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### Publication Date

1984-08-15

**The New Media, Telecommunications,  
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The Choices for the United States and Japan**

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Working Paper 7

Originally prepared for a symposium organized by the Japanese  
Ministry of Finance and the Japan Center for International  
Finance, August, 1984

The New Media Telecommunications and Development  
The Choices for the United States and Japan

A new communications system is emerging in each of the advanced industrial countries part of a quite fundamental transition into a world built on microelectronics. Technical developments make possible these new national telecommunications networks. However, the character and configurations of each network will be a product of market forces and policy choices.

In examining the new telecommunications networking infrastructure that is being shaped in the U.S. and Japan, we mean to include all of the emerging communication media which utilize the new, innovative, telecommunications and informational technologies, for example, digital switching and fiber-optics. Thus, we are adopting the definition of "new media" developed by the New Media Committee of MITI's Industrial Structure Council and the Information Industry Committee, chaired by Professor Ken'ichi Imai. In what follows, we interchangeably use the terms new media, new telecommunications network, and communications infrastructure.

Three broad issues must be addressed in an American-Japanese discussion of new media and telecommunications. First, innovative telecommunications technologies create a new infrastructure for the economy. The innovations establish the basis of the new media. This infrastructure is as important to our world as roads, bridges,

railroads, and telephone lines. The character and configuration of the new telecommunications system -- as much as the pace at which it is created -- will structure opportunities for national profit and growth, as well as influencing who can capture those opportunities. Policy must be concerned with the question of whether markets, monopolies, or regulation -- and in what combination -- will generate the new infrastructure.

Second, the telecommunications equipment and services industries (which are the communications components of the "information industry" in MITI's terminology) are now strategic industrial sectors. Producing the equipment for the new system and delivering the myriad new services the technology makes possible, will be a lucrative and expanding set of businesses. Equally important, these telecommunications industries will be a powerful, perhaps dominant force, in shaping the development of the computer and microelectronics industries in the coming years. Will the emergence of a new telecommunications system be intentionally used to create competitive advantage in related industrial sectors?

Third, the economic impacts of these developments in telecommunications, their character as domestic economic infrastructure, and consequent international trade in telecommunications goods and services, all signify that the domestic choices of one nation will critically affect the development of all other nations. This is particularly true of the United States and Japan. We are the largest national markets for the equipment and services and are together forging the technological revolution in telecommunications. But our policy choices concerning the management of the new telecommunications are quite different. What will be the

consequences of those differences at home and abroad?

In this paper we approach these issues from an American perspective but with the intent of understanding where American and Japanese interests and purposes are common and can be joined together. Where there are differences, resolutions must be found that permit our common interests to predominate. We must maintain close, friendly relations amidst the upheaval in telecommunications, or both of our great nations will surely suffer. If we choose common ground we will both prosper.

-- The Technology and the Market --

Our story of the new media and the new telecommunications begins with the possibilities created by the new technology. Two inter-related elements are at the center of our concerns. First, innovative transmission and distributed digital switching technologies have proliferated as a result of both of our nations' industrial efforts. Technically and commercially viable alternative transmission techniques have undermined the traditional belief that transmission is a natural monopoly. Microwave, fiber-optics, cellular mobile radio, coaxial cable, and communications satellites all challenge the traditional copper wire. These alternative technologies retain the capacity to be interlinked, and consequently can constitute one telecommunications system. However, when combined with highly flexible and distributed digital switching systems, the alternatives represent competitive product packages offering a wide range of

diverse services at different prices. The end to a technological justification for monopoly in communications is critical.

Second communications and computing have merged as the technologies underlying telecommunications and data processing have converged. During the 1970s the communications industry moved away from the pure provision of communication pathways for analog voice transmission toward the provision of enhanced communications (voice, data, video and facsimile) using computer technology. Simultaneously the computer industry moved away from stand-alone computers toward networks of geographically separate computers interconnected through communications pathways for data transmission. Consequently the relatively distinct boundary lines between the two industries were blurred by the decade's end. Indeed, telecommunications in the 1980s and beyond will be characterized by the digitalization of both national public-switched telephone networks and private communications networks, and by the increasing linkage of data processing systems to both the public and private networks. Network integration, both within firms and externally in the public and private networks, is the overriding orientation of the current upheaval in telecommunications. Today, the telecommunications industry must be broadly understood to encompass the provision -- for information networking -- of terminal, transmission, and switching equipment, and voice, data, video and facsimile services. The convergence changes the character of competition and alters the services and products offered.

A new telecommunications system will emerge in each country, built on and incorporating the new technologies, but not determined by them. A frontier of new possibilities has been defined: a frontier which identifies the types of new products and services that can be

made available. That frontier is itself a product of past choices about research and development to meet, create, or control user needs for communications in the market. Specific choices within the frontier of technological possibilities are not the product of technological change: they are, rather, the product of those who make the choices within the frontier of possibilities. Technology does not drive choice, choice drives technology. Grasping this point is critical for there is nothing determinative, nothing inevitable about the ways in which the new technological possibilities of telecommunications will be implemented.

