, but we all agreed that an objective of regional cooperation should be the strengthening of multinational trading.[11]

Despite the explicit words limiting the goals of APEC to those of regional and global trade liberalization (perhaps similar to those of the Organization for Economic Cooperation and Development, or OECD), it is very difficult not to think that a seed may now be planted which could one day blossom into an Asian/Pacific Rim version of the European Common Market. Offsetting any conjecture that such a "Pacific Common Market" may be imminent are the realities of mutual distrust and economic self-interest among some of the participants. Even the future of APEC is questionable due to uncertain support among its initial participants. Nevertheless, from the viewpoint of the telecommunications equipment industry in the U.S., APEC may be an encouraging sign. Participation by the U.S. may afford yet another conduit into a region that has been characterized by nurturing of domestic industries and difficult trade and cultural barriers. In addition, the identification of telecommunications as an important trade sector during the November '89 meeting demonstrates a predisposition that may offer opportunities.

3.2.1.4 China

As an example of a volatile and uncertain market environment, in this case made so by various political events since the seventies, the case of China is outstanding. From the so-called "opening of China" during the Nixon administration, through the Silkworm Missile incident, to the Tiananmen Square disaster, up to the Bush administration's overtures to the Chinese government, the telecommunications equipment manufacturing

industry in the U.S. has been rocked by rapid-fire swings in the U.S. government's China policy. Signals were sent by parts of the government that the clear need of the Chinese for modern telecommunications should be vigorously pursued by the telecommunications equipment industry in the U.S.; but, in the midst of the industry's long and difficult efforts to penetrate the Chinese market, the U.S. government tightened export controls and limits on technology transfer in response to the discovery that Chinese-supplied Silkworm missiles were being used by Iran in the Persian Gulf. There followed a warming period between the U.S. and China during which the industry resumed its efforts. Then the government imposed a severe cutback in China trade in the wake of the Chinese government's violent suppression of the students in Tiananmen Square.

Hope for renewed trade was briefly regenerated in the industry when the Bush administration, much to the discomfort of many in Congress, reinitiated high-level contact with the Chinese leadership but then, at the July 1990 Group-of-Seven-Summit in Houston, that same administration showed great reluctance to follow the Japanese lead in getting commercial ties with China back on pre-Tiananmen track. Industry complains that the Chinese view the industry in the U.S. as "unreliable business partners" who are unable to make good on promises made. At the same time, there is great suspicion that other free-world competitors either do not have similar government restrictions imposed on them or that they are, with the implicit collusion of their governments, by-passing international CoCom agreements that call for "harmonization" of trade controls to China.

Response from some in the government has been that while overall trade improvement with China is a priority goal, a reaction to extreme political acts on the part of the Chinese is essential and that trade controls are an appropriate reaction. In addition, very little evidence of "cheating" by free-world governments has actually been produced, but when that evidence has been produced the U.S. government has been quick to act. As an example of U.S. government action against "cheaters," they point out the U.S. sanctions against Toshiba Industries after that

corporation sold extremely accurate and sophisticated milling machines to the USSR. They also cite decisive U.S. government action in the case of several German companies' sales of equipment to the alleged poison gas plant in Libya.

It would appear at this time that the only constant in the China market is that of change. The future of trade controls with China is linked (for better or for worse) to events in Eastern Europe since, for several years, China has been consciously treated more liberally in CoCom than Eastern European countries. The actions of the Chinese government will continue to be watched by a wary, but hopeful, U.S. government (as well as by other governments). Given the highly uncertain situation in China and in Eastern Europe, the only safe prediction is that there will be more change.

3.2.2 Changing Technologies

A discussion of technologies per se is far beyond the scope of this paper, but they are a driving force in competition and are in a state of great flux and thus cannot escape some examination.

The conversion from analog transmission and switching to fully digital has been underway and continues in many markets. Since many countries in which the conversion is still taking place are eager for a "great leap forward" (China is one of these countries) in digital-based services, there is a demand for accelerated digital installations. The questions of compatibility, incremental conversion through "digital islands" versus total replacement, installation of fiber versus digital-microwave versus copper cable, amount of installed infrastructure that can be employed in a new network, and so on are of great importance and may be real limitations on the achievement of the great leap.

New technologies that move beyond plain old telephone service (POTS) such as broadband or optical switching, Integrated Services Digital Network (ISDN), common channel signalling, asynchronous transport mode, fast packet technologies, or cellular mobile telephone may impact on competition in important ways. The introduction of new technologies

creates what some call a "step function" in the market. Referring to the same phenomenon, Michel Guité of Salomon Brothers cites market "discontinuities":

> One may be able to take advantage of one-time discontinuities such as Ericsson's success in the newly formed cellular markets in North America and Europe, where such user-supplier relationships do not yet exist, or in the opening of Eastern Europe. The discontinuities are very, very significant in that they offer opportunities for different or new players to come forward. For example, it was the opening of the U.S. C.O. switching market to digital that allowed NT [Northern Telecom] to achieve its position.... But where there is no discontinuity it is much more difficult.[12]

For most of these companies, claiming a "first" has the effect of enhancing competitiveness, even if the connection between the technologies and services to the customer cannot be generally appreciated by the telephone user. For example, the advantages afforded by common channel signaling are difficult to appreciate by the ultimate user, but it underlies or is essential for user services such as rapid call set-up time, efficient database retrievals (for example, 800 service), Custom Local Area Signaling Services, or CLASS (for example, caller ID service or call waiting), and ISDN.

Of most importance regarding changing technologies is the question, Can the telecommunications equipment industry's capital project customers (PTTs, Ministries of Communication, or privatized service providers) pay for the new technology they need or want? The very nations that would benefit most from a technological "great leap forward" appear to be the nations that can least afford it: China, Eastern Europe, African countries, and so on.

3.2.3 The New Players

Beyond the traditional companies, the "new players" in the telecommunications industry in the U.S. – the Regional Holding Companies – are moving into areas that they believe provide greater opportunity for expansion than they can find "at home":

> "We are simply recognizing that the opportunities for growth are greater outside the United States than within," said Eugene Sekulow, president of the Nynex International Company. "Our primary business is still here within our region, but the marketplace is increasingly becoming a global one and Europe is where we see the most potential."[13]

The kind of foreign business that the Regional Companies are seeking includes not only telephone operations and information services, their clear forte, but engineering services and systems integration as well. Table 3-1 provides an idea of the breadth of activities the Regional companies are pursuing overseas.

Table 3-1

Examples of Regional Holding Companies' Foreign Activities

NYNEX
- Owns half of Gibraltar Telephone Company
- Telephone network management, Britain, France
- Financial services software in Britain
- Telephone service improvements in Poland and Hungary

SOUTHWESTERN BELL
- British cable
- Freedom Phone sales
- Proposed business transaction links

BELL ATLANTIC
- Owns Sorbus, computer services
- Computer leasing and sales, Munich
- Telecommunications consulting, West Germany
- Italian phone system software

AMERITECH
- British Voice Messaging

PACIFIC TELESIS
- West German cellular system
- Cable television, Britain
- Wireless telephone ventures

US WEST
- Cellular system in Hungary
- Fiber-optic cable across Soviet Union
- Cable television in Britain, France

BELLSOUTH
- Stake in French cellular company
- Wireless telephone bid, Britain

Source: Calvin Sims, "The Baby Bells Scramble for Europe," *New York Times*, December 10, 1989, sec. 3, Late Edition.

Judge Greene's ruling in 1987 that development and software production constituted "manufacturing" effectively precludes the Regional Holding Companies from competing in these activities in the U.S. due to the Modified Final Judgment's (MFJ) ban on Regional Bell Operating Company (RBOC) participation in manufacturing. As **Table 3-1** indicates, some of the RBOCs have begun to flirt with systems integration and development outside the U.S. (for example, U.S. West with the fiber proposal, Nynex with software development, and Bell Atlantic with telecommunications consulting). Given the controversy that is being generated by the "no manufacturing" ruling, there may be a time when the MFJ's proscription will be reversed and the RBOCs appear to be positioning themselves to become strong competitors in the telecommunications systems-integration and engineering-services marketplace.

3.2.4 Changing Commodities

For a number of years, we have been made aware of the transition that is going on from a manufacturing/product-based/smokestack-industry economy to a service-based economy. It would appear that, judging by the following "product items," that trend is alive and well in the telecommunications industry as it is in other sectors and is felt especially in the equipment manufacturing area.

3.2.4.1 Software

The classical image of telephone network equipment leaves the impression of glowing and flickering lights, spider-web-like cable distribution frames, massive metal cabinets, and relays sparking and clicking. In the age of electro-mechanical equipment, this image may not have been too far from the truth, but with the movement to stored-program controlled, electronic equipment, a whole new approach has appeared. Functionality as well as features are strongly software-based. The normal central office telephone switch has anywhere from 750,000 to 1,000,000 or more lines of object code operating it. The hardware in a switch is basically run by the code. Changes in service, activation of lines, rerouting, and so on are all handled from an operator's position and are software-controlled changes to software. If

a network node fails, management software can automatically reroute calls and analyze statistics automatically forwarded by local switch software – by way of Signalling System Number Seven, a software-run management network – to a central location where a normal response is to reinitialize the failed node by downline loading software.

For all practical purposes, the sale of telephone "equipment" is the sale of software functions and features that can be upgraded, expanded, and changed through new software releases with usually no more hardware involvement than the occasional addition or swapping of a printed circuit board. It is not stretching credibility to claim that the "commodity" of today's digital telecommunications marketplace may be a software commodity.

3.2.4.2 Networks

One of the new "commodities" emerges as manufacturers move away from selling "equipment" and begin to sell "networks." Traditional telephone service started locally. Small areas or exchanges were established to provide essential *local* service. As the need was felt, these local exchanges were interconnected into wider regional networks, and eventually long-distance and international service emerged. A new marketing approach by many in the equipment industry is primarily to offer design and systems integration services for local or trunk networks as an initial step, and then moving to the supply of equipment. This approach makes sense from the perspective that modern networks have progressed to such levels of complexity that their design may best be handled by highly specialized and experienced network engineers. Supplies of such people are relatively low in many countries of the world but are available in modern firms located in developed countries. In some cases, such as the U.S. West led project to create a fiber-optic network across the Soviet Union, consortia of western (international) firms may bring a mix of expertise to bear that otherwise might be unavailable.

The problem with all this is that it tends to look very strange to governments that have political and economic reasons to provide local

service as soon as possible in the old traditional way. Access to telephones and quality of telephone service are visible signs of economic well-being to many people of the world. A common measure of national affluence is the number of telephones per 100 people in the country. In some third-world countries there are only fractional telephones per 100 people, whereas in some developed countries the number is much higher and in some areas of some developed countries exceeds one telephone per person.

Many government leaders recognize that their personal political fortune may rest on visible signs such as having a telephone reasonably close to every person in the country. They often identify telephone access as goals in their long-term and short-term planning and know they will be judged by their people, at least to some degree, on their success in meeting those goals. In addition, the network-first approach requires a commitment of a great deal of money early-on (even if the actual expenditure might go on for a number of years), as opposed to the incremental decisions and financing inherent in the more traditional approach. Those who advocate the network-first approach point out that, in the long run, it should be cheaper, more efficient, and ultimately more effective than to incrementally build local "islands," which would be connected later into a national network. The emphasis, in the minds of the network-first approach advocates, has changed from the sale of *equipment* to the sale of *network design services*, which would ultimately result in equipment sales.

Some in the telecommunications equipment industry claim that the network-first approach is "customer" driven. They point out that, typically, financing is the major problem in any large capital project since telephone administrations/companies normally cannot just buy outright or incur an upfront investment without some promise of return. Thus, the customer must look for revenue generation that would ultimately pay for the equipment. That revenue would not come from residential users, but it would come from the industrial/business sector since that's where the money is in terms of revenue for services. The strategy, then, seems to be this: Let's build a network for those high

revenue users and then use funds so-generated to trickle service down to the low revenue (residential) users. Industrial/business users need a nation-wide and international network, and so that's where to start.

3.2.4.3 Technology transfer

Another change in "commodity" that is not limited to the telecommunications equipment manufacturing industry, but is certainly important to it, is technology transfer. Most third-world customer countries are looking for economic growth, for increased employment for their people, for a stronger industrial base, and ultimately perhaps to obtain foreign exchange by establishing an ability to export. Following the old adage, "Do not give a starving man a fish, but teach him how to fish," many countries today require technology transfer as a condition for purchasing telecommunications equipment.

A common method for the transfer is through a joint venture, where the U.S. or other telecommunications company agrees to provide technology and training to local workers usually for assembly, distribution, and installation of equipment.* Often the joint venture is initiated is through "semi knocked-down kit" assembly. That is, major components are delivered to the joint-venture factory already assembled, leaving final assembly and noncritical components for local completion. Final testing, delivery, and installation (including customer-required modifications) are all accomplished by the joint venture entity.

As training goes on and the local workers become more proficient, the venture moves to the next stage: "completely knocked-down kit" assembly. In some ways this stage could be looked at as a "bag of parts" delivered for detailed assembly and intermediate testing, as well as final testing, delivery, and installation. The venture then may progress to the stage where locally fabricated parts replace the "bag of parts." This can include such things as printed-circuit board

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* An excellent example is China, which has developed a strong pattern of joint-venture production in China of all PBXs and Central Office switches it purchases.

fabrication (including design of the artwork) all the way up to semi-conductor fabrication and software development – all the technology supplied by the U.S. or other partner.

It certainly would appear that the commodity, then, is not the telecommunications equipment per se, but the technology for the equipment. It is true that the supplying company may withhold certain proprietary aspects of the equipment, but basic skills all the way through advanced engineering are fair game for the market.

Some people in industry are beginning to wonder whether or not the industry in the U.S. is training its own future competition. In addition, what happens if the technology "runs out"? Some would claim that technology is virtually an inexhaustible resource – that as R&D progresses, new breakthroughs would occur that would keep the U.S. at the forefront. As we shall discuss in a later chapter, many others have a considerably less sanguine view and express the concern that U.S. R&D efforts are failing and would be unable to continue supplying outflows of U.S. technology. Joint ventures may provide opportunities for industry in the U.S. by making sales that otherwise could not be made and by positioning U.S.-based companies in changing and possibly protectionist markets. However, joint ventures may also be a mixed blessing.

