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Why We Need an Industrial Strategy for the United States Economy

*Robert Cohen, Ph.D.**

I would like to respond to the question of whether we should have an industrial policy in a strongly affirmative way. It is necessary for us to have a more focused industrial policy, which I would redefine as a focused economic strategy. I would like to also respond to the points that were raised in the Conference materials about questions concerning industrial policy. We are not holding our own in many of the technology industries that are going to be crucial to the growth of the United States' economy in the future. In fact, we may have already lost the battle. Unless we make decisive efforts, there will be entire areas of future technology competence in which the United States will be lacking. If this happens, our economy will suffer by having slower productivity and employment growth.

I think that an industrial policy can certainly be consumer friendly. There is no need for decisions to be made that would inadvertently, or in an unfriendly way, affect consumers. In fact, the argument here in terms of consumer preferences should not be over how many choices are available to consumers via free trade. It should consider what kind of economic base we have for the future if we lose some of these core competences in our industrial economy. I compare these to the analysis that has been done over the last few years of the core competence of the corporation and transfer this concept over to the core competence of the economy. We are failing to provide the ultimate consumers in the economy with adequate new jobs, with new technologies that provide the kind of growth in productivity and growth in real wealth in the economy that has been our experience in the past. This failure has become evident during the last fifteen or twenty years.

We also have to talk directly about the concern that is often raised about picking winners or losers. There is a very poorly recognized but well documented history in the United States of industrial policy. When we did this at our best, we followed a kind of agricultural parallel. In other words, government set the environment, provided the nutri-

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The following text was compiled from the transcript of the remarks made by Dr. Cohen at the Conference. It summarizes recent work on the communications industry, published by the Economic Strategy Institute, as "The Economic Impact of Competitiveness," Broadband Communications on the U.S. Economy and a previous paper on industry policy, "Picking Winners and Losers."

ents, assured that the rules of the game were even, and then got out of the way. In some cases, this involved a very short-term presence. But in terms of nascent industries, a few instances where we did the best involved a long-term vision and a long-term commitment to insuring that we had a global presence in those industries.

I would like to recount some of our own experiences and our own successes, which I think are very poorly recognized in the whole story of industrial policy. In fact, in examining them closer, I feel that the Japanese, who have been cited as some of the most successful users of industrial policy or economic strategy, are the copycats and we were the originators.

Why should we have a more focused industrial policy? Other nations, particularly Japan, have undercut our strategic industries of the future. Key technology industries such as robotics, machine tools, and semiconductors have been affected over the last decade or two. Our loss of these industries will dramatically impact the development of a range of new technology industries in the next several decades. This will occur not only in relation to Japan but through efforts to promote national infrastructure of the future in Taiwan, Hong Kong, Korea, Singapore and the European Community. I am not singling out Japan as the only nation likely to be effective and the only opponent in terms of how we respond to new types of competition. What has characterized this approach by our rivals is trying to figure out how to shape the environment, how to influence outcomes, and how to create another new dimension. Many of these countries think in supersectoral ways. They are no longer thinking of this industry versus that industry, but trying to look at areas where a confluence of technologies becomes crucial for growth.

When Singapore sets an industrial policy for the information sector it is not just talking about computers, it is investing in communications, computer skills, software development and a whole range of related things. The efficiency of individual corporate decision making has changed. A software firm's decision may be good for itself, but put in the context of this information complex, that decision may be detrimental to the national interest. That is what a number of the more successful countries have begun to do. They look at these future opportunities and future growth prospects in terms of a complex of industries. The fact that these complex decisions are not handled well by decision making at the micro-level is another reason for having a focused industrial policy.

This loss of technology leadership in some of the critical sectors that we have experienced over the last decade or two provides additional reasons why there ought to be a focused industrial policy. What has this loss done to the U.S. economy? For one, it has reduced our future innovation because the few firms that are left in an industry

such as robotics are hampered by a lack of economies of scale needed for the investment to develop the future technologies, new equipment, R&D, and new manufacturing experimentation to move on to the next stages of innovation. In addition, the small number of companies that are left reduces the overall profitability and the individual profitability of the companies that remain. This has a dramatic impact on the amount of Research & Development ("R&D") spending that they can do. Certainly in the robotics sector that R&D spending has been diminished considerably.

Secondly, I think that the impacts of foreign industrial policy have limited U.S. productivity gains since the U.S. companies that are using technology get delayed deliveries of critical equipment. For example, in the machine tool industry, Mercedes and Toyota will get innovative machine tools before Ford, GM and Chrysler. Nobody has done a quantitative analysis of what this means, but certainly the year and a half, two, or two and a half year delay means a lot to the competitiveness of our auto industry. So, our loss of competence in certain technology industries spills over and has a dramatic effect on the competitiveness of other sectors.

The third point is that the loss of the key technology industries erodes the chain of their supplier companies. These firms begin to falter and often go out of business. In the semiconductor industry, one of the things that was noted as soon as the Japanese share of the global market and the U.S. market accelerated was a real erosion of many of the "food chain" industries that provided intermediate goods for making semiconductors. Semiconductor equipment manufacturing companies and packaging companies almost disappeared or were bought out by the Japanese.

