UNITED STATES GENERAL ACCOUNTING OFFICE

PROCEEDINGS OF

A ROUNDTABLE DISCUSSION

ON

PRODUCT QUALITY -- JAPAN VS. THE UNITED STATES

TUESDAY, AUGUST 19, 1980

AFMD-81-60

JUNE 22, 1981

PREFACE

At the request of the Subcommittee on Trade, House Committee on Ways and Means, the General Accounting Office (GAO) began studying Japanese approaches to product quality and comparing them to approaches typically followed by American firms. As part of that effort, a 1-day roundtable discussion was convened at GAO where 15 well-informed representatives from industry, labor, academia, and Government participated, along with the then Chairman of the Subcommittee on Trade, the Comptroller General of the United States and several congressional staff members. The full day's transcript is contained in this document.

The purpose of the roundtable was to promote discussion on the many aspects of product quality, and to demonstrate the pervasiveness of this term, from the broadest of national economic policy and strategic planning, to the individual company level, down to the shop floor where actual quality goes into a product as ultimately measured in the marketplace. Discussions covered a myriad issues, including:

National strategic planning and policy making

--A comparison of economic policy for planning and implementation

--Cooperation among corporations, banks, and Government

--Long-range economic planning--targeting of industries and the role of product quality

--Government tax policy, investment policy, savings, research and development, and long-term growth of firms

Marketing strategy

--Concept of global market share

--Product quality as an integral part of strategies for market penetration

Production/product quality standards

--High technology

--Capital intensity; automation for efficiency and quality

--Emphasis on "process" to achieve consistently high quality products

--Quality control

.management's responsibility

.quality and productivity not seen as trade-offs

.concept of zero-defects

.statistical techniques to "fine tune" the process and maintain high quality

Concept of management and employees as partners

--Company policy of assuring job security

--Management practices to assure productivity and quality

.quality circles and participative decision making

.communication and cooperation

.top managers responsible for quality

.training and development of people

.product designers required to understand production needs

Comparisons between Japanese and U.S. approaches and emphasis on product quality had a specific purpose in this roundtable discussion. That is, the Japanese model appears to demonstrate the pervasiveness of product quality as a tool for economic and strategic planning on a national level, as well as for the structuring of cooperative linkages among Government, industry, and financial institutions; for cooporate structuring, planning, production and marketing strategies; and for management/labor relations and commitments which have been conducive to high rates of productivity without compromising product quality.

To the extent, therefore, that an examination of the Japanese "system" provides insights into this nation's needs, then Japanese/U.S. comparisons are useful.

We are deeply grateful to the participants whose contributions provided rich insights into the myriad issues which, in combination, comprise the definition of "product quality" and its importance in the competitive marketplace.

Donald L. Scantlebury
Director and
Chief Accountant of GAO

P A R T I C I P A N T S

THE HONORABLE ELMER B. STAATS,
Comptroller General of the United States

GAO National Productivity Study Team:

MR. ED FRITTS, Moderator
Group Director for Private Sector Productivity

DR. FRED TARPLEY, Co-Moderator
Geoergia Tech University

MR. BRIAN USILANER, Associate Director
National Productivity Group

MR. NICK HORSKY, Team Member
Los Angles Regional Office

MR. DONALD L. SCANTLEBURY, Director
Accounting and Financial Management Division

PANEL MEMBERS:

MR. RALPH J. BARRA, Manager
Corporate Product Integrity
Research and Development Center
Westinghouse Electric Corporation
Pittsburgh, Pennsylvania 15235

DR. JACK BARANSON, President
Developing World Industry and
Technology, Inc.
915 15th Street, N.W., Suite 600
Washington, D.C. 20005

MR. DALE CUNNINGHAM
Vice President for Quality
Texas Instruments, Inc.
Mail Station 223, Box 225474
Dallas, Texas 75265

DR. W. EDWARDS DEMING
4924 Butterworth Place
Washington, D.C. 20016

MR. FREDERICK L. HAYNES, Director
Cooperative Generic Technology Program
United States Department of Commerce
Washington, D.C.

PARTICIPANTS (Continued):

MR. ROBERT JENSEN
United Auto Workers
8000 East Jefferson Avenue
Detroit, Michigan 48214

MR. TAKAO NAGATA, President
Nagata Engineering Corporation
Central Federal Tower
225 Broadway, Suite 2100
San Diego, California 92101

MR. SIDNEY RUBENSTEIN, President
Participative Systems, Inc.
Princeton Forrestal Center
103 College Road, East
Princeton, New Jersey 08540

DR. YOSHI TSURUMI
C/O Mr. Riger
157-62 19th Avenue
Whitestone, New York 11357

MR. WILLIAM J. USERY, Jr.
1730 Rhode Island Avenue, N.W.
Suite 301
Washington, D.C. 20036

MR. CHRIS WADA
Assistant Vice President
Sony Corporation of America
9 West 57th Street
New York, New York 10019

MR. JAMES G. VORHES
Vice President for Consumer Relations
and Service
General Motors Corporation

MR. JOSEPH H. KEHLBECK
Manager for Material Resource Operation
General Electric Corporation

MR. JACQUES FEUILLAN
U.S. Federal Trade Commission

OTHER SPEAKERS:

CONGRESSMAN CHARLES VANIK, Ohio,
Chairman, Subcommittee on Trade
House Ways and Means Committee

PARTICIPANTS (Continued):

DR. W. EDWARDS DEMING, Private Consultant on Statistical Methods, Washington, D.C.

DR. TIM NUGENT, of Congressman John La Falce's staff

MR. JAMES COSTELLO, of Congressman Stan Lundine's staff

MR. BILL VAUGHN, House Ways and Means Committee

MR. ART STEIN, House Ways and Means Committee

P R O C E E D I N G S

MR. FRITTS: Ladies and gentlemen, welcome to the panel session this morning. Before giving our introductory remarks, I think it would help everyone here to know who the panel members are. I'd like to start by having the panel members around the table introduce themselves, and then Mr. Scantlebury will introduce the Comptroller General. First, let me introduce Brian Usilaner on my left, Dr. Fred Tarpley from Georgia Tech, Nick Horsky from our Los Angeles Regional Office, and I'm Ed Fritts, your moderator for today's session.

Dale, would you introduce yourself, please?

MR. CUNNINGHAM: I'm Dale Cunningham, I'm with Texas Instruments in Dallas, Texas.

DR. TSURUMI: Yoshi Tsurumi, Founding Director of the Pacific Basin Economic Study Center, UCLA, and Professor, City University of New York.

MR. RUBINSTEIN: Sidney Rubinstein, President, Participative Systems.

MR. VORHES: I'm Jim Vorhes with General Motors, and I have the Consumer Relations and Service staff of the Corporation.

MR. VAUGHN: Bill Vaughn of the Ways and Means Trade Subcommittee.

MR. FEUILLAN: I'm Jacques Feuillan of the Federal Trade Commission.

MR. KEHLBECK: I'm Joe Kehlbeck, I'm with General Electric but I'm here representing the American Institute of Industrial Engineers.

MR. HAYNES: I'm Fred Haynes, I'm with the Cooperative Generic Technology Program, U.S. Department of Commerce.

MR. NAGATA: I'm Takao Nagata, Nagata Engineering Company.

MR. JENSEN: I'm Bob Jensen, United Auto Workers.

MR. BARRA: Ralph Barra, Westinghouse Electric Corporation.

MR. WADA: Chris Wada, Sony Corporation of America, Assistant to the Chairman for Special Assignments and also Assistant Vice President in charge of import/export.

MR. USERY: I'm Bill Usery, Bill Usery Associates, Inc., and I'm here today for the American Productivity Center.

MR. STAATS: I'm Elmer Staats, GAO.

MR. SCANTLEBURY: I'm Don Scantlebury, GAO.

GAO'S ROLE

I'd like to say at the start that you may wonder who all those people sitting in the back of the room are. Most are GAO staff people who are very much interested in productivity and product quality. A few people have been invited from outside GAO. They're taking this opportunity to get brought up to date on it.

I'd like to just say for the benefit of the panel members, some of whom may not be too familiar with GAO, a little background about us.

The General Accounting Office is an arm of Congress and it's not a part of the Executive Branch. We perform audit work and certain other functions for the Congress, and we report to them on matters that need to be changed. Our basic charter makes us responsible for doing certain types of audit work and, in addition, looking for areas in which the economy, efficiency and effectiveness of the government can be improved. We make recommendations to Congress, we issue over 1,000 reports every year, and the recommendations contained in these reports result in substantial savings to the government, some of which we can measure and some we cannot.

We are an independent organization. The Comptroller General is appointed for a 15-year term, and that gives us a great deal of independence in the work that we do.

In carrying out our work, we've divided our efforts into issue areas; these are major areas of concern that we feel need attention. One of these areas is productivity. That includes not only the productivity of the federal work force, the productivity of the state and local work forces, but also the productivity in the private sector.

With that, I'd like to turn to my boss, the Comptroller General, Mr. Elmer Staats.

WELCOMING REMARKS BY
THE COMPTROLLER GENERAL

MR. STAATS: Thank you, Don.

You have in your folders a list of GAO reports on productivity completed and in progress. These are some of the more recent efforts. I mention this because it reflects, as Don Scantlebury said, the interest we have had in this subject now for some 10 or 12 years. We have a sizeable staff in Washington and in field offices working in this area. It's a matter of high priority as far as we're concerned.

Today, you're going to be addressing productivity from the aspect of productivity and quality control. This comes about, I think as you are familiar, because of the interest which has been generated in the House Ways and Means Committee, and particularly in the Subcommittee on Trade and the U.S./Japan Trade Task Force, to examine product quality as an aspect of product competitiveness. The concern here is with design, operating characteristics, reliability and serviceability which are well known to all of you.

Quality control and reliability, it seems to me, have been trademarks of the U.S. industrial competitiveness historically. But in recent years, this trademark has become somewhat eroded. Japanese products, on the other hand, rightly or wrongly have been sought after particularly now because they have been perceived to be of higher quality in many product lines than those in the United States.

About 30 years ago, I think it would be fair to say that our competition was mostly in the area of price, and now quality takes on more and more importance to the consumer. A commitment to quality control in Japan appears to be shared by labor, by management and by government, and it has been carried over to the Japanese-owned and managed plants in the United States.

What we are going to be concerned about today is how this came about. Where are the examples of high quality control in the United States? Is there anything in this picture where government plays a part positively or negatively? These are some of the issues which are before you. This will be a very informal session. I believe we are making a record of the session so that we will have the benefit of that record for purposes of responding to the Ways and Means Committee.

I believe we have representatives or will have representatives from the staffs of several members of that Committee. I believe Ed Fritts will introduce them in due course, but the idea here is, to put it colloquially, to pick your brains and share in the discussion and get the benefit of different points of view, all to give us a better basis on which to respond to the Committee.

Again, we appreciate very much your joining us. It will be invaluable to us, and while I have to go up for a hearing this morning, I will be spending as much of the day with you as I can. I'll turn it back to Ed Fritts.

MR. FRITTS: Thank you, Mr. Staats.

INTRODUCTION OF
CONGRESSIONAL STAFF

We do have some staff members who either are here now or will be coming. Of course, Bill Vaughn with the Subcommittee on Trade has already introduced himself. We also have other members

from House Ways and Means; Art Stein. If any of you are present please stand up. Thelma Askey; Eileen Bergen. And we have Tim Nugent, representing Congressman John LaFalce from New York; and James Costello representing Congressman Stanley Lundine, also from New York.

Incidentally, I might add that the microphones on the back table are active and we want to encourage the Congressional staff people, because we're working very closely with them, to raise questions to the panel members. You may use those microphones on the back table.

I also understand that Congressman Charles Vanik, Chairman of the Subcommittee on Trade, will be with us very briefly around 11:00 o'clock. I'm sure his time constraints are very tight, and he will probably not be able to stay very long but we will welcome him and I think we will interrupt the proceedings upon his arrival to give him an opportunity to address this audience.

I would be remiss if I failed to recognize an old friend of mine with whom I worked here in GAO for about 7 or 8 years, Fred Haynes, who "jumped the traces" to go to Commerce to head up the Cooperative Generic Technology Program. Fred, welcome back to the halls of GAO.

MR. HAYNES: Thank you.

MR. FRITTS: The only absentee so far is Biff Gale from Music Corporation of America, another good friend of mine whom I met, of all places, in a little port town in Portugal a few years ago. I found out very quickly that if I were going to address productivity issues with Biff, I had better be pretty sharp because he certainly was. So I hope that he can make it later on because I'm sure he could add much to the discussion. And, of course, to all of you, we are very, very gratified that you came.

CONCERNS OVER PRODUCT QUALITY

When I called to invite you I was met with more than mild interest. There was a great deal of enthusiasm, which I perceived to be a form of alarm that this country is perhaps in deep economic trouble. Of course, I'm personally gratified that you came, but I'm also fully aware of your concerns. We share those concerns.

The agenda that you received was our attempt to separate the levels of quality, if I can put it that way, from a national policy level, further and further down to the micro level, or shop level where product quality goes in as ultimately measured in the marketplace. Obviously, we can't separate them entirely. Every single aspect of product quality is related either directly or indirectly to every other aspect. But it's a way, I think, of handling perhaps the discussion here.

BASIS FOR DISCUSSING
U.S. VS. JAPAN

I would like to begin now to get the discussion started by quoting the opening paragraph of Caryl Callahan's paper entitled, "Business-Government Relations in Japan." 1/ Let me emphasize that we're comparing Japan versus the United States, not to introduce an argument as to whether they are better than we are, because that's a fruitless argument. The point is that product quality is one of the finite elements impacting international trade and marketing; the Japanese have learned to capitalize on product quality; and it behooves the United States to find ways to improve its competitive position by improving the quality of products produced. That's the point we want to address. To the extent that we can use the Japanese "system" to better understand our own problems and areas for improvement, then that's what we want to try to do.

JAPAN'S INDICATIVE
ECONOMIC PLANNING
SYSTEM

Let me quote from this first paragraph which I think sets the stage for our discussion of product quality as an element of national strategic planning and policymaking.

"In the post-World War II period, Japan had achieved a rate of growth unmatched in the industrialized world. Contrary to popular myth abroad, this phenomenal growth has not been due to cheap labor, to low profits, to a special Japanese mystique or to any of the other glib and easy explanations of the Japanese economic miracle. Instead, Japan's success has been due largely, to the cooperative interaction between business and government in formulating and implementing detailed plans for the structure and direction of the economy. The indicative economic planning process that has developed in Japan since the War is a non-coercive method by which the government, working closely with industry, sets the overall goals for the economy and communicates them publicly to private firms who voluntarily share in their implementation. The government merely indicates goals, rather than legislates them."

I would like to ask Dr. Tsurumi, who is very familiar with the Japanese system, to describe for us his impression of how the indicative economic planning process works, and then we want dialogue as to what portions of that system, that process, may be implantable within our U.S. system, if any. Dr. Tsurumi?

1/"Business-Government Relations in Japan," Pacific Basin Center Foundation, 1980. P. 2 (available from Y. Tsurumi, Baruch College, New York, N.Y. 10010).

DR. TSURUMI: Let me make a very topical statement. Yes, indeed, the product quality has been the recognized element of Japanese business strategy. There is no question about it in Japan. This didn't come about as a matter of government policy. It has more or less evolved rapidly.

PRODUCT QUALITY AS INTEGRAL PART OF BUSINESS STRATEGY

Personally, I have traced the evolution of product quality as an integral part of the Japanese business strategy. This means that you do not go for pricing or cheap products, et cetera, but certainly for product quality as the distinct competitive strength of firms. Therefore, the firms have endeavored to produce the managerial systems which do not create physical notion of productivity--how many units per hour, et cetera--as a tradeoff against the quality. If you can characterize the Japanese firms, they might be seen as an entity which treats the physical notion of absolute product quality--how many units you can produce--and the scale economy of large scale production as their overriding strategic weapons. Anybody can produce lots of things if they're allowed to produce shoddy things. By doing anything that everybody can do, you do not obtain any competitive edge.

Therefore, a competitive edge in the worldwide export of domestic products can only come from the system which can produce many products, and therefore milk the economy of scale or learning curve effects, and also improve the product quality at the same time.

ROLE OF JAPANESE GOVERNMENT

Now, how does the government indicative economic system fit this picture? The indicative economic system clearly emerged after World War II when the government was put into the subtle role, I would say, of allocating the scarce resources, technology, capital, among diverse private firms for industrial activities.

At the outset, it was just a trial and error method, and out of that something had emerged. When you talk about the indicative economic planning system of corporate growth, you're discussing some kind of corporate visions which the economic planners of the government or business or labor share. The only vision they share is that somehow the world is in a state of flux. This is nothing but common sense observation of reality. Therefore, they have to live in the world of uncertainty. But they want growth, and growth meant a betterment of living standards.

Then, what government can do is to provide some kind of framework for the industrial allocations of the crucial resources, in particular scarce resources, like technology. Technology was

clearly identified from the outset as an independent policy variable by the Japanese government. From the very outset, technology as much as capital or financial investment, has been recognized as an independent and necessary policy variable by the government and by private industry.

The government role is more like giving the first draft of their future vision of the world, like the economic situation 20 years from now. And right after the World War, it was easy for Japan to come up with that kind of vision because the only thing Japan needed to do was to look at the United States or the industry of leading nations and study their industrial structure and all the other things and then say, well, what did it take for them to do all these things? Where are we right now and what will it take for us to move from here to there? And we know that, unlike the United States, Japan doesn't have ample resources to spare. So from the outset, for both government and businesses, the planning concept as we teach it in business school was how to manage growth under scarcity and shortage. The growth target was very easily drawn at the outset by looking at the United States structure.

What government did was to propagate this general notion about the desired target for Japan. To be very efficiently drawn by the government in close consultation with industry and labor, each industry must reconcile different views. Otherwise, diversity of views emerge, and diversity may bring about all kinds of conflicts of interests and jockeying for their own interests. In terms of drawing up a national vision as to, say, the makeup of the economic situation or the desired industrial structure of Japan say 20 years from now or ten years from now, which will again be adjusted as they go on, both government and industry cooperated and tried to come up with some kind of shared understanding of what it's like to be living in the years ahead and what it takes to get there.

The indicative planning was, as the Callahan paper pointed out, nothing but an indicative system.

The word "indicative" is as opposed to a planned "coercive" measure. The government was to indicate what was the desired goal and what were the necessary technologies for private industries to acquire in order to attain their particular goals. The government, then, used foreign exchange allocation and capital allocation processes to simply favor the successful firms which came out of the survival of the fittest to prove that they can produce efficiently and competitively.

SIMILAR APPROACHES BY OTHER COUNTRIES

Now, the indicative economic system, as we understand it, is not unique to Japan. France implemented, rather successfully

in my opinion, the indicative economic planning after World War II because that country also faced the problem of managing growth under scarcity and catching up with Germany and the United States.