3.3 NOW THE $64 (GIVE OR TAKE SEVERAL ORDERS OF MAGNITUDE) QUESTION

3.3.1 The Argument

Many believe that the telecommunications equipment manufacturing industry in the U.S. is having serious problems with international competition. Providing balance-of-trade evidence for that view, former Assistant Secretary of Commerce for Communications and Information (and, as of this writing, chairman of the FCC), Alfred Sikes has noted that: "We've had a precipitous drop in our net telecommunications trade account. We've gone from approximately a $300 million surplus in that trade account just before the breakup of AT&T to about a $2.7 billion

net deficit at present."[14] In addition, they point out that, for central office switching, AT&T's domestic market share before divestiture exceeded 80 percent, whereas as of the second quarter of 1990, it was approaching 40 percent. The difference is due largely to the success of Northern Telecom and to a much less extent that of Ericsson and Siemens in the U.S. market for switching.

Taking a contrary view, others would say that the telecommunications equipment industry in the U.S. is in no competitive trouble at all. Vice-president of Salomon Brothers, J. Michel Guité, provides this view:

> Not compared to the other, say, 35 or so industrial sectors that many people look at like semiconductors, like consumer electronics, like steel, like pulp and paper, and on and on. So, I think it is one of the few sectors that is not, on a global basis, in trouble at all.... Fundamentally, there is no evidence that I know of that would show that the U.S. leading manufacturers in the biggest sectors of telephone equipment like central office switching or transmission equipment or office customer premises, PBX-type equipment are less efficient or are achieving less success compared to other global competitors in off-shore expansion or are any more under pricing pressure than anyone else globally.[15]

Others claim that the telecommunications equipment industry in the U.S. is not only competitive but also that it is getting more so. They point out that prior to the 1984 divestiture, international competition was all but out of reach for AT&T. Since divestiture, the industry in the U.S. is learning the international ropes quickly and each year is becoming more and more competitive. In addition, prior to the 1984 divestiture the domestic market was virtually captive to Western Electric (being vertically integrated with AT&T's service divisions), with only a few other largely domestic companies, such as GTE's Automatic Electric and Stromberg Carlson, sharing a very small slice of the market. AT&T's loss of domestic market share, they claim, is simply an adjustment that reflects the best business judgment of the RBOCs not to be totally dependent on a single supplier. Even with an open market, AT&T remains the dominant player domestically.

Citing a more differentiated market than the balance-of-trade figures reflect (see the above discussion on CPE and network markets), three of the communications industry's leading trade associations provide the following data in **Table 3-2**:

Table 3-2

U.S Trade Balance in Telecommunications Equipment

	1986	1987	1988
	Millions of Dollars		
Consumer/Mass-Market Telecom Balance	-$1,613	-$2,028	-$2,398
Cable Television Equipment Balance	-$ 361	-$ 561	-$ 401
All Other Telecom Equipment Balance	-$ 57	+$ 39	+$ 191
Total Trade Balance	-$2,031	-$2,550	-$2,608

Source: Collaborative research study by the Independent Data Communications Manufacturers Association, North American Telecommunications Association, and Telecommunications Industry Association, *The Post-Divestiture U.S. Telecommunications Equipment Manufacturing Industry: The Benefits of Competition*, March 1990, p. 28. Original data from the U.S. Department of Commerce, official statistics.

The interpretation put on the above data points out that

> for 1988, of the $2.6 billion telecom trade deficit, $2.4 billion was due to imports of telephone (corded and cordless) instruments, telephone answering machines, and facsimile terminals. The dramatic surge in imports of these consumer and mass-market products preceded divestiture and is more the result of low wages in Far Eastern countries than it is of any domestic actions. Another important consumer product segment included in Commerce's $2.6 billion deficit is cable television apparatus.

> Again, the upswing in cable television apparatus imports is much more a function of consumer buying habits, not domestic action.... If these various consumer and mass market products are excluded from the trade figures, the complexion of telecommunications trade changes completely. Take away these products and 1988 saw a trade surplus of $191 million, up from a deficit of $57 million in 1986.[16]

While one may or may not agree that the so-called consumer/mass-market CPE items should be excluded, the above could be taken to demonstrate that for network equipment (switches, transmission, and so on) the figures appear to be improving.

Another important indicator of competitiveness may be market share. For example, for large INTELSAT traffic earth station terminals marketed in developing countries, GTE has produced the figures in **Table 3-3**:

Table 3-3

Large INTELSAT Traffic Terminals

Company	1984 Market Share	1989 Market Share
NEC	40%	33%
Telespace/Alcatel	25%	18%
GTE	9%	25%

Source: Glenn Sacra, president, GTE Spacenet, interview on May 1, 1990. (Note: The figures for this chart are GTE's and are for planning purposes; there is no claim that they will match figures from any other source.)

These figures not only point out that, for this product/market, GTE believes it has improved its market share since 1984, but they also suggest that at least part of the GTE gain may be at its primary competitors' expense. These figures may indicate at least some success of the telecommunications equipment industry in the U.S. in international competition.

3.3.2 Statistics

The discussion in the preceding section relies, to some extent, on statistical data. Statistics traditionally have been very important and are becoming more and more so, not only in analyses of the competitiveness of the telecommunications equipment manufacturing industry but also in studies based in other social areas. There seems to be a feeling that such analyses must be "scientific" and, of course, science is quantitative. Any data not presented in the form of graphs, tables of numbers, formulas, or charts are, in some way, looked at as incomplete and perhaps a little less worthy of attention. Yet, obtaining good statistical data and, even more, accurately dealing with and interpreting the data once collected is a cause of great frustration to analysts. One industry analyst expressed it this way:

> For me it's very frustrating. But you often have to make assumptions. I don't even know whether we are going up or going down. Census only changes its SIC [Standard Industrial Classification]* categories every ten years or so.
>
> For trade data, I can guess – talk to industry experts – rely on companies to share their market research – but there is no validation. Trade deficit with countries is misleading because they make low-tech items. A lot of what happens is that they are U.S. companies making them [products] and sending them back. I don't know whether there has been a concerted effort to deal with what is a U.S. company for statistics.[17]

The above comments identify very well some of the specific indictments of the use of statistics. Many of the statistics employed

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* The Standard Industrial Classification system is a method used by most Federal statistical agencies, most State agencies, and many private organizations to identify and group specific industrial activities for statistical purposes. The system assigns numerical designators to various levels of industrial activity in the following way: Divisions are assigned a single-digit number; within each Division, Major Groups have a two-digit number; within the Major Groups, Industry Groups have a three-digit designation; within the Industry Groups, Industries have a four-digit number; and within Industries, Product Classes have a five-digit number.

for the sake of "scientific accuracy" are based on assumptions. Often, data must be derived from guesses, industry experts (who have specific points of view which may not be objective), or industry research (which is often conducted for purposes other than those in which the analyst is interested or may contain proprietary information that cannot be used for analysis). Few of these sources of data will support the kind of validation that is needed in order to provide credibility.

The problem of sufficient categorization impacts greatly on the interpretation of statistics. In the case of the balance-of-trade statistics discussed in the previous section, there are only gross export minus gross import figures available. It is virtually impossible under the SIC scheme to obtain sufficiently fine-grained information to distinguish between market segments (for example, CPE vs. network equipment). And yet, SIC codes are perhaps the best way to identify different categories of products and services. The problem is that technology is moving faster than the categorization scheme can track. A perhaps too-easily suggested solution is to break down SIC categories more frequently to keep up with changes in the marketplace. That suggestion, of course, ignores the cost required to do that and the political difficulty in trying to identify categories to which everyone would agree.

Another categorization problem deals with the reasons for imports. For the purposes of judging corporate competitiveness (as distinct from U.S. national competitiveness), it is important to know who is importing and for what purpose:

> The trade figures are an inadequate measure of competitiveness.... What you see is that three-quarters of American imports are imported for one of two reasons. They are imported by U.S.-based subsidiaries of foreign-owned corporations, or they are imported [from] foreign-based subsidiaries of U.S. corporations.[18]

These "foreign American to domestic American" imports or "foreign foreign to American foreign" imports skew the figures because in many cases, these imports are components for continued manufacturing here on

shore or are completed products assembled off-shore but totally within the control of a U.S.-based entity. For example, AT&T assembles telephone handsets off-shore but sells them here in the United States; and those sales may be counted in determining the competitiveness of AT&T – even though the salaries for the assembly jobs are paid to non-Americans. We are getting dangerously back to the arguments about what makes up a U.S. company, but the example is a good one to demonstrate the inadequacy of the statistics to distinguish imports that add to competitiveness from those that damage it.

Another danger in statistics is the problem of their proper or improper use. For example, in the trade-association figures in the previous section, we note that the network equipment figures move from -$57 million in 1986, through +$39 million in 1987, to +$191 million in 1988. The interpretation states: "Take away these products [CPE] and 1988 saw a trade surplus of $191 million, up from a deficit of $57 million in 1986." That implies that there may be a trend, yet we have no statistical analysis that shows either that sufficient data has been collected to establish a trend or that the fluctuations in the data are statistically significant. Please note that highlighting the above figures in no way implies that they are worse than any others. The problem is pandemic with the use of statistics.

NOTES

1. Peter W. Huber, *The Geodesic Network: 1987 Report on Competition in the Telephone Industry*, prepared for the U.S. Department of Justice, Antitrust Division (Washington, D.C.: GPO, 1987), 14.7-14.8 (citing Northern Business Information and Gartner Group).

2. Ibid., 14.8 (citing Northern Business Information and Tagliabue).

3. "Why Transmission Manufacturers Are Threatened by Single Market," *Financial Times*, July 13, 1989.

4. Huber, *The Geodesic Network*, Vol. 3, 16.27.

5. John Williamson and Peter Purton, "The Break of Europe's Order Leads to New Liberalization," *Telephony* 214, no. 13 (March 28, 1988).

6. Peter Purton, "Alcatel Warns of Impending U.S., Japanese Invasion into European Telecommunications Manufacturing Market," *Telephony* 215, no. 24 (December 12, 1988).

7. Ibid.

8. See note 3 above.

9. Information Gatekeepers Inc., "The World's Fastest Growing Telecom Market," *Fiber Optics and Communications Newsletter* 12, no. 10 (October 1989), citing the UK's Telecommunications Research Centre data.

10. See note 5 above.

11. Geoffrey Lee Martin, "Fortress Mentality Erodes under the Asian Challenge," *Daily Telegraph* (Australia), Wednesday, January 31, 1990.

12. Michel Guité, vice-president, Salomon Brothers, interview with author, June 14, 1990.

13. Calvin Sims, "The Baby Bells Scramble for Europe," *New York Times*, December 10, 1989, sec. 3, Late Edition.

14. Interview with John Gallant and Anita Taff by The Communication Channel, recorded and shown at Communication Networks Conference and Exposition '89, February 6, 1989.

15. See note 12 above.

16. Collaborative research study by the Independent Data Communications Manufacturers Association, North American Telecommunications Association, and Telecommunications Industry Association, *The Post-Divestiture U.S. Telecommunications Equipment Manufacturing Industry: The Benefits of Competition*, March 1990, 27-28; original data from the U.S. Department of Commerce, official statistics.

17. Glenn Sacra, president, GTE Spacenet, interview with author, May 1, 1990.

18. Lionel Olmer, former Undersecretary of Commerce for Trade, interview with author, May 10, 1990.

CHAPTER FOUR

WHAT SHOULD THE U.S. GOVERNMENT BE DOING ABOUT ALL THIS?

There is a joke that has been circulating for some years now:

QUESTION *What are the three greatest lies in the world?*

ANSWER
- *"The check is in the mail."*
- *"Of course I'll respect you in the morning."*
- *"Hi! I'm from the government and I'm here to help you."*

There is a general distrust of government and that has been true since there have been governments. The focus of that distrust, however, does change from time to time and, in the area of trade policy that distrust has been well expressed by Lionel Olmer: When you consider "... what American government policy has been in an effort to encourage the maintenance of a domestic base of production, you can also see a danger in the government trying to be helpful."[1] What is it, then, that has been at the basis of the "helpful" policies that has allowed large segments of production to move off-shore or had a negative impact on the telecommunications equipment manufacturing industry's competitiveness? One view has it that

> The debate is not being discussed in ways that contribute to its resolution because ideologues do not find compromises – do not find common ground. One either wins or loses on the basis of you have the president behind you or the majority of Congress or whatever. It doesn't tend to be something you can work out and find a common area and start there.... This is typical – not just telecommunications and not just trade policy – this is true of almost every aspect of government now and that's why people don't think government is working. Government, some years ago – about 10 years ago – stopped trying to be practical and started trying to be perfect and that's created quite a problem, for in the search for perfection we are missing a great deal of practicality.[2]

Beyond the generalities, there are, of course, very specific views of what government should be doing.

4.1 THE VIEW FROM INDUSTRY

4.1.1 Trade Policy

Many people within the telecommunications industry in the U.S. have expressed great dismay at what appears to be virtually independent government departments, agencies, congressional committees, judges, regulators, and commissions claiming to have the authority to set and/or enforce trade policies, regulations, and laws that have impact (for better or for worse) on that industry's ability to compete. The reasons for this dismay can be appreciated by considering these numbers: "[T]he United States has an ad hoc, disjointed policy scattered among nine congressional committees, four congressional support agencies, 14 executive branch departments and dozens of executive branch agencies...."[3] More specifically, Digital Equipment Corporation expresses its view of the U.S. government's telecommunications trade policies this way:

> The problems with U.S. trade law and with the inherent character of trade negotiation are complicated by the manner in which U.S. policy-makers are organized within the government. Regrettably, the administration of various applicable laws is not centralized in a single body with broad experience and expertise and with a mandate to promote global free trade in general and the United States' overall position in particular. Instead, responsibilities for different parts of the information industry are divided among a number of governmental agencies. These agencies have varying degrees of expertise, varying constituent interests and different ideas about what is good for the United States, characteristics that make overall coordination a difficult and time-consuming task.[4]

Thus, many in the telecommunications industry are calling for a coherent "information" or "telecommunications trade" policy to be developed and implemented by a central agency. Yet

> Arguments about government policy formulation will never end and will never be resolved. But criticisms of it are not entirely bad. Unfortunately, much of the structure is impervious to criticism. You just can't change it. It is what it is. Over time it probably will reshape itself, but, by and large, what you see is what you will have. If we had a *tabula rasa* and the authority to build what we really thought was worthwhile, sure, we could consolidate it [policy formulation] in an agency. Now, you would more than likely wind up with another bureaucratic layer and the policy process could be further impeded.[5]

Beyond the call for a consolidation of policy making and despite pessimistic views of the possibility of change, a number of specific, broad-based government trade/business actions are being called for. The following items are representative and are expressed as paraphrases of the statements of people in the telecommunications equipment manufacturing industry.