In America, the technological possibilities were first released by regulatory decisions to permit both competitive service providers to the Bell System and alternative transmission and networking products to hook-up into the public telecommunications network, and by the legal decision to divest ATT of its local monopoly operating companies and to permit that former monopoly supplier of telecommunications equipment and services to enter any other market. Underlying these regulatory and judicial decisions in the United States, is the strongly-held belief that the deregulated marketplace should decide how the new telecommunications changes will occur. The market is responding to the particular needs of the largest users of information in America -- large businesses and government.

-- Networks and Growth --

The transportation and communications infrastructure of a nation sets the terms of many economic decisions. The cost of moving goods to

market or shipping raw materials to factories shapes choices about what is produced and where. In the United States in the nineteenth century, as rails replaced rivers as the dominant continental transport systems, what were then the Western States (such as Ohio) became directly tied to eastern and European markets for the first time. Cities which had sprung up because they linked river traffic to inland farms lost advantage to communities that invested in the railroads. Control of the technology, of course, proved critical. The regulation of the nation's railroads after our American Civil War in the mid-nineteenth century, set prices to favor the shipment from northern to southern states of manufactured goods and from South to North of raw materials and agricultural goods. This directly slowed the industrial development of the Southern U.S. while spurring that of the North. The regulatory discrimination served to build the equivalent of a tariff wall around the North. When, after the Second World War, the interstate highway system was constructed, trucks began to compete more effectively with trains for freight transport. Businesses that depended on such transport, moreover, no longer needed to be tied to the railroad network. The highways and trucks, which permitted much greater decentralization, were sufficient. The freeway pulled firms and their workers out to the suburbs. Patterns of urban life were altered. The reorganization of production provoked and facilitated by railroads and highways also served as an agent of economic development.

New transportation and communication networks act as powerful agents of growth for two simple reasons. First, the network has to be built. Railroads require steel, construction crews, locomotives, station houses, and telegraph (now fiber-optic transmission) systems



to run the network. Second, everyone else must invest to capture the opportunities for growth and profit made possible by the new system. Each firm experiences the new infrastructure in the prices for land, transportation, and communication that face it in the market. In a very short time, a set of possible profitable investments are suggested. The interstate highway system meant firms could move out of the center city where access to rails had forced them. Suddenly building outside the city meant lower rent. Or facilities outside the city where land was cheaper, impossible before for transportation reasons, could be built for more efficient production.

We are already beginning to see similar kinds of drastic changes in what is produced by whom, where, and how, as a result of the new communication infrastructure being built. Both of our nations are at such an early stage in this major transformation that the ramifications of the new telecommunications network are only just beginning to be understood. We can only suggest the early outlines. Company location decisions are being altered and the organization of business operations is being reshaped by the new information technologies. A company's operations can be widely dispersed to different locations, with all parts linked together for the rapid transfer of information over integrated, private corporate or public communications networks. For example, insurance companies or financial enterprises that must process large volumes of data and paper can now locate the most labor intensive parts of the activity away from the home office. Once the information is computer-stored, all parts of the operation can have immediate access to it from terminals located almost anywhere. IBM's internal Corporate Consolidated Data Network now links together about 16,000 terminals

and 40,000 users throughout the United States with mainframe data bases in 18 different U.S. cities. The system is largely unattended, and is remotely managed from IBM's Network Control System in New York. The savings in rent and labor costs, and increases in productivity, make the cost of the new equipment and buildings worthwhile. Similarly, as Japan's own great industrial corporations have best shown, the control of manufacturing operations, including component flows, can be automated and need no longer be centralized.

Equally important, corporate strategies at home and abroad will be molded to capture competitive advantage from the new technologies. In several industries from textiles to metalworking to electronics production, manufacturing success in competition on markets throughout the world is coming to depend upon the new automation of production made possible by computer-controlled information networks that manage the production process. Similarly, Japanese companies that operate semiconductor design centers in the U.S. will begin to have greater success competing in the U.S., as the new communication technologies begin to make possible rapid contact and design information exchanges between U.S. customers, the U.S.-based design centers of Japanese companies and their parent manufacturing operation in Japan. In the U.S., the insurance business is being reorganized because geographically dispersed agents linked through new communications networks make possible wholly new kinds of services. Slowly, telecommunications will change from being an aid to business in conducting old strategies to an element in formulating and implementing completely new strategies.

We cannot review the full range of developments in strategy and location. We need only recognize that the characteristics and

possibilities of the new networks will induce and compel a wave of investment and adjustment. Such a broad upheaval provides new opportunities for economic growth and compels new policy choices as well.

-- The Place of Telecommunications Policy  
in Information Industry Development --

The telecommunications equipment and service industries that supply, create and operate the networks will in themselves be an important focus of growth. Taken in the aggregate, the U.S. market for telecommunications equipment and services as described before, reached approximately \$116 billion in 1983. This broke down roughly as \$100 billion in telecommunications network services and equipment, \$14 billion in data communications equipment and \$2 billion in business communications applications. Telecommunications already represents 3-4% of GNP. Optimistic projections of growth suggest that the sector could reach to between three and four hundred billion dollars by 1990. It would boost telecom's share of the GNP to well over 10%. This enormous market is both an expression and product of the major changes occurring in telecommunications.