But the contrast between Japan and France might be interesting. I don't think this is a superficial contrast. In order to implement the goals of the indicative economic system in France, I don't think the government was able to count on informal but effective cooperation from private sectors. Accordingly, in order to implement the targeted goals, they needed to own the three major commercial banks and use capital rationing processes so that the funds would be channelled into the targeted industries. Also, they came to own some key parts of manufacturing industries, the automobile industry in particular, as well as others.

WHY INDICATIVE PLANNING WORKS IN JAPAN

The indicative economic planning system was not unique to Japan, but the way they went about implementing it might be somewhat characteristic of Japan. This was because there existed in the main, the cooperative mode of interaction between business and government, between especially business elites and government elites. They went to the same school and all kinds of things and they've been doing things together for about half a century now, and after World War II they wanted to do things together.

Therefore, once some kind of shared goal emerged as to the future makeup of the Japanese industrial structure, it was easier for the government to communicate the key targeted industry to the private industries and leave mainly the rest of the implementation to private industry.

The way the government uses the industrial policy is through administered competition. All governments try to administer market competition, but what it does in Japan is to promote the philosophy of "survival of the fittest." You're trying to develop new industries. You don't know which companies are going to succeed. You cannot simply select from the outset the winner and simply get the whole thing done. All you can do is simply call for the candidate entrants into that industry and see which ones will succeed. At the same time, you cannot let too many guys into the play from the outset because the domestic market will be too small to permit any economy of scale.

The government tried to regulate the first of three entrants or four entrants as the domestic market size increased, rather than simply letting the initial entrants cover the increase in growth; let's try to bring in a few more competitors and go through a whole shakedown process. Eventually, they tried to reward the survival of the fittest, and meanwhile, always mindful of allocating the resources out of the declining industry into the future growth potential.

This may be changing in Japan today, but still, I believe that's the Japanese government industrial policy. And this is shared by private industry and is characterized by the survival of the fittest. It's not a conglomerate or a conspiratorial sort of group cooperation.

MR. FRITTS: There are exceptions, in other words. Honda, for example, was an exception to indicative planning because they were not one of the preferred or early winners in the game.

DR. TSURUMI: That's right. It's not a rigid system. It leaves enough leeway for entrepreneurial things. And obviously, the key industry like steel got much more leeway than others, and the government directed the protections of, say, consumer electronics and others. There's enough industry difference.

But the only point I wanted to make here about the indicative economic system is that the government's role has emerged as the kind of conveyor of the future vision of the industry, so that they can signal business opportunities for any private firms to exploit. As a result, the government has emerged as the allocator, the key allocator, of the scarce resources to targeted industries and let the private industries sort of bid for them. Again, I come back to the point of technology, and especially production process technology. When you talk about technology, let's start classifying it. I classify it into the product feature-oriented technology and the production process technology--how to make this particular product once you design it. Then, all these technologies are considered as an independent policy variable. Private firms have internally absorbed that concept and have built their export growth strategy as well on the notion that the quality is the key factor of their success in sales and growth, and sales only follow the reliability of product.

MR. FRITTS: Let's concentrate on the part, for the moment, of the implications of the indicative economic planning system. I would like to hear other panel members comment on their own perceptions as to whether this kind of policy planning is even acceptable within our American system.

MR. WADA: I'd like to supplement what Dr. Tsurumi said by taking an example from our experiences. First, when Sony wanted to take a license from Western Electric in 1953 on the semiconductor, the Japanese Government did not help us; in fact, government made it difficult for us to send the first payment for the royalties. Government did not help us. Certainly, government did help us by taking care of the country and so forth, but in the crucial issue for the success of Sony, government did not help.

Number two, in 1968, the EIA [Electronic Industries Association] said that all televisions from Japan were being dumped. Sony proved to the U.S. government that we were not dumping. After

a thorough examination in 1975, the U.S. government said, "you are not dumping," and so stated in the Federal Register of February 13, 1979. The Japanese Government did not help in this.

What I'm trying to say is that as far as Sony is concerned with our crucial successes, I don't think we had so much help from government. Government is necessary, but I think one does not have to have so much help from government to be successful from the quality standpoint, or from the productivity standpoint. So I wanted to supplement what Dr. Tsurumi said.

MR. FRITTS: What you're describing, then, is that Sony was not one of the industries per se that was in the indicative economic plan at that moment, nor the technology involved.

MR. WADA: That is correct, yes. And many American companies, such as Texas Instruments and IBM, among others, are very successful in Japan. I don't think they had any help from the U.S. government. They have always been scrutinized by government because of antitrust, et cetera. So I think government is very important for us but I think the clue for success is not so much in government, but the clue is in each company.

MR. FRITTS: So there is entrepreneurship within each successful company.

MR. WADA: I think so.

MR. FRITTS: Just as we have in the United States.

MR. WADA: What Dr. Tsurumi said is true, but there are also examples where without any help from government--I shouldn't say any help--but without crucial help companies have been successful.

CAPITAL FORMATION

MR. FRITTS: We must recognize, however, that in the total innovation process the important role of formation and availability of capital is very critical, so in that respect, the indicative planning and to the ownership of the banking system and allocation of resources, government played a very important role.

MR. WADA: Yes. This depends probably on the industry.

MR. FRITTS: Yes.

MR. WADA: There are certain industries which are very capital intensive and we are a little different. Industries such as integrated circuits, steel, and autos, surely need help in capital.

MR. NAGATA: I fortunately or unfortunately have to agree with both gentlemen, Dr. Tsurumi and Mr. Wada. Sony is the same way as Mr. Wada has said, that government never, in a sense, put any support in terms of financial support I think. My involvement with the electronics industry is Sony and Panasonic--they are basically the same way.

Dr. Tsurumi pointed out right after the war in 1945 and 1953, during that time it was natural that government came in and helped private industry because of the fact of financial trouble and needing national solidity. Therefore, government stepped in. But after that, I'm sure Sony as well as major electronics industries, which today we call electronics giants, never were assisted by any financial support.

In order to expand their market research, there are a lot of functions through the government, Japan Electronic Industry Development Organization is probably one of the very successful organizations to expand their market shares throughout the United States or throughout the world, for that matter. But basically we have done it ourselves.

Therefore, what I'm saying is that American industry has matured already in terms of financial standing. IBM is a good example, probably. They're doing one of the best quality products as well as Hewlett-Packard and Westinghouse and we can see it. But they do have financial support by themselves, I believe. Therefore, what we need, what I'd like to see here in the United States in American industry, is they have to get together in terms of the productivity of which we are talking about today, in terms of quality. Then we can be on our feet.

DR. BARANSON: Let me just introduce a little leavening to this loaf. There's no question that in Japan, beginning in the early period of the 1950's when they were infant industries and where government support was of a very pervasive kind of orchestration and the government supplied the typical pattern of government support, which was in successive waves. And there's no question, as Mr. Wada and Mr. Nagata have pointed out, that the government policies have always had a certain ambivalence and have on the one hand, chosen instruments and in a sense of nurturing the early stage of the industry as a whole; and at the same time, maintaining a kind of free for all in the internal competition.

In the early period of the electronics industry, for instance, there were something like 80 or 90 radio manufacturers. In television, there were 20 or 30 which finally filtered down to 10. The government had certain policies which at a certain stage encouraged rationalization and merger. And there are such things as the Sony's and the Honda's, the Toyokogyo's, the Matsushida's and so on, which became the sixth and seventh tier but which don't get preferential treatment.

PROVISIONAL MEASURE LAW:
COMPETITION WITH PROTECTION

But the thing I want to point out is that as you gentlemen know, in the electronics field, for instance, there have been what the Japanese called the provisional measure laws which are a broad umbrella providing financial assistance in targeted growth areas. And all companies, including the Sony's and the Matsushida's, in addition to the Hitachi's and the traditional established industries, get extra depreciation allowances; the export becomes a critical element of financial support, and the tax exemptions connected with overseas markets. So these firms benefited from a broad range of government policies, to say nothing of the fact of the very carefully orchestrated protectionism, the shield, which the government provided in the early fifties and sixties, so these industries could not be touched by foreign competition.

PROTECTION BROUGHT
ABOUT LICENSING

As a matter of fact, that's the thing that unleashed the licensing. RCA, which really began massive licensing in early sixties, and that's the thing that really got all of these industries started, was because the government didn't allow anybody in. It was a very careful orchestration of these infant industries.

I think the critical thing to understand when we try to understand what is it that Japan did so well and how we are losing ground, is to understand the very critical role of government in the long-range kind of--you call it indicative planning. That becomes a little dangerous because it's too tight. It's a very careful, subtle, pervasive orchestrating of growth at critical stages, and that's the thing that has launched Japanese industries. You'll find now that the provisional measure law was passed in three versions. The first one was between 1957 and 1971, and then 1971 to 1978, and the new law that was passed in 1978.

In each of these, there is a new wave of industry. What was the television industry in the fifties has become the computer and the microprocessor industry in the eighties. That pattern of critical concern about growth targets and growth environments and an overall shield and incentive to industry that is very, very dominant in Japan. It is virtually, totally lacking in the United States.

MR. FRITTS: We have, do we not, in this country bits and pieces of that total system? For example, what Fred Haynes is working with in Commerce and the whole idea of nurturing and improving the flow of technology, certainly from the government sector, and even developing new technologies, generic technologies--that's a very important piece of the puzzle. Perhaps Fred can address it.

OTHER GOVERNMENT
LINKS TO INDUSTRY

DR. BARANSON: Let me say just one other thing, Ed, that's very important. There's another institution in Japan which links government to industry. In the electronics industry you have the Japan Electronic Industry Development Associations, JEIDA, and the Electronics Industry Deliberation Council. These are very important bodies where the broad framework of growth is set, and where government and industry people are totally interactive. Now, our system with our antitrust laws completely preclude that. There is no basis whatsoever for doing that. The only area that I think is anywhere near that is in the Department of Defense. When we really have a critical problem in national defense, there are certain areas where you begin to collude. This would be what is called intelligent forward thinking and planning, and would be called collusion in this country. And they have a body and instrumentation in Japan to do this and we don't.

ANTITRUST LIMITATIONS

MR. FRITTS: I might ask at this point if Jacques Feuillan is able to discuss with us what the Federal Trade Commission is now doing, at least in its policy planning in the area of antitrust. Is this an area that you are dealing with, Jacques?

MR. FEUILLAN: Ed, this is really too preliminary for me to comment on. We're just beginning to look at this whole issue, and there really are no policy recommendations even on paper at this point for discussion. We're really simply taking an overview.

MR. FRITTS: Yes, I don't want to put you on the spot.

MR. FEUILLAN: I understand that.

DEPT. OF COMMERCE EFFORTS
IN PRODUCTIVITY, TECHNOLOGY
AND INNOVATION

MR. FRITTS: Fred, I'd like to ask you, what are the pieces of this scenario that you can describe that are now within the Department of Commerce program for productivity, technology and innovation? Can you address some of these issues?

MR. HAYNES: We can try, Ed. I think before I do, it's important to understand that the infrastructure in which our cooperative generic technology program and the Department of Commerce initiatives are trying to get started are significantly different from the situation in Japan. And I don't want to suggest that there is a complementary relationship between the two.

We're obviously trying to shoot for the same target but from a different cultural and economic background. Commerce, as

you know, reorganized in March and created the Office of Productivity, Technology and Innovation under Assistant Secretary Jordan Baruch. One of the major initiatives under that activity is something called the Cooperative Generic Technology Program, and I will give just a very, very brief commercial for it.

It's a means whereby, for the first time, individual firms in the United States are provided a forum for coming together and doing exactly what Jack Baranson has said. We call it cooperative collaboration in the development of generic technologies. We are taking technology as a separate variable for looking at how the United States' economic growth is going to be developed in the 1980's and the year 2000.

Generic technology as we have defined it are those kinds of technologies for which there is little or no incentive for individual firms to pursue, but if they were pursued, would carry those individual firms and the industries ahead at a faster rate than in the past. Perhaps one of the best examples of that was the joint development between the government and industry of the APT language for the numerical control machine tools. Had not the government cooperatively gone in and done what machine tool producers who, at that time, were not versed in programming computers or numerical controls, we probably would not have what advantage we have left in the numerical control machine tool area. There are a number of other examples, such as agriculture, aerospace and computers.

This program is working on the concept of developing generic technology centers which usually will be separate nonprofit corporations, jointly funded with the private sector. The government funding will be used to provide equipment, initial startup costs and salaries; the kind of stuff that will get you over the hump and will allow the individual private sector firms to put most of their funds into the generic research agenda and the diffusion of the results.

In 25 words or less, Ed, I think that's probably about all I should say, but I would like to offer a couple of other observations in terms of what has been said so far.

JAPAN'S SURVIVAL DEPENDS ON EXPANSION OF MARKETS

I think it's very important to note that Japan is different from the United States. The only way that Japan is going to survive is to expand her markets. And I think that's critical. We don't have that sentiment in the United States. They must expand their markets in order to provide jobs because even though only 25% or so of their labor force has lifetime employment, the only way an individual firm can continue lifetime employment is to build a new plant to try to expand its market and create more jobs.

SPECIALIZATION OF
FUNCTIONS: PRODUCTION,
MARKETING, AND FINANCING

Additionally, they have segregated their goods producing activities into several highly interactive functions. For example: the purchasing of materials and the marketing of goods are both often done by the international trading companies; the firm's financing is frequently handled by their associated large, medium and small banks; and the production activities are relatively unencumbered by overhead operations. This grouping of functions, distinctly different from that found in the U.S., fosters a unique production quality orientation not often found outside of Japan. And, as I think we have all seen, if you are going into international markets, it is quality that's going to take you there.

JAPAN ADOPTED AMERICAN
MANAGEMENT TECHNIQUES

Now I want to hark this audience back to about the early 1950's when a guy by the name of Mogenson said work simplification is something that must be very important to our domestic economy because through work simplification, we can develop what are now called quality control circles in individual U.S. plants, and thereby engender the individual employee's interest, not only in his own job, in his own position, but in the interest of the plant. And Mogenson did a lot of work in that area, but you don't see very many of those activities around today.

U.S. EMPHASIS ON
PRICE NOT QUALITY

One of the reasons you don't, I believe, is because United States, unlike Japan, never got top level interest in quality. Here the top level interest was primarily in price. I think this is an important distinction to make when we're trying to talk about the structures that were arranged in Japan to enhance quality and therefore make their goods extremely competitive on the international market, and the kinds of things that we have done in the United States which have really been to enhance price competitiveness, which has not necessarily produced us the long-term quality image that we would like to see.

You gave me just a minute, Ed, and I went on. I apologize.

MR. FRITTS: I appreciate that. On the idea of work simplification, I think Dale Cunningham from TI could probably describe in 25 words or less that TI has been very successful in doing that very thing.

WORK SIMPLIFICATION AT TEXAS INSTRUMENTS: PEOPLE INVOLVEMENT

MR. CUNNINGHAM: It's interesting that you brought that up. Back in the early fifties, TI entered into the program with Alan Mogenson in work simplification. In fact, in 1954, I attended his course up at Lake Placid and actually conducted work simplification within TI for several years.

That whole program is geared around people involvement; that's basically what it is. Team approach to solving problems. It's been a continuous program at TI ever since, and it's evolved now into really what we call the P&AE program, the People and Asset Effectiveness Program, and part of the P&AE program is still the classic work simplification training program but it's been expanded to include many other things now.

We still have teams, but we've changed the name a little bit. We generally call them either P&AE teams or TIP teams, Team Involvement Programs, and they're used for a number of different activities. Cost reduction, productivity improvement, quality improvement, work simplification, whatever the problem is we're trying to solve at whatever plant we're trying to solve it in. We're in the office, we're in the boardroom or wherever it may be. We try to do it as best we can through an employee team.

Under the theory that the people understand the problem the best and understand probably how to solve it the best and understand how to go about it the best, are the people intimately involved in the job. Plus the fact that if they are a party to the solution they're going to be much more--they'll make it work--as opposed to some solution coming down from the top that everybody tries to find all the reasons why it won't work.

So that program has been a continuous program at TI. We think we've got quality circles even though we don't call them quality circles. We didn't realize we had them until we started reading all of these journals and we said gee, we've had those since the early fifties. We just call them by a different name.

If I could just take another minute or two, I'd like to comment on some of the things that have already been said. I guess I view the problem as being extremely simple with respect to quality of the product. In fact, just to give you some perspective, in November of last year, TI established a corporate quality assurance operation which I'm in charge of. And up until that time, all of our quality operations have been in our plants' divisions but we never had a corporate function.

U.S. PRODUCT QUALITY NO WORSE,
BUT COMPETITION IS BETTER

But in any event, with respect to quality, I think the quality of the United States is not any worse than it was ten years ago; it's probably better in most industries. The problem is that the competition is better, and that's good. I think the strongest company ought to be able to survive in the world, with whatever it is they're making. And the Japanese learned a lot from us and we need to go back and learn from them. They had to export to survive, so they've concentrated on growth industries or growth product lines. We're in a growth industry so they attacked us on every product line we've got, I think. So they picked good industries to go into. They've been competitive in pricing. Not necessarily low prices but competitive. They've done an excellent job of engineering, really good job of engineering. Good design, good tests, they come out with good products. And then they've had the strategy that their high quality was required to capture the Western markets which is where they need to sell. Their quality had to be as good as the quality of Western producers 30 years ago, and they've done it and excelled in it. Now all we've got to do is just do exactly what they've been doing. Just do better. And it seems to me if we do that we'll pull back up out of where we are; we'll succeed.

MR. FRITTS: Part of that I think is first to recognize that there is a problem.

MR. CUNNINGHAM: You recognize your problem and then you just go do exactly the same thing; get a good product, good price, good engineering, good quality and you'll win.

HIGH QUALITY DEMANDS
GOOD DESIGN

MR. HAYNES: Building on that, I'd just like to offer a brief observation, too, as a matter of fact. I just came back from the West Coast talking to our semiconductor friends about differences in design concepts. And I was floored when I was told by one of the design engineers in one of the major firms that the average Japanese design team in the areas of designing new semiconductor circuits runs about 50 people; 50 engineers. I don't know how they classify them but at least that's how they come across. The average size design team in the U.S. is from 8 to 10 engineers. Now, on futher investigation one finds that these 50 engineers are not just design engineers but they are manufacturing engineers, they're electronic engineers, they're electrical engineers and they're metallurgists. And they form a very unique team, designed to ensure that quality is designed into the product. Furthermore, they don't necessarily pay any attention to the existing process technology. They may design new equipment at the same time they're designing a piece of IC (integrated circuitry).