4.1.1.1 Reduce the federal deficit

The telecommunications equipment industry in the U.S. has enough trouble competing in international and domestic markets without competing with the United States government for investment dollars. As long as the federal deficit continues to be financed by U.S. government high interest securities, the industry must pay similar or higher interest to convince investors to provide sorely needed financing for new projects or long-term R&D.

4.1.1.2 Foster long-term R&D

The telecommunications equipment industry sees permanent tax credits for long-term R&D, permanent relaxation of antitrust laws to allow for R&D consortia, a more active and open transfer of the results of government or government-sponsored R&D to the industry, and the establishment of a civilian R&D agency similar to the Defense Department's Defense Advanced Research Projects Agency (DARPA) as necessary steps to preserve its lead in high-technology telecommunications products. The cost of developing one new high-

technology item can run to billions of dollars. Companies working alone will soon find that they are unable to afford to compete without significant cooperation and cost-sharing from both the government and possibly consortia of competing companies. Some think the cause of the failure to compete and ultimate loss of several major U.S.-based telecommunications companies was their inability to survive long-term and expensive product development. Some have attributed the sale of ITT's telecommunications manufacturing to Alcatel to the horrendous cost of developing the System 12 switch (specifically, the 1240 switch) and ITT's failure to significantly penetrate the North American market. A fact that lies behind the dire predictions of more companies failing and consolidations of telecommunications companies in the future is precisely the cost of development. When the cost of major new network products development is considered, projections state that a company must have 20 to 25 percent share of the world-wide telecommunications market in those products to recover its investment and make a profit. Thus, it is a reasonable conclusion that no more than five companies will be able to survive. To guarantee that telecommunications companies in the U.S. are represented to the maximum in the numbers of those surviving companies, the U.S. government must act to support high-tech R&D.

4.1.1.3 Simplify and liberalize export control laws/regulations

From the viewpoint of those in the telecommunications equipment manufacturing industry in the U.S. who are attempting to export their products, the export regulations of this country are complex, full of redundancies, too strict, and the authority for regulation is divided among too many government agencies. The Commerce Department is responsible for the Export Administration Regulations (EAR), while the State Department is responsible for the International Traffic in Arms Regulations (ITAR). Many of the commodities controlled on one set of regulations are also controlled on the other, the only difference being whether the end-use of the commodity is for the military or is "dual-use" – that is, a basically civilian commodity that has military applications. It is an immediate problem to determine under which set of regulations one needs to apply for a particular sale.

The EAR, as published, is several inches thick, and full of cross-references and highly specific conditions for export approval or denial. Most small telecommunications companies cannot afford to have Washington-based lawyers or consultants to help them fight their way through the morass of applications, forms, and interpretation that is required to obtain the necessary approvals and are thus at a serious disadvantage. Even after all the paperwork is completed, it can then take many months, sometimes years, to obtain the approval – few customers will stand for such delays. Simplification, liberalization, and streamlining of the system is an imperative to put the telecommunications equipment industry in the U.S. on an equal footing with those industries based overseas which are operating under considerably less difficult constraints.

4.1.1.4 Coordinate trade promotion resources

An outstanding and important example of fragmentation in government is in its trade promotion activities. Various formal and informal trade promotion responsibilities rest with such diverse agencies as several parts of the Commerce Department and State Department, the USTR, OPIC, ExImbank, Treasury Department – even the FCC.

The problem, as seen by those in the telecommunications equipment manufacturing industry who are trying to do business overseas, is that the agencies have their own agendas, and they don't consult with each other or with the industry as to what those agendas ought to be or the best way to achieve their goals. What needs to be done, in the opinions of equipment industry spokespeople, is this: In coordination with industry, jointly determine what the problems are, where the opportunities are, and focus all government activities to enhance the efforts of the industry.

The following hypothetical example illustrates the problems that are now faced: If the USTR is successful in opening South American markets to telecommunications products, U.S. government financing might not be available to allow U.S.-based manufacturers to combat highly subsidized foreign competitors in that market. Legislation in place for over a

decade prohibits, in general, AID funds from being used for capital improvement projects, limiting U.S. funds for use in human needs projects. Without coordination between the Executive Branch and Congress for a change in the legislation, efforts by one part of the government might be frustrated by another part or, in the extreme case, government actions could actually damage the industry efforts those actions were meant to help.

4.1.1.5 Improve communication with industry

The telecommunications industry in the U.S. is not just a handful of big companies. Rather, it is also made up of a lot of small companies that make and sell niche products, distribute other people's products, provide engineering and installation services, and consult. In the opinions of many of these smaller companies, the U.S. government has not done a very good job of reaching out to make government services known. It is difficult and in some cases prohibitively expensive for them to maintain offices in Washington or retain prestigious Washington law firms or to know of the regional offices of various governmental agencies. Thus, government services that are available are not being used for the small companies' benefit. Government must do better in making its presence and its trade promotion abilities better known to these firms.

4.1.1.6 Foreign Corrupt Practices Act

In some parts of the world, "baksheesh" is a way of life. If a person who is living in such a place wishes to have his trash carted away by the government service established for that purpose, he would be well advised to make sure that the man who carries it away as well as one or more of his supervisors have been "well looked after," even though it is a government service. The telecommunications equipment industry in the U.S. does not find many government telecommunications officials in these parts of the world who are immune from this particular cultural practice. While we in this country view such activities as "bribery" or "kickbacks" and therefore consider them unethical or immoral, few other countries in the world are so sensitive.

The Foreign Corrupt Practices Act was passed in 1977 in the wake of allegations that U.S. companies had engaged in questionable kickback activities through the decade of the sixties into the seventies. Its ambiguous wording and lack of clear specification as to what is acceptable practice and what is not led many companies to interpret the law as absolutely forbidding any but the most innocuous of customer inducements. But the law basically does nothing to stop such practices; it only stops U.S.-based telecommunications companies from competing with foreign-based companies for sales in which there are expectations of some "considerations." While the Omnibus Trade and Competitiveness Act of 1988 clarified the Act somewhat, the industry feels that there should be another look at the law's provisions to offer additional relief.

4.1.2 Industrial Policy

Intuitively, "trade policy" is different from "industrial policy," but the difference is not always clearly understood or expressed. Jack Kuehler, the vice-chairman of IBM, in testifying before Senator Hollings' Commerce, Science, and Transportation Committee expressed discomfort with the term: "For starters, the term 'industrial policy' means so many different things to different people that I really don't feel comfortable in using that term and then trying to agree with it or disagree with it or sponsor it or aid it."[6]

There does, however, appear to be general agreement on one distinction between industrial and trade policy: industrial policy "targets," whereas trade policy does not. Given that one of the functions of national governments is the just and proper allocation of national resources, and also given that those resources are limited, thus making it impossible to allocate them to all industries equally, then if government is to provide direct support it must choose which industries to support and which ones to ignore (i.e., government must "pick winners and losers" by "targeting" certain industries for support). No one appears to believe that government intervention by targeting is an inherent function of government, but opinions vary as to how bad it is:

fragmented policies, established by agencies with their own agendas, and that the aggregated effects of these policies amount to an industrial policy. Even worse, fragmented policies have the built-in danger of being incoherent and diffused, thereby risking damage to industry with none of the individual policymakers recognizing that damage. Some have pointed out that the classic "industrial policy" of the United States has been the Internal Revenue Code. Traditionally, direct tax breaks as well as investment tax breaks have been selectively granted for some specific industries. The 1988 tax reform bill went a long way to remove such distinctions.

It would logically seem that these two arguments (viz., the U.S. government *does* or *does not* have an industrial policy) could be simply reconciled by agreement regarding what an industrial policy is and implies, and then applying that definition to government actions; but that agreement probably will not occur soon since embedded in both arguments are not-very-well-hidden political views that are served by keeping such a definition fairly loose and fuzzy.

4.2 THE VIEW FROM GOVERNMENT

4.2.1 The Executive Branch

4.2.1.1 Government policy fragmentation

The concern over the U.S. government's ability to deal with telecommunications competitiveness is not limited to the telecommunications industry. Alfred Sikes addressed the situation this way:

> Markets are changing rapidly, technology is changing rapidly, corporate structures are changing rapidly. We are going from a domestic to an international marketplace.
>
> As those things are swirling about, we in government, within the judicial branch, the executive branch or the legislative branch have to be prepared to adapt quickly. If we can't adapt quickly, then we can't expect companies to adapt quickly.[8]

Reflecting the views of some members of the telecommunications industry that telecommunications policymaking should be consolidated within one executive branch government agency, Sikes, nevertheless, has some important modifications:

> What I'd like to see is a communications organization of a consolidated nature in the Commerce Department under an undersecretary of commerce. That would be the principal executive branch communications agency.
>
> It would act in an interagency context. If you had a communications issue that involved national security, the Defense Department and the [National Security Council] and others would want to participate in making a decision. If you had a decision that regarded trade policy, then the U.S. Trade Representative's office would want to participate.
>
> The president is elected as our chief executive, as our commander in chief, and we can't have a regulatory agency making decisions that involve national security policy, trade policy, and international competitiveness policy when it should be the president and his agencies that make those decisions.[9]

Thus, the inherent pluralism of the U.S. government's executive branch interagency consensus process appears to pose significant obstacles to effective consolidation of responsibility for telecommunications policymaking including telecommunications equipment trade policy. On the specific level, it is necessary that each agency of the U.S. government be involved when international marketing of telecommunications goods and engineering services may impact on its responsibilities. Thus, for National Security matters (U.S. domestic export controls or international export controls such as CoCom), not only is the Department of Commerce involved, but also the Department of State, the Department of Defense and, depending on the nature of the commodity, possibly the National Security Council, Army, Navy, Air Force, NASA, Defense Communications Agency, the Joint Chiefs of Staff, and so on. This example does appear to confirm the industry's complaint that government's approach to the telecommunications is fragmented, causing confusion, delay and, ultimately, loss of business. Nevertheless, some

> The hard part is to make that intervention properly directed. When it becomes political, symptoms get treated and not causes. Well, wouldn't it be helpful to deal with some symptoms? Sure why not, but it doesn't fix the true problem. But if one is going to do that, then focus on the successful sectors to keep them successful.[7]

At the heart of the discussion are the possible political and economic consequences of an industrial policy to industry in general. The creation of an industrial policy also creates the expectation (not always realized) of government action. Action, in turn, implies planning, funding, and execution. All this means government resources, bureaucracies, decision making, regulation, and enforcement – in a word, *control*. Behind many of the telecommunications equipment industry's views in these days of "newly" won open markets and diminishing regulation is the concern that government involvement will, in some way, lessen the control the industry has over its own future.

Many countries have clearly-stated industrial policies that identify certain industries as "leading-edge" industries or as "industries vital to national growth and well being." The governments of these countries, with no apologies, provide overt support to their targeted industries in an effort to give them as much of an international competitive edge as possible. There appears to be, however, a great deal of confusion as to whether the U.S. government really does or does not have an "industrial policy." One argument states that the government does not have an industrial policy since, unless we are being misled, the policymakers of recent administrations have not only denied that there is any such policy, but have been eloquent in their philosophical opposition to even the idea of any distortions of free markets by means of industrial policies. No clear statement of such a policy has been promulgated and, without promulgation, no industrial policy could possibly be realized. In other words, how can an intentional policy be denied and be openly followed at the same time?

On the other hand, those who feel that the U.S. does have an industrial policy claim that an industrial policy can be made up of

in government argue that this approach is necessary to assure that all legislatively-mandated or executive-directed government responsibilities are appropriately carried out and, while all agencies that are involved may not be telecommunications experts, they are experts in their own fields.

4.2.1.2 Industrial policy

"Industrial policy" is claimed to be antithetical to the belief that the best economy is a free market economy. Recent administrations have held that philosophy and have expressed their views strongly on the "evils" of industrial policies. In October 1988, then-U.S. Trade Representative Ambassador Clayton Yeutter clearly exposed the Reagan administration's view of industrial policies in general:

> [A]round the world, governments are involving themselves in high technology development in ways that distort competition, creating problems that urgently need our attention. These problems take on a number of guises – subsidies, diverse forms of targeted government assistance, an array of restrictive measures hampering access, and unfair or non-competitive market practices. But, characteristically, they are reflective of extensive government intrusion, past and present, into high technology trade.[10]

In his testimony before the Hollings Committee in May 1989, Secretary of Commerce Robert Mosbacher presented his view and that of the Bush administration of the problems encountered with "industrial policies." In this testimony there appears to be some cracking in the ideological wall that was erected by the Reagan administration:

> [T]he reason I am against industrial policy is because, to me, it does mean that the government takes the lead, picks winners and losers, gets into the marketplace, and is a player all the way from R&D down through manufacturing.

4.2.1.3 Government trade promotion, outreach, and communication with industry

The U.S. government does have an effort at U.S. export trade promotion, as can be seen from the representative list in **Table 4-1.**

Addressing the view of some in the telecommunications equipment manufacturing industry that the government must do more to reach out to industry and communicate more, especially with small firms, James McCarthy, a trade development officer specializing in fiber optics with the International Trade Administration of the Department of Commerce has stated:

> I don't know that we do 100 percent, but the effort, I think, is there.... A couple of years ago, President Reagan – this was done under Secretary Verity – started the Export Now Program. Really, there was nothing new in it other than publicizing and highlighting the many programs we have, such as trade development people, like myself; overseas posts for companies that are unaware of the country [marketing details], but are aware that there is a market there, and they want appointments there or to be briefed on what's going on in that country; whatever.... This Export Now Program actually went so far as to have billboards in various cities.... You want to help but you don't want to be intruding. I think the programs are there – we have publicized them – but you can't necessarily reach everybody. Overall, we have tried our best. We have various trade promotion efforts. We have missions going to Eastern Europe right now.[13]

The results of these efforts, however, have been mixed. Even when special opportunities are created and contact with parts of the telecommunications equipment industry has been made through trade associations and chambers of commerce, at times the response has been less than enthusiastic:

Table 4-1

U.S. Government Trade Promotion Services

DEPARTMENT OF COMMERCE — ITA	
Export Counselling	Advice from ITA trade specialists in district offices and in Washington
Agent/Distributor Service	Help in finding foreign representatives for U.S. companies
Commercial News U.S.A	A monthly magazine that promotes U.S. firms to potential representatives and customers
Comparison Shopping	Provides firms with key marketing information about specific products
Foreign Buyer Program	Promotes world-wide trade shows to provide opportunity for U.S. firms to meet potential customers
Trade Opportunities Program	Provides current sales leads from overseas firms
World Traders Data Report	Custom reports that evaluate potential trading partners
Overseas Trade Missions	Opportunities for U.S. firms to confer with foreign business and government officials
Overseas Trade Fairs	Commerce Department creates a U.S. presence in which U.S. firms can participate
Matchmaker Events	Offer introductions in new markets for joint ventures or licensee partnering
Export Trading Companies	Programs of conferences, workshops, and presentations on forming export trading companies and export management companies
DEPARTMENT OF COMMERCE	
Other Agency Services	Export licensing assistance; help in meeting foreign standards; help with foreign metric requirements; help for Minority businesses in exporting
U.S. EXPORT-IMPORT BANK	Export loans, guarantees, insurance
AGENCY FOR INTERNATIONAL DEVELOPMENT	Export opportunities arising from U.S. foreign aid
SMALL BUSINESS ADMINISTRATION	Export counselling, financial assistance
U.S. TRADE REPRESENTATIVE	Deals with unfair trade practices
OVERSEAS PRIVATE INVESTMENT CORPORATION	Political risk insurance, financing in developing countries
TRADE AND DEVELOPMENT PROGRAM	Funds feasibility studies for public and private sector projects in developing countries

Source: U.S. Department of Commerce, International Trade Administration, *Business America*, vol. 109, no. 7, 1988 Special Edition, data drawn from pp. 8-11.