The telecommunications industry is an economically strategic industry for other reasons than its sheer size. There is an important debate as to whether telecommunications and computers are strategic industries in the sense that steel or automobiles have been. In fact, the employment consequences will be quite different, but the information industries will alter the productivity of the entire

economy. As a source of innovative demand, for example, telecommunications is crucial to the continuing development of the microelectronics and computer industries. Just as computer and consumer product demand drove microelectronics development in the 1960s and 1970s, telecommunications demand is driving semiconductor development in the 1980s. Similarly, telecommunications uses constitute an enormous demand for computer equipment. The reason in both cases lies in the convergence of computing and communications technologies. Up until recently, the telephone system transmitted the voice in analog wave form. Changes in sound produced changes in wave-shape. Now, voice is digitalized, that is, converted into digital signals, the series of 0s and 1s at the heart of computer operations, and the digital information is transmitted. The sophisticated new services offered over the phone network rest on the abilities of digital, computer-controlled switches to separate control information from the communication and to process the respective digital information separately. The switches differ in purpose and capacity from PBXs to a variety of local central office and toll switches. Since information is transmitted in digital form, it is also possible to encode video images or even documents in digital form and transmit them over phone lines. That also requires more sophisticated computers, a variety of new terminal equipment, from facsimile machines to video monitors and new wide-band transmission media like optical fiber linking the switches and terminals, to carry the enormous amount of data involved. It isn't simple, but many companies in America already offer computer mail services commercially. And you in Japan are already considering replacing first class mail service with the new, Japanese-pioneered facsimile

services. In all of these cases, one computer is transmitting data to another computer. The telephone system is in the process of becoming a computer network.

Conversely, computers are being tied into data networks. Once computers consisted of powerful mainframe computers with data storing and processing capacities. (The most advanced computers -- usually meaning the fastest at complex number-crunching -- are generally called supercomputers and have traditionally been used for scientific purposes. Now new uses and new markets are being generated from dynamic modeling for mechanical engineering applications to the computer-generated special effects film. It is no accident that Lucasfilms, which brought you the Star Wars movies, is the first purchaser of the next generation of Cray supercomputers.) The minicomputer developed for purposes which required relatively less memory, and more dedicated processing capabilities, but opened entirely new markets by lowering the costs of computing. In all of these cases, the computer (where the intelligence resided) was linked to the user by a 'dumb' terminal. Then Apple started the personal computer business. Its box was more than a dumb terminal. It was a self-contained computer that rested on advanced semiconductor chips like the microprocessor and the Random Access Memory. The desktop computer, in its more powerful, more application-specific forms called a workstation, can now be given enough processing capacity and memory to perform the functions of the mini and mainframe computers.

It now becomes a choice of how much power and memory to put on the desk, how much to put off the desk, i.e. in a mainframe or mini, and how to link several computers together. The choice depends on the purpose of the system, the tasks of the various participants, their

needs for common data and common applications. The computers are linked by telecommunications networking products like local area networks (LAN) or PBXs, and are linked into the public phone network as well. The convergence between the industries is real, not metaphorical. ATT and IBM, NEC and Fujitsu are dominant in different parts of the same business, and would like to capture part of the others' markets.

The industrial implications are remarkable. As telecommunications networks are created they become a vast market for the computers which are the switches. The telecommunications computer switch and interconnect device producers become major purchasers of semiconductors. The expansion of telecommunications is, thus, becoming the critical new user of computers and microelectronics (over the next two decades at least). Moreover, the research by telecommunication companies in components and computers will be as important as the demand for new equipment. Bell laboratories was effectively the major public electronics R&D laboratory in the United States and indeed in the world. Regulation prohibited ATT from selling equipment or components on the open market, and consequently it shared and disseminated its technology widely.

The impact of the development of telecommunications on the next generation of computers will be shaped in part by regulation of the network and services delivered over it. We turn, therefore, to the question of regulation.

How then will the emergence of the new system be managed? In the United States we are substituting a market driven system for the regulated monopoly of ATT. In the United States traditional approaches to telecommunications regulation have become irrelevant to the current issues, and even worse, the attempt to regulate by the old logic risks distorting the evolution of the new system. The central premise of the old logic has been that telecommunications services could only be provided on a monopoly basis. The intent of regulation until now, consequently, has been to control monopoly power. The purposes of such control have been to prohibit discrimination in the availability and the price of services; and to prevent ATT from earning monopoly profits. The instruments of classical regulation have been quite limited. Principal among them is rate-setting, but regulatory bodies have also acted to assure universal access to services at affordable prices for all Americans. The process of old style regulation was reactive to ATT's behavior, dependent upon its data, and beyond the goals of universal service and monopoly containment, had no other policy motive.

Our concern is not with whether or not the old system was properly or wisely regulated, but with the nature of the new regulation. The alternative technologies which undermine the concept of a natural monopoly should force a reconsideration of the regulatory issues.