JAPANESE INCENTIVES:
DEBT VS. EQUITY

And this gets back, I think, to another very important government incentive that is applied to Japan and not here. That is they get extraordinarily high depreciation rates for selected industries. This provides further benefits. For example, there's an incentive to reinvest which tends to deflate their profits so that a superficial look at activities in Japan would say they are not very profitable. Yet the cash flow generated from rapid depreciation also provides an assured servicing of debt. Consequently, from the banking standpoint, this would suggest that the firms are very profitable.

As you look further you find something like 16% or less of the Japanese firms are financed from equity; all the rest are primarily financed from debt. The opposite is true in the United States. If my statistics are right, 58.2% is financed from equity in the U.S.

SHORT TERM VS.
LONG TERM PLANNING

This creates a built-in short-run versus long-term view on investments. Especially investments that are key to enhancing the quality of any manufacturing process--the process technology itself.

And I will suggest to you that one of the things that those Japanese design teams of 50 or more do is to ensure that quality is build into their process technology; quality control is built in. That in-process quality control assures that you don't add value to the product when it's no good. We don't do that yet.

MR. SCANTLEBURY: Fred, you lost me on your debt and your equity. What difference does it make?

MR. HAYNES: If you're financing more from an equity standpoint, the allegation is that you have a greater incentive to meet short-term goals and short-term financial statements and short-term stock market fluctuations. When you are financed from debt, there is an incentive for you to take a longer look. Because the bank is interested in loaning money, they are interested in the long term ability to service debt. And by the bank investing in you, they are your partner for a long term. Moreover, the way they do their numbering, it comes out that the individual firms may have a 1.3% return on sales but they're extremely viable because with the long-term debt and the high depreciation rates, they have an incentive to reinvest in their process technologies, having a much longer payback than our firms can justify. McGraw-Hill surveys I think suggest that on balance when the top 8 industries in Japan are compared to those in the U.S., two-thirds

of their process equipment inventory is less than 10 years old. In contrast, we're running just the opposite--two-thirds more than 20 years old or older. Among other things, this means that as our capacity utilization increases, we will have to employ less productive equipment than they, and as a result, start to feed inflation earlier.

DR. BARANSON: One other point on that, and that's very important. A Boston consulting group did an analysis also of the Japanese firm and its after tax, after distributed dividend income to the company, and they're higher. It's contrary to the myth that the Japanese firm's average earning is low. The available funds for reinvestment in the future is greater in Japanese industry. It's a very critical component to the financial structure.

MR. FRITTS: So then, the tax structure is--

DR. BARANSON: Tax and dividends. Because the other thing he's mentioning, this whole business of the propensity for American management to go for the necessity for survival to go for the quick buck is very critical, and it's because the pressure is on to show dividends for the last two quarters and to distribute dividends to the stockholders. It's disastrous when you can't distribute dividends.

Well, Japanese management is not under this compulsion, it's able to retain earnings not only after tax but after dividends. They don't distribute dividends until they really get going.

MR. WADA: To further develop what you said, I compared American annual reports against Japanese annual reports, and what is very interesting is that American annual reports have lists of both boards of directors and of officers. In Japan, we have only one. We don't have the two lists. There may be one or two outsiders who sit on the board of directors. Sony's annual report shows two; those represent two banks.

In other words, Japanese management normally does not have to worry about the stockholders, or about dividends; we worry about interest. This illustrates the point you've been saying.

The banks want you to borrow more and more and more. You borrow and pay the interest before tax. Inflation will help you. You'll be so happy you borrowed.

(Laughter.)

In America, you are more concerned with dividends. You have to pay dividends after tax. And again, you will be paying tax on the dividends you receive. Tremendous disincentive. In Japan, take Sony, for example, we took a long time to perfect our version of color televisions. We spent about $700,000 every year for about five years.

The founder of our Company was heading the project. He was spending $700,000 every year for about five years. No one was coming in to fire him because the officers and the board members were the same people. The average Japanese company's equities are about 11 or 12%. The manufacturer's is about 15% or 16%, and a larger portion of that small percentage is usually controlled by a board of directors or the officers or the founders or the owners who are after all, to a great extent, identical. So we can plow back and plow back. The only dilemma is we have to continue to expand our markets. How far can we go? In the 1950's and 1960's, Dr. Baranson mentioned, we had a shield. I think that was good that we had a shield in the fifties and sixties.

JAPAN'S NEED TO BE ECONOMICALLY STRONG

In 1945, the war was over. I was a little kid. Tokyo was really in rubbles. What was the greatest concern? The minute you won World War II, what was the greatest concern? Not to see Japan be part of Russia or of Communist countries. The greatest incentive immediately after the war was to make Japan economically strong. In th 1950's, there was the Korean War; in the 1960's the Vietnam war. There were many business opportunities in defense associated with those wars.

In 1955, 1956, I was working in the U.S.-Tokyo Ordnance Depot. I was sitting with Sergeant Nicholas, Sergeant Kopeski, Sergeant Humphrey and so forth. What were we doing? Repairing M-43 and M-46 tanks from Korea. And this helped Japan build, not to have economic and social unrest. Thank God Japan, thanks to you, became strong. We have China and we have Russia very close to us. Is there social unrest in Japan? No. We are very stable. But thank God we stayed strong and stable.

We see so many Russian submarines going around our country and islands. Thank God we are economically strong; no one is going to tamper with us.

So I think we were shielded. This psychology makes us work harder and we're united instead of having adversarial confrontation among ourselves. We don't want to have adversarial confrontation between management and workers. We work together. And thank God the financial structure in Japan works in our favor. Faced with the problem of continuous expansion of the market, we have to see if we can co-exist in harmony.

JAPANESE BANKS HOLD EQUITY POSITIONS IN COMPANIES

MR. VORHES: Chris, in addition to borrowing from the banks, did the banks also have an equity position in the companies?

MR. WADA: Yes, because very often through quick expansions, companies could get in a very dangerous financial position.

There were so many electronics companies growing with borrowed money. Many companies have gone down, and only the strong and correctly managed ones survived. Every time a major corporation goes down, many subsidiaries or related banks have to go down with it. Government tried to help, but they go down. That's precisely why the Japanese government recommended shifting people from, say, the textile industry or the shipping industry to high technology industries. So there have been many who had to go down and banks had to go down, too. So banks have to be very careful. It's a matter of their survival, too, because they have so much in those industries. If they invest in the wrong industry, they may not survive. That has been the history with us. Only the strong survive. So we have to work and design, and develop patents and so forth.

The number of patents applied for in Japan is 160,000. In U.S. I think it's about two-thirds of Japan. In many companies there are contests for employees to make suggestions in engineering design. Within Sony, in one year we had a tremendous number of suggestions--1,500 suggestions within one year. Technically, some are very simple, like how to pack efficiently to save money, and waste less and so forth. Girls and boys, young and old. In one year 1,500 suggestions.

So because of a situation like seeing another company going down, every employee works hard. There is no other company to go to. Once we are where we are, we work together, and maybe the boss doesn't take so much money. We are very democratic I think. Because in this country, confrontation--. Wherever you go in the United States, people seem to want to destroy something, divide and attack. You are dividing yourselves and you're attacking yourselves.

MR. FRITTS: We have a question from Jim Costello in the back.

U.S. POLICY IMPLICATIONS OF DEBT VS. EQUITY FINANCING

MR. COSTELLO: I just wondered if maybe some of the representatives of the American businesses wanted to comment on the debt versus equity question as to whether it would be feasible or even desirable within the context of the American economics system to have some shift in that ratio that Mr. Haynes just outlined. And it's something that certainly has congressional policy implications because we have a virtual obsession in Congress right now with the question of whether we ought to be, with tax incentives, encouraging more savings or more investment among average peers.

MR. CUNNINGHAM: I'll comment on that. I think we agree totally with what Mr. Haynes said. We can get money; what we need is incentive from a tax and depreciation point of view to make

longer-term investments. The Japanese make investments based on 10, 15 or 20 year payouts. We have to make investments based on one or two-year payouts. And that's the big problem.

MR. VORHES: And that would be true whether it's debt or equity or whatever it is.

DR. BARANSON: Why don't we give the other business people an opportunity. I think it's very interesting to hear their comments.

In the first place, on debt-equity, firms like Sony, Matsushida, Honda, their debt-equity is untypical. It's closer to 50-50 than the 80-20. So the debt-equity in and of itself is not the key to this.

The whole business of financial structure, the question that was raised, is critical and we have in this country no sense of allocation, either in mobilizing savings or allocation of investments toward either critical growth areas, and defense is the only one--I mean, one of these small areas where we do that. Nor is there any sense that when an industry--they have systems to seek early warning when the thing is getting bad and to do something about it. In our automotive industry, there's no builtin thing to recognize this and to have the discipline of a bank. Professor Tsurumi, I hope, will mention it. He wrote an article which I think is a classic, comparing how the Chrysler situation materialized and how it was handled in this country as compared to the way it was handled in Japan, and the business of the involvement, the discipline of a hardheaded banker coming in and not giving the money until they showed a plan of reconstruction.

So the critical element is capital and growth capital. I think if congressional committees look at nothing else, the financial structure of this country is going to kill us.

SOME AMERICAN COMPANIES SUCCEED UNDER THE PRESENT SYSTEM

One other thing let me mention. The TI [Texas Instruments] case has been a continued enigma. Why is it TI is a thriver? TI has been characterized in a number of very fine classical articles as a very Japanese kind of company. TI for 15 years was earning 15% and was plowing it back into redesign, re-engineering and moving down that learning curve. They're a very typical Japanese company. How is it TI thrives under our system? I think that part of looking for the answer is to answer that question. I think it has something to do with ethos and management and organization. TI does very well under our system. Under the old tax incentives they've done beautifully and they are managed like a Japanese company.

MR. FRITTS: I would like to ask Dale to respond to that and also, whether he can really identify the conditions today within our tax structure and financial structure that are more difficult than they were 15 or 20 years ago.

MR. CUNNINGHAM: Well, I think part of the problem is understanding the problem, as you mentioned. TI has been very concerned and very interested in it and it's been one of our objectives to constantly improve our productivity. As I think I mentioned earlier, productivity, quality and cost reduction are very involved. You do the same thing to make each one of those three things happen. And it takes good people, it takes trained people, it takes being sure that the people do everything right, people effectiveness. It takes assets, equipment, it takes good equipment and you must be sure that the equipment does everything right. So we have had a very aggressive program to constantly improve our productivity through what we've called people and asset effectiveness. And as a result, we have forced ourselves to continuously add equipment to keep productivity going up through capital investment. And we've used every trick in the game to figure out how to procure that equipment, how to raise the money, how to financially make it happen. We did work at it maybe harder than other people have worked at it because we certainly work under the same set of rules everybody else does. But it is very difficult, and I think that's one area that a lot of people just aren't working at it as hard as we do. And for the whole country to do the same thing, there's probably going to have to be some relaxation or some change in the tax and depreciation laws.

MR. FRITTS: But with the maturity of TI plus its constantly developing of new fields, there is a continuous, I'm sure redesigning of process technologies which takes new capital. Now, is this from accumulated savings or is it still in the financial market?

MR. CUNNINGHAM: We have, through the last number of years, self-financed our growth. Earlier this year, we had to go out and borrow money, large amounts of it.

HIGH QUALITY
CONSERVES RESOURCES

MR. RUBINSTEIN: I'd like to make a couple of comments. First, in terms of objectives. Quality isn't only a way to improve sales, it's a way to save resources. And that activity is critical not only to the Japanese but to ourselves. The Japanese now are saying that their current objective is to reduce their components by one-third while keeping intact all the reliability features of their products. The potential impact of that type of strategy is even greater than we've seen up to this point in terms of manufacturing quality.

We have the same responsibility to be able to conserve our resources and we're going to have to get ourselves into the

position to be able to do that. The position that lets you do that is to have an effective system of manufacturing and quality, based on the total organization's participation in improvement and self-control within manufacturing.

It seems to me the question of what the Japanese did to do this is only one part of the issue. I think the other part is what we didn't do during the same period of time that allowed us to drift into the situation we're currently in, because there's very little about Japanese technology that was not known here 40 years ago, or 30 years ago, or 20 years ago, as it evolved. A good deal of what they learned came from expertise from the United States. And there are basic concerns that I have about why job simplification didn't take off as a major effort, why efforts at involving people didn't succeed during the last 20-year period, and a lot of experimentation did not succeed.

I think, for some of these questions, we might look at some underpinnings of the Japanese system in terms of principles that haven't been discussed at this point. I don't know whether you want to do that now or not.

MR. FRITTS: Yes. If you can raise some of the underlying principles that you're alluding to, Sid, I think that might be very helpful.

THE "SYSTEM" OF QUALITY: JAPAN VS. THE UNITED STATES

MR. RUBINSTEIN: Quality as a system in Japan has a different objective than quality as a system in the United States. In the United States it's maintaining your quality standard. In Japan, it's to change your quality standard. The activity of the total organization is involved in reviewing continuously how you can improve the quality of the product and the quality of your operation. And it involves the entire organization.

In the United States, quality is an exception process. You improve quality by exception. You have a group of managers and technicians who are responsible for quality, and you select the key quality areas that you want to improve on, and that's assigned to that particular group.

ORGANIZATION FOR QUALITY

In Japan, they've organized a system in which the total organization is involved in improving operations. Let's look at the quality data of the auto industry in terms of what's behind it. Toyota does an analysis of warranty losses every year. Approximately 2,000 different causes produce the external quality loss or warranty loss. Two hundred of those problems, or 10%, represent 50% of the loss. And 90% of the problems produce the other 50% of the loss. Toyota assigns the 10% of the problems

that are the big ones--that produce the 50% of the loss--to their engineering organization, and follows that very carefully to make sure that they are corrected.

Chrysler, General Motors and Ford do something similar. They also select the critical issues, the critical problems and send those with a very careful follow-up system to their engineering and manufacturing organization to correct. Then there is a difference. In Toyota the other 90% of the problems, the smaller and less critical ones that produce 50% of the loss, are then sent to the entire manufacturing organization and they're distributed to quality control circles, or problem-solving teams, and there's a total corporate effort to solve those problems.

In the United States the practice, by and large, has been that those less critical problems also go to engineers. However, the opportunity of getting to them is a function of the resources and priorities. Of course, the focus is on the major problems. So a lot of those smaller problems that are seen by the customer are perpetuated. The hope is that they will be cleared up in the next design. But frequently they're not; they're continued.

LACK OF CONTINUITY OF U.S. MANAGEMENT INHIBITS QUALITY

Now, what would it take to have a total organization to be able to do this? The first thing it takes is continuity of management. The major reason why we have had failures in this country over the last 20 to 30 years in these programs, and particularly with continuity of these programs, is constant change of management. When managers change, a new manager comes on board and has a different set of objectives. There's no motivation to continue programs or efforts started by a predecessor.

LACK OF CREDIBILITY INHIBITS QUALITY

The second reason for failure of these organization programs is related to the lack of credibility of these programs with the work force. Now, if you have workers involved in problem-solving activities and there's a layoff and they're laid off, what credibility is there to this type of activity? Further, if the union sees this as a vehicle for speed-up or a way of looking at greater efficiency which is translated as the same amount of work with less people, instead of, "how do we get more with the same people," then the credibility of such programs is questioned by the trade union movement.

OVERSPECIALIZATION INHIBITS QUALITY

Let's add a third factor, namely the vested interest in a specialist class in this country. Our total education program

and the total organization of our engineering community is around the concept of solving these problems through specialists, instead of sharing them with the work force as a whole.

So you have three fundamental factors that continue to cause the failure of what we're doing. The economy is in trouble; there's going to be a lot of activity and there is a lot of activity going on. One of the questions that concerns me is whether this activity will last, because it's not difficult to start a program that involves the entire organization. It's very easy. But it's very difficult to continue it.

The Japanese have had difficulty with continuing it. Toyota has had two starts in implementing QC circles. Many organizations in Japan have had difficulty with the continuity of what is now being touted as a major system, because there are complex problems in Japan.

The problems we have are even greater, so we have to look very carefully at any recommendations that are made--to see if they would, in fact, be continued. And those are some of the places where I think government can help, not to duplicate the help that the Japanese Government gave. What Japanese government did about quality was that it said: "you're not going to export unless you meet a quality mark," and they allowed semi-government agencies to be created that set Japanese standards, set up training, set up consultants, made sure that a quality system was in place, that the mark was there, and then said, "you can now export." It was not a direct, controlled process that the government was part of to guarantee quality levels of exports from Japan. We don't need that. We need other solutions. We need a different approach, not the government approach that you had in Japan. We need an approach that will address those problems in our society that are preventing this kind of an effort.

Now, some of the good things that have taken place here in the last six or seven years are that there have been some significant changes in certain key relationships. I think the relationship in the auto industry has changed between the major corporations and the union, in terms of how they can jointly address these problems. That's a significant, critical breakthrough in our country that will have an impact on the entire society--an impact of establishing the credibility of both labor and management, of jointly working to improve quality and the quality of work life and of the system as a whole, while maintaining their own individual responsibilities to their constituencies.

There are breakthroughs in place now which make it credible for us to be able to successfully move toward a massive solution. But I think we have to very carefully analyze what has prevented us from doing it up to this point.

I sat in Washington in 1972 at a meeting of the National Academy of Engineers. The topic was quality. The questions that are now being addressed were addressed then. The issues were addressed then. The call to the government to get involved was made at that point. Nothing came out of that meeting. The general attitude was one of arrogance, one of saying the only thing the Japanese know is what we've taught them. I think the timing is right to change that, but in order to do this, in my opinion we have to very carefully look at what has prevented this country from using the technology it has known, because the technology has been known.

DR. BARANSON: Let me just very quickly reinforce what Sid is saying. I think it's important that what Sid just said is being said in 1980. If he'd said what he did in 1960 and we had taken heed, we would have gone somewhere. The relative dynamics of the U.S. and the Japanese economies are of such a proportion now that I think we have to consider just how much reconstruction we do at this point. Let me give you a few statistics.

GROWTH TECHNOLOGIES

One of the technologies Sid is talking about here is robotization. This is the new frontier trend. Japan today has 13,000 of the 17,000 industrial robots in the world. The United States has 2,500. That's 13,000 compared to 2,500. Seventy companies in Japan are developing new robots as compared to 27 in the United States, and the Japanese government, just as one activity, has a $50 million research program in unmanned robot-operated factories. The Japanese firm has a sustained--take Matsushida--has a slogan of "scrap and rebuild." Matsushida in 1979 announced a more than doubling in its scrap and rebuild program. Compare this and think about what happened at Chrysler, and failing to get this thing in time.

I visited Hitachi a few months ago when I was in Japan, and this was their latest LSI, large-scale integration, one of the most modern. This is where the 64,000 bit semiconductor-microprocessing device is being built. And they had an automatic welding machine that was doing 15 welds at .07 seconds per weld. They did 15 welds. I was looking in a microscope and it was faster than the eye could see, and the engineer was telling me they're not satisfied with 15 welds at .07 seconds. They're already redesigning something at .02 seconds.