> What I have said before and what I firmly believe is that we do need to work on industry-led policy, which means that the government encourages industry; does, under certain circumstances, help them with the cutting edge R&D as a sort of a seed money approach in the things that are further out in front; but that the decisions as to what the priorities are and how it should proceed from there should be private sector industry decisions – not government decisions.[11]

On an issue as contentious as industrial policy, it is probably not too surprising to find other opinions in the executive branch:

> I'm very dissatisfied when I see the market being twisted by other people's subsidies and we claim that, "That's fine because they're wasting their money." That's such a humongous assumption that affects so many lives that I'm not comfortable with just sitting back in an ivory tower and making that assumption. Can't argue with it, but I don't feel it. I think the idea that the rest of the world is stupid and we're going to outlast them and win in the end because they are going to spend themselves into poverty is ... not a comforting thought. It is ideologically a very comforting thought to somebody who wants to keep government spending low and keep the private sector dominant. But I don't happen to feel that the market mechanism works so perfectly and unobstructedly that one can just say "I don't care what industries we have left, we'll go to the ones that people aren't subsidizing and we'll make a better living off of those." ... It might work, but it seems to be a hell of a risk.[12]

Once again, it appears that there is a certain pluralism operating in government and that pluralism can be expressed in diverging opinions. The philosophical tone may be set by the president and his appointed administration, but the structure of government is such that for any specific case, issues can be decided on the battlefield of interagency coordination, with rare cases taken to highest levels for decision. Even issues as philosophically fundamental as industrial policy can have, within the same government, proponents of all persuasions.

> I'll give you a for instance. The people up at the ETC [Export Trading Company Program], went around to each of the industry specialists – industry clusters – and asked for volunteers. [With] fiber optics, we have a few big companies and hundreds of small start-up companies and I said, OK, let's try it with fiber optics. I lined up at least one meeting with the trade association in the area [and] had a representative from that office [the trade association] go to that meeting. I went to that meeting and also gave them the name of a State fiber optics association [to invite]. As far as I know, there was just no interest. And here is something that allows several small companies to band together. They could have [found] a leader of the group that is more experienced in international trade; the risk is not that great, you're not going out on your own, you're not putting yourself out there for financial ruin by participating in this program. And, at least in fiber optics that, as far as I know, has not worked. But we did try.[14]

Thus, at least from some in government the communication issue is a two-way street. Government outreach will certainly be discouraged if the impression is left that no one in equipment industry is interested. Of special concern is the lost opportunity for the Commerce Department to broker relationships between more experienced exporters and firms less experienced in the process. If one excludes proprietary information, the exchange of cultural, business, and procedural information could have a very big payoff from one company in the telecommunications manufacturing and export industry in the U.S. to another, thus enhancing the competitiveness of that industry as a whole.

4.2.1.4 Trade policy

A specific example of an existing government trade policy that affects the telecommunications equipment industry is in order. A provision of the 1988 Omnibus Trade and Competitiveness Act required the Export-Import Bank (ExImbank) of the United States to study the problem of tied-aid credits.* In the cover letter accompanying the April 20,

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* Tied-aid credits are defined by the ExImbank as: Loans or grants containing a "concessionality level" of greater than 0 percent which are tied to procurement of goods and services from the donor country.

1989, report of the study to Congress, William F. Ryan, the acting president and chairman of the ExImbank stated:

> A key reference point for understanding the [tied-aid credits] issue is that U.S. exporters are not facing illegal or discriminatory foreign practices. In response to Congressional legislation the U.S. intentionally shifted its AID [Agency for International Development] focus in the early 1970s away from capital-goods-intensive infrastructure and toward basic human needs. The 1973 "New Direction" legislation required AID to focus its resources on areas fundamental to a developing society, such as agricultural production and improved health/education programs. Our major trading competitors did not follow suit. They continued to fund telecommunications, power, and transportation projects in the developing world at concessional rates, a practice many foreign governments consider a reasonable method by which to support economic development and one within their "rights" contained in international agreements. In addition, AID is not active in the countries, such as China, whose markets are most "spoiled" by tied-aid credits. As a result, since the mid-1970s U.S. exporters have been expressing concern that this lack of "project money" is shutting them out of important markets in the LDC [lesser developed countries] world.[15]

It is thus the view of the Administration that in one sense, there is no problem since "U.S. exporters are not facing illegal or discriminatory foreign practices" when other countries use tied-aid credits as sales inducements. It is interpretable from the above excerpt that even if tied-aid credits are a problem, it is not an Executive Branch problem

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Concessionality level is defined by the ExImbank as: The difference between the nominal value of a loan and the discounted present value of the future debt service payment to be made by the borrower, expressed as a percentage of the nominal value of the loan. The discount rate is differentiated by currency.

In general, tied-aid credits can be looked at as a loan or grant made to a country on the condition that the receiving country purchases certain goods or services from the donor country. These credits would certainly act as an incentive to purchase the donor country's goods over those of a country not offering such credits.

since AID's practices have taken direction from Congress-passed legislation.

The ExImbank report itself focused on specific industries, among which was telecommunications. From case studies, it found:

> The foreign tied aid credits identified in this report cost the [telecommunications] industry between $350 million and $1.0 billion in lost sales since 1985, and has directly limited LDC market access for six of the companies interviewed.[16]

The report also cites figures from the International Bank for Reconstruction and Development (IBRD):

> During the period between 1985 and 1987, the IBRD authorized financial support for telecommunications projects requiring the purchase of nearly $2.1 billion in equipment from international suppliers, of which bilateral donor agencies finances $771.5 million. Practically all of this bilateral "co-financed" portion was provided as tied aid credit support. The U.S. has not been able to participate in the co-financing of telecommunications projects because U.S. companies could not compete without matching similar support for U.S. exports.[17]

Despite the acknowledged impact on the telecommunications equipment industry in the U.S. of the above, the report finds no overarching national U.S. objective that can justify the expenses associated with a change in tied-aid policy in general:

> [T]his analysis does not find that the facts available on tied aid credit practices and effects establish a clear case of need for a priority call on public expenditure. While foreign tied aid practices may be costing the U.S. several hundred million dollars of lost exports and doing possible damage to certain sectors, few would advocate indefinitely spending 35 cents of taxpayer money per one dollar of "reclaimed" export without a clear explanation both as to how such expenditure connects to a major/critical national objective and why that objective is sufficiently important to merit such an expensive action.[18]

4.2.2 Congress

4.2.2.1 Industrial policy

Some in Congress believe that development of a "telecommunications trade policy" is an important, perhaps essential, step toward securing U.S. competitiveness. When the term *telecommunications* is added to the phrase *trade policy*, it would appear that the essential industry targeting is present for that phrase to be considered to be synonymous with the phrase *industrial policy*. While it is undoubtedly a politically partisan issue, it would be misleading to dismiss Congressional concern as merely "politics as usual." Actual legislation is in force, in the telecommunications provision of the Omnibus Trade and Competitiveness Act of 1988, that could be considered to be a full-fledged industrial policy. Representatives Dingell (D-Mich.), chairman of the House Committee on Energy and Commerce, and Markey (D-Mass.), chairman of the Subcommittee on Telecommunications and Finance have stated: "If the U.S. is to compete successfully in international markets, it is essential that Congress and the Administration develop a coherent and coordinated telecommunications policy."[19]

A further mark of how important many in Congress believe the issue of competitiveness and industrial policy to be is the large number of hearings held by a broad range of committees dealing with one aspect or another of telecommunications policy. During one of these hearings, held by the Senate Commerce, Science and Transportation Committee in May 1989, Senator Rockefeller, responding to comments by Commerce Secretary Mosbacher, commented:

> ... I recognize that "industrial policy" is a bad word. I recognize that the previous administration had a feeling that if industry is simply unleashed to do what it does best, that we will solve our problems. On reflection, I'm not so sure that's anywhere near the truth at all. And I'm not so sure, Mr. Secretary, that you believe it's anywhere near the truth at all.

> My point to you, rather than my question, I suppose, would be one that both Senator Gore and Senator Kerry made. And that is that – I think it's come to a point in this country where collaboration however one wishes to phrase it – is not only essential but perhaps lifesaving in terms of our fundamental manufacturing. I would hope that the ideologies of private enterprise – "don't let the government do it" – they say, "Don't let the government do it," but when they get in trouble, they come.[20]

It seems that at least some members of Congress not only believe that some sort of telecommunications industrial policy should be set, but also doubt that even the most vocal proponents of free market competition have as much conviction as they may claim.

A number of bills have been introduced in Congress that are designed to address some of the very issues the telecommunications manufacturing industry in the U.S. believes are important. Among these is the "Aid for Trade Act of 1990," a package of legislation introduced by Senators Boren and Bentsen which, among other things, calls for an increase by 1996 in the percentage of "bilateral economic assistance" to be used for the "construction, design, and servicing" of capital projects to 40 percent. This is a major reversal of the 1973 "New Direction" legislation, which redirected economic assistance to "human needs" projects.

The bill also calls for a decrease in "cash transfers" in bilateral economic assistance to 10 percent in 1996 and for "cash transfers" in "Economic Support Funds" to 30 percent in 1996. "Cash transfers" are defined as cash payments which are not used for the purchase of U.S. goods and services or the repayment of debt owed to the U.S. government. In other words, a considerably higher amount of aid will be tied to the purchase of U.S. goods and services if this bill becomes law. While its future is unknown as of this writing, it is clear that if the bill passes, it could be significant for the overseas marketing efforts of capital projects industries such as the telecommunications equipment industry. The view remains, however, that allocation of funds under this or any other legislation should be accomplished in pursuit of some

well defined national objective. If this is not kept in mind, money could be indiscriminantly thrown at a problem resulting in waste.

Senator Glenn has proposed a legislative package that would address several of the industry's concerns. It calls for

- Reorganizing the Commerce Department as well as changing its name to the "Department of Industry and Technology";
- Placing economic Cabinet Members on the National Security Council;
- Elevating the president's Science Advisor to the same status as the National Security Advisor; and
- Establishing an "Advanced Civilian Technology Agency" to provide seed money for long-term, generic R&D.

Similar, far-reaching legislation has been introduced into the House of Representatives.

4.2.2.2 Interbranch contention

There are strong, internal conflicts among the branches of government, with Congress at the center, regarding the setting of telecommunications trade policy. In his remarks introducing HR 2140, the Consumer Telecommunications Services Act of 1989, which attempts to overturn the proscription on equipment manufacturing for the BOCs which was included in the Modified Final Judgment of Judge Greene, Representative Swift of Washington expressed this view:

> If we were to design a regulatory system for communications, it is very unlikely that we would end up with the system we have now. Having a district judge making telecommunications policy based strictly on the narrow focus of antitrust law is inherently unfair to the democratic process. It is also an irrational way to set long-term policy goals for our Nations's telecommunications infrastructure. We need to encourage the development of universal information services for the American consumer; and we need to unleash more competition in telecommunications services and manufacturing to improve our international competitiveness.[21]

The message in this is plain: The Judicial Branch of the government should not be involved in setting telecommunications policy and, by

inference, the power to determine U.S. government policy should be returned to the Congress. Clearly, this expresses concerns for jurisdictions and perogatives.

The Executive Branch does not escape Congressional criticism. Representative Markey makes a direct albeit somewhat satiric point:

> "Our nation needs to recognize that our future is tied directly to our ability to compete successfully in the burgeoning international telecommunications market," Markey said. He said the Administration's refusal to provide all-out support for new technologies such as HDTV is short-sighted and blamed Budget Director Richard Darman for "budgetary solutions ... somewhat akin to a doctor who recognizes the disease but refuses to order any meaningful treatment. Over the last 9 years we have travelled a straight line from voodoo economics to economic 'Darmanism' – a theory that refuses to recognize any role for the national government in nurturing and supporting critical emerging technologies."[22]

Such divisions within government, while by no means unprecedented and perhaps even constitutionally required through the principle of "separation of powers," only reinforce the impression from outside government of a divided and fragmented effort more directed toward protecting turf than toward solving difficult problems.

4.3 OTHER VIEWS

Voices from outside government and industry have also been added to the debate regarding the U.S. government and telecommunications. The *Los Angeles Business Journal* quotes University of Southern California professor William Dutton on "industrial policy" and telecommunications:

> "In France, West Germany and other advanced industrialized nations, the public sector is subsidizing the development of new telecommunications networks as a centerpiece of industrial policy," says Dutton. "But in the United States, the private sector alone is responsible

> for the development of public communications. We have no national industrial policy."[23]

Dutton's view focuses on the problem in a slightly different way. He claims that in the United States there is no overall national industrial policy which has telecommunications as its "centerpiece," as exists in other countries. He is, therefore, not discussing a "telecommunications policy" or a "trade policy" as members of industry and government might, but rather an umbrella approach to commerce as a whole in which telecommunications is highlighted.

Diagonally across the country, discussing U.S. competitiveness in general, the Massachusetts Institute of Technology's Commission on Industrial Productivity, in the report of their two-year study on U.S. competitiveness, approaches the problem in roughly the same "umbrella" way while highlighting what it perceives to be the "adversarial" relationship between the U.S. government and industry. Even though the M.I.T. study did not focus on telecommunications specifically, the general findings of the study are very applicable to the debate over telecommunications, and thus I shall highlight them here.