The configuration of the new system is no longer dictated by a technological logic built on the fact of monopoly. How the network should be technologically configured, who should own and control its many parts, what services should be offered over it, and at what prices and to whom, have all now become a matter of choice. The

question is how the decisions should be made. As described in more detail below, in the U.S., the court-ordered break-up of ATT substitutes market competition for a regulated monopolist as the agent creating and controlling the system. That means that the massive information needs of the largest users of information -- large firms and government -- are driving the changes in our telecommunications infrastructure. For example, the increasing creation of private bypass networks and the move of PBXs toward voice/data network integration are being driven by the desire of major businesses to gain control of the costs, integration and evolution of their own communications uses. The consequences are clear, but relatively unconsidered. A progressive increase in competition for the delivery of alternative telecommunications services (including bypass) and for the creation of alternative local distribution facilities, is gradually revamping what has been a relatively uniform local communications infrastructure. The resulting infrastructure is far more diverse, but far more differentiated toward major user needs, and therefore hierarchically accessible, than the local voice communications infrastructure of the pre-divestiture era. Old style regulation is not suited to the new choices, but do we want to abandon public influence in the choices about the electronic equivalent of the nation's roads?

The American market has been laid open to foreign competition without asking for reciprocal treatment for American firms in Japan. Will this affect the competitive development of American firms?



Regulating the New American Communications Infrastructure:

The divestiture of the Bell System and the deregulation of American markets for telecommunications equipment and services has shattered the old monopoly basis of the old style regulation. From the mid-1960s on, American regulators attempted to grapple with user demands for change to permit competition in the delivery of telecommunications equipment and services, and with ATT's desire to enter data communications markets given the blurring of distinctions between communications and computing. A series of regulatory decisions acknowledged that the old regulatory goals of rate-setting and universal access to service were simply not sufficient to meet user and ATT demands for development of the possibilities inherent in the new information technologies. Rather than attempting to formulate new policy goals to guide implementation of changes of the national communications infrastructure, regulators and policymakers simply abdicated responsibility to the market: Competition in the market would determine the evolution, new structure, uses and control of the nation's communications network.

To prepare for the market-driven phase of development, it was of course necessary to break up the monopoly structure that had developed during the regulatory phase. The divestiture of the Bell System accomplished that. The divestiture has spun off the entire local Bell System public-switched and private line communications network and the 22 Bell local operating companies that run it, under the control of seven regional holding companies. Using those facilities, the Bell operating companies provide local exchange communications services, and permit carriers of long-distance communications to access the local exchange areas for the purposes of

originating or terminating long-distance communications. The divested local companies are not permitted to carry communications between local exchange areas (that task falls to the long-distance carriers), and are only permitted to offer enhanced information services through a separate subsidiary. The local companies retained the Bell name and logo, and are permitted to market but not to manufacture customer premises equipment (like PBXs and handsets), and may neither market nor manufacture the equipment that goes into building the communications network (like central office switches, or fiber-optic transmission equipment). Restrictions on their entering new businesses (including manufacturing) can be removed by the courts in certain cases.

ATT itself retained the rest of the Bell System operations, including the long-distance network and services (now called ATT-Communications), Western Electric (the manufacturing arm), Bell Labs, ATT-International (the international business arm), and ATT-Information Systems (the arm which sells enhanced information services and equipment). Most critically, ATT is now permitted to manufacture for and compete in any markets it chooses to enter (whereas before, it was limited to traditional telecommunications equipment and services). The new ATT remains one of the largest industrial corporations in the world -- bigger in fact than IBM -- and is rapidly becoming a strong competitive force on world markets for information products and services.

Market competition is changing the communications infrastructure of the U.S., and the outlines of that change are fast becoming apparent. Intense competition has resulted in a proliferation of new long-distance carriers (like MCI) each of which

is building a long-distance network to rival ATT's. There is thus a proliferation of nation-wide networks for carrying voice and data over distance, made up of a different mix of new transmission technologies, from fiber-optics to microwave and satellite systems. Major users can choose which carrier they want for each communication they make, and thus have a wide range of competitive choices for their communications needs. However, many major users have also begun to build their own private networks, so-called bypass systems, in order to tie together their wide-spread operations and gain control of the evolution, costs and structure of their own communications needs. A similar intense competitiveness is beginning to characterize local-level communications as well. Competitive service providers, utilizing cellular radio, CATV, digital microwave Termination and Electronic Message systems (DTS/DEMS) as well as fiber-optics, have begun to emerge to challenge the local-level monopolies of the divested Bell local operating companies. Hence, at the local level, too, competition in the delivery of services and in the construction of alternative local distribution facilities, is resulting in a proliferation of different networks offering different services for local customers. Indeed, private bypass systems are also being built by major users for their local communications needs.

The consequences of market-driven development have not been carefully considered, however. There are problems in building a network by competition alone. First, the market-driven network will be shaped almost exclusively by the needs of the major users. This is a clear and classic example of market failure. In the United States, demand for communications services is highly concentrated, with about four percent of the users accounting for at least 50% of common

carrier revenues. The demand of these users is articulated and backed by their own investment. The rest of the demand is diffuse, not aggregated sufficiently to influence the major producers, and is acted-on only by the very few companies willing to run the very high risks of developing it. Thus, the network will be shaped by the articulate, concentrated demand of a few major users. A second consequence is that the externalities, the social gains of a system designed to serve the whole, rather than the few, have not been examined. Indeed, historical experience with railroad development suggests that under these circumstances, private investment tends to conform to existing development patterns. By contrast, public investment in the railroads permitted new possibilities to be captured. It is these new possibilities in telecommunications which the U.S. may forego by relying entirely on the market model, in the context of lost externalities described above.