This scrap and rebuild and the money they're putting into it and this dynamics, that's what we have to understand. And we're talking now--we're dealing with a 15-year gap almost, of lagging in this country compared to full speed ahead in Japan.

MR. NAGATA: Naturally, in order to make a robot or what we call in terms of industry a "jig," they don't happen overnight. As everybody knows, it takes a long time to make a jig and then after all, it will be a robot.

Now, what we have to see here in the United States is that individual effort as well as the entire corporation effort.

ELEMENTS OF JAPANESE SUCCESS

There are five major portions that Japan has looked into in terms of industry. One is quality, two is quantity. And quality is, of course, a tradeoff between better quality versus quantity. In other words, efficiency of the industry.

Number three is cost; how effectively, how cheaply. It doesn't mean, though, making a junk product. How inexpensively can you produce.

Number four is just what we need in the United States, morale.

Number five, we don't often see here in the United States, is safety. In Japan, if you visit Japan, there have to be always in big writing in the middle of the aisles, "Safety is Number One." I have visited quite a few companies in the States, but nowhere have I seen a sign that says "Safety."

In other words, what we're saying here is we care about the people. That is really the core of the system we have developed; care. And that means it's so important not only for the top management as well as the people on the floor. In fact, in relation to TI's program, I'm sure TI has had a program. But until recently you have realized that you have quality control circles. But I suspect that basically in 1967 in Florida in terms of the U.S. Defense have developed a so-called zero-defect program. In fact, that was a really great program. However, somehow today in private industry it is diminishing.

On the contrary, we're talking about a quality control circle imported from Japan. But we have to see and we have to analyze the zero-defect program, how it could be implemented and how effectively it could be worked out. Well, the quality control circle itself is approaching it from one angle; that is, problem solving. How to minimize cost, how to increase the productivity after quality goes into the product. And zero defect goes parallel to the program. I don't know what kind of program TI has had, but basically the United States in 1962, July 20th, they had and we in had developed a system. But nonetheless, we start drifting apart, in a sense, and then we're looking for something.

BUILDING IN QUALITY

Another comment I'd like to make, as Fred mentioned, total quality control system, that quality has to be made a built-in, not at the end of the production line. It's got to be built first with the people. The workers, fortunately or unfortunately,

know the best. So we should invite those people on the design phase with engineers, production design people, corporate head people, so we all talk and discuss it. Then quality will be built into the product.

MR. FRITTS: I'd like to ask Ralph Barra if he would give us some experiences from the Westinghouse view.

QUALITY CONTROL CIRCLES

MR. BARRA: Thanks, Ed. I had a chance to be part of that quality control study team last year that went to Japan. Only 10 of us went but we spent an exciting 15 days there and went through some 10 different companies in Japan and really had a chance to study the quality control circle and the Japanese total strategy of just how they got that concept to work in their culture and business environment.

But I think I had my own personal interest in seeing what could be transferred from Japan to Westinghouse and the United States. I really believe at that time of the trip that most of what I saw in Japan is definitely transferrable to the United States and now I'm proving it at Westinghouse because we are doing it.

Some of you who are familiar with quality circles are familiar with the Ishikawa diagram, the cause and effects diagram, which is a very powerful tool that workers use in Japan to solve quality, productivity and cost reduction problems. I used that particular diagram to analyze the Japanese strategy to improve productivity. When you look at that diagram, they call it the four "M's"--Manpower, Materials, Methods and Machinery--as the four causes to produce an effect. And if you apply that analysis, problem-solving analysis to the problem, being to improve productivity as a corporation or as a nation and then look at those four "M's" as a company, we can take a look, I think, at the secrets of success the Japanese have had in productivity.

MANPOWER

Look at manpower first--Education and training. The Japanese after the Second World War put a top priority on quality, but they started with education of the presidents of their corporations and the top executives and middle managers. And it gradually filtered down in the sixties to the workers. And that's how the quality circle got started. After the top executives were convinced that quality was their responsibility, they then endorsed substantial commitments and investments in time to train all their people in quality; quality added to the consciousness.

QUALITY IS MIDDLE MANAGER'S RESPONSIBILITY

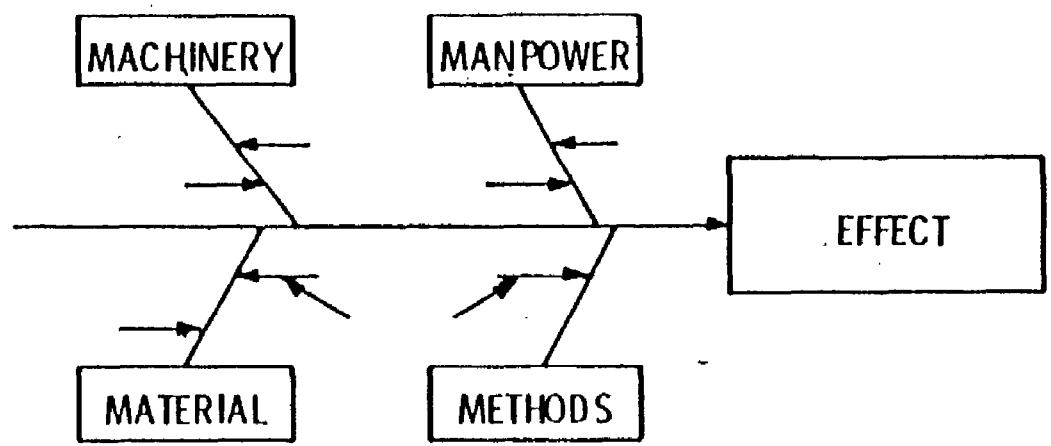
The quality circle really started as a reading circle. In 1962, when Ishikawa was the then president of JUSE 1/ and also a professor of one of the universities there, they recognized that the foremen had to learn about statistical quality control that Dr. Deming and Dr. Juran were then starting to teach in Japan, and they didn't know how to get those foremen to learn that. So they published a monthly publication to get the foremen to read it. And then they formed reading circles with the foremen and workers to read one chapter a week or a chapter a month, to learn about statistical quality control, and that's how the quality circle evolved. It really wasn't planned.

QUALITY IS WORKERS' RESPONSIBILITY

And as these workers learned the problem-solving techniques, they then realized gee, with these powerful tools that we have, let's actually solve problems. And they did.

1/Japan Union of Scientists and Engineers.

CAUSE AND EFFECT DIAGRAMS



INVEST IN EDUCATION
AND TRAINING

I think the main point, then, in that first "M" is that education and training from the top to the bottom is a very important strategy that has to be implemented in any organization in the United States if you want the quality circle of participatory management concept to work. We have to start making that investment, and it's not easy to make because most of our managers are short term managers and they aren't ready to spend money on the future, if the impact is going to be seen 5 or 10 years from now, and that's what we are seeing.

What is happening now in the seventies and the eighties in Japan and in the international markets started 25 years ago, so we're not going to start turning things around in just a few months. It's going to take the United States or any one of our corporations several years of dedication in the educational area.

MATERIALS

The second area is purchased materials. Some of the comments were made where do we need government support. Certainly, one of these areas is to provide mechanisms where we can get more cooperative relationships between suppliers and the people they supply. The Japanese have done this.

THE SUPPLIER
"FAMILY"

They have a family, and when they have productivity as a goal of the major corporation such as Sony, all the suppliers are in tune with that goal, too. They work together on establishing improved processes and materials and components so that Sony's television set can last 12 years without a failure. And we have to do that.

HIGH COST OF DEFECTS

We find in our corporation that a large percentage of our failure costs in our factories are due to the high defect rate of the incoming parts that we actually accept from our vendors. We've been patsies for a lot of our suppliers and we've been accepting the so-called AQL, acceptable quality level, that just would never be heard of in Japan. When they look at their suppliers they demand perfection and they get it. And we've learned a lesson just recently when we visited one of our suppliers and asked them, what could we get when we bought his parts. And it turned out that he also supplied parts to Japan. The Japanese got his best parts and we got his worst ones.

(General laughter.)

And he said all we had to do was to ask for the best and we would have got the best, too. At least we would have competed with the Japanese for getting the best. I think there's a message there. We've got to figure out ways to get our suppliers in with us in establishing strategic objectives in the area of quality--levels of quality and productivity.

QUALITY IS A SOCIAL RESPONSIBILITY

In fact, I look at productivity or quality improvement as a social responsibility. Not only do we as a corporation have responsibility to our customers to provide them the best quality products so that they can be more productive--. You see, when we look at productivity, let's not be selfish about it. We shouldn't look at productivity of our own corporation only as being our objective or responsibility; we have to look at the productivity of our nation and our customers. So, looking at it that way, it behooves us as a corporation to be responsible to our customers who then are responsible to the nation to be more productive. And then looking back, our suppliers have to be responsible to us to provide us the highest quality parts and materials they can so we can be more productive. And if we do that jointly, certainly the nation will be more productive.

MACHINERY

In the area of machinery--automation--the Japanese with robots, with automated tests and inspection equipment have been able to get away from the kind of problem we've had in the United States, and that is, it's very costly to detect quality into the product, or to inspect it into a product. You cannot achieve quality at the final stages of an assembly or in the middle of an assembly; it's too expensive. And we've been doing it as a country manually with labor.

HIGH COST OF MANUAL QUALITY CONTROL: THE ADVERSARY APPROACH

When we look at productivity measures, it's no wonder we have low productivity growth, because most of our people in some of our factories are associated with looking over the shoulders of other people rather than doing productive work themselves. And what really has disturbed me is the fact that when you have that kind of an atmosphere and environment, how can you get people motivated to think about quality when you're promoting distrust and a lack of respect of the worker because he's being watched. He's being timed and he's not being trusted at all. He's not given a chance to really be responsible for the quality of his work because there's some inspector who's being paid to do that for him. And it also promotes adversarial relationships within our departments. Engineering, manufacturing, purchasing do not talk to each

other; in fact, they point fingers at each other when we have quality problems. It's not a team approach like Texas Instruments is showing us is the right approach. It's an adversary approach.

I come from a background of being in quality for some 25 years, so I know the relationships I've had with engineering managers and purchasing managers and manufacturing managers. I've been the bad boy because I've been demanding quality and they've been telling me I've been holding it up because my inspectors and my engineers have not been accepting the product and letting it get shipped on time.

One of the greatest things we did for the Japanese industry I think was to give them the chance to really start a new organizational concept in the fifties after the War. They were able to actually organize without a quality department. They were able to say to the president of a company you're responsible for the quality, and then he said to his staff you're all responsible for quality and then it filtered down so that everyone was responsible for quality; therefore, there were no adversary relationships. They all assumed their responsibility for quality.

HIGH QUALITY THROUGH AUTOMATION AND ROBOTICS

So you get back to the machinery part. Automation, robotics are good things now. They have to be looked at as good things because they will improve quality. Robots, once they're programmed correctly, never make mistakes. Human beings can be managers of machines, as the Japanese are showing us, rather than laborers, and they can have more exciting work with robots working beside them. They'd be more productive.

When you look at the machine inspecting rather than having people performing an inspection--let a robot do it or a piece of equipment do the testing and have the person analyzing the results of those tests and doing statistical quality analysis, trend analysis and the management part of it.

I believe that in the eighties and nineties we're going to see a lessening of the number of blue collar workers and many, many more people involved in what we now call white collar activities in the factory. It's going to be very exciting work and our educated work force is ready for it. In fact, we have been underutilizing our work force.

METHODS

And the last "M", Methods, the Japanese have certainly shown us with their strategy that value engineering, that originated in the United States, works in Japan beautifully. With value engineering they design quality right into the product in the beginning. Less parts, less components, better parts and they

design the product so that the customer perception, as in the automobile and steel industries, is in concert with the way we measure and produce the product. So we actually put into the product the characteristics that the customer is going to be looking for when he decides whether he's going to buy our product again.

QC CIRCLES: DIGNITY AND RESPECT FOR THE WORKERS

And we've got to do that. Quality circles? Beautiful concept that embodies all the principles that we've had in our participatory management concepts, our organizational development. Our psychiatrists have told us that in the hierarchy of needs, once you've satisfied the lower needs of the worker then you've got to now satisfy his need for dignity, respect and his need to be creative. Quality circle gives that to the worker.

The quality circle also provides to management a mechanism to learn how to listen to his people, how to communicate with his people which he hasn't learned for years now. Our managers have been paid to do all the problem solving with the workers following his directions. Well, a foreman who's just been put on the job for two years doesn't know how to run a milling machine like the operator who's been running it for 25 years. What we've been telling our foremen and our first-level supervisors is you make the decisions on how to flow the work in, how to train the people, how to run the milling machine, and have your people follow your directions.

Well, that's the wrong way around. The people who have been running that darn machine for 25 years know the right way to flow the material, they know the right way to set up the machine, they know how best to get the most out of the machine. They live with it and the machine is a part of them. We've got to give them the chance to actually voice their opinions and speak up, and the quality circle allows us to do that.

A lot of people are telling me that gee, we've had quality circles for 20 years. They haven't, because they look at their workplace meetings as quality circles. That's not a quality circle. A quality circle embodies everything we've been talking about. It embodies education and training of the workers. We teach them problem-solving techniques like statistical quality control and cause and effects, brainstorming, how to make a management presentation. We're elevating the entire population of industry all at the same time, and this has given us a mechanism now that we never had before.

Most of us have had training courses in most of these concepts--brainstorming and all these others. What has been missing is the fact that when you leave your classroom you go back to your job and management, your boss does not encourage you to practice what you learned. I learned value engineering 15 years ago, and

I was a believer. I was brainwashed for those two weeks. And when I went back I was part of a value engineering team and within one month we saved that particular division in Defense in Baltimore a million dollars. And I was really excited about it for about a year until I realized that my bosses and the other people around me weren't as excited as I was, and I got back to my regular way of functioning. All those beautiful documents and books went into the bookcase and I didn't open them up again for 15 years.

Management has got to be educated to recognize that we've been teaching these things in our schools, not only in universities but also in the locker room. In corporations we have our own educational evening schools. They're good principles, good concepts, and they have to be practiced. Management has got to provide the environment to do that and it's got to be a caring environment; it's got to be a listening environment; it's got to be one that recognizes that the strength of decision-making, the strength of problem-solving lies with the people, not with the managers.

Managers have a responsibility to approve the recommendations of the people.

JAPANESE AUDITING OF QUALITY

And the other method that the Japanese have really demonstrated very effectively is the auditing system, because when you go to a Japanese company and find out that all their business unit managers and plant managers are interested in quality, you've got to look a little deeper and say why are you so interested? Well, the president's visiting me next month, and he's going to be studying me for three days and he's going to be measuring me. He knows what my defect rates were. He knows what my problems were last month or six months ago, and he's going to measure me again. And if he doesn't like what he sees, I'm going to have to answer a lot of questions and I may not be here later.

Well, their top executives are involved in that kind of an auditing system, which is a very effective one. It's not that we don't have those in the United States. We do, but too often we lose sight of the total value of that auditing system and the importance of the involvement of top management. In many cases we delegate that responsibility to some quality organization, which is an adversary role once again. And so you get this quality organization going over into manufacturing auditing. You know that the manufacturing people are going to hide the problems, they're going to try to get away with as much as they can and hope that that quality guy doesn't find the real problems.

NO SIMPLE ANSWERS

So I think just to summarize, we can't look at any one thing as the solution or strategy. We can't look at quality

circles as the total answer. It's not the panacea. But if we look at the total, all four "M"'s, I think we have a real good shot at staying in first place. I think it was Mr. Arai, head of the Japanese Productivity Center, who very nicely gave us a little analogy when he said the United States is like a track star, the mile runner, who has been breaking the four-minute mile and he's always been at the head and has been winning those races. But over the last 10 years, each time he wins the margin of victory is narrower and narrower and narrower, and that track runner behind him is a Japanese runner right now. And he said we shouldn't be disturbed by that because the Japanese runner has been studying our training, our calisthenics and how our American runner has been winning all those races. And he's been studying that and emulating it and then improving on it in his own training exercises. And all we have to do now is recognize we're still winning the race, but now we've got to go back into our own training and improve our training ourselves so that we can maybe hit that mile in three and a half minutes instead of four minutes.

MR. FRITTS: You've made some very excellent points, Ralph, thank you. We have one more person from the back. Would you please identify yourself?

NEED FOR A NATIONAL FOCAL POINT FOR PRODUCTIVITY

DR. NUGENT: Yes, I'm Tim Nugent, I work for Congressman LaFalce. Mention of the Japanese Productivity Center brings to mind what I think of as moving from the micro to the macro point of view. That is, in Japan they have a highly funded very dynamic, very well staffed Japanese Productivity Center. In 1978, the National Center for Productivity and Quality of Life working died without a whimper. It has been replaced by a National Productivity Council which hides out in the Office of Management and Budget with a total staffing of two people.

Now, at the risk of antagonizing Mr. Haynes--.

(General laughter.)

I would suggest, seriously, though, that there is a problem at the highest level in this country. That is, there is no national plan on productivity, whereas the Japanese have a conscious, well-articulated plan on a national basis for productivity. There is no coordinating agency in the United States on productivity, despite Mr. Baruch's appointment to the new office within the Department of Commerce. There is no national center, no U.S. center. Japan has one, other countries have them. And I would suggest perhaps that no long-term solution to declining productivity in this country, declining--not even England has this problem--will ever be found until the United States, and that is the Administration whatever administration it will be, makes a lasting dedication

to the concept of productivity and its importance and establishes a center on productivity; a center which could bring together the government, labor and management.

At the present time, for instance, we have labor-management cooperation in the Department of Labor in one of its subsidiary organizations. Within the Department of Commerce we have another office. We have offices in Argriculture, we have offices in almost every department, but is there any coordination? No. How many times has the National Productivity Council met? Three times in two years. There is no coordination, there has been no articulation at the highest level, and I think as our Japanese friends will tell us, without that dedication, without that feeling that the government is leading, no meaningful progress on a long-term basis will ever be made on improving productivity and product quality in this country.

MR. FRITTS: Thank you, Tim. Joe Kehlbeck?

MR. KEHLBECK: Ed, it's been very interesting to sit here and listen to all the comments made this morning. Let me say that I am very fortunate to have the opportunity to continually travel throughout the world visiting factories in the United States, in Japan, and other Far East countries two or three times a year. I think it would be worthwhile just to comment on my observations.

RAPID DIFFUSION OF PRODUCT TECHNOLOGY

As I look at the U.S. industry versus Japan, in particular, and many other countries that are developing very rapidly, what I see is similar product technology. The development of new product technology spreads worldwide very rapidly. If TI comes up with something, it's being developed in Japan tomorrow or vice versa. Product technology moves rapidly throughout the world.