Fourthly, the ability of U.S. companies to shift into new critical areas where competences need to be created gets eroded by the political turf fighting and disagreements that can affect certain sectors in the United States. Right now we are facing this kind of issue in the telecommunications industry where we have cable companies versus telephone and computer companies who want to see the communications infrastructure become far more friendly to the use of digital technology. Yet the phone companies are saying, we want to do it the way we always have since this is the way we invented it in the United States. I was very struck by an announcement in the press from Japan concerning NTT, the National Telephone Company for Japan, which has been a pioneer in moving into advanced technologies. It decided to take one route, which was to go with Integrated Services Digital Network ("ISDN") technology, a technology which has been introduced in Europe but has not had much success in the United States.

Last year, because there were not many applications available, NTT lost a half billion dollars and invested about \$450 billion. They

have now decided that, instead of doing this two-step ISDN route to move to new technology areas, they are going to adopt the technology of packet switching which the computer companies in the United States, and many of the other very well informed people, believe is the one-step way to go towards the future and to do it less expensively. They expect to cut their investment costs in half so that next year they will only need \$200 billion of new investment. But I think, more importantly, it is a way of moving ahead that involves a consensus in Japan. When NTT decides to do something, it is not some intelligent executive at the top, but rather it is a series of discussions between the Japanese electronics industry and the Japanese Government.

This same kind of cross-fertilization and "cross-thinking" has occurred successfully in the telecommunications industry in both France and Germany, where there has been a recognition that certain key applications have to be seeded. The German Government has decided, along with the major electronics companies, to set up an experiment in Berlin where all types of advanced applications are being funded, examined and developed with the private sector. There is a sort of public/private collaboration in figuring out how to move ahead.

This ability to set an environment will enable these countries to move ahead in telecommunications. The question is whether the US, facing various kinds of old-fashioned frameworks, will be able to assemble the kind of collaboration needed to overcome the barriers to progress.

What does the competition do that we do not do? Here I am trying to set forth some lessons that we ought to pick up and apply to our own thinking for the future. One thing that is clear is that the competition tries to be intelligent about economic development. They try to bring together the best minds that they have, the best knowledge that they can put together, to shape the direction of their economy. We spend much less time doing that.

I spoke recently with Professor Wassily Leontief, the Nobel Prize Winner from New York University for input/output studies. Most of his time today is spent thinking about helping Japan. Most of his students, who are thinking about the future, are in Tokyo working for Japanese ministries. A series of Japanese ministries employ something like 200 economists working on input/output analyses. In the United States, the Commerce Department has probably a dozen, at most two dozen, people focusing on this. We give it very little importance in evaluating what our policies should be.

In Japan, when I have looked at the computer industry or the semiconductor industry, there are input/output tables that I can refer to which show me exactly how much the Japanese believe the electronics and information sectors will contribute to their economy in the year 2000 or the year 2010. I have heard they have taken their estimates

another ten or fifteen years down the road.

It is this ability to evaluate the long-term evolution of both the global and the national economy that some of our competitors possess that we do not. Some other examples will illustrate this point.

In France, when there was concern where the electronics industry was going, the President established a formal committee to evaluate digital communications and the computer industry. This committee evaluated what kind of approach should be taken. It involved both public and private sector people and some of the leading thinkers in France.

In Germany, there is an ongoing circle that centers around some people in Munich that informally collaborates with people in the government. This group includes people in industry that think about what kind of public policy changes are needed and what kinds of initiatives are required to assure German competence in advanced communications.

In Japan, future technology groups meet and report in a formal way to the Agency for Science and Technology about what new technologies are emerging. What is interesting about these groups is that they try to isolate the critical barriers in developing new technologies. In other words, we have had an approach over the past that what is good is to promote pre-competitive technology, but this group identifies *specific* barriers to *commercial* success to be addressed by both industry and government.

In Japan, what these future technology assessments do is identify what new technology industries are emerging. This gets down to very, very specific things. One of the more fascinating things that these assessments did in the last three or four years was to look at the connection between different technology fields. In other words, how could you use biotechnology and electronics to come up with new products or new industries. One example was how to create products such as something to open your office, car or house doors by putting your fingers into a slot and having the electronics read your fingerprint, or body heat, or both, and then open the door, thereby doing away with keys. It is this connection between different, usually unrelated, technology industries that they were trying to explore. They point out not only what technologies are emerging but they also try to identify where private industry is likely to support the funding for those emerging technologies and where it is unlikely to support the funding for those emerging technologies. These groups then recommend that the government step in where there is an enormous opportunity, which may be missed because the private sector may feel that there is too much risk to put its own funds in place. So, the government acts as a facilitator. The government's effort is matched with these abilities to identify the roadblocks in commercializing new technologies.