The second consequence concerns issues of equity. In short, what was once a relatively uniform, national, local and long-distance communications infrastructure is being rapidly changed under the force of market competition. The proliferating networks that result from this competition are all geared to serve the needs of major users of information. In the process, the long-held regulatory goal of universal service for all Americans at affordable prices, is being fragmented. At least over the short-term, as competition drives the evolution of the infrastructure, major users will have first and most complete access to the wide range of new voice, data, video and facsimile services, while the majority of users will have only limited access to a much smaller menu of services, or no access at all. In the U.S., the abandonment of policy control (over network evolution)

to market forces, has therefore meant an abdication of responsibility to ensure the fair and just development of the new communications for the benefit of the nation as a whole. Japan should bear this result in mind as she moves in part to mimic the market-driven model of the U.S., and in part to control the process through a more reasoned and responsible application of policy.

Third, the research base of American electronics is at issue. By shifting from a primarily regulated to a primarily market-driven system, policy has altered the function of Bell Laboratories. From the mid-1950s until the divestiture, Bell Labs played a crucial role in maintaining U.S. preeminence in high-technology. Industries like semiconductors, communications, lasers, computers and software, were all built in large measure of the base of research and personnel coming out of Bell Labs. Because foreign firms had comparable access to the Labs' technical innovations, Bell Labs also served to underwrite their competitive positions. With the privatization of Bell Labs, with the turning of its mission to serve ATT, these benefits have been lost to domestic and foreign firms alike. Even some of Bell Labs' historical functions, like planning the evolution of the local network, have been spun off into a new organization. Bell Labs' primary mission will now be to serve the market competitiveness of the new ATT. Since ATT must now compete in the market, it can no longer permit Bell Labs to act as an international source of technology. Bell Labs has been part of the entrepreneurial base of American industry. Whatever the advantages of the new system, and whether these uncertain benefits outweigh the clear costs of losing our national electronics laboratory, the consequences are largely unconsidered.

Fourth, the impact of market-led rather than regulatory-led change on standards in telecommunications, both for users and equipment competitors, has been likewise unconsidered. We now will have a marketplace struggle over the standards, which threatens to fragment our system and diffuse the competitive energies of our companies. American policy has not used standards to shape competition, as for example Japan has so successfully done in areas like machine-tool controllers.

It is a bit too early to tell how the standards issues will be played out in America. The proliferation of different communications networks and equipment threatens to lead to a situation of high incompatibility. Of course, when the market decides these issues, as it has in the computer industry, de facto standards do emerge (IBM's operating systems in computers, for example). In the process, however, many producers and users of equipment can be obliterated in competition. That is the danger. However, there is also opportunity, for U.S. firms operating in a multi-vendor communications environment are pressuring for the development of standard interfaces and protocols to link together the many dissimilar networks and equipment. If that can be achieved, then U.S. companies could gain a strong competitive edge on world markets in developing the software that underlies the inter-communication of dissimilar information systems.

Finally, of course, the move to market-led change in the U.S. has thrown the U.S. market wide-open to foreign competition. This is a tremendous opportunity for foreign firms, one that Japanese companies in particular are taking advantage of in highly successful ways. But, in our rush to abdicate strategic policy-making in

communications, we forgot to ask for quid-pro-quo from abroad when we opened our market. Since the development of the new American telecommunications infrastructure will have ramifications for competitiveness in computer and computer-related industries, domestic regulation has substituted for trade policy in this strategic industry. There is now a move in the U.S. Congress to require reciprocity in open market telecommunications opportunities -- foreign firms would only be permitted to sell in the U.S. to the same extent that U.S. firms are permitted to sell in foreign markets. Such a move would probably affect European firms more than Japanese companies, since you in Japan have made great efforts in recent years to begin to open your telecommunications market to U.S. firms. And since we have now briefly sketched out changes in the U.S., perhaps this is the best place to examine our American perceptions of the changes in Japanese telecommunications policy and practice.

The New Japanese Regulation Seen From America: We outline here our understanding of the implications for American companies of the changes in the management of the Japanese telecommunications system. We do so both so that we may be corrected, where appropriate, in our understanding and so that you may understand the perspective from America. We emphasize that the decisions about the configuration and character of the network itself are properly entirely domestic choices. We admire Japan's recognition of the significance of creating such a new information infrastructure. Indeed, we applaud the decision to exploit the potential of the new information

infrastructure to promote growth and shape the dynamics of the Japanese economy. And we especially admire your resolve to retain a strategic policy control over the process of change rather than completely abdicating that responsibility to the market as we have done in America. Overall, a better understanding of the possibilities and goals of the changes occurring in Japan is one of our gains in participating in this discussion with you.