SLOW DIFFUSION OF PROCESS TECHNOLOGY

Where the Japanese have the lead on us is in process technology. I think you can go through any factory in the United States and then look at its counterpart in Japan and find that in the area of process technology the Japanese factory is probably 5 to 10 years ahead of us. Another important point is that when you look at product technology and process technology, it is obvious that quality and productivity go hand in hand--you can't separate the two. By putting in up-to-date, modern process technology you are able to accomplish considerable improvements in quality at the same time that you're getting higher productivity.

In one of my visits to a factory in Japan, the people were explaining how they had eliminated a job, and the foreman

said that it was not only the changing of the job place and the reduction of the amount of cost to make the product, but the importance was that the quality improved considerably through the elimination of that tedious job on the assembly line.

NEED TO RECOGNIZE
COMPETITIVENESS
AS A PROBLEM

At the same time, I don't think we should conclude that the Japanese are better than we are in all respects. I think that American industry, where it has recognized the need to do something about productivity and quality, has addressed that issue. I think TI is an excellent example. I think the telephone system in the United States is better than any in the world. In jet engines I think our record is outstanding on quality.

I think the importance is that management in the United States recognize the need for competing on a worldwide basis and address this issue. We have the technical capability to solve the problems. It's when we fail to recognize that need for worldwide competitiveness that we fail.

NEED TO UPDATE
TECHNOLOGY

In conclusion, I think there's a real need for us to update our factories, especially in process technology and to build on the experience that Japan has, bring it to the United States and go one step further--build on theirs like they built on ours.

NEED TO CHANGE
ADVERSARIAL
RELATIONSHIPS

I also feel that we need to address the people problem and that has come out in many different ways here this morning with quality circles and the need to change the adversary relationship between management and unions. There's certainly a need to aggressively address the "people problem."

But, I'm convinced that with the support of government, industry in the United States has the wherewithal to be competitive in the world market. I support many of the comments made by the other speakers here this morning.

MR. FRITTS: Thank you very much. Let's take a brief break.

(A short recess was taken.)

MR. FRITTS: I'd like to resume the discussion by asking Jim Vorhes from General Motors to give some of his perspectives on the issues we've discussed.

RELATIONSHIP OF PRODUCTIVITY AND PRODUCT QUALITY

MR. VORHES: Thank you. I won't take our time to go back over many of the same areas, but will make a couple observations, and ask a couple of general type questions. The two specific areas of purpose today seem to be directed at productivity and quality. And I think we've heard a number of things already this morning that suggest to me at least that in terms of priority, productivity is first and product quality is second. I don't mean in importance, but that quality is almost a product of improved productivity. And we've heard that a number of times.

MR. CUNNINGHAM: I'd like to interrupt you. I think it's the other way around.

MR. BARRA: I say the same thing. Quality is first and productivity is the product.

MR. VORHES: Alright, let me give you an example of what I mean, I believe what Joe said. Some of the process methods and process engineering that helps productivity is a big contributor to quality. Those of you who have gone through an automobile assembly plant know that one of the great theatrical shows in our automobile assembly plant is near the final assembly line where there is a group of "Michelangelo" workers who are really great. They have large wooden-handled rubber mallets and they fit doors and trunks. They open a door and they stick the wooden handle in and slam the door on it and they whomp on it a couple of times and never blemish the paint and the door ends up fitting.

(Laughter.)

In fact, our industry should have fired those people many years ago. You do not find such a person in a Japanese assembly plant. The reason is that in Japanese process engineering and design they make a door opening that's exactly the way the blueprint says it should be. And then they produce a door that's exactly the way the blueprint says it should be. The worker simply attaches the door in the right place. He doesn't have to look to see if it fits, because he knows that back in the system everything was made right.

Too many times in our process, we weld together 15 pieces to make a door opening, or to assemble a door. The whole thing becomes a matter of having each piece made right, not just one door opening made right or one door made right. The process that produced the methods to make that door opening right wasn't performed

from a quality point of view originally, I don't think, but rather from a productivity point of view, and quality was simply a natural follow-on to that.

I have the sense--and I'd be interested in learning more if I'm wrong, and I've heard it suggested here this morning too--that productivity was the first major thrust in Japan, and that the quality strategy seemed to evolve from development in that period, as opposed to a determination that they were going to build a great quality product and productivity in some way came along behind that.

Whether my perception of this is right or wrong, I suggest that it's important in developing a plan because if there is a relationship between the two, or if there is an order between the two, then that needs to be a pretty important part of the plan, whatever we have.

Added to that, I suspect, is another important part of it. I sometimes feel that there's a basic difference between an understanding of quality in the Japanese business world and in ours. I sometimes feel that in this country we associate quality with a product that has dimensions according to a blueprint, if the material is the right material and the door either fits the opening or it does not. In Japan, I sense that quality is a way of life. The medical department, the stenographer, everybody thinks about how they do whatever they do in terms of quality. Not just whether the product had quality.

As an example, say there was a widget component plant in the United States that was part of a system supplying an assembly plant. If at noon on a busy Friday the manager of that plant found that something had gone wrong with his process that morning, and he had 10,000 widgets out on the dock and he knew they weren't all bad but he knew that more of them had to be bad than should be because of his knowledge that something happened to that process that morning, he's got a decision to make. It's noon on Friday; there's an assembly plant working overtime needing his widgets; should he close down the plant, recheck all 10,000 widgets, recheck his process before he starts up again, or should he ship the widgets--it's Friday after all--finish the afternoon shift, and then work over the weekend to check his process? I guess that usually in this country he would ship the widgets and sincerely work over the weekend to check his process.

But given a manager in a parts plant in Japan, facing the same situation, I guess he wouldn't even think--he would not ship the widgets. And I'd suggest that both managers arrived at their decision exactly the same way. They did what they thought their management wanted them to do. And they did the thing that they thought they would get rewarded for and they avoided doing the things that they thought they would catch hell for. So their process was no different, as a thought process, in arriving at what to do.

And lastly, somewhere along the line, regardless of how well a plan or a scheme or a strategy is developed, we need to ask ourselves whether business and government have the relationship to make any scheme or plan work effectively. That question has been raised a number of times this morning. Is there any major industrial country in the world that has the adversarial relationship between government and business that exists in the United States?

And while it's important to get the plan, it's also important, both from business point of view and government's point of view, to figure out some way of making a mutual commitment to get on with it, because you can write the most beautiful music in the world but if we're not going to play it together it won't work.

CHAIRMAN,
SUBCOMMITTEE ON TRADE

MR. FRITTS: Jim, if I could interrupt--you've made some very good points and we can pursue some of them a little later. Mr. Vanik has arrived. Congressman Charles Vanik from Ohio who is Chairman of the Subcommittee on Trade, House Ways and Means. Good morning, Mr. Chairman, and welcome to this roundtable discussion.

CONGRESSMAN VANIK: Thank you very much. I just want to say that I'm grateful to the membership of this distinguished panel for your work on the issue of quality of production. During my last four years as Chairman of the Trade Subcommittee, I've come to believe that improving the image and the reality of quality of American products is one of the most important steps we can take to compete with the Japanese, the Germans and others. And I say that if we can't find a better way to become more competitive, then there will be irresistible pressures in the Congress for trade restrictions.

I want to just say that I don't want, at this time, to respond to the question of the adverse relationship between Congress and business. I'd like to debate that in a more open forum sometime because I don't sense that. I think that what we've done with respect to OSHA and EPA has set a pattern for the whole world. As a matter of fact, we've created some new industries in the control of pollution. I've found many people abroad in Germany and in Japan traveling, selling American developments in pollution control and American developments in OSHA. So we've created a new item for export. And I don't think there's going to be any backward step in America. We're not going to back off saving the environment. That's part of the heritage of this country and I don't consider that as an adverse relationship with industry.

I think there's a climate in the Congress now that's unique, and it's not partisan. There is a greater interest on the part of Congress to get involved in the concerns of American business. I think you must recognize that. And I think that this climate is one that's conducive to working out a more effective

relationship between Congress and our business community. I've urged my colleagues in the Congress to travel less abroad and more in the industrial sectors of this country, farming sectors, to become as familiar with America as they are with Paris, Tokyo and other places in the world. I think it's important that they should be aware of and have hearings in the various areas of America that are producing specialized products.

I might add that as one who's been interested in tax reform, I'm almost sick and tired really of the--I can't get very much more tired since I'm a departing member--of the parade of people that look for tax reform or tax changes as a solution to their problems. I've asked all of these people, would you be willing to trade the entire business tax code of Germany for the entire business tax code of the United States. And the answer is no. Would you be willing to trade the entire tax code of Japan for the entire business tax code of America? No, they don't want that, they just want certain elements; they want the increased depreciation that comes somewhere or the accelerated depreciation. It comes under subsystems. But they've failed to recognize that there are other systems of taxation in those countries like wealth taxes and other things that are different than our system, and I don't think they'd want to trade the entire tax system that we have.

As a matter of fact, our tax system is a model that a good part of the world is looking at, and I think what we might expect in tax changes as more and more pressures develop and the needs of government develop that they're probably going to look more to our tax system than we will at theirs.

But there have been some differences in management, in the style in which foreigners have operated plants in this country. I have a large facility in my own community that is being very successfully operated by German management. We have the VW plant, the Honda plant and the Sony plants that are here in America making items that are very competitive.

We also have American plants doing business here and in Japan. Texas Instruments, for example, is doing a very successful job in both places, producing high quality and competitive products.

Now, I believe the time has come that our American businessmen need the competition of foreign management here in America, to see if there are some differences in methodology or approaches to the productive system that might be useful. I think there is very wide room for an interchange of ideas and of approaches. And I'm very much afraid, for example, in the automobile industry, that our competitors are--I think we're making progress and I think the progress has been very slow. But you must remember that at the time of the oil crisis I was one of the first--I was the first member of Congress to introduce a bill to

tax gas guzzlers in the United States, and my own newspapers criticized me editorially and said that I was advocating the purchase of foreign cars in America. And it took so long for our industry to lead and find a way out.

If we had government involvement as they have in other countries, I think some people would have been banished for their indiscretions in business decisions because I remember the management of a company that we have since tried to save when the Chairman of the Board said in the middle of the energy crisis,--"We're going to continue to make the big cars because that's what America wants." And I responded, "America wants what you teach them to want. They listen to your television ads, they see your advertising, and they become absorbed and taken into this process."

So with respect to automobiles, we've been very slow in responding. I have been just sitting patiently waiting to buy two American made gasoline-efficient cars, and until that happens, I'm driving my 1971 Mercury which is a gas guzzler. It's worth nothing, so I have no capital investment to worry about. I have a very fine Oldsmobile that's very good for its size. It's a 1977 car, and I'm still waiting for my $200 rebate, which I don't think is enough because I've lost $500 in gasoline for not getting the California car which I thought I was buying! And I feel that that hasn't been settled to my satisfaction. I'm one of the people who's on the other side of that unsettled issue.

I just feel that today while our industry is creeping ahead on gasoline efficiency, I'm astounded by the accelerated gasoline efficiency that I see advertised in foreign cars. I saw one advertised the other night offering 53 miles to a gallon, while the very finest thing we're doing on our side is--I don't know whether we're approaching it or not, that's a matter of speculation, but I think we really have to leap frog in the industry.

I've urged the Japanese and the Europeans to develop plants here. I've urged that they buy component parts made in America, and I've asked that in the interest of economy and efficiency that they buy all of their replacement parts in this country because that's one of the breakdowns in the supply of replacement parts for foreign automobiles that are sold in this country. That's a big business which will approach $7 billion within the next three or four years.

So I say I hope, I hope, that if we have the introduction of competitive systems of production here. I think it would be good for America. We've given a lot of our technology; a lot of the technology that's been developed by General Motors and Ford and Chrysler and American Motors has come out in improved products of our foreign competitors. But I think we have to move from their plateau of achievement, and I measure it from their plateau of achievement because that's what the competition is. If we're now getting 37 miles to a gallon, we have to recognize

that they're moving from 40 to 53 miles per gallon. And the price of fuel is going to continue to rise, we all know that, so somehow we need the introduction of a competitive form of production in our own country, using our own power, using our own labor, using our own resources.

I don't want to talk down or criticize the American automobile industry or any other industry. It's been an industry that has done very well. Another very important element that people overlook is the element of safety in a car. If it hadn't been for my 1977 Oldsmobile and my 1971 Mercury I don't think I would be here, because I was in two small accidents that could have been very serious with a car as unsafe and as small as I would otherwise have had. So we do have something to offer the competition by way of increased safety, which I think they can't compete with. There's something we used to see advertised in the American automobile industry and in a lot of American products, and that's dependability.

Now, I'm a consumer advocate. I've been a long time respondent in consumer affairs, and I want quality products. I think we do so much better with an American toaster than the one Sony has which rings bells and doesn't toast.

(Laughter.)

I think there are so many products that we excel in that we just don't advertise enough or talk enough about.

So I think we have a great deal to learn on this interchange. I hope this panel is going to be giving serious consideration to new ideas and to help us find solutions, along with taxes. I think we're going to have to modify our tax structure, and I want to do that as we can within the structure and limitations of government. I like the idea of phasing in these changes so that industry knows they're coming, so that people know they're coming, but I don't want to throw the cost of government out of balance and get us into a big borrowing program. That happens to by my own philosophy. I think we can do it over a period of years and give industry in America some idea of what we can do to meet this problem without upsetting the fiscal structure of the country.

But I don't think America is really going to do very much in retreating. I don't think the Congress is going to do very much in retreating from our standards, which are going to increase with respect to safety, with respect to OSHA, with respect to pollution control. I think we're dedicated on this course, and the competition seems to meet these demands. The competition has never said that these were adverse actions of the United States States government. They've just met them. And I think the pressures are now very strong in foreign countries for the same kind of standards that we insist on here in America. So

I think that that handicap is going to be uniform, and it ceases to be a handicap if it has uniform application. The people of Japan have a greater stake even than the people of the United States in clean air and in clean water and in the safety of people. It's a much more congested place, and so is Germany, and they have a much greater stake in these things which I consider as necessary and not adversary to business.

Now, we do have problems with antitrust, and we have a need to modernize the law to help make our industry more realistically competitive with the Japanese.

I think it's very, very essential for Americans, and I think the Congress is going to be vitally concerned with what you're doing here today. I'm going to report to the Congress about this hearing, because we want to give our industry every opportunity to be competitive; we want to give American workers every opportunity to be competitive; and I think while we've done very well in the past, and I'm very proud of our past, I want to look with as much pride to the future and the idea that we are going to be a competitive society of people that want to produce quality products.

I'm amazed with so many, many things that I buy of fine quality that are American made, and it's exciting to see the high quality of so many things that we produce. I would hope that this panel comes up with some realistic recommendations that we can take back to the Congress. I want Congress to be talking more about quality of production and efficiency of production. I hope to continue this interest out of office. I hope that we can keep that fire burning in Congress. This is the sort of thing we ought to be debating, instead of the irrelevant things we talked about at the national conventions, both of them.

(Laughter.)

This is what our competition is talking about in the Socialist and Communist worlds. I've attended some of the economic discussions and they've gone along on the same line, quality control, productivity; the same discussions take place in the highest levels of government. And the error makers are not put into institutions where they can rest after they make their mistakes. We have a lot of places here, foundations and places where people can stay on payroll and exist for periods of reprieve from their errors. I think we've got to fine tune our system, and I think we in government ought to do what we can to accelerate the keen interest and the continuing debate and partnership that we have. We're not adversaries with anybody in industry or business; we're partners. And this partnership of interest I think is what we seek; not to interfere with the decisions of private business, but to try to praise private business when it does things right and criticize it, as we criticize errors in government, when things are done wrong. I think too many businessmen in America have the option that so many doctors have--to bury their mistakes

or sell them as freak car collection items in later years. They must face up to and live with the realities of the stakes.

In the boards of directors, people are going to be more actively following their decisions. There's going to be more of a public concern. If it's not in government it's going to be from private people who are going to be outsiders who are going to comment on this and who are going to be more observing about the decision making process. I know these decisions are extremely difficult and it's difficult in a competitive society to always be right. All I ask is that we are wrong less frequently.

So, I'm proud of this panel and I want to keep informed of what you're doing, and I'd like to take the opportunity to thank you for your deep and dedicated participation in this very important issue.

MR. FRITTS: Thank you, Mr. Chairman. I wonder if your time permits you to answer questions by panel members?

CONGRESSMAN VANIK: I'll be happy to answer any questions.

MR. CUNNINGHAM: I'd just like to make a comment on something you said.

CONGRESSMAN VANIK: I didn't even see that you were here from Texas Instruments.

(Laughter.)

MR. CUNNINGHAM: I think I disagree with you from the point of view of the adversary relationship between industry and government. You say there's not one, but I think it's perceived by industry that there is.

CONGRESSMAN VANIK: Oh, I think it's perceived by industry.

MR. CUNNINGHAM: And it's like a lot of our customers now perceive the quality of U.S. made products not to be as good as some of the competition, and we can debate whether that's true or not. But the fact is it's perceived that way and we need to change it.

So there's one way to go about changing that perception of quality of products, and that's to improve it and show good faith and advertise and do all the things you have to do to change the perception. I think government needs to do the same--if it's not an adversary role there, it needs to be aggressive towards convincing industry that there's not one. And I think industry has got a big challenge in changing the adversary role between customer-vendor relationships. We've got an adversarial role with vendors, and I think we're all working towards trying to change

that adversary role between company and employee which to varying degrees keeps coming up.

But if there's one thing that comes out of all this, it's that this adversary situation has got to go away and we've all got to get on the same team to whip the same problems.

CONGRESSMAN VANIK: I can't argue with that. I can't argue with the perception, but I would say that the degree of the adversary relationship is not as extensive as industry perceives.

MR. CUNNINGHAM: I don't think the adversary relationship is all OSHA or all environmental. I think there's a whole myriad of problems there.

CONGRESSMAN VANIK: You see, we have in America the private litigative process, and this has troubled me. You wonder where your warranties end, and we've got to probably do something about that. I worry about that as a member of Congress. If they ever were to develop a causive action--I think one could develop for negligence in what we do in public life--

(Laughter.)

It would mean that we probably wouldn't run for office unless we could buy a $100 million liability insurance policy for indiscretion. But that's the private sector, and I do think that that's one of the very difficult problems.

I would be very troubled as a businessman in knowing where my liability ended, because it seems to be eternal, and that's a separate problem.

I read a very elaborate report the other day in Trial Lawyer about the chainsaw industry. I don't know how anybody can stay in the chainsaw industry and let anybody use one because it's a dangerous thing and has to be used with care, even if they put on all the protective gear. When I buy a lawnmower, the first thing I do usually is take the encumbrances off; those are the safety devices. Because if you have all the flippers on the side of it, you can't get around and cut your lawn, and you're carrying 5 or 10 extra pounds of shields that are pretty difficult for aging arms to handle. So there has to be some rationale, some moderation and some temporizing about the degree to which we prevail in stretching out warranties infinitely and without limitations.