The M.I.T commission makes a specific proposal for government-industry cooperation and suggests how, in the commission's view, their suggested approach to such cooperation would differ from industrial policy:

> More generally, our industry studies provide further support for the view that the American economy exhibits a lower level of cooperation among business, government and labor than any of its major competitors. And however qualified our conclusions about the role of industrial policy in the successes of those competitors, what we do find significant is that closer cooperation has established a favorable climate for strategic and organizational change. Such cooperation may be stimulated by government and may even look like industrial policy, but we believe it is different.

> Traditionally, U.S. industrial policy has involved the government in the design of national or sectoral policies, and industry and labor are brought into the process only to obtain information or to facilitate implementation of the government's grand design. In contrast, the cooperative arrangements we found to have been significant are characterized by power sharing, negotiation, and collaboration at all stages of the process. Equally important, the cooperative patterns differ from industrial policy with respect to what government provides. In the cooperative case, government facilitates the cooperation of many potentially divergent interests in projects from which all parties can benefit. In the case of traditional industrial policy, government action characteristically selects one firm or a few firms to receive subsidies and protection.[24]

It is, of course, not clear how government would defend such a policy of "cooperation" to foreign interests while still holding to the philosophy of the "free market." Nevertheless, this proposal dovetails rather nicely with some of Secretary of Commerce Mossbacher's comments mentioned above.

4.4 YES, BUT WHAT IS GOVERNMENT DOING?

4.4.1 Negotiating

Even though there may be no coherent or overall "industrial policy," the U.S. government is addressing telecommunications trade imbalances. As is usually the case, only a limited number of choices are available. If one rejects active support to U.S. telecommunications companies, an effort to "convince" other countries to open their markets to free trade may be all that is left to do. As Ambassador Yeutter so dogmatically stated: "No, the answer is not to join the sinners, but to reform them."[25]

Under the telecommunications provision of the Omnibus Trade and Competitiveness Act, the U.S. government can take a year to negotiate an end to perceived unfair foreign trade barriers raised against the telecommunications industry in the U.S. The reason that industry

segment was given special consideration was the rather prevalent view in Congress that foreign telecommunications equipment industries were given access to our markets under the court-ordered divestiture of AT&T, and the further view that other countries had not sufficiently reciprocated. If the required negotiations are not successful, the act gives the president relatively strong retaliatory powers.

The president's powers are exercised through the U.S. Trade Representative (USTR). It is the USTR's responsibility to negotiate the lowering of trade barriers with other countries and to recommend appropriate retaliatory actions to the president. Carla Hills, the USTR in 1990, expressed her view of her responsibilities in a very straightforward way. "Our goal is to capture the attention of our trading partner, and open markets. And we do that through consultation, through 301 retaliatory action,* through every means at our disposal."[26]

The Japanese have been the target of much rhetoric regarding trade barriers, but there does appear to be some progress in telecommunications. In June 1989, agreement was reached in USTR negotiations with Japan to open the Japanese cellular telephone market to Motorola by allocating frequencies for cellular communications that can be employed by the Motorola system. This will allow Motorola to market its equipment and the agreement will give them access to at least 40 percent of the two-way radiotelephone licenses in Tokyo. Claims by some in industry should be noted, however, that the reason for the U.S. success in this area was Japan's desire to avoid threatened U.S. sanctions for its failure to fully honor the 1985 Market-Opening-Sector-Specific (MOSS) agreements.[27]

Besides progress in negotiations, there may be some evidence that sales to Japan from U.S.-based telecommunications equipment firms are beginning to grow. An article in the September 1989 issue of *Chief Executive* featuring an interview with NTT's president, Haruo Yamaguchi,

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* The Super 301 provision of the Omnibus Trade Act of 1988 calls for retaliatory action to unfair trading practices.

points out that NTT's overseas purchases rose from $19 million in 1982 to $330 million in 1988 and that the latter figure represented purchases from U.S. firms.[28]

4.4.2 Active Assistance

In addition to negotiating a lowering of overt and hidden trade barriers, some claim that the U.S. government does assist industry more actively. Professor Dutton points out some U.S. government active involvement:

> Dutton notes that the U.S. government is only indirectly subsidizing the telecommunications industry. First, tax allowances provide incentives for investment in cable and other telecommunications networks. Second, private electronics, computer and communications companies benefit from the billions of dollars funneled into military research and development through spin-off technologies.[29]

In addition, many foreign critics of U.S. policy are quick to point out the large amount of publicly financed research performed at U.S. national laboratories,* through grants to nonprofit institutions, or contracted to private organizations. The claim is that the U.S. government increasingly shares the benefits of that research with U.S. industry either directly or through their contract relationships:

> A popular fallacy has it that West Germany and Japan subsidise industrial R&D more than America does. Quite the opposite. In West Germany the public sector and non-profit organisations together provide about 35% of R&D money; in Japan the figure is 30%; while in America it is over 50%. What really sets West Germany and Japan apart is the small sums they invest in war and peace. Defence-related R&D spending in West Germany is less than 15% of the federal R&D budget; in Japan the figure is only 3%. In Britain it is about 50% and in America over 70%.

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* They note not only the large, well-known labs such as Los Alamos or Lawrence Livermore, but the civil (e.g., Department of Agriculture, Department of the Interior, or NASA) and military (e.g., DARPA, The Air Force's Rome Air Development Center, the Army's Harry Diamond Laboratory, or the Navy's Naval Research Laboratory) as well.

> There is no doubt that military R&D can spin off and benefit civilian research (or that some "military" research, especially in America, is civilian in all but name).[30]

Nevertheless, despite all this purported government R&D aid and the questionable future of military R&D in the U.S., many find it to be extremely doubtful whether the advantages enjoyed by foreign telecommunications industries, as a result of publicly-funded and government-programmed efforts, can be overcome.

4.5 WHAT ELSE IS POSSIBLE?

Despite his strongly stated opposition to "industrial policy," Secretary of Commerce Robert Mosbacher does believe that there are other things which government can and must do:

> We simply cannot afford to let our industries lose in the race because of public policy factors which are under our control. I'm against a government-led industrial policy. I support and strongly recommend an industry-led change. We do need to look at our antitrust policies, capital gains tax revisions, easing the cost of attracting capital, and other changes that may be needed. We must work together and act together to meet the competitiveness challenges of the new world trading system. This is what I mean by economic security. Together the executive, the Congress and, most of all, our private producers, as well as the people of the country, can meet and beat any challenges they see and understand.[31]

Digital Equipment Corporation has called for an "Information Age Model" since: "...trends in key telecommunications and trade policies can be predicted with certainty. These changes will inevitably present important opportunities to reshape and redirect U.S. policies for the Information Age."[32] Despite the questionable assertion of "certainty" in so volatile a business as telecommunications, the model they propose deserves some attention if for no other reason than that it attempts to approach the problem analytically as opposed to the more commonly seen general problem statement:

> As an initial effort to provoke discussion and debate, DIGITAL offers a proposed set of five basic principles that should form the basis for a new telecommunications and trade model. First, trade policy and telecommunications policy must be complementary. Second, policy issues must be addressed in terms of a broad Information Age marketplace rather than focusing unduly upon narrow service or product components. Third, approaches to promoting U.S. access to foreign markets must be examined in terms of their compatibility with the evolution of national regulatory policies. Fourth, pursuit of U.S. objectives requires a cost/benefit analysis of the practical short-term and long-term consequences for telecommunications and trade interests. Finally, the effective development and implementation of a sound Information Age policy requires a commonly developed industry/government vision of technology and the marketplace.[33]

The M.I.T. Commission on Industrial Productivity lays out nine broad, relatively non-specific steps that they believe the U.S. government should take to improve the lot of U.S. competitiveness in general:

- The federal government should pursue macroeconomic policies that reduce the cost of capital for private investment. This will require measures to increase private savings and reduce the federal budget deficit.

- The federal government should continue to press for removal of trade restrictions and for equal access for U.S. firms and products to foreign markets.

- The federal government should adopt programs for K - 12 education that will lead to greater technological literacy. This will enable a larger fraction of citizens to participate in and benefit from more productive working careers.

- The government should encourage continuous education and training for the U.S. work force, with special attention to the increased participation of women, blacks, and Spanish-speaking Americans.

- The federal government should endorse and seek to diffuse labor-management cooperation and worker participation in both union and nonunion settings. This will require enforcing current labor laws and modifying them to allow for more varied and flexible forms of participation and representation than were envisioned when the current law was initially adopted in 1935.

NOTES

1. Lionel Olmer, former Undersecretary of Commerce for Trade, interview with author, May 10, 1990.

2. U.S. government executive, personal communication.

3. "Bellcore President Says U.S. Technical Leadership Threatened by Investment Pressure, Government Policies," PR Newswire, May 8, 1989.

4. Digital Equipment Corporation, "U.S. Telecommunications and Trade Policies: The Need for an Effective Information Age Model," paper presented at the October 1988 Airlie House Conference, 28.

5. See note 1 above.

6. Statement of Jack Kuehler, vice-chairman, IBM (May 9, 1989) before the Senate Commerce, Science and Transportation Committee as reported in Federal Information Systems, Federal News Service, May 9, 1989, Commerce and Trade section.

7. Michel Guité, vice-president, Salomon Brothers, interview with author, June 14, 1990.

8. Interview with John Gallant and Anita Taff by The Communication Channel, recorded and shown at Communication Networks Conference and Exposition '89, February 6, 1989.

9. Ibid.

10. Remarks by Ambassador Clayton Yeutter to the Dataquest Semiconductor Industry Conference, San Diego, California, October 17, 1988.

11. Statement of Secretary of Commerce Robert Mosbacher before the Senate Commerce, Science and Transportation Committee as reported in Federal Information Systems, Federal News Service, May 9, 1989, Commerce and Trade section.

12. U.S. government executive and economist, personal communication.

13. James McCarthy, Department of Commerce, interview with author, May 30, 1990.

14. Ibid.

15. Export-Import Bank of the United States, *Report to the U.S. Congress on Tied Aid Credit Practices*, April 1989, cover letter.

16. Ibid., 219.

17. Ibid., 219–20.

18. Ibid., 222.

- The federal government should continue investing in basic research and should provide adequate support for operations, equipment and modern facilities.

- The federal government's support of research and development should be extended to include a greater emphasis on policies to encourage the down-stream phases of product and process engineering and to clear any current obstacles to innovation.

- The government should encourage the establishment of a national information infrastructure.

- The federal government should heed the many voices calling for greater efficiency in military research and development and military procurement to minimize the financial and human resources required to meet national-security needs.[34]

As is often the case, however, no matter how well considered or sensible the advice and no matter how fair-minded and cooperative the bureaucrat, it is not always an easy matter to implement programs that take such fundamental points into account. Putting together political coalitions that will accept costs or changes to already on-going programs or reallocation of resources from one constituency to another can present herculean obstacles.

CHAPTER FIVE

WHAT ABOUT INDUSTRY?

We can modify the joke that began chapter four:

QUESTION *What are the three greatest lies in the world?*

ANSWER
- *"The check is in the mail."*
- *"Of course I'll respect you in the morning."*
- *"Hi! I'm from the best telephone network in the world and I'm here to help you."*

The telecommunications manufacturing industry in the U.S. has been the object of a great deal of criticism from many directions including the U.S. government, foreign industry/governments, and from within U.S. Industry itself:

> Is the U.S. telecommunications [industry] competitive? Absolutely! In every sense of the word. But how it competes, however, is another question. It has learned to fit the suit of clothes it has been given and, to a certain extent, that it has sewn for itself.[1]

It has been accused of being

- U.S. ethnocentric and not understanding the international marketplace;
- Dominated by the financial aspects of business leading to short-term planning and operations horizons;
- Lulled into complacency by the size of large markets, especially the U.S. market; and
- Passive in the search for new technologies, markets, and products – and through technology transfer, selling off current "assets" only to develop future competitors.

The above is quite a bill of particulars in an overall indictment. This chapter will examine these in some detail.

19. Ibid.

20. See note 11 above.

21. Congressional Record, 101st Cong., 1st Sess., April 27, 1989, 135 Cong. Rec. H1434.

22. "Game Plan for 1990," *Communications Daily* 9, no. 237 (December 11, 1989), 6.

23. "Market-Driven Orientation of Telecom Could Impede Progress of New Research," *Los Angeles Business Journal* 9, no. 38, sec. 1 (October 12, 1987): 25.

24. Michael L. Dertouzos et al., The M.I.T. Commission on Industrial Productivity, *Made in America: Regaining the Productive Edge* (Cambridge, Mass.: The MIT Press, 1989), 111-12.

25. See note 10 above.

26. Statement of Ambassador Carla Hills (USTR), March 2, 1989, before the Oversight and Investigations Subcommittee of the House Energy and Commerce Committee as reported in Federal Information Systems, Federal News Service, March 2, 1989, Commerce and Trade section.

27. Stuart Auerbach, "Japan Agrees to Open Cellular Phone, Radio Markets," *Washington Post*, Thursday, June 29, 1989, Financial section, Final Edition.

28. "The Struggle for NTT," *Chief Executive*, no. 53 (September/October 1989).

29. See note 23 above.

30. "Ein Wissenschaftswunder?" *The Economist* 313, no. 7628 (November 11, 1989), 103.

31. See note 11 above.

32. DEC, "U.S. Telecommunications and Trade Policies," 5.

33. Ibid., 2.

34. Dertouzos et al., *Made in America,* 152-55.

5.1 MISUNDERSTANDING THE MARKET

5.1.1 Ethnocentrism

The charge is leveled that, in general, Americans don't adapt very well to overseas cultures. Born of our post-World War II success and technological leadership, perhaps we have developed the view that "our ways are the best ways." The joke with which we opened this chapter is a paraphrase of the telecommunications equipment industry legend that describes a high-ranking executive of a U.S. telecommunications firm who, when meeting with the president of a major overseas customer told him that the U.S. telecommunications network is the best in the world and that, on that basis alone, the customer should purchase his unmodified equipment with the promise that modifications would be discussed later. The U.S. executive clearly had the expectation that the customer would be willing to take on the risk of a possible total redesign of his network – thereby scrapping the already installed base – simply to obtain the U.S. equipment. Imagine the U.S. executive's surprise when he was politely, but firmly, asked to leave.

This legend, whether true or not, provides some insight into the charge that U.S. manufacturers of telecommunications equipment are not accustomed to seeing the marketplace from an international viewpoint. No matter how wonderful the U.S. telecommunications system may be, it is not sufficiently the "better mousetrap" to induce world customers to "beat a path to the door."