In examining the telecommunications infrastructural changes occurring in Japan, we focus on the new communications laws that may take effect in 1985, the NTT Law (assuming it is adopted when resubmitted in December, 1984) and the Business Communications Law. Again, for purposes of the discussion, we adopt the definition of New Media offered by the New Media Committee chaired by Professor Imai. The term new media is used to indicate all the communication media which utilize the new, innovative, telecommunications and informational technologies. However, we do not focus on the New Media Committee's recommendations. Instead, we focus on the new communications laws because, in our view, these are the first critical steps in Japan's move to implement new media policy. As we proceed, we are guided by two overall issues that the new laws raise: First is the creation of the new communications infrastructure in Japan; second is the question of whether the changes occurring in Japan will create or resolve American trade complaints.

Let us begin by considering the new NTT law. We note for American readers and participants that Nippon Telegraph and Telephone (NTT) has been Japan's domestic, public, common carrier communications



monopoly under the administrative control of the Ministry of Posts and Telecommunications (MPT). In addition to monopolizing common carrier communications, including data transmission, NTT offers data-processing time-sharing services, licenses all communications and runs four very advanced electronics R&D and systems engineering laboratories. Since its formation in 1952, NTT -- under MPT's direction -- has engaged in joint R&D and systems engineering to develop network equipment for Japan's public-switched communications infrastructure with a favored 'family' of major Japanese electronics companies (NEC, Fujitsu, Hitachi and Oki). NTT has helped to develop and finance pilot and mass production systems for manufacture of the products jointly researched and developed. Crucially, NTT has procured high volumes of equipment and systems at premium prices from its family companies -- which serves both to make demand highly predictable and stable, and to subsidize price competition for those Japanese firms on export markets. It has even engaged in direct export-finance. Of course, all of these developmental activities have been closed to foreign firms. In essence, NTT's industrial policy role has enabled favored Japanese telecommunications-computer-semiconductor companies to develop and commercialize new technologies in a protected and subsidized, risk-minimalized way. The resulting equipment has been procured in high volume at premium prices until quality and cost have reached world levels, enabling rapid competitive penetration of world markets by major Japanese firms. As data processing and telecommunications have converged, NTT has emerged as an important element in electronics development.

The NTT law, as we understand it at the time this is written,

is a substantially watered-down implementation of reforms recommended by Japan's Second Ad-Hoc Commission on Administrative Reform in its Basic Report of July, 1982. The Commission had recommended that NTT be divested in a form roughly paralleling the break-up of ATT in the U.S. -- a central company was to control the trunk lines network, and local companies were to operate local services: the government was to hold 100% of an initial stock offering, but then sell off up to 49% of ownership to Japanese holders over time: new entrants were to be permitted to compete with NTT in the delivery of enhanced and some common carrier services. The new NTT law scraps plans to divest NTT into the central and local companies, but implements the stock-holding and (in conjunction with the new Business Communications Law) liberalization of competition reforms. Thus, the new NTT will be initially held 100% by the government, which will gradually cede up to 49% ownership (with the approval of the Diet). Critically, no foreigners or foreign companies will be permitted to buy stock, although a Japanese company held less than 50% by foreign interests will be technically eligible as a shareholder. Moreover, NTT will now be free aggressively to compete in the delivery of enhanced services in the Japanese market (see next section on competition in Value-added Networks) -- and may even be permitted to de-average its rate structure in order to compete with potential common carrier entrants on high density voice and data transmission routes (e.g. Tokyo-Osaka). If and when the new NTT law goes into effect, NTT will be one of the largest companies in Japan, with about \$40 billion in assets and annual revenues approaching the \$20 billion mark.

Just as NTT's overall developmental activities have been closed to foreign firms, its procurement has been equally closed until

recently. Until the U.S.-Japan Agreement on NTT procurement was implemented starting in 1981, less than one-half of one percent of NTT's annual procurement had gone to foreign firms. Since the U.S.-Japan Agreement, NTT procurement from foreign firms has risen steadily, from about \$15 million in 1980 to about \$140 million in 1983. The 1983 figure still represents less than 5% of NTT's estimated annual procurement of about \$3 billion (we estimate traditional telecommunications equipment to account for roughly half of that total).<sup>\*</sup> The U.S.-Japan Agreement was renewed for three years in December, 1983; and it was hoped that the renewal would help more fully to open the Japanese market to U.S. suppliers (Rohm has sold a few PBXs, ATT many small computers, and Cray a supercomputer since the renewal). It is in this context that the new NTT law gains added significance: As the government's ownership of NTT is reduced over time, it is possible that NTT's procurement will fall gradually out from under the coverage of both the U.S.-Japan Agreement and the GATT Code on Government Procurement.

\* With the exception of a few PBXs, one transportable digital switching system, pocket bell pagers, multiplexers and satellite communications components, there has been no foreign procurement of telecommunications equipment -- despite the acknowledged competitiveness of big-ticket items like digital switching equipment made by U.S. and foreign producers like ATT, Northern Telecom, and Ericsson. Most of NTT's current foreign procurement is data processing components, peripherals, computers and systems, and semiconductor manufacturing and test equipment. Thus, despite years of pressure from the U.S. government and the U.S.-Japan Agreement, the Japanese market for telecommunications equipment still seems to be largely closed to U.S. and foreign firms.