MR. BARRA: One of the lessons we've learned from the Japanese is that the relationship between government and industry in the area of long-range planning has been a very powerful factor in their achieving their productivity objectives in the seventies and now in the eighties. Could you share with us some of the thoughts that you have in this area of long-range planning?

CONGRESSMAN VANIK: I think you have struck on what I think is the key. I think what the American businessmen need more than almost anything else is a survey as to what the rules are for five or six years. Our competition needs that, really, because if everybody knows what the rules are with any feeling of performance, General Motors can make plans, Texas Instruments can make plans, anybody can. And foreign govenments can make plans to adjust. I think that is one of the more critical things. I felt that it's time, and I felt long ago that it's time for America to have a national steel policy. What do we really want to do? How much production do we want to have in this country? The same thing with respect to automobiles. How much? We've got to deal with the world car issue, it ought to be debated, it ought to be discussed. That concept provides a sharing of production from all over the world in which everybody can contribute, and I think we can do a great job. We ought to be thinking about that.

But instead of doing that, we spend more of our time--probably about 20%--in Congress just talking about ethical rules governing ourselves. Not that that is not necessary, and then on the single issues we take about 60% of the time. So the real vital economic issues of this country are just passed over. I think the kind of discussion we're having right here is the kind of discussion that really ought to occur on the floor of Congress every day. It's not dramatic. One of our problems is it doesn't capture the media. And in Congress we have a great many actors now and campaigners. It's a tragic thing that our system has created.

You know, one of the reasons I'm leaving is I'm frustrated with the problems of achievements. It's hard to find out what you're doing when we have a revolving door Congress in which many people seek the office so they can get credentials with which they can go to other places in the private sector, or get a career credential rather than making the public office a career and developing the long-term expertise that is necessary to help solve the problems.

But I do think there is a strong desire in the Congress to make declarations of policy as to what we ought to be doing in various sectors. I would recommend that we do it by sectors. I have felt that there is a special need in automobiles, in high technology, in steel and in chemicals, and I think that just concentrating first in four sectors and trying to establish national goals which would include determinations about what we would be doing about the industrial participants and the labor participants. I think this sort of discussion and determination of policy is a very critical need.

MR. COSTELLO: Mr. Cunningham mentioned that there is this pervasive, in his view, that goes beyond OSHA, sense of distrust and adversarial relationship between business and government. I also wanted to call Mr. Vorhes in on this. Since he had

some good words about the Oldsmobile before Congressman Vanik arrived. Mr. Vorhes said that there was also this strong adversarial relationship. The question is what can government and business do to bridge that gap. Is the kind of sectoral planning strategy that Mr. Vanik is talking about sufficient, or do you need a more expensive token of good faith such as an accelerated depreciation bill?

MR. VORHES: I suppose that anything that would come, like tax incentives to help with some of these problems would have to come after the relationship improves. If there is, in fact, this relationship that's at least perceived by many of us in business, I suppose one of the first things that must be done is to get a commitment from both parties to try to stop it, even if it means we're doing too much shouting at each other, to stop the shouting and get on with the planning or the commitment. Or, a commitment to help understand better each other's problems, to try to see whether, in those areas where business looks dumb from the outside, they are, in fact, all that dumb. Can it be a coincidence that they all do that, even when they're competing with each other?

We must recognize that there are, even in the United States, limited resources. Capital formation is a huge problem. We must try to get the priorities of our country reasonably aligned. As an example, Congressman, I think that all of us as citizens of the country certainly don't want to go backward, if you will, on any of the ecologic gains that the country has made. On the other hand, closing off all of the final increments can get hugely expensive, and there's only so much capital available. My company will be spending some $40 billion between now and 1985. Not enough of it, probably, will be spent to increase productivity, which is important to what we're talking about.

As just one example, we'll be spending hundreds of millions of dollars to redo paint shops in assembly plants to comply with government regulations. If we were building a new assembly plant, it wouldn't cost any more to build one that complies with the regulations than one that did not, but to redo an existing facility takes a lot of money, and there's a question that needs to be answered. If there's just so much money, which is best for the country? To spend it right then to convert that paint plant, or to use that money to buy more robots or whatever it would take to increase productivity? Those are legitimate questions that need a rational and reasoned atmosphere to come up with the best solutions.

CONGRESSMAN VANIK: I would just like to say in comment that there are finite limited resources of the government to give up other than the tax code. We're in a very precarious condition. I opposed a tax cut this year and next year, and I don't know when I can be for it unless we can take it out of operating expenses. To borrow money is an incredibly foolish thing. If you borrow $10 billion now you're probably going to spend $20 billion to pay

it back. You'll never pay it back, it just becomes a growing debt that adds to our inflationary problems.

I have personally felt that giving 10-5-3 across the board to everybody was very wasteful. That would be an indiscretion on the part of government. It would give some people the opportunity to buy surer futures with the proceeds or invest money in foreign countries or do other things with it. I've always felt that incentives ought to be targeted.

What do you do about 10-5-3 and depreciation allowances are good for the successful business? What do you do about those that have no income out of which they can use depreciation? More and more of our companies in America, almost half of them probably, are in that category. We've talked about reverse income tax where if they can't use the credit, then you use Treasury funds to give them the credit. That's a foodstamp for industry, and I don't think that's ever going to be or shouldn't be acceptable to the American people.

I do think that what the Japanese have done very successfully is to establish priorities on resources, on capital resources, rather than create interference that the private system could not accept. But if we at least targeted the tax program to investment; in other words, somehow, if we wrote a tax law that says yes, you can get this, you get it for capital formation but you're going to have to plow it in, but you're not going to get it to buy someone else's business or to buy sugar futures. You're going to have to plow it into the enterprise.

That would cost the Treasury infinitely less and the program would be more of a quality tax program than the kind that's liable to emanate in the passion of a political campaign. It's very difficult to get people off something for everybody because the 10-5-3 has a wide political base. As you narrow the political base then you narrow the chances of creating the political support for it. But I think it's time for people in industry to get on the side of helping us be more efficient about how we write tax laws, so that what we do provides an incentive for quality production in America, for new systems, for expansion and development of our own productive potential, rather than scattering the resources that are taken out of Treasury and borrowed by Treasury from others who loan money to the government, and then let them scatte it around the countryside. I think you have to help us in the Congress to write a quality law.

MR. RUBINSTEIN: Congressman, one of the lessons we've learned from Japan that's been very clear is that the responsibility of the corporation or the organization to the individual, particularly for job security, has been a critical condition that has allowed for this rapid expansion of quality knowledge and commitment to the organization. Basically, their policy is to guarantee that some portion of the work force will not be laid off during cyclical downturns.

In 1976, I testified at hearings conducted by Congressman Lundine, and proposed this job maintenance concept: Instead of laying people off and looking toward income maintenance, you would keep the workers employed and they would spend a portion of their time in training and problem solving. You would provide some form of job insurance to continue their employment, instead of applying all the fiscal resources only after the person is laid off.

You say that the Congress is now ready to look at some of the problems in a more serious light. Would it be your judgment that a proposal of this type--which would get directly to the heart of providing for continuity of employment during cyclical downturns--could be seriously explored by Congress. Do you think the timing is right for that?

CONGRESSMAN VANIK: I think the timing is right for a discussion of the idea. But you know, you have to relate that to what comes forth in the law. Just giving a declaration of intention has no meaning, and I think it depends on the specifics of what kind of law you want Congress to pass.

I think that most American workers would be willing to give up some of their fringe benefits and perhaps some of their demands for higher adjustments to meet inflation if they had tenure. Certainly, in cyclical industries the tenure has much more meaning than almost any other ingredient that can be provided. I just don't know how you're going to fund that income maintenance during a down spell. What would you do at General Motors if you were to maintain your employees on compensation?

We have a little problem getting automobile workers to qualify for rebuilding a paint shop, for example. That's another union that's involved. We have very difficult problems that are a little different.

MR. RUBINSTEIN: I would think that a study of General Motors or any other corporation would show that there is a tremendous cost to the current system that could be looked at.

CONGRESSMAN VANIK: Yes. I want to say I've appreciated this time. I owe my life to two American automobiles in spite of their problems, and it's worth something to be a living American, who may have wasted a little fuel, than a dead one who was efficient.

I think we have some competitive factors, and we haven't said enough about the safety of the person in the automobile. I've never seen an automobile, American product that said you're safer in this car, and I think that's such an important selling point. I think it's a very important competitive point.

Although they've relaxed important standards on automobiles in Japan, I never thought there would be much of a market

for our cars in Japan. I feel the solution to our problem here in America with respect to automobiles is the production of highly competitive, safe, dependable automobiles with parts here. I've got letters, countless letters, from people who buy foreign cars and say they've got to wait six weeks for a carburetor adaptor, for example, which takes time to get here. I think we have some special advantages, and although I think there's a permanent place in America for our competition I think that in the experience of the last six years we have developed a corps of Americans who have now developed a desire for some of these foreign products, and I think it's very, very important that we have this mix on the scene of America of competitive, quality products. Sometimes, when I think about trade I think that when you deal with quality there should be almost no restraint. I think the best thing ought to come in free, no matter what it is, and I think General Motors believes in that. The best product ought to come in free.

MR. CUNNINGHAM: All people in the world should be able to buy the best products made in the world.

CONGRESSMAN VANIK: Yes. The price of soap, for example, has gone so high that now I buy Yardley's. What's the difference? I've always liked it.

(Laughter.)

So I may as well have what I really want instead of worrying about some of the other products.

MR. VORHES: Congressman, a good starting point for our whole program is that we'd like to sell you one of our safe, fuel-efficient General Motors cars and get you out of that '71 gas guzzler.

(Laughter.)

We think they're safer than most imports.

CONGRESSMAN VANIK: I'm looking at your Omega and I--

MR. VORHES: Great, it's a fantastic car and gets better fuel economy than many of the cars coming in from Japan.

CONGRESSMAN VANIK: And with a high degree of safety? I think that's something we ought to talk about because it's a fine automobile.

I want to truly say that my life was saved twice. Today, every motorist has lapses of wisdom as he drives along the road. I don't worry about running into another car; I usually run into a standing object that I don't quite appraise. But I want to tell you that my Mercury was a totally damaged car and the cabin compartment was entirely untouched. I had four feet of steel on

each side of me, or five, which was protective and it didn't get pushed into the passenger section. The Oldsmobile is another fine, safe automobile. If you can get that Oldsmobile Delta to about 40 miles a gallon, I think we've got a real good competitive item because you've got space and storage and safety, and I think it would compete very well with an import product that did 53 or 55.

MR. VORHES: We've got a little over 30 now on the highway with that car with the diesel engine.

CONGRESSMAN VANIK: I want you to do it in my lifetime.

(Laughter. Applause.)

MR. FRITTS: Thank you Mr. Chairman for sharing with us your time and your thoughts in spite of your very heavy schedule.

DEFINE THE PROBLEM BEFORE IMPLEMENTING SOLUTIONS

MR. CUNNINGHAM: I'd like to make a comment on a question that was asked earlier. I guess I think that maybe a change in taxes or tax laws or depreciation schedules could certainly help solve the problem, but I hesitate to guess at the solution. I think the thing that has got to be done is to first understand what the problem is, the problem of productivity and quality and how they interrelate, and a plan has got to be made for how to solve the problem. And then, the various solutions worked out. Maybe that's a solution and maybe it's not, but there are probably many solutions that have to go into that, and then we go implement it.

If we start guessing at the solutions before we understand the problem, it's not the right thing to do.

MR. FRITTS: I would agree with that wholeheartedly. Plus the fact, and I think this is what Mr. Vanik was alluding to, there has to be, at the very top level, consensus building between those of us in government and those of you in industry and labor. Because consensus among those three components is absolutely essential. We each can't be doing our own things in our own ways without dialoguing with the others and making the total system operative. I think consensus building is the beginning point. What we have today is a form of consensus building. I think the domestic policy review which Jordan Baruch conducted a year and a half ago was a consensus-building forum that, unfortunately, didn't get as far as it might have, but that's the kind of style that we've got to be looking at and pushing for.

At this point, I'd like to turn the chair over to Dr. Fred Tarpley and change gears slightly. We've covered many subjects and many more should be covered. Fred?

DR. TARPLEY: I think we've gone through a number of topics, not necessarily in order. This session is kind of like

the freshman essay which is to address the universe and all related problems, but in three pages or less.

COMPARATIVELY LOW SAVINGS
AND INVESTMENT RATES
IN THE UNITED STATES

One of the items in terms of national policy that we haven't dealt with directly is the problems associated with the U.S. savings rate, and the effect of the savings rate in the United States, which is at a historical low, and which compares very unfavorably with the much more robust savings rate in many other countries, especially Japan.

Jack, would you like to start?

DR. BARANSON: I was collared during the coffee break and I was warned that I might be called on to say something on this.

The question of the savings rate, I don't know that I'm particularly knowledgeable on just what it is in terms of savings versus consumption. The fact is that when you compare the United States to Japan, both the savings and investment rates are very far apart; two to one or more. I do know that mobilization of savings, the Japanese economy still relies very heavily on things like postal rate savings, and that these are funneled into channels where the governmental authority, in strong consultation with industry interests and feasibilities, is able to channel available resources into the kind of activities we've been talking about; growth areas and in maintaining productivity and so on.

Now, Congressman Vanik touched on that, and I was thinking as he mentioned it, this is an area where the channeling--I think this whole question of the mobilization of savings and the channeling of those savings into needed areas, either restructuring U.S. industry or maintenance of technological dynamics in frontier industries, is an essential consideration. Here in the United States the only area that I think we really have anything like this is in the housing field. After all, their savings are given a special preferential treatment.

Not too long ago, you could put money into savings at above the Treasury rate; they were giving a quarter of a percent or more, and you had such a thing as a loan guarantee system. So a very large number of people who, when you think back to the time when the Act was passed somewhere in the thirties, the risk of an individual homeowner just on his income to a bank was out of the question. And yet, this system of the homeowner loan corporation and the mortgage guarantee through the FHA I think is indicative of a mechanism that needs to be thought of from a legislative point of view. I really think that the channeling, the mobilization the raising the level of savings and the mobilization is one

thing, but the channeling and the devising of some system for a much greater allocation of investment funds for growth industries is something we badly need. I think that's an area that we can work on, within our style or without getting into some of the much deeper sociological questions--because a lot of the things we're talking about are sociology. The whole way Japan functions, the ethos and social organization is very different than what we have here.

NEED FOR CONSENSUS BUILDING AND PROBLEM DIAGNOSTICS

Let me just say one final thing. I think that this question, as a number of the other questions, harks back to an umbrella issue. I know Dale Cunningham was talking about this question of consensus and the adversary relationship. Now, nice talk across the table really isn't the problem and so on. The fact is, I believe a little more on Dale's side. There is a very deep problem in this country of--let's put it in broader terms--of consensus reaching, and definitive diagnostics of what is wrong. We just don't have mechanisms for that.

To this day, where is there anyplace we can go, the GAO or a congressional committee, and say what is wrong with the U.S. automotive industry? There is a babble of voices that is occurring; there are all kinds of things being written. Most of them are briefs by special interests who don't want their particular boat rocked. But the consensus, the process of definitively diagnosing a situation and arriving at a consensus as to what our policy options are just doesn't exist.

I think people like Congressman Vanik--he's thinking of retiring--I think there's nothing better than a person like him to think about this problem of consensus in our society. And at the first level, people like him ought to be able to get together with people from General Motors who have decision-making capability and be able to decide how it is we get a common diagnostic and a set of alternatives that management and government can think about before government passes an act. By then industry is faced with a fait accompli. I think that's part of our problem; how do we build consensus within the kind of society we are and the kind of ethos we have. That's the problem.

DR. TARPLEY: Mr. Jensen, we haven't heard from you today. Would you like to comment?

WORKERS NOW DEVELOPING GREATER AWARENESS OF NEED FOR QUALITY

MR. JENSEN: I don't want to comment on the savings thing; that's beyond my expertise. On the industry and quality,

and that gets you back to where you were, I think there's developing among our workers in the auto industry a much greater awareness of the need for quality, especially out of the Chrysler section. We have had preliminary meetings with the corporation, we've had commitments from their people and their vice presidents to get involved in quality, and they've been meeting at the plant levels, the new K car plants; new cars, old plants, to get the quality program rolling.

PROBLEMS WITH
HIGH LABOR TURNOVER

I don't know--you're trying to say, well, what happened in the past. There has been a tremendous turnover in the auto industry in labor, a tremendous whole shift. I was telling someone here earlier today that in one plant they put on 2000 Arabs. They are good workers; however, few of them could speak English. Detroit has the nations largest Arab community. They had interpreters in the plant. The signs in the employment office were in Arabic. And if you have tremendous turnover, and they did have tremendous turnover in the industry, labor turnover, the lower skilled workers go to the second shift and the cars that come off the second shift have less quality than the day shift.

I think, though, now with the down sizing in cars, it's easier to build quality into them because as the gentlemen from General Motors said, it's true, they used to make that side panel on the car all in little pieces. Now, the new K car side panel is all stamped in one piece. The door opening, rear quarter panel, it's all one stamping, so it's got to have engineered into it a lot of quality.

FEWER WORKERS IN
THE AUTO INDUSTRY

I think the American worker, with the amount of Japanese cars coming in, and downsizing, is getting scared and starting to get quality conscious. We're getting an older work force. I don't think you'll ever see the industry again at the levels of employment we had, even if Chrysler could sell as many cars today as they did in 1973 which was their peak year, about 2.3 million cars. They could do it with about half the workers or three-fifths of the workers, because the down sizing has taken so much out of the car. The engines use less than half of the grey iron; less steel, less press capacity, etc.

There's competition developing within the international union. Who's going to be the first up with the best quality program. The Ford Department also has a quality program similar to the Chrysler Department's and we're comparing notes and we're saying we've got a better idea, and none of us has really got our feet far off the ground yet. But I think you're going to see a much greater awareness on the part of the American worker of the need to build quality products.

UNION RECOGNITION THAT
SURVIVAL DEPENDS ON QUALITY

I think two things have hit the industry at once; the recession and the volume of imports coming into the country. This has really scared a lot of people. The top union leadership seems very receptive to quality improvement. The local union leadership endorses the program and they say we're going to make it work because they figure it's their plant next that goes down the tube if they don't get the quality.

MR. FRITTS: Thank you, Mr. Jensen. Dr. Deming has joined us but I think we had better break for lunch and we'll be back in one hour.

(Thereupon, at 12:05 p.m., the meeting in the above-entitled matter recessed for lunch, to reconvene at 1:05 p.m. the same day.)