5.1.2 Cultural Awareness

How one conducts business in the international market is of extreme importance. It is perhaps, by now, a banality that good international marketing requires knowledge of the customer: his cultural biases (don't show the bottom of your foot to an Arab), his national or regional imperatives (trying to sell refrigerators to Eskimos), his national history, his educational background (is he an engineer or a history major), and on and on. It may be commonplace to say these things, but the U.S. telecommunications equipment manufacturing industry

is, generally, accused of not being capable or experienced enough to handle these points.

For example, it is often said that because European countries are so close to each other and are so interdependent on each other that Europeans must be multilingual to survive economically. The argument asks: In a global marketplace, has not the distance between the United States and other countries so shrunk that, "in order to survive," we also must become multilingual? It has been easy for Americans to point with pride to the fact that, by the postwar period, English had almost totally replaced French as the international language (ironically becoming the Lingua Franca). We could be comfortable knowing that when we acted internationally, we would probably find someone there who could speak English well enough for the conduct of business. Of course, deep down, we admired that multilingual ability, but also deep down, we felt we had "one up on him" because he was speaking our language. Nevertheless, are there many U.S. corporate international representatives who have not encountered the uneasy feeling that comes over one when, across the negotiating table, the customer's representatives confer relatively loudly among themselves in their own language, feeling secure that the other side of the table has no clue as to what is being discussed? Who has "one up" on whom? Is it banal? Probably. But has the industry taken that banal advice to heart?

5.1.3 Equipment Modification

It costs a lot of money and time – sometimes millions of dollars and months of work – to modify equipment to foreign standards or other network requirements. This is at the heart of the view that national or PTT standards cause problems for the telecommunications equipment industry in the U.S.:

> That's one thing about the U.S. market – we talked about it being 20 to 25% of the global market – it also only takes one adaptation to get into that market. Europe also is 20 to 25% of the market, but it takes 12 and sometimes more than 12 adaptations to get into that market. That's a very expensive market and it's going to be reflected in your margins.[2]

European and Far Eastern government negotiators have claimed that the U.S. telecommunications equipment manufacturing industry is reluctant to take on the expense of modification, preferring to suggest that changes in national standards be made to accommodate U.S. equipment. The industry replies that any reluctance to modify on its part is due to the high risk of not gaining sufficient market share to cover the cost of the modification. Out of this situation comes the U.S. industry's counter-charges of "standards as market barriers" and U.S. industry's apparent inability to influence standards making in foreign countries. The argument goes on to say that it may be the industry's reluctance to adapt that is closing them out of many markets. The Industry in the U.S. replies that after a cost vs. potential revenue and market size analysis, some markets are not worth pursuing and the markets that are closed are closed for reasons other than a reluctance to adapt equipment.

5.1.4 The Other Side

When we discuss the telecommunications equipment industry in the U.S., it would certainly not be accurate to think only of AT&T, but it is clear that AT&T's success or lack thereof influences a great deal of the success or lack of success of the telecommunications manufacturing industry in the U.S. as a whole. The other big player in the U.S. is Northern Telecom, and again, whether one thinks of Northern Telecom as a U.S. company or not, its international success is a major influence in the perceived success of the telecommunications manufacturing industry in the U.S. Thus, practically, the defense against the charges tend to center around these two corporations whether that defense comes from the companies themselves, their competitors, financial people, or from trade associations.

In 1925, in order to be able to pursue a virtual telephone monopoly in the United States, AT&T divested its international manufacturing holdings. Out of this divestiture was born ITT, whose international telecommunications holdings are now part of the Alcatel empire. Thus, the irony of the situation is that *the* U.S. telecommunications company that began with an international view had to wait for 50 years before

becoming a neophyte in international marketing. Replying to charges of excessive U.S. focus in the industry, Teresa Evert stated:

> I think that accusation comes as a result of AT&T's being late to the international market and having a rather steep learning curve. In 1979-1980 we were brand new boys on the block. We had a lot to learn. We were a U.S. company, period. We had no international experience in the network equipment business. We had a lot to learn. So, I think that accusation comes from our naïveté when we first entered.[3]

Given the new entry of AT&T into the global marketplace, after having thrived in the relatively protected marketplace of the United States for all those years, it should not be surprising that the company would have narrow views of international marketing and that those narrow views would be from a largely U.S. perspective. It would then be reasonable to ask: OK, it has been a number of years since AT&T has entered the global marketplace, so what are they doing to improve their global outlook?

> Three or four years ago, Allen [chairman of AT&T], through some work that was done by Corporate folks, came out with a three-prong AT&T strategy, which is publicly available.... He said that in order to be successful in the future, we have to do three things: We have to concentrate on our core products and services; we have to concentrate on data networking; ... and the third was international globalization. So those were the three major ones and, of course, international – AT&T had sold off international operations in the twenties and became strictly a domestic company, and now we felt that in order to succeed in the future we have to go international, and that's a big portion of our strategy.[4]

When asked why AT&T was unwilling to modify equipment for sale and installation in foreign networks, the reply was that it definitely was not an unwillingness to modify. But it is not as simple as the charge makes it sound:

> It is not easy to make a 5E [AT&T's switch, the 5ESS] here in the U.S. and sell it overseas. We have done it for an initial sale, but there is not a large export market for this type of product. There are some products you can make in the U.S. and sell abroad – cable connectors, for example (and even those require type approval). We have learned that the problem is more complex and that modifications must be done for every customer, in every country. And it may make the most sense to do those modifications as close to the customer as possible.
>
> We have found that it is not just as simple as adapting the 5E to CEPT standards and then selling it. You have to adapt the 5E to every single country and that application's (e.g., local, toll, gateway) requirements every time you enter a new country. What we put into Spain is going to look very different from what we put into Holland which is going to look very, very, very different from what we put into the U.K. because of modifications necessary to meet different customer requirements and different national standards. So it's not that simple.
>
> The Europeans have lived with these differences longer than AT&T. When AT&T entered Europe, European companies had already completed that R&D; they already had their adaptations in place because they grew up with these differences. We had to, all of a sudden, dump a lot of money into that research, into that development and adaptation. Because we were the new kids on the block, however, we learned very quickly that it would cost a lot of money to do adaptation for every switch in every country.... We're getting a lot more realistic about what it is going to cost and are very aware that these costs will be very high, at least for the next few years. Now we hope the Germans and the French will open their markets as quickly as the U.S. opened its market to German and French suppliers.[5]

The question then remains, has all this learning been effective?

> Fundamentally, there is no evidence that I know of that would show that the U.S. leading manufacturers in the biggest sectors of telephone equipment – like central office switching or transmission equipment or office customer premises, PBX-type equipment – are less

> efficient or are achieving less success compared to other global competitors in off-shore expansion or are any more under pricing pressure than any one else globally. So, I think it is pretty clear that AT&T and Northern Telecom – I would reverse the order in fact if we were to talk about who is doing even perhaps a shade better job than the other – Northern and AT&T are probably the lowest cost producers world-wide of digital central office switching, digital PBXs, and are the world-wide leaders in intelligent network functionality and software; and since that is the biggest market there is world-wide in telecom equipment, I couldn't possibly conclude that they are disadvantaged when compared to NEC or Fujitsu on the Japan side or Lucky GoldStar, ... Ericsson, Philips, Alcatel, Siemens, Plessey, – all those are not in any stronger position than AT&T and Northern.[6]

If, when compared to their overseas competitors, AT&T and Northern Telecom seem to be doing so well, the argument states, we must conclude, at the least, that any ethnocentrism, cultural blindness, or unwillingness to modify that remains is not having a serious effect on their success and, at most, that the learning that AT&T needed to accomplish is, in fact, taking place.

5.2 PROFIT OR PERISH

5.2.1 Short-term Horizons

Bellcore's President Marano cites what by now has become conventional wisdom:

> "Economists and government officials blame the sagging fortunes of America's competitive ability on the high cost of U.S. capital and the restrictive application of antitrust laws," said Marano. "But more significant are the barriers we ourselves have created – barriers that are accelerating the decline in our ability to compete."[7]

He goes on to identify the "barriers" as a "now" mentality that is fostered by the "profit or perish" attitudes of Wall Street, the damage that leveraged buyouts do in loading corporations with debt, and a high

aversion to risk-taking. All of these result in cutbacks and delays in research and development which, in turn, stifle new products and services.

Another telecommunications equipment industry executive describes the "profit or perish attitude" slightly differently. He suggests that there has been a fundamental change in the goals of the industry. Once companies made products, and the reward for making good products was money. Today, it appears that the goal has become money and it makes as much sense to sell the *means* of making products to your competitors as it does to sell *products* simply because selling technology makes money.

In June 1989, a news article distributed by Japan's Kyodo News Service reported on a Ministry of International Trade and Industry (MITI) "white paper" which "presented a lengthy analysis of the U.S. economy, emphasizing the impact on international trade of its *distorted* industrial structure"[8] [emphasis added]. The article goes on to describe some of the "findings" of the white paper:

> [T]he paper said the U.S. needs to make adjustments in view of its poor productivity together with the profit-oriented management commonly practiced by U.S. firms.... The paper said U.S. corporate management tends to seek short-term profits rather than consolidate its operations..... Comparing the attitudes of American and Japanese shareholders, the paper indicated that many Americans want companies to make more efforts to raise the value of their stock, whereas Japanese seek a corporate approach aimed at growth and stability.[9]

Some in the Japanese telecommunications industry agree with this view. In response to a question regarding his view of U.S. Industry, then-president of NTT, Haruo Yamaguchi, echoes parts of the MITI comments:

> We should not forget that in many cases, Japanese managers try to look at long-term rather than short-term or short cycle profit. Somehow it seems that in the U.S., it is difficult for companies to invest long term.

> I do not mean all U.S. companies. But in many cases they say that they have to recover their R&D costs quickly. If we are investing a great deal of money for the development of new products, for instance, they say that this kind of development is too large.
>
> With Japanese companies, even if they have to make a red figure investment, if they think they will be able to recover that cost and profit in the long term, they will take that risk. This is the major difference between the two countries.[10]

The "profit or perish" attitude does not only exist in terms of corporate planning or R&D. There is a component of the "short-term" even in sales. One high-ranking U.S. telecommunications equipment manufacturing industry executive observes that it takes at least six years to develop a relationship with an overseas customer. Basically, that means that the elapsed time from the first contact with the customer to the first installation of equipment in the customer's network will be, on the average, six years. That six years translates into high investment costs with no return to offset them for a significant period of time.

For example, according to one estimate, it can cost upwards of $75 million to build a relationship with a Japanese customer; and to simply keep a U.S. company representative in Tokyo, it can cost in excess of 3/4 of a million dollars per year. But, because of short-term pressures, six years is too long for many companies. "Their time frame for anticipated success and financial results is way too short. They don't have the patience or the persistence to succeed. They take a one-week jet trip to some country, they come home without an order, and they say to their congressman [that] it's a closed market."[11] The issue of equipment modification is also affected. If the customer wants some modification, the prevailing profit or perish attitude dictates that modification money needs to be recovered on the first order. If it takes, say, six months for R&D to make the changes, for that time, the money is not earning profits and the system will not abide that.

5.2.2 Causes

There is virtually universal agreement that the telecommunications manufacturing industry in the U.S. does have a short-term mentality. There are, however, several causes and many of them exist outside of the industry itself: big institutional investors (who demand regular dividends to satisfy the needs of their client population – i.e., annuitants in pension plans or individual investors in mutual funds), government policies and regulations, corporate "raiders," and organized labor.

> [T]he shift of ownership in the large, publicly held corporations to representatives of the employee class – i.e., pension funds and unit trusts – constitutes a fundamental change in the locus and character of ownership. It is therefore bound to have profound impact, especially on the governance of companies: above all, to challenge the doctrine, developed since the second world war, of the self-perpetuating professional management in the big company; and to raise new questions regarding the accountability and indeed legitimacy of big-company management.... [P]ension funds are "investors" and not "owners" in their legal obligations, their interests, and their mentality.[12]

The system of compensation for managers in this country is ultimately based on judgments of how well they meet the stated needs or desires of their CEOs and boards of directors. In turn, it is among the jobs of the CEOs and boards to read the needs and desires of the investors and translate those to the managers. If managers develop long-term programs that would lead to global competitiveness, it would take a commitment of resources for anywhere from five to ten years with no hope of earnings from those resources until that time has elapsed. Because of the needs of the big institutional investors, managers' compensation packages are often tied to the attainment of quarterly profits with little or no incentives for long-term thinking. Thus, the manager who considers and acts for the long-term advantage of the company risks loss of compensation or, in the extreme case, being fired for failure to meet his goals. In addition, long-term planning and commitment of resources can lead to the conditions that will encourage the "raiders" to mount an

attempt for a hostile takeover. In that case, the risk of the loss of management jobs is exceedingly high and this is yet one more external disincentive for long-term approaches to management.

It might be said that there is no evidence of hostile takeovers or evidence of real threats of hostile takeovers of the major telecommunications companies in the U.S. While that is true, a number of executives of the telecommunications equipment manufacturing industry have acknowledged that planning for that possibility has occurred and measures against such an eventuality have been taken. Thus, even though no major corporation in the telecommunications industry has been "raided," the effects of raids have been felt by the industry and have further contributed to cautious, low-risk decisions by management.

Another view, however, holds that the short-term, institutional investor influenced financial approach is by no means essential. Thus, from that viewpoint, it would be a mistake to see the situation as one in which a group of passive managers is being buffeted by external forces totally beyond their control.

> [I]mmediate stockholder gains do not, as has now been amply proven, optimize the creation of wealth. That requires a balance between the short term and the long term, which is precisely what management is supposed to provide, and should get paid for. And we know how to establish and maintain this balance.[13]

Well, how do we "establish and maintain this balance?" One telecommunications corporate executive sees it this way:

> I have pondered for many years as to how to create a pool of patient money in America. Unfortunately, everything today is on the basis of, What can you do for me immediately? I often thought that, as corporate executives, we cause a bit of that ourselves by demanding that our pension fund managers produce returns of 17+% on our pension funds. These pension fund managers are not out, therefore, investing in patient long-term returns. They arbitrage which then comes right back to bite Corporate America on the back side.