A crucial question in this context, is whether NTT will continue its comprehensive developmental role for Japan's major electronics equipment manufacturers. There are important signals that in many areas that developmental role will be more limited than in the past, especially as NTT enters the market in competition with its 'family' companies, in particular NEC and Fujitsu. For example, although the data is sparse, it appears that the percentage of NTT procurement accounted for by NEC, Fujitsu, Oki and Hitachi, has fallen from 60% in 1978 to 30-40% in 1983 (although the value of this procurement has remained relatively constant). This self-conscious diversification of NTT's supplier base suggests that opportunities for U.S. and other foreign firms to participate in NTT procurement may well proliferate. In our view, the critical variable will be whether MPT will push NTT to continue its developmental role, or permit it to continue to diversify its procurement. If the developmental role continues, we expect it will center largely in the networking equipment area (since NTT itself will not become an equipment manufacturer for the foreseeable future). Because NTT's foreign procurement may continue to be limited, a concern widely expressed in the United States is that as just another stock-held Japanese corporation, NTT will be much more immune to government-to-government negotiations to open its procurement.

Whatever occurs with NTT, however, there should be substantially increased opportunities for U.S. and other foreign producers in Japan because Japan's private sector now actually procures more telecommunications equipment than does NTT. This fact both demonstrates the tremendous speed at which change is occurring in Japan, and signals the potential that is emerging for vast new market

opportunities. We believe that this is a hopeful sign of the possibilities of eliminating U.S.-Japan trade tensions, assuming of course that U.S. firms are permitted to sell to Japan's private sector. Overall, then, it appears that most U.S. equipment manufacturers looking for opportunities in Japan might well flourish by looking toward NTT's competitors (domestic and foreign) in the services arena as they begin to build competing networks. It is to liberalization of competition in services that we now turn.

The Business Communications Law is our next concern. Since 1971, MPT has gradually begun to relax restrictions on telecommunications in the domestic Japanese market, to take account of the convergence of data processing and communications. A revised telecommunications law in 1971 provided a legal basis for data communications, permitting users to connect with the public network and with leased lines (in some cases, only with the approval of MPT). However, message switching (the most simple kind of value-added network -- see below) was prohibited. In 1972, facsimile machines were permitted interconnection. In late 1982, on-line information processing systems were completely decontrolled. Under a ministerial ordinance MPT also liberalized some portions of the value-added network (VAN) market, permitting limited VAN services for small and medium enterprises, including internal corporate VANs for affiliated enterprises (e.g. Fujitsu F.Y.P. provides administrative information exchange among Fujitsu-related software development companies). Of course, permitting internal corporate VANs provided the major Japanese corporations who might compete in a fully deregulated VAN market with substantial in-house experience in setting up and running VANs. (n

this simple way MPT policy helped prepare Japanese firms for the coming full deregulation of VANs. The concern outside of Japan is that this policy increased competition in Japan among Japanese firms but did not allow entry of foreign firms.

The new Business Communications Law takes liberalization a step further by deregulating the VAN market in Japan and even opening it to foreign competition. For purposes of the law, we must distinguish three types of VANs -- literally, networks where data transmission is enhanced but the contents of the data are not changed. The simplest VAN is message switching, in which data is transmitted and switched on to a final destination, but neither communication nor information processing occurs. The second type of VAN stores and forwards data adding communication processing (e.g. speed/code/protocol/format conversion) but not information processing (e.g. processing for cryptograph, statistical file, credit inquiry). The third type of VAN adds information processing to the network's functions. The new law clearly deregulates the first two VAN types. It is an open question whether the third type of VAN falls within the new Law's purview, or whether it will be considered an information processing system.

The distinction is important because unlike for information processing systems, there is a "notification" requirement for VANs under the new law: While entry into the VAN business is ostensibly deregulated, any potential entrant must "notify" MPT of its intent to offer VAN services. Crucially, "notification" is not self-activating; rather, it requires an acknowledgement from MPT. In effect, then, MPT permission to operate must actually be obtained. Hence, even though foreign firms are permitted for the first time to offer VAN services

on the Japanese market under the new law. MPT will have the final say over which firms and which networks are permitted to operate. This is an interventionist rather than merely regulatory power: MPT's decisions permitting or denying VAN operations will structure the VANS market in Japan.

MPT fought long and hard against MITI to win the new law's notification requirement. During the battle, MPT was forced to drop a proposed 49% limitation on foreign ownership of VANS in Japan -- in part because of strong opposition from the U.S. Nevertheless, MPT's victory in winning the power to screen applicants over MITI's objections (combined with MITI's defeat by the Ministry of education over MITI's proposed software law) reflects a partial reshuffling of policy control over the emerging information economy within the Japanese bureaucracy, and suggests some of the limits of MITI's power in Japan. MITI had wanted VANS to be considered as information processing subject to its own administrative guidance, and thus called for complete deregulation of the VAN market in Japan. Under the influence of some economists, MITI also seems to be invoking market generated 'state' economic efficiency more than in the past, and this factor also accounts for MITI's call for full deregulation. By contrast, MPT wanted to extend its own jurisdictional authority into the information processing realm, implicitly at MITI's expense. Because the distinction between VANS and data/information processing networks is increasingly less tenable from a technological standpoint, future policy control over the evolution of Japan's information-based economy lies hidden in the MPT-MITI fight over the new law. We can expect many similar bureaucratic battles over the next few years as information networking evolves in Japan.