Overall, the aim of these exercises is to identify where the future value in the economy is going to come from and where the biggest gains in marginal productivity will be. In other words, where are these economies likely to gain the most in global competition and in the generation of jobs? These two questions are critical for the United States. The whole question of developing chains of inter-related industries that are totally or very largely interdependent upon each other, whether it is groups of suppliers and final users, or industries where technology developments in one sector are very significant in the success of another sector, are very critical and well recognized by other countries and not as well recognized by our own policies.

The other thing that our rivals do that is significant is to set forth some vision of where they would like to see their economy move in the future.¹ This could be called a road map, but in many cases it sets a strategy that identifies some direction for overall policy. Certainly the Ministry of International Trade and Industry ("MITI") is best recognized for doing this. From time to time, MITI publishes a series of visions, in some cases for computer industry or semiconductor industry, in other cases taking a much broader vision of where the entire Japanese economy is going. They are not the only ones who have done this. Certainly, the European Community has set out a series of technology plans, usually for a five-year period. The Europeans focus on specific sectors and have plans for specific industries that have been assembled as a result of consultations between industry and policy makers. They have now moved much closer to the marketplace in terms of their orientation for their programs and they have put a much larger emphasis on software and on knowledge-intensive applications.

We are also seeing these visions or road maps developed by newly-industrializing countries. What is fascinating is to see Singapore, Hong Kong, Korea and Taiwan developing information technology plans. They are identifying the kinds of skills and important sectors that they feel they have to develop, providing incentives for private firms to come in to assure that some of these skills are available in the economy, and almost becoming technology "way-stations" by having fiber-optic links from one place to another to assure that they have the best communications.

A friend was startled recently when I said that the new fiber-optic link that is being developed by a number of phone companies to Asia runs directly from Marseille in France to Singapore in Asia without stopping. He was amazed that it did not go through India or the Middle East. It goes directly from Europe to Singapore and the time for transmitting a message over that length will be less than one second.

¹ See generally MARIE ANCHODOGUY, *COMPUTERS INC.: JAPAN'S CHALLENGE TO IBM* (1989).

So, the distance between the global community becomes almost as though Asia is next door to Europe. These capabilities will include not just voice communications but also video and data and a myriad of other abilities.

In addition to these visions, the other thing that our competitors do is figure out how to cope with the failures of industrial policy. The best example of this was in Japan where a series of initiatives in the 1950s and 1960s to raise their semiconductor industry to the level of the industry in the United States failed. Japan went through a series of four programs with the first three resulting in complete failure, largely due to Japan's inability to create the kind of semiconductors needed for computers. But in the fourth program, Japan's government and industry put together what was a "Japanese Manhattan Project" and reached a level of equivalency with American semiconductor technology. The ability to do this and figure out how to cope with failure is also very key to moving ahead.

How should the U.S. respond to these challenges? What we need to do is re-establish the kind of structure that has been used by our competitors overseas. We need an economic strategy. We need a vision of where the economy is going and what problems need to be addressed. We have to establish complimentary policies to this vision and to collaborate with industry. We need to set out ideas for key and emerging technologies and make sense of what is often a complex system. We need to move beyond traditional American support for R&D that has characterized our policies since the late 1940s and consider how to commercialize new technologies more successfully.

I want to provide a couple of examples of how the U.S. government was an initiator and succeeded in using industrial policy. At the end of the first World War, the United States faced a situation where much of the emerging communications technology was in foreign hands. When President Wilson went to the Versailles Treaty negotiations, he was shocked that the U.S. might not have the capability to contact its own fleet or its own merchant marine with wireless communications. Marconi, Siemens and other companies in Europe dominated this technology and owned most of the patents. Franklin Roosevelt, who was the Assistant Navy Secretary, was also involved in these decisions. When the US delegation returned, officials organized a series of meetings to discuss with General Electric and a number of other companies what might be done to reverse the situation where the United States would end up being a technology purchaser rather than a technology innovator. The officials and industrialists recognized that the future might see the development of wireless communications and other technological possibilities that would grow out of this new technology.

What did the United States do? Under President Wilson, it established the Radio Corporation of America, RCA. The stock owners in

RCA included some of the key technology companies of that era: General Electric, Westinghouse, and AT&T. It also included United Fruit, one of the major users of wireless communications for its fruits shipped from Latin America. Another shareholder was the United States Navy which owned twenty percent of the stock. Government contracts permitted RCA, in its infancy, to purchase the kind of equipment it required and to pool patents. A change in the antitrust laws, which other consortia could not do, gave RCA the boost it needed. This was one of the most successful consortia ever created, because in the early 1920s, RCA began to develop radio technology, which achieved a huge commercial success.

What RCA demonstrates (and it is not a well known story) is the ability of the United States to focus on an area where we are behind, to create the kind of symbiotic relationship between government and industry to get us active in a technology, and to set up the kind of vision that can lead us into the future.

I think there are other cases where we have been successful and not successful. In my view, the successes outweigh the failures. We set the context and probably taught other countries how to play this game. Currently, we are losing and we need to do something dramatically different from our approach in the past. We need to implement an economic strategy for our country that will move us ahead.