> In recent years there seems to have been limitless funds available to people who, in essence, had no legitimate credit rationale for the funds they were able to borrow, (i.e., junk bonds and their equivalents). More lenders overlent than borrowers overborrowed. However, the great thing about our system is that, just as it seems that there is no hope in sight, the system corrects itself. Right now the system is purging itself of junk bonds, the people who sold them, and those that bought them (i.e., the S&Ls and others). Junk bonds funded unwise financial investments that negatively impacted America's global competitiveness.
>
> As the ability to make unwise financial investments wanes, there is now an opportunity for executives and other investors to lengthen their investment horizons – that is, for the ones who have the guts to do it. I believe that it is time for corporate boards of directors to direct their managements to generate longer term planning horizons than the one or two years that is now so prevalent.[14]

Having the "guts to do it" is another way of describing the willingness to take the risk of failing and being fired:

> Risk-taking ... may well be more difficult in today's financial environment. But managers are not without the ability to influence investor perceptions. A number of thoughtful U.S. businessmen told us that American managers' oft-stated concern about short-term financial pressures could be much reduced if the managers themselves were more willing or able to develop a long-term vision for their companies and to communicate it effectively to their investors.[15]

"Knowing how to do it" is also not the entire battle. The conversion from a long-term planning horizon to a shorter one is relatively easy because one can tap into several years of investment that has been steadily flowing. The financing is clean and easy since it is simply a diversion of already existing funds. Going the other way is a major problem. Financing for a change to long-term planning horizons can be a great problem since any long-term global competitive strategy requires huge front end investments of people, R&D, facilities, and marketing. This is even more critical when the long-term strategy is one of

breaking into non-U.S. markets because, as we have seen above, this requires a very long time constant and a great deal of "patient money."

5.3 THE LOTUS EATERS

5.3.1 Let's Stay Home

An important factor in the international competitiveness of the U.S. telecommunications equipment industry is the U.S. market itself. It is somewhere between 20 and 25 percent of the world market and offers challenges sufficient for any manufacturer. Operating and reliability standards set by the telcos and the RBOCs are among the highest in the world; thus, succeeding in this market is an accomplish-ment of the highest order. The great majority (measured in market share) of the U.S. digital switcing market is divided between AT&T and Northern Telecom, with only small inroads by European and Japanese manufacturers.

Ambassador Diana Lady Dougan, the former head of the State Department's Bureau of International Communications and Information Policy, expressed this view of the U.S. market and the telecommunications equipment manufacturing industry in the U.S. in 1987:

> Let's face it; we have a built-in problem in the United States – that is, we have such a vast domestic market, and for the first time we're starting to see more than a bit of competition over our shoulders from abroad. Also, while telecommunications may no longer be a sunrise industry, it's still very much a midmorning industry that has a lot of built-in growth factors – so that it's very difficult to get U.S. industry to look at the global market as the key target, as opposed to just concentrating on our own large domestic market.
>
> This is especially true in the manufacturing end. Virtually all other countries have known that they're not going to survive on the domestic market alone, so they have started out with a premise of looking to international markets. And they've been out there very, very aggressively cultivating not only the U.S. market, but the markets of tomorrow – the developing countries.[16]

Well, shouldn't a company be satisfied with a major portion of that market? Why go out and take risks? Why isn't the U.S. domestic market enough to ensure success?

> Then there is a very large group of American companies for which the American market has almost been a drug; [it's] so big that you can get economies of scale without monkeying with all that higher-risk foolishness in the rest of the world. Therefore, rather than going after markets in the rest of the world, they have stayed comfortably in this market. Those are ones that are really hurting. And they may be very good companies and they've been very successful right here. But the problem is that America is no longer a domestic market – it's a global market. You don't have to stick your nose outside of the borders of the U.S. and you are exposed to every one of the major global competitors in the world. And you find yourself in the unfortunate position of playing defense all the time; you never get to go on offense because there is no other half of the field. The other half of the field you've never exploited, so you're playing defense all the time. So you run down to Congress to see if they can't take a little bit of the heat off you and so that you're not just playing defense and just losing a little bit full time.[17]

5.3.2 How Safe Is the U.S. Market?

The view that the U.S. market is so vast that it offers a safe haven to established companies somewhat ignores the situation that has occurred with AT&T. Using the U.S. digital switch market as an example, as of the second quarter of 1990, AT&T held a U.S. market share of approximately 40 percent. That is down from a share of greater than 80 percent prior to divestiture. Most of that difference has been taken over by Northern Telecom. If the U.S. market is such a safe haven, how did this dramatic shift take place? Depending on to whom you talk at the dawn of the 1990s, it was for one of three reasons:

Theory One: Northern Telecom leveraged their entry into the market by using the profits from their protected base in Canada to underprice AT&T. Since Northern had a product line that provided reliable, high-quality equipment at a price that was lower than

AT&T could match, Northern quickly obtained a significant market share.

Theory Two: In the totally vertically integrated Bell System, prior to divestiture, virtually only Western Electric equipment was employed in the network. Since good business dictates that no one should be totally dependent on one supplier, and since Northern Telecom had equipment that already matched the North American standards and did not have to add unreasonable modification costs, the RBOCs bought a great deal of their equipment.

Theory Three: Northern Telecom had the equipment to convert old analog networks to digital. At the time the U.S. market opened up, AT&T still did not have digital equipment ready for sale. Under the old closed market, AT&T was under no pressure to get new products out and so was unprepared. It took AT&T two to four years to finally produce digital equipment; during that period Northern had a virtually uncontested market.

All three theories are plausible. All of them appear to have some basis in fact. All of them could even be true simultaneously. But, whether any or all of them are true, they well illustrate the forces that can be brought to bear even in a "safe haven" market that could destroy that safety.

5.3.3 Bigger Is Better

There does seem to be a change in the "stay home" view. As we have seen above, AT&T has made a commitment to globalization, and Northern Telecom appears to be doing well in the international marketplace. But the issue may still be with us as a generalization. The desire to avoid risk may not only be a factor in choosing the U.S. market over foreign markets, but may come into play in choosing among foreign markets as well. Choosing a foreign market can lead to what may appear to be surprising decisions. First of all, it is impossible to target every market in the world in parallel since the size of that effort would drag

down the most capable of companies. Markets must be placed in priority order and those markets must be chosen first that will provide revenue enough to finance the efforts to develop lower priority markets in the future.

> [Y]ou could guess what the 20 to 21 current priority countries are: they are the larger markets or markets that are rapidly growing. If the company is going to pump millions of dollars into adaptation and wants to be able to sell millions of dollars worth of equipment, we're not going to target switching for Burkino Fasso. First of all they don't have the money to pay, but second of all the market is not large and is not growing rapidly. So, if you're the newcomer on the block, you've got to target the bigger or fast-growing markets.[18]

There are clearly economies of scale in the bigger markets, but the big markets are also the most competitive and protected markets. There are, of course, other external problems with small LDC markets, including government-backed financing, and so on, but the view is that there is an important market there, but not for huge, high-traffic volume equipment. There must be

> ... a fit between your technology and what the market needs. In other words, the 5E is typically a large-capacity switch. We have to look at countries where the customer needs such a switch. Different applications in a network will require different sized switches. For example, while Singapore is not a very large country, we sold a 5E there because they have substantial international traffic. So again there is ... a level of sophistication that we have had to learn also in terms of targeting markets.[19]

Thus, where small markets may require lower-capacity equipment, a business decision must be made whether to develop such a product and whether the development costs can be recovered from such markets. Other telecommunications companies in other countries have made the decision to seek these markets, but they may have had the advantage of government support or other help to allow them to recover their costs and to profit.

5.4 THE CHALLENGE OF TECHNOLOGY AND R&D

5.4.1 Research

Companies must have new technology. Competition is based on the "new," and a company that cannot produce a growing technology base on which to develop new functions or features will wither. Thus, an important question is, Where is new technology coming from? Clearly, the answer is, From research. One way fundamental research is accomplished in the U.S. is by the U.S. government and from U.S. government funded projects. It is an almost universal opinion that the promotion of basic research is a justifiable government function. In addition, government funding of universities is doubly beneficial since it not only produces direct results, but it contributes to the education of scientists and engineers as well, thereby contributing to a national resource.

Yet, there is some real question as to the future of that national resource. The telecommunications equipment industry needs qualified scientists and engineers, as well as educated people of all kinds. Yet, the lower and middle education systems in the United States are turning out fewer and fewer young people qualified for training as engineers and scientists. The student bodies of our engineering and technical schools appear to be made up to an increasing degree of foreign students. Are these students going to contribute to the "national resource"? Some say no, that we are basically educating the employees of competitors, as these students return home to practice the skills they were taught in this country. Others say yes. They claim that a large number of these educated foreign students will remain in the United States and will be a source from which the U.S.-based industry can draw the talent it needs for the future. It would appear that we might consider that, not only are intuitively U.S. companies becoming globalized in their viewpoints, markets, ownership, and locations, but also in their domestic work force, at least at the professional levels.

While there is also some government funding of industry research

> There comes a crossover point in the R&D process when you change from the creation of new knowledge for knowledge's sake, and in which government is the logical provider of funds, to the innovation stage in which new knowledge is applied to the solution of problems. Industry should fund this later stage although government participation is appropriate if government is to be the principal user of the innovation. Universities participate in both phases, but in knowledge creation their outside funding should primarily be government and in innovation it should come from industry.
>
> The U.S. still creates over 50% of the new fundamental knowledge in the world – down from 75% over a decade ago. However, this change reflects the growth of activities by others (i.e., Japan and the EC), rather than a diminution in U.S. efforts. Following World War II, the U.S. wisely funded the redevelopment of these two areas of the world and made them active competitors in the free world's market system. Just as Japan and the EC innovate off of new U.S. scientific knowledge, U.S. producers should not be reluctant to innovate off of new knowledge created in other parts of the world.[20]

So, many believe that research that produces fundamental knowledge is a function of governments and, presumably, universities – and not necessarily only the U.S. government or U.S. universities. Thus, one component of technology, fundamental knowledge, will come from these sources; but what is the source of the innovation component, the development part of research and development?

> The point at which the U.S. primarily fails is that our private sector does not swiftly enough convert new knowledge into "conspicuous customer solutions" (innovation). It's not a matter of spending more money, but spending it smarter and getting a more rapid response. We must be more aware of the true nature of the opportunities that the new knowledge creates, be better aware of the probable limits of the new technology, and be more aware of when it is the right time to shift to the next technology. Just throwing more money at R&D will not do the job. To do so would be the equivalent of compensating the

> vice-president of R&D based on how much money he could squander in a year. Rather, he should be held accountable for milestone achievements.[21]

In an industry where the development of a new product can run from $2 to $3 billion, the idea of spending more money is staggering. Yet, the "smart" spending of R&D funds is clearly a necessary component of international competitiveness.

5.4.2 R&D and the MFJ

In 1987 Judge Greene ruled that the Modified Final Judgment's (MFJ) proscription of manufacturing by the RBOCs includes development and software production. The supporters of that ruling claim that, in their opinion, should the RBOCs be allowed to manufacture, the only way they could meet the costs of manufacturing network equipment would be to partner with large foreign manufacturing firms. It appears that the RBOCs have little interest in CPE manufacturing. Part of such a network equipment manufacturing arrangement could be R&D and software production to adapt the foreign equipment for the U.S. market, thereby significantly lowering the costs of the foreign equipment and creating a virtual vertical integration for the U.S. market shutting out the more established manufacturers. The view is that this would only exacerbate the competition problems of existing U.S.-based telecommunications equipment manufacturers in that part of the international market that is the U.S. market.

The RBOCs deny that claim. Lew Cramer, a consultant to U.S. West has stated: "We really are looking at the R&D and software development that will allow us to do systems integration.... [T]hat's where this RBOC's real strength, expertise, and future is at."[22] The RBOCs claim that the kind of manufacturing they wish to do is either integrating equipment into networks, which takes a certain amount of software, or in fabricating generalized pieces of equipment that the big manufacturers would have no incentive to make.

> In early 1987 U.S. West announced plans to establish a research and development entity. Our ambition over time was to commit substantial resources – up to five percent of revenues – to bring new services and technology to the marketplace and to enhance the quality of services we provide our customers.
>
> In a separate initiative, we had established a company which was developing an operator console that would be compatible with multiple central office switches. Such a product would provide wider latitude and compatibility in the design of our switching network. The Department of Justice examined the proposed product and ruled that it constituted a violation of the MFJ manufacturing restriction. We were given 30 days to divest or shut down the operation. We shut it down – a $50 million investment with 90 employees.
>
> This action denied the availability of new technology and the gainful employment of many people.[23]

5.4.3 Technology Transfer

Earlier in this paper we identified technology as one of the "new" products in the telecommunications manufacturing industry. One characteristic of that product is that once you sell it to your customer, he never has to buy it again; that is, if you wish to sell him more technology it must be something he does not have – you must have developed some new technology to sell him. If you sell a customer a piece of transmission equipment, and he likes it, he may buy more as he needs it. If you sell him the technology to make it (e.g., assembly skills or software), he has the technology once and for all and may be able use that technology to help him eventually fabricate his own transmission system. Nevertheless, the view is that partnering with overseas firms is the only way to conduct the international telecommunications equipment business, and some believe it has been successful:

> I believe that there are a great number of American companies today that are very expert, sophisticated, and profitable exporters. (The U.S. is the world's largest exporter with exports of $385 billion in 1989). Most are not

> only exporters but also direct foreign investors. Today, competitive international business requires a combination of export and investment in people, facilities or both in the foreign markets in which you wish to participate. These investments in foreign markets then create a demand on home country facilities for components, sub-assemblies and even complete finished products. (One quarter of all merchandise foreign trade is between units of individual global enterprises.) Not all these companies are large corporations; some are medium- and small-sized and are very good at global business.[24]

From a more specific viewpoint, AT&T also believes that a very important way to succeed in the international equipment marketplace is through partnering. From their testimony, the days of rugged individualism are over for telecommunications marketing.

> AT&T Network Systems' ... strategy ... is clearly one of partnering and joint venture – not necessarily going it alone. Other U.S. high-tech companies had that luxury – many don't have joint ventures; they do everything wholly-owned. AT&T doesn't have that luxury [because] A) we're a latecomer to markets already mature in many ways, and B) the capital intensity of the business today almost requires a sharing of corporate resources.[25]

Aside from the business reasons, there are also political reasons for joint ventures and partnerships. Clearly, as pointed out above, positioning for EC 1992 will require a European presence and other than having wholly-owned subsidiaries in Europe already, the only feasible approach is to partner with a European company.