AFTERNOON SESSION

MR. STAATS: I'd like to start the afternoon session. Ed Deming and I are colleagues of years gone by. Maybe we shouldn't say, Ed, how long ago that was. But back in the late 1940's, he and I were colleagues in the Bureau of the Budget. Ed came to the Bureau from the Bureau of the Census. He has been interested in this subject of quality control for many, many years; I think without much fear of contradiction he's now undoubtedly among the leading experts in the world in this field.

We're very happy that he's been able to work it into his schedule to join us here for part of the afternoon, and I think you've seen, Ed, the agenda. You know the people who are here. So I'm going to turn it over to you and let you deal with the subject however you will.

DR. W. EDWARDS DEMING, ON
STATISTICAL CONTROL OF QUALITY
IN JAPAN

DR. DEMING: Elmer, thank you very much for the kind introduction and for the privilege to be here. I know very well that what I have to offer is a small part of the problems of productivity. I'm also well aware, if you'll forgive me, that what I have to offer is important.

People ask me, how did it start in Japan? Well, I'll try to be rapid. Bill Leonard, whom you'll remember, Elmer, used to say, when you don't quite know what you're talking about, talk rapidly. So I always remember that, Elmer, it's a good idea.

I had been to Japan in 1946 and 1948 to work on the census of population and of agriculture, on the monthly report on the labor force, and a number of demographic studies. I took the trouble when I was there to get acquainted with statisticians, and in fact, I would go to the PX and buy food, and the food was pretty wicked. I somehow wangled a room in the Dai Ichi Hotel and was able to serve that terrible food. I invited all the statisticians that I knew to come, and they would all come. And I was not aware of the fact that some of them had to walk long distances because the tramways stopped, I found out, some of them at 9 o'clock. A lot of things I didn't know, a lot of things I still don't know about almost anything.

Anyway, I met with them and I told them how important they were; what they could do for Japan. Well, in 1949 came a letter from someone in General MacArthur's staff. I didn't understand then how it originated. It originated, I learned years later, from the statisticians in the Union of Japanese Scientists and Engineers. Come and teach us something about statistical methods in industry. I was able to go in the summer of 1950, and the movement dates from that time.

I was teaching 230 engineers in Tokyo in the auditorium of the Medical Association in June of 1950. It was very hot, there was no air conditioning. I was dripping wet by half past eight in the morning and seven or eight hours of that per day was pretty grueling, but I stood it. Somehow or other, the engineers stood it also.

I looked back at what happened in America, which was nothing. There had been 10-day courses in simple statistical techniques, instituted by Stanford University at my suggestion. There were also courses given by the War Department. I taught in 23 of these courses. The results were brilliant fires here and there, illustrations of what could be done with statistical methods in industry, but nothing permanent happened. It would just be a big fizzle, a bright fire and it would burn out. Management in America had no idea what was happening. I became worried after two or three days in Tokyo. Here were these wonderful engineers, so satisfying it was to teach them; so well-educated they were. And I realized that nothing would happen in Japan unless management learned something about statistical techniques and how to manage them. Why repeat in Japan the mistakes of America?

So somehow I arranged to talk to top management. American friends knew the right Japanese. The man to get Japanese management together was Mr. Ichiro Ishikawa, President of the Union of Japanese Scientists and Engineers, and President of the great Federated Economic Societies of Japan. Anyway, Mr. Ishikawa sent 45 telegrams to 45 men--come to the Industry Club next Tuesday at 5 o'clock. They came, and I talked, and they wanted more. They asked for more sessions, so we had more. And so I taught engineers and management that whole summer at Osaka, Nagawa,

Hakata, Hakata, and so on. Thus management got started on their responsibilities.

This movement, I told them, will fail and nothing will happen unless management does their part. Management must know something about statistical techniques and know that if they are good one place, they will work in another. Management must see that they are used throughout the company. I also emphasized the importance of quality in incoming materials from vendors. Poor quality from vendors was a problem all over the world. It was nothing unusual in Japan in 1950 except that it was perhaps worse at that time. Help your vendor, help your competitor: I thought all this was new. It was not new in Japan; people work together. In fact, the relationship between a good vendor and a purchaser is as binding a relationship as that between a worker and company, or between teacher and pupil; a lifelong relationship.

Well, it began. And they wanted more. And I will mention one other thing--they never looked to their government nor to ours for support. When they ask me to come, they send a ticket and a check from industry. I have just made my 18th trip to Japan.

Well, where are we? I'm no economist, I'm not trying to tell you that productivity in America is down, or anything about the balance of trade. I am only a statistician. I am an apprentice. But I have heard that productivity in America is not good.

You may not like this idea. You may think that it is overdrawn, and you may think that I am out of my field. I am not out of my field. I know what I am talking about because I have received over these years many letters, many calls, many invitations to come and work, help us. I think that I know what I am talking about. A friend of mine is in China, Dr. William R. Dill. He was Dean of the School of Business at New York University and he wishes me to come to China. I know something about China from my work in Japan. And I know something about this country. Forgive me, perhaps, when I try to draw a parallel. There are some very interesting opposites, conflicts, some differences worth mentioning, as I see it.

In China, they lost a generation of education but they know it. They are trying to make up for it; they are studying and trying to learn. There is one little trouble in this country: management already knows everything, so they don't need to learn anything more. Now, that is a pleasant state to be in. But it is a dream. Management here have the handicap of not knowing that they must start from scratch and relearn. In China, they know where they are at.

You may ask for illustrations. I could show you a letter; I would take the signature off and the letterhead. The man asked me if the statistical methods that I use had ever been used in the manufacture of wheel chairs. Now wheel chairs have

nothing to do with the case. Another man wished to know if any of my colleagues or myself had ever worked with small motors, the kind used in refrigerators. Several bankers have called up. They had apparently never heard of William J. Latzko at the Irving Trust Company. Last Friday, someone called up, a manufacturer of semi-conductors. He wished to know if I or anyone whom I could recommend to him had ever used statistical methods for the manufacture of semi-conductors. (Apparently he had never heard of NEC.) [Nippon Electric Co., Ltd.] He needed, he said, a statistician that understands the manufacture of semi-conductors. That had nothing to do with the case, I explained, and I continued: "I am now beginning to understand you: You have no one in your organization that understands semi-conductors: You need someone that knows something about semi-conductors." Oh! But this is such-and-such company. Yes, I understand, but you're looking for somebody that knows semiconductors. He finally admitted that what they were looking for was someone that knows statistical methods, never mind the semi-conductors.

A roster of all the successful cases and unsuccessful ones in the manufacture of wheel chairs, small motors, semi-conductors, or anything else would constitute no basis for prediction of success in the use of statistical methods for these same products in other companies. Statistical methods are universal. Success in application depends on the management, how hard they work, how willing they are to learn simple statistical techniques and how to manage them, and on the statistical knowledge in the company. Productivity in small motors could be great in one town and flunk in another one, solely because of management and the statistical help that they have in one place and not in the other one.

Until people learn some fundamentals about the transferability of statistical theory, not much will happen. And people ask me, and it's nothing new, could I spend a day with them? Could they come and talk to me? We have heard of your work in Japan, and we, too, would like to be saved.

(Laughter.)

They have no idea that they must go to work and learn in a series of from 8 to 12 seminars stretching over a period of a year and a half or more. It is difficult for men in management in America that they need ed cation, that there are gaps in their education that must be filled. In between seminars, their taskforces go to work under my direction on a pilot plan or two or more. I use some examples in the next seminar. My only interest is to create a structure that will continue to function without me. It may take two years, maybe three.

Folklore in America has it that if you emphasize production, your quality will suffer. Ask any plant manager in this country. That is what he will tell you. You have one or you have the other. And he gets the devil for one and then next month he

gets the devil for the other one. That's because he doesn't know what quality is, or how to achieve it. He is only doing his best. He has the devil's own job; any plant manager has.

I received a letter from a Japanese friend dated the 23rd of March of this year. I will read it to you. He said, "I have just spent a year in the northern hemisphere and in Europe, visited 23 countries, talked with many people in industry. They are all interested in the cost of quality." Even yesterday, somebody asked me how much will quality cost. I said look, if you are interested in cost, we don't talk. I will send a bill. Don't worry, it will be enough. That's only part of it. You will have to get hold of some statistical help, but if it doesn't deliver 50 to 1 I will not be interested. You have to qualify as a client, and stay qualified.

Anyway, people here and in Europe talk about cost of quality. He went on. "There is a direct relationship between productivity and quality." And he doesn't mean inverse, either. "As quality goes up, so does productivity. The source of this statement is comparison of Japanese versus American and Western Europe industries. Quality and productivity are different aspects of the same thing."

"In Europe and in America, people are now more interested in cost of quality and in systems of quality audit." I won't have time to be logical in this hour and 45 minutes that you allotted me. There is only 35 more minutes. But if you are asking me, I would say that arbitrary numerical goals, work standards, unmanned computers, and quality audit, are hurting production and quality in this country. Anyway, let me go on with his letter.

"But in Japan, we are keeping very strong interest to improve quality by using statistical methods which you started in your very first visit in 1950. When we improve quality, we also improve productivity, just as you said in 1950 would happen.

A schoolboy can understand this. Don't ask the plant manager; he's too close to the job. Look, suppose you spend $100 in the plant, and suppose that you produce 89 good pieces and 11 defective. Now, the smartest thing you can do sometimes is just throw the 11 away, because it costs more to rework them than they cost in the first place. Why rework them? Well, because we must meet a contract a week from Friday, and we are going to meet it. So they rework the defectives at any cost, but let us just say that we have spent $100, we have 89 good ones, and throw away the 11 defectives.

Now, this is an actual case. In December 1979 the proportion defective was 11 per cent. Seven weeks later the proportion defective in the same operation had dropped to 5%. Now, 11 minus 5 is 6; that's one of Deming's theorems, I guess. But another theorem is, what nobody knows but what a schoolboy can

learn, that six people are now engaged in making product that is good instead of making product that is defective. Quality thus went up. It went up from 11% defective to 5% defective. Six people that were making defectives are now making good product. What is the result?

- Better Quality (6% fewer defectives)
- Productivity increased 6%
- Customers better satisfied
- Workers happier

The people on the job are happier making good product; they are unhappy when they can't possibly make good product no matter how hard they try.

A man told me only last week of a little problem that they had trying to stick leather to plastic. The problem was, as most everybody here knows, leather will not stick to plastic if the grease in the leather is more than 9%. Well, he took steps, either washed the leather and got the grease down to 9% or lower, or did not buy any leather that has grease content more than 9%. Easy to say, not so easy to do. He had been plagued with turnover, but once he changed the system to use only materials that would do the job, turnover dropped to near zero. In other words, the workers are happier now that quality and productivity have improved.

I'd like to enumerate some roadblocks to greater productivity. One roadblock is that management supposes that all problems are produced by the worker. The fact is that most of them belong to the system which only the management can change. For example, if we were trying to do some close work here, all of us, with needle and thread, or looping stockings, or something of the sort, the light isn't good enough. We do the best that we can, but our work is not good. We might even all be in statistical control, yet produce much defective product. The problem is the lighting. Well, we just work here, we can't change the light. Yes, we could go out and buy fluorescent tubes and we could put them in and then somebody would come along and ask if we had permission to reconstruct the building.

Incidentally, that doesn't bother people in Japan; they just go ahead and do it.

Another curse is that management here does not see their own problems. Statistical methods help to find problems and to measure their magnitude, and learn what kind of corrective action will be effective.

Another curse is dependence on inspection. A friend of mine working with one of my clients used the term tollgate inspection, and I like it. Total reliance on final inspection is the wrong way to go about it. The quality is already in the product;

you don't make it better by inspecting it. When it comes to service organizations, banks, government, the payroll department, the service part of a manufacturing concern, you'd be amazed how many mistakes there are in the payroll. Where did it happen? Mistakes are costly. What does it cost a bank to send a remittance to the wrong bank? The wrong bank received the money and they can't figure out why. It is not top priority to try to straighten it out. Maybe we can locate the papers that go with this; meanwhile, we'll hold it. Meanwhile, the bank that sent the money has to pay interest to the company or bank that should have gotten the remittance and had to borrow money to get along.

Well, those add up. Anyway, the costly mistakes are those that happen along the line. The ones that got out are also costly, and nobody knows their cost. I think that it is impossible to compute them. But there is a better way. Know that it is right before it goes to the next stage. Why make a defective in the first place? Why let it happen? Get at the roots. You say that's simple and sounds, good, sounds great. Let's do it. Yes. But you can't do it without statistical methods.

Inspection is too late. Better make it right in the first place, and you can do it. There is no point in receiving parts that aren't right, and no reason to make mistakes as you go along.

Only three weeks ago the manager of a large company, I won't mention any names, was making a large cylinder with tubes in it for another company that is represented here. You know, Doctor, what we do? We make a record of every one of those defects.

Where are the data, I asked? In the computer. Well, that's the usual answer. But this time, he was doing something about it. "Our engineers never stop," he said, "until they find the cause of every one of those defects."

Now, most people would think that that is great. When you go home tonight, on the way home, if you ride home on the train or on the bus, tell people that that is wrong. That is not quality control; that is making trouble. And without statistical thinking, you don't see why. It sounds great. So obvious, so wrong, like a lot of other practices.

Somehow, I have a feeling that people have gotten so accustomed to late mail, which is absolutely unheard of in any other country except Canada; trains late, nothing on time. I went to do some work in Philadelphia, was going onward later in the day to work in New York. The train was 50 minutes late to Philadelphia. Now, that takes some planning, I think, to do that. So the first thing I do in Philadelphia is to get on the telephone and try to make new arrangements in New York. I'll be there an hour late. Yes, they didn't mind, we would work through dinner.

Well, that's too bad; you have to make alternate plans for everything that you do. Nothing works, nothing on time.

We think that this is a way of life, a necessary way of life. My little commuter would roll in 00 to the second in Japan. A train was due to leave at 1420. As 00 rolls in, I felt the first tremor. I've kept track of arrivals for a long time, and the latest train was 18 seconds late. Usually, three seconds ahead, three seconds behind. You wouldn't believe it, but my itinerary three weeks ago was this: arrive Hakata at 7:23; change trains and leave at 7:24. Why not? Got a whole minute to cross the platform. Don't need a minute. No problem. Don't think about it.

Last week, I sent two envelopes, one to Chicago and one to Atlanta, at a cost of $50 and $60. I received three envelopes at a cost of whatever it is, $45, $50, $60 for each one. In Germany, England, Japan, use a postage stamp and it will be there in the morning. Mail a letter in London this afternoon; it will be in Paris in the morning. Don't worry about it; it will be there.

Another curse, to my way of thinking, is the unmanned computer. Data, but no analysis and no action. I can tell you about a plant manager that receives every morning on his desk a figure that shows the average quality of what he produced yesterday in an important line. Also the standard deviation of that distribution, the fourth moment coefficient and the proportion defective; what the Ford Motor Company would not accept. That report is on his desk every morning. And you know what it is worth to him? Absolute zero. The same mechanism, same machinery, could put on his desk something that he could use. It could tell him that at 10:00 o'clock yesterday morning, something happened. There was a point out of control, a statistical, signal that something happened at 10:00 o'clock yesterday. Now, he and his men can get together and figure out what happened, and remove the cause of the trouble. Then, they can begin to study the process, and improve it.

I had lunch one day with one of the vice presidents of a large life insurance company and he said to me, Ed, I'm buying another three million dollar computer. I said to him, what you need around your place is three hundred thousand dollars worth of brains.

(Laughter.)

Well, I told that joke at a lecture at American University one time. Some people laughed. I suppose some people laughed the next day, I don't know. But after the lecture there were about 18 people gathered around and I was very pleased, of course, at their interest. But one of the men from the C&P Telephone Company, Mr. Kingman, said, you know, people laughed, but it isn't funny. If I wish to buy three million dollars worth of equipment, no problem. There are four companies that would be delighted to write up the purchase order. And all I would have to

do is to sign it. But if I wished to buy $300,000 worth of brains, there is no easy way for me to do it. I would have to work hard to convince people that we need brains in this company.

Mr. Staats, there's a lesson there for you. Government agencies can buy hardware but they cannot buy brains without so much red tape that I won't have a thing to do with it. I wouldn't go to that much trouble, and I know that a number of competent people will not put up with it either.

Some people talk about installing quality control. They can install this microphone system and a new table and some new chairs, these lights, but you don't install quality control. Quality control is something that takes root; you seed it, it has to take root, and nourish it, study, and it is very interesting study. The more you study, the more you wish to study.

Some people think that if they could just have a day of my time, or come and have a talk, they would understand all about what to do. That is worse than starting from zero; that is a handicap. And I am afraid that these ideas pervade the whole of American industry. There are exceptions, of course. I have known Presbyterians that smoke cigarettes.

(Laughter.)

Bad training in industry: There are ways to know how training is doing; statistical methods will tell you when somebody is trained and when he is not yet trained, and as long as he is not yet trained, there is still hope to improve his practice for whatever the job is. When he reaches statistical control, it is not economical to train him further on that job. If his work is not satisfactory, you must move him to another job. How many people that are doing training know that? Yes, there are some.

You hear the story, "We just don't get the kind of worker today that we used to get." It may be a matter of training. And statistical methods help the worker to know how he's doing.

In Japan, there was and is the JUSE 1/--if I start on the history of this I'll take up all my time. If you say it stands for a union of Japanese scientists and engineers, you are almost correct but not quite. A better name is Union of Science and Engineering.

Anyway, when I pointed out to Japanese management in 1950 the need for schools for management in statistical methods, the need for continued statistical education of engineers, of

---

1/Japan Union of Scientists and Engineers.

foremen, of production workers, it was possible in Japan through this organization, JUSE. Massive training was possible there. Here, maybe it can be even better, but it will have to be company by company. Mr. Barra, whom I've had the pleasure of meeting and talking with, is doing that training in his own company, Westinghouse. I suppose that he could, maybe if he has any spare teachers and time, train for other companies. I don't know. But that's the way it will have to be done here. Perhaps there is no better way. The point is, do it. But who is doing it? Somebody is. Dr. Donald W. Marquard at DuPont is doing it.

But all I know is just the little that I know. There may be a lot of other examples. For the most part, it just isn't being done. Maybe you can dig up examples that if all told would make up a half a percent. Where is the other 99-1/2%. It's a big problem, but it can be done, and it will have to be done company by company.

I'd like to have questions. I think that I have talked long enough.

MR. FRITTS: Very good. Do any panel members have questions they would like to pose to Dr. Deming?

DR. BARANSON: In your experience between Japan and the United States, how much of the receptivity to some of your thinking is due to the Japanese culture and values as distinct from American culture and values?