Consequences:

We return to the two major issues raised by the new laws. First, the new laws appear to be the critical first steps toward implementing the potentials of the new media in Japan. As our discussion suggests, the new telecommunications infrastructure emerging in Japan will combine competition in the market between NTT, major Japanese companies both private and public, and foreign firms like IBM and ATT, with a continued policy guidance aimed at ensuring that the new infrastructure serves important public goals. This combination of market competition and policy guidance is certainly quite different from the completely market-led approach adopted in the U.S. We applaud these efforts to develop a uniquely Japanese approach to guiding the development of the new media, and we suspect that your efforts will be highly successful in creating a very efficient new communications infrastructure for the Japanese economy. Indeed, we feel that U.S. policy-makers have much to learn from Japan's way of handling these issues -- and learning from you is one of our primary reasons for participating in these joint discussions.

Second, however, an American concern is that the Japanese market will continue to be closed in strategic ways, and Japanese policy will continue largely to favor Japanese producers and help to prepare them for competition on world markets. The coming market battles in communications and information processing in Japan between Japanese and foreign firms will signal exactly how formidable emerging Japanese suppliers of end-to-end voice and data communications systems are likely to be on world markets. U.S. firms should find increased



opportunities to sell equipment and services in Japan as a result of the partial liberalization of the domestic market effected by the new laws. However, the Japanese market business of U.S. firms will continue to be subject to regulatory control by the Japanese government (in particular, the Ministry of Posts and Telecommunications (MPT)). And paradoxically, liberalization of competition in Japan could well strengthen MPT's ability to use policy toward NTT to assist development of Japanese industry, since the existence of competitors will provide a justification for MPT action. Indeed, because that continued regulatory control will be less formal than in the past, U.S. firms worry that they will find their opportunities systematically limited in ways less amenable to resolution through government-to-government negotiations. The controversies between the United States and Japan could be vastly reduced by alleviating fear that the domestic Japanese market will be made to serve as an invaluable base for Japanese firms to fashion and hone competitive strengths in the delivery of enhanced communications services like value-added networks (VANs). We hope to better understand the intent, purpose, and anticipated consequences of the new regulation.

Resolving the awkward issues and eliminating troublesome concerns will permit us to develop together the new technologies and media. We need to draw jointly on our technological efforts and our experience managing and regulating the evolution of this system. We hope that the United States can learn, in particular from Japan, the importance of the media networks as economic infrastructure and the significance of shaping them to our social and economic needs. On this trip and the others which will certainly follow, we hope to learn

from your efforts.

-- The Implications of Managing the System Differently --

American policy has decided to allow the market to create the new infrastructure. It will not, as a matter of national policy, attempt to shape the next generation media. Nor will it attempt to create market advantage for American firms or exploit the close link to the other information industries. The infrastructure that emerges in America will reflect the needs of our major businesses and government as delivered in the form of network products and services by the new ATT, the divested Bell local operating companies, and the myriad of competitors that are emerging at the national and local levels. The infrastructure will undoubtedly be highly diverse, composed of both wholly private and public information networks that are interlinked, but it will be shaped with little regard for social cost and benefit externalities by concentrated demand, and will be accessible for the most part only to major users rather than to all Americans. The hand of policy will be limited, and as a consequence, important strategic issues will not be faced upfront. These include the loss of Bell Labs as a national R&D facility in electronics and related technologies, and the loss of opportunities to set standards in ways that could create advantage on world markets for domestic and foreign firms operating in the U.S. Other serious strategic issues, like the opening of our market to foreign competition without reciprocity, will be dealt with on an ad-hoc basis by Congress -- something that will alternately create and resolve international tensions. Overall, market-led development of the information

industries and infrastructure in the U.S. will create tremendously dynamic competitive market opportunities, but the apparent cost is the loss of strategic and reasoned policy guidance over the changes taking place.

Japanese policy, by contrast seems to be consciously shaping the character and configuration of the network. We have great admiration for this objective. Japan's way through the maze of changes also strategically retains the potential to use the procurement for that network as an instrument of development for Japanese industry. That policy, and ours as well, will have international consequences. If that policy appears to discriminate against American firms, it makes domestic policy an international issue. We would emphasize that an asymmetry in telecommunications trade, a substantially open American market and a substantially closed or difficult to access Japanese market, will not be politically stable. Japanese policy for new media is likely to determine whether the American market remains open. It will shape international views of the terms on which Japanese domestic development is being promoted.

We enter a new technological world together. Japanese and American technology and policy are likely to define the future directions of new media and the telecommunications/information industries on which the new media rests. Issues of disagreement and conflict will emerge, but they must be subordinated to our common interests in generating domestic growth and exploiting the possibilities of the new technologies. That will require a willingness to confront the difficult problems together. The challenge is to learn from each other's efforts to manage this transition. We at BRJE welcome this opportunity and look forward to

the possibility of working with you to reach our joint future.