Any potential damage technology transfer might do is mitigated by a few principles that are followed by most companies:

- **Do not joint venture** with any company that has the same technological capability as yourself. This would create a balance of technology flow that would soon obviate any need for the relationship that was based on technology. It would also engender practically endless arguments among the technical people on both

NOTES

1. Lionel Olmer, former Undersecretary of Commerce for Trade, interview with author, May 10, 1990.

2. Teresa Evert, manager, International Government Relations, AT&T Network Systems, interview with author, July 12, 1990.

3. Ibid.

4. Wayne Lisowski, senior market planner, AT&T Network Systems, interview with author, July 12, 1990.

5. See note 2 above.

6. Michel Guité, vice-president, Salomon Brothers, interview with author, June 14, 1990.

7. "Bellcore President Says U.S. Technical Leadership Threatened by Investment Pressure, Government Policies," PR Newswire, May 8, 1989.

8. Misuk Woo, "News Focus: U.S. Must Boost Productivity, MITI Says," Kyodo News Service, Tokyo, June 9, 1989.

9. Ibid.

10. "The Struggle for NTT," *Chief Executive*, no. 53 (September/October 1989).

11. Personal Communication.

12. Peter Drucker, "The Futures That Have Already Happened," *The Economist* (October 21, 1989).

13. Ibid.

14. Personal Communication.

15. Michael L. Dertouzos et al., The M.I.T. Commission on Industrial Productivity, *Made in America: Regaining the Productive Edge* (Cambridge, Mass.: The MIT Press, 1989), 66.

16. "Ambassador Diana Lady Dougan and an Open World Policy for Telecommunications," *Broadcasting*, 1987. [NEXIS]

17. Personal Communication.

18. See note 2 above.

19. Ibid.

20. Personal Communication.

sides of the venture regarding which side had the better solution to problems.

- **Always keep certain modules or components proprietary** since that will keep the venture dependent on the technology transferring partner.

- **Spread out the transfer** so that by the time all technology is transferred, it is as close as possible to the end of its life cycle. In this way, the transferring partner will have moved beyond that technology and will no longer need it for competition.

21. Personal Communication.

22. Lew Cramer (former Deputy Assistant Secretary of Commerce), consultant, International Projects, U.S. West, interview with author, June 15, 1990.

23. Laird Walker, vice-president, Federal Relations, U.S. West, interview with author, June 15, 1990.

24. Personal Communication.

25. See note 2 above.

CHAPTER SIX

THREADS

The issues discussed in the preceding chapters are rich with opinion and controversy. In the realm of international competition, there are few hard facts to deal with and generally perceptions are the guidelines on which actions are taken. It might almost be said that the only fact is that there are no facts. The richness of opinion, however, can lead to diffusion of thought and confusion and, therefore, it may be useful to look at the issues from an overall perspective with the hope of obtaining some focus. I have chosen some of the issues in which, I believe, we can find a few general insights.

6.1 THE DEBATE: "SOUND AND FURY, SIGNIFYING NOTHING"

In reviewing the "uninformed debate," one can quickly get the idea that one reason the debate is so uninformed may be that great portions of the argument are not well enough defined. How can one side of a discussion understand the other side if there is little agreement regarding the detailed meaning of the terms that are used?

As I progressed through the study, it was common to find that many of the most fundamental terms were either being questioned or being used by people on opposite sides with different shadings or totally different meanings. I highlighted some of the problems in the preceding chapters, but just to get a feel for the number and importance of the terms let's briefly look at a few:

> Competitiveness: Does "competitiveness" imply company survival (for example, high market share or good profits) or national economic success (for example, jobs or a high standard of living)? They are not necessarily the same.

policy and performance issues, perhaps the nationality of a company is the most important misunderstanding in the debate.

One of the major contributors to the "sound and fury" of the argument is the perception that, when we ask the question, Is the U.S. telecommunications equipment manufacturing industry competitive in the international market? it may be syntactically and grammatically correct – the only problem is that we haven't a clue as to what most of the words mean. Now there may be political reasons to keep the debate unfocused. It is a particularly favored trick in the political world that if you cannot win your point by using the other guy's definitions, then redefine so that your point makes sense. Thoughts on the intellectual honesty of that aside, that approach is with us and will always be with us in highly politically charged issues. Yet, in this case, I believe there is more to it than playing politics. The confusion may partially or in whole come from the quick and far-reaching changes that are occurring around us and the inability of people to recognize rapidly enough when the "old" definitions are no longer adequate.

6.2 GOVERNMENT-INDUSTRY RELATIONSHIPS: POLICY AND PRACTICE

6.2.1 The "U.S. Company" Revisited

It is ironic that the very industry that can perhaps claim the greatest responsibility for globalization ("communications have made the world smaller") is also one that is so strongly affected by it. The effect of globalization leads to a great number of questions which will create new or greatly impact on existing industry-government relationships. For example, if globalization does cause a loss of national identity with attendant loss of national loyalties within companies, then how will a globalized industry deal with national government positions which it views as contrary to its legitimate interests? How can globalization be reconciled with the ancient and traditional national values of patriotism, family, commonweal, and so

on? Will global companies begin to "play national governments off against one another" to achieve their goals, or have they already begun to do so?

On a more general plane, there may be some insights to be gained by extrapolating from a number of events of the late 1980s/early 1990s. If we consider the overall politico-economic trends that may be developing which lie behind such events as

- the U.S.-Canada Free Trade Agreements;
- the seemingly imminent actions of the European Community (EC '92);
- the establishment of Asian economic cooperative blocs;
- national movements (both actual and proposed) toward divestiture, privatization, and deregulation;
- globalization of telecommunications markets; and
- the movement from "national corporations" through "multinational corporations" to "global corporations,"

we could be tempted to postulate changes that would be as fundamental and far-reaching as was the transition from the economics of feudalism to the economics of mercantilism. There appears to be a trend to supranational economies in which only supranational corporations may be able to survive. Will this imply a divorcing of (or at least a separation of) international economics from national politics – a thought that is almost inconceivable today given their historical and complex intermeshing.

If such a separation occurs, will the "governmental" function of economic regulation be taken over by supranational governmental organizations such as the U.N.? The U.N. already has a "Centre on Transnational Corporations" that has dealt with global issues. Is the deterioration of Communism at the dawning of the nineties a recognition of and/or an outcome of these trends? How will the reawakened ferment of ethnic nationalism in the wake of global political changes conflict with these trends and, heeding historical precedent, to what violence could that conflict ultimately lead? Will these trends, based on their

Manufacturing: Judge Greene has decided that development and the production of certain software are an integral part of manufacturing. The RBOCs, among some others, strongly disagree. Many policy and business decisions are affected by this disagreement.

Industrial Policy: It is not evident that anyone has a clear idea what an "industrial policy" is. To determine whether the U.S. government has one (as some assert) or does not (as the Administration claims), it is first necessary to know what it is.

Telecommunications Equipment and Market: Some would exclude CPE from the definition of telecommunications equipment and include it in the definition of consumer electronics. It is difficult to make much sense out of the telecommunications equipment industry unless one knows what they make and to whom they sell it.

International: With the "globalization" of industries and markets, it is becoming increasingly difficult to distinguish between domestic and international activities. Virtually everyone agrees that the U.S. "domestic" market has been "globalized." If the U.S. market is a global market, with competitors based in a variety of countries contending for its business, then one is led to the paradox that the U.S. domestic market is an international market. When we want to determine how internationally competitive "U.S. telecommunications equipment manufacturers" are, then should we include their performance in the U.S. market as well?

U.S. Company/Industry/Manufacturer: The globalization of the U.S. industry and of foreign industries was discussed in chapter one. It is unnecessary to go over all that again except to comment that from the perspective of long-range

broader geographical impact, finally bring about the much called-for equitable distribution of wealth throughout the world?

6.2.2 Industrial Policy

The question of an "industrial policy" in the United States has been hotly debated for a number of years. Many in government, notably in the Bush and Reagan administrations, have claimed that there is no such thing in the U.S. Others, both in and out of government, believe that an industrial policy really does exist, but that it is an amalgam of disparate polices that, when taken as a whole, make up an overall industrial policy. The problem with disparate policies is that they could end up unintentionally damaging industry rather than helping it. Industrial policies in some other countries are open and well understood and have as their goal to aid their domestic industries. It is, of course, debatable whether those industrial policies really do aid their industries or, in the long term, cause mischief.

The position in which the U.S. government has found itself (especially during the Reagan administration) is one of defending free market economies, and thus for consistency's sake opposing a coordinated and well-defined U.S. industrial policy. That position has not shielded it, however, from accusations from abroad that there really is surreptitious government aid to U.S. industries and that in reality, the U.S. government's position is somewhat on the hypocritical side.

6.2.3 Do More, Interfere Less

While there is disagreement as to the details, there does seem to be an almost universal agreement, both in industry and in government, that the government must do more, but few are willing to call it "industrial policy." One may call it "changes in antitrust policies, capital gains tax revisions, or easing the cost of attracting capital." Another may see it as a new "Information Age Model." Yet another may call for increased industry/government "cooperation" or "partnership." Still others want an enhanced telecommunications trade policy. The limits on government involvement are not totally agreed upon. It is, however, apparent that virtually every player wishes government involvement to

stop before it extends to government control or influence or overt subsidy.

6.2.4 Government Is Not a Monolith

Our high school civics classes did us all a disservice. We almost all came out of that experience with a organization chart diagram of the U.S. government executive branch in mind. We saw the president on top and we believed that all policy flowed from top to bottom. Funny thing, it doesn't work that way. Even if we had Lionel Olmer's *tabula rasa*, the responsibility for all aspects of telecommunications policy, especially policy that dealt with international trade in telecommunications equipment, could not be centered completely in one agency. There are many factions and constituencies contending within the executive branch of government as well as in Congress and within the governments of the States to make their own view of telecommunications dominant. This factional approach may even extend to turf disputes.

From the industry view, it appears that the government is fragmented and incapable of exercising any decisive action to deal with unfair foreign trade practices or to provide necessary support to the telecommunications industry of the United States. From the inside, it appears to be a completely normal situation, operating in the "interagency forum" which is the only way that will provide a consensus that takes in as many differing views as possible, thus serving the American people in the best way possible.

6.3 OK, WE MAY NOT KNOW WHAT IT IS, BUT IS IT IN TROUBLE?

I think we still don't know.

AT&T has lost much of its U.S. domestic equipment market since 1984. Estimates say that it has picked up only a very small percentage of foreign equipment markets. ITT and Stromberg-Carlson have, for all practical purposes, disappeared from the telecommunications equipment manufacturing business as U.S.-based entities, and GTE has only

vestigial manufacturing left. Some would contend that the loss of these companies or of market share are the result of weaknesses in the industry and of poor management philosophy and thus were avoidable. Examples of what is meant abound: short-term horizons, aversion to risk, a financial view as opposed to a product and servicing view, a blindness to foreign cultures and an attendant U.S. ethnocentrism, a slowness to convert fundamental knowledge to useful technology, and fostering foreign competition through the sale and transfer of technology. On the other hand, many point out that there are evolutionary consolidation forces at work in the marketplace and that the loss of U.S. companies and the drop in AT&T's U.S. market share are simply normal and expected results of escalating product development costs and of globalization.

In trade account terms, the U.S. appears to be having difficulty keeping up in CPE, that is, the low-tech end. On the high end, the telecommunications industry in the U.S. seems to be doing reasonably well internationally. Yet, these judgments are made on the basis of statistical data that, at best, resist validation.

Assuming some validity to the statistical data, the question on the high-tech side is how long will it last? Trade barriers along with an increasingly fierce competition based on the inability of the market to support all players appear to be significant factors that can cast continued success into great doubt.

Yet, while negative market forces exist, new opportunities appear to be opening up (for example, Eastern Europe and possibly the "European single market" EC '92). The traditional players are not the only ones taking advantage of these opportunities – the "new guys on the block" are expanding into them as well. Despite the expressed concerns of some in foreign companies and the U.S. industry alike, the telecommunications industry in the U.S. is moving into the international marketplace through joint ventures and the creation of foreign subsidiaries because of the broadly-held conviction that it can be done in no other way.

6.4 CHANGE

A possible interpretation of all this is that whatever difficulty the telecommunications industry in the U.S. is experiencing, whatever confusion exists regarding terminology, whatever archaic or misguided government policies are promulgated may be due as much or more to markets, industries, economies, and competition in the midst of dynamic and dramatic change as to weaknesses in the industry or unfair trade practices.

We are seeing new U.S. competitors, we are seeing new fields (the transition from product to services) for competition, we are seeing consolidations, we are seeing a new industrial structure, we are seeing new technologies, we are seeing new markets opening up, we are seeing new trade alliances, and we are seeing new political and business concepts taking root in hitherto unexpected places. Globalization is changing the meaning of "U.S. companies," "foreign companies," and perhaps ultimately the economic role of national governments.

Change always means cost in both financial and human terms, but depending on the view of the future one takes, that cost could be looked at as an investment. Nevertheless, change creates its own imperatives for *all* players. Without boldness, opportunity will turn to failure and without flexibility, change will destroy.

ACRONYMS

AID	Agency for International Development
ANSI	American National Standards Institute
APEC	Asia Pacific Economic Cooperation
BOC	Bell Operating Company
CCITT	Consultative Committee on International Telegraph and Telephone
CEPT	*Conférence Européenne des Administrations de Postes et des Télécommunications*
CLASS	Custom Local Area Signaling Services
CoCom	Coordinating Committee for Multilateral Export Control
CPE	customer premises equipment
DARPA	Defense Advanced Research Projects Agency
EAR	Export Administration Regulations
EC	European Community
EEC	European Economic Community
ETC	Export Trading Company
ETSI	European Telecommunications Standards Institute
ExImbank	Export-Import Bank
FCC	Federal Communications Commission
HDTV	High Definition Television
IBRD	International Bank for Reconstruction and Development
ISDN	Integrated Services Digital Network
ITAR	International Traffic in Arms Regulations
LDC	lesser developed countries
MFJ	Modified Final Judgment
MITI	Ministry of International Trade and Industry, Japan
MOSS	Market-Opening-Sector-Specific
NASA	National Aeronautics and Space Administration
OECD	Organization for Economic Cooperation and Development
OPIC	Overseas Private Investment Corporation
PABX	Private Automated Branch Exchange
POTS	Plain Old Telephone Service
PTT	Post Telegraph and Telephone
R&D	research and development
RBOC	Regional Bell Operating Company
SIC	Standard Industrial Classification
SONET	Synchronous Optical Network

TRAC	Technical Recommendations Applications Committee
USTR	U.S. Trade Representative
VCR	Video Cassette Recorder