DR. DEMING: There may be a lot of difference. I made the statement on my first visit there that a Japanese man was never too old nor too successful to learn, and to wish to learn; to study and to learn. I know that people here also study and learn. I'll be eighty next month in October. I study every day and learn every day. So you find studious people everywhere, but I think that you find in Japan the desire to learn, the willingness to learn.

You didn't come to hear me on this; there are other people here much better qualified than I am to talk. But in Japan, a man works for the company; he doesn't work to please somebody. He works for the company, he can argue for the company and stick with it when he has an idea because his position is secure. He doesn't have to please somebody. It is so here in some companies, but only in a few. I think this is an important difference. You' just asked me and I gave you my answer.

MR. STAATS: What is your reaction, Ed, to the use of labor-management committees, such as we have in some industries and some companies in the United States? Have you any particular views as to whether those have really contributed much to quality and productivity, and, if so, what could be done to foster that? If that's a fair conclusion?

DR. DEMING: I think that other people here are much better qualified on that than I am, but I can tell you one thing. The workers can contribute what nobody else can contribute because they work there, they know about the light, machines out of order, etc. Other people go through with leather spectacles and don't see the problem. One company that I work with had a strike, and the office force went out and worked 11 hours a day, six days a week, or seven. One woman told me that she was sorry when the strike ended because she had been paying off the mortgage. (They did get some overtime on this, even the office force.) Production went up 50%, 35%, in every line.

Anyway, a man said to me, you know, the first two days I spent tuning up those machines. I didn't know that they were in such bad order. One machine was just ready for discard. It wasn't even worth tuning up. When I tuned up those machines, things straightened up and production jumped to double what it had been. I said, Larry, you know whose fault it was that the machines were out of order, don't you? He said, yes he knows whose fault it was; it won't happen again.

Well, you asked me a question, I don't really have any answer. QC circles can make tremendous contributions. But let me tell you this, Elmer. If it isn't obvious to the workers that the managers are doing their part, which only they can do, I think that the workers just get fed up with trying in vain to improve their part of the work. Management must do their part: they must learn something about management.

MR. STAATS: They've got to set the example.

DR. DEMING: Yes. On what only they can do.

MR. FRITTS: I'd like to ask Dr. Deming--part of your discussion had to do with developing a finite process; the building of quality as you go, and once you have the process fine-tuned, leave it alone. Is that essentially correct?

DR. DEMING: Well, you'd better know what it is doing. Leave it alone except to remove a special cause of trouble, and only on statistical signal. Once you achieve statistical control, then improve the system; management's job. And if you don't know what statistical control is, believe me, you don't know. And it does not mean computers.

MR. VORHES: Doctor, I believe you when you say that quality must be built into the process; it cannot be inspected in. Yet, the few times that I've been in a Japanese plant, it seemed to me I saw a lot of inspectors, and they were considered rather elite among the workers and they sometimes were even licensed by the government to hold that job.

DR. DEMING: There are Japanese industrial standards, developed by industry, with the force of government. Products to

be exported must satisfy Japanese industrial standards. There may be more inspection in some places than there need be. On the other hand, most parts are delivered to the purchaser for assembly without defect, and the purchaser need not carry on any incoming inspection.

MR. FRITTS: Is it possible in your estimation in this country to develop vendor relationships with the producers that would be amenable to developing and producing products that are of high quality?

DR. DEMING: The answer is yes. With every vendor? No. I attended a meeting only two weeks ago called by a company with 25 vendors that had expressed interest in quality control, or claimed that they had some quality control and wished to learn more about it. They were deeply interested. Now, being interested doesn't produce; you've got to do something. It's action that counts. And action has to be directed.

I named an example a while ago of what seemed to most people as absolute, tight quality control, which is totally worthless and only making things worse. So interest and good intentions are not enough.

But anyway, I've answered your question, and the answer is yes. On the other hand, there are a lot of vendors that just don't understand, they just don't believe that there is any way to improve their product. Sometimes they are right; usually not.

MR. FRITTS: Is it possible that many vendors don't recognize that they're adding the kind of quality problems that indeed the producer finds?

DR. DEMING: Most of them, yes. I'd say most. A company that I worked with sent out 200 letters to 200 vendors for 800 parts in one machine. This company sent out 200 letters to 200 vendors, and 170 of the answers could be put into a pattern that sounds like this. We believe in quality. Quality is our motto. Everywhere in our plants you can see that we believe in quality. We inspect and inspect. In fact, we inspect everything that goes out, to make sure of quality. These answers were self-incriminating, admission that they are not making it right and that they are relying on final inspection. Inspection doesn't do it. You cannot separate the good from the bad. Oh, if this tumbler is smashed, I think we can all agree that it is smashed. But you cannot separate good from bad, especially if you're in a hurry. We have got to get this contract out, so we won't inspect it at all. Never mind, we'll get it out. Friday night, it will be out, on board. That's the way inspection goes. I see it.

Anybody can tell you if it's made right, you don't need to inspect it; just a small control sample to make sure. Of

course, most of the problems, so many problems, are in management. A lot of people think that if they buy testing equipment, expensive testing equiment, they eliminate the problems of inspection. If you ask me, I'd say that expensive equipment confuses the problem. There is more trouble, more disagreement between two machines than there is between people.

There is another little thing to remember when you talk about machines. You read in the Wall Street Journal, the New York Times, Toronto Mail, and so on, that the reason for loss of productivity is that there has not been enough investment put into machinery and automation and so on. Very interesting reading and very interesting writing. I am sure, for people that know nothing about it. They get sucked down the river.

MR. NAGATA: Dr. Deming, I have two questions. We Japanese have learned that statistical analysis is a tremendous tool for us, and my personal experience has led to two questions. One is, quality assurance versus quality control. If I'm wrong, please correct me. Quality assurance is that the product be delivered to the customer; at the factory, we workers assure it. But quality control is done in the factory. Am I right?

DR. DEMING: Well, I think to most people, quality assurance is figures that show where you have been, whereas quality control is a program for continual improvement.

DR. NAGATA: My other question you defined--we Japanese call it the Deming circle versus QC circle. The Deming circle--

DR. DEMING: I'm sorry, Dr. Nagata, I didn't hear you.

DR. NAGATA: The question is between a Deming circle, the circle that you have designed, and the QC Circles.

DR. DEMING: They bear no relation to each other.

MR. NAGATA: That's right. Quality control circle by itself is plan and do and check and act. Now, how do they relate, the two circles, one to each other?

DR. DEMING: The Deming circle is a quality control program. It is a plan for management; 4 steps: design it, make it, sell it, then test it in service. Repeat the 4 steps, over and over, redesign it, make it, etc. Maybe you could say that the Deming circle is for management, and the QC Circle is a group of people that work on faults encountered at the local level.

MR. RUBINSTEIN: I'd like to get your insight into a problem. I think one of the unique things about the Japanese is the sharing of knowledge. The engineer is willing to share knowledge with the worker; the manager is willing to share knowledge--

DR. DEMING: With everybody.

MR. RUBINSTEIN: With everybody. There's a sharing of that knowledge. And there's a desire to learn, as you said, in everyone, and quality and statistics are learned by all levels of the organization. What's your insight about the United States? How can we break through this barrier of delineating the various technical functions, and thinking that everything has to be solved by a technical specialist? How can we move in the direction of making problems the common property of everybody in the organization? What would have to be done in our institutions to make that happen?

DR. DEMING: I don't know. Maybe if things get bad enough you can do some things that you can't do now; they're not quite bad enough. I don't know. I'm no economist. Sidney, you can answer it much better than I can, or Mr. Nagata. Anybody here. And I'd like to listen. Sidney, I just don't have answers.

You know, Mr. Barra is doing training in Westinghouse for everybody as fast as he can, and I'm sure he's not going to do it faster than he can. It takes time. I'm sure he probably had a lot of learning of how to do it.

MR. KEHLBECK: Dr. Deming, along this line, it seems that what we need to do is to go through a large cycle of retraining people to change the mental approach to the subject we're addressing today. Most of us come out of school thinking that AQL is an acceptable level rather than parts per million, it seems like we've got to make major changes at our educational institutions relative to quality related courses.

DR. DEMING: That is a very good illustration; acceptable quality level. Acceptable. Any thing will do. That's a good point.

Well, yes, I say we're really starting under a handicap because people in management try to think they know. They think it is a sign of weakness to imagine otherwise. I think there are a lot of things that we just have to change. People are going to have to relearn, under the handicap of thinking that they know. A lot of people say that they have statistical control, but all that they mean is they have some automatic registration that goes into the computer.

In one of the companies that I work with, the final product was inspected, a small sample, say 200 out of 8000, but 200 was about all that the girl could do in one day. When I asked what had happened to the figures that she produces, nobody seemed to know anything about them. And that time the figures were not in the computer; they didn't have a computer. That's better because you save money.

(Laughter.)

Well, Professor Chambers and I got hold of this girl's tickets for the last seven weeks and he did most of the work, but it turned out that the finished product that they had been sending out to their customers was afflicted with 7-1/2% major defects, on the average day. I am using their definition of what a major defect is. I don't need to know. It's what their management classed as major defects. There are about 11 ways to make major defects, sometimes more than that. Seven and a half percent on the average of what they were shipping out was afflicted with major defects, and they didn't know it. They had never looked at those figures.

I picked up two blocks in a plant, both beautifully made, lacquered, not a flaw, both met the specifications. The company had paid for them. One, the manager said he could use; the other he could not. One was made in Cleveland, the other made in Naples. Don't ask me which is which, I don't remember; it makes no difference. But what are you going to do about it? I'll have to rework these; he said, there is nothing else to do. There wasn't time enough to argue about getting new ones. The company had bought 10,000 of each one. They had to rework 10,000 of them at terrific cost to get that contract out.

Well, they got it out. I asked him how about the purchasing department that purchases these things? Did they know anything about this? Is there any channel of communication by which you can alert them to the fact that you are having trouble, and are forced to use materials under duress? Using stuff that is defective, making it go some way or other. Well, he said, there is no use to complain.

You know how people solve problems? The way he solved this one. There are two ways. One way: "this is the kind of thing that we see any day." And the other one: "our competitors are having the same problems." That solves it!

MR. STAATS: Accept it as a way of life.

DR. DEMING: That's the way we live.

MR. FRITTS: Are there any other questions? Ralph Barra--we've hit around and touched on the quality control circles several times today. Ralph has brought with him a videotape of about 15 minutes' duration which gives an update or a preview of what he's been able to do at Westinghouse. Ralph, would you like to come forward, or does it take description?

QC CIRCLES AT WESTINGHOUSE

MR. BARRA: Just one minute, that's all. A few months ago, we actually videotaped two of our quality circles at one of our divisions in California. It was when they made their management presentation. And for both of these circles this is their

first presentation they ever made. They'd only been in operation a few months, and I think you'll be impressed at the quality of the statistics that they show and the way they communicate with management the results of their study of the two problems that they chose.

(A videotape was played.)

MR. USILANER: Did all these employees go through training before they participated?

DEDICATED TRAINING
ESSENTIAL IN QC CIRCLES

MR. BARRA: Yes. One of the most important elements of the program is that the first two or three months are dedicated primarily to training in all the problem-solving steps, including the Praedo analysis, the brainstorming, cause and effects analysis, histograms, trend analysis. And these are people who may not have had a high school education and have even been out of school for 20 or 30 years and they can learn these very basic simple techniques of problem-solving and they love it.

MR. USILANER: Dr. Deming, to take that one step further, wouldn't there be a built-in resistance if you tried to train these people in statistical quality control techniques?

DR. DEMING: But, you do train them.

MR. BARRA: We do.

MR. USILANER: Did you go the whole route?

DR. DEMING: They have to learn the difference between (a) a special cause of trouble, and (b) a fault of the system, which must be corrected by the management. The only safe guide is a statistical signal. The naked eye can't do it. You must rely on a statistical signal.

MR. BARRA: The most important thing we teach them is cause and effect--could I use the blackboard. It would just take a second, because we're talking about the cause and effects diagram. And this is where the statistical quality control comes in. When we talked about the four M's--the Japanese Ishikawa diagram--all it does is it identifies the problem and the cause. Sometimes you put on a fifth one, money, if you want to.

PROBLEM DEFINITION
BEFORE SOLUTION

If the problem is lack of productivity, lost time, lack of tooling, lack of training, any one of those management-controllable problems, your circle first works on defining the

problem. They may spend two or three meetings, and each meeting is about an hour apiece, but they do learn how to delve into the problem definition phase, which is what I was talking about this morning. Before we tackle the problem we have, we'd better define it before we try to come up with solutions. They're taught that, too. Define the problem. Once you've defined it, then look at the four groupings of possible causes. And you go into that, and under Manpower you get into training, you get into a lot of things in that area. Materials, you get into the purchase parts, problem, quality of parts and material that you're using and so on.

DATA COLLECTION
AND ANALYSIS

Then they find out very quickly as a circle that they need data to convince management. They need statistics, they need to know about these most probable causes. We also teach them the Praedo analysis, which is prioritizing. You may come up with a list of 100 causes and you say well, it's impossible to analyze all those causes. And we teach them how to find the critical 10% or 20% which comprises possibly 80% or 90% of the problem. And once they prioritize, now they can dig in and they can then determine through check sheets, charting techniques and collecting data at their work stations on a continuing basis over a period of time, it may be two or three months, they can then collect the actual data they need to convince management that they are losing a substantial amount of time or there is a high defect rate or a machine needs maintenance because it has a large amount of down time, or they have a problem on a particular part of the shift, or the problem is associated with a machine, a person or a time, and that kind of thing. So the statistics come in.

CONVINCING MANAGEMENT

Then, of course, they're taught in the last phase what you saw on the videotape, how to make an effective management presentation where all the members of the circle have an opportunity to actually present their contribution and their part of it. So the statistics come right into the circle. And what we're finding is that as the circle matures, even after six or seven months, they've learned several techniques and we start teaching them more advanced techniques, and we will get into scatter diagrams, and we will get into some of the other analyses that are more advanced and maybe have been primarily taught to engineers in the past. We think we can teach these techniques to blue collar workers and secretaries and purchasing people.

MR. STAATS: Is there any kind of a reward system or recognition or incentive payments for coming up with ideas which improve quality or safety?

REWARDS SYSTEMS:
RESPECT AND DIGNITY

MR. BARRA: No. In general now, in some of our divisions in Westinghouse, 10% of Westinghouse, there are suggestion systems that had been in place before the circles got started. We weren't able to tell the people that when you join a circle you couldn't also still be eligible as a circle to put it into the suggestion system and also get a financial reward. So that's continuing.

In most of our plants, 90%, there are no suggestion systems, and the primary reward that the people have is the respect, the dignity, the opportunity to be thought of as a human being, as a person that can contribute, and the self-esteem that they receive is all they want. That's all they want.

What we feel would be a tremendous negative is if we treated the quality circle program like the suggestions program. The worst thing we could do is to tell the people that we're ready to pay for your brain power, because what the suggestion program has done is that we've been paying most of our workers in the factories $1000 or $1500 a month or whatever it might be for just their hands. We cut them off at the throat and we say all we want is your body and your hands and you do what you're told and you get $1000 a month. Now, if you ever tell them that for their brains you're going to give them a $50 check, which the suggestion system in general has given to the people $50 or $100, that's an insult to them as human beings. So we never downplay their contribution of their brains, financially. We feel that that's a separate problem and should be dealt with by either a profitsharing plan or proper compensation in salary administration but should not be associated with a program like this where it's really owned by the people and it provides them an opportunity to really contribute their thoughts, their experience and their recommendations to the company. They feel more secure when they do it, because they now feel that they have a chance to influence the direction of the company.

COMMITMENT BY MANAGEMENT

The only thing that the program provides which had never been available before is that management has always had the excuse, I don't have time to talk to my people; I don't have time, because I have to ship thousands of widgets out every week or at the end of the month. With the quality circle, at the beginning of the program we tell management if you offer it to your people, you are saying you are ready to commit one hour of your time every week to whatever they want to work on. They not only volunteer for the circle; management has no control over the problems that the people select in our circles. Now, that's not true of all the circles in the United States. There are a lot of companies where management feeds the problems to the circle.

We believe that if it's people owned and they not only volunteer but pick their own problems, they know it's for their best interest. And the other thing we have done with our program is that we only start one or two circles, because we feel that if the program has no merit to the people, then the circles will die with little risk on management's part. If the people see merit in it, the circle program will grow on its own merit.

QC CIRCLE MUST BE CREDIBLE

DR. TSURUMI: Of course, you didn't turn this QC circle attempt over to the owners or whatever; that's the worst possible thing you could do. However, we have been discussing the linking of this success of the QC circle to the idea of building the quality control into the production process. This rests on the idea that the quality improvement wouldn't come out of the worker's hides. This means that the job security of workers is the determinant of plant productivity. Management commitment to workers--not the one hour every month when they listen to all these good things--management commitment that it will not use layoffs as the easy scapegoat for making their own managerial mistakes is the key to the devotion of workers to total productivity. Only when workers are convinced of that, would they really put all they have into it. This has been already proven by other examples.

Therefore, the question I'd like to ask you is, is this plant unionized?

MR. BARRA: Oh, yes. And non-unionized, too.

DR. TSURUMI: Yes, that's what I assumed. Both.

MR. BARRA: When you say this plant, the one that you just saw, that's unionized.

DR. TSURUMI: Yes. When business is going very well it's easy to introduce all kinds of changes. Now the crunch comes when the business declines, or if it's cyclical or otherwise. Then the management commitment proof can only be proven in such a way that the costs of readjusting are going to be distributed fairly. In the past, you lop off 10% or 15% of the workers who can least afford to be laid off.

Obviously, you haven't instituted that plan, but is any discussion being started in terms of the management changing its attitudes? What regulations and rules?

MR. BARRA: Discussion is definitely getting started. We already discussed it earlier today. If we don't have the right cultural environment, if we don't have that tendency to lifetime employment, to caring for our people and keeping them when things are bad, then something like quality circles will not last. So

management, once they've seen the value of this, hopefully this will be a motivator to then get them to think in terms of ways to have lifetime employment and job security.

DR. BARANSON: The motivator is to management.

MR. BARRA: Motivators to management, right, to be committed to that philosophy because they'll be afraid to lose this participation by the people that will show big results within a few years.

DR. BARANSON: Do you feel at Westinghouse that management is beginning to learn this, or is this sort of, you know, good public relations? Is it something that's beginning to sink into management?

MR. BARRA: I wouldn't be as enthusiastic as I am if I didn't have the president of the corporation behind me, as well as the board of directors and the other presidents are getting on board now. And we're now dealing with the middle managers and vice presidents. There are a lot of things we've been doing over the past two years that you have to do. You just can't bring in a consultant from the outside and have him come in and get everyone converted. It's a tedious process, and Dr. Deming has already pointed out if we don't get management totally committed and behind it and believing in it and involved. Japanese management is very proud to say that more than 50% of their time is spent in the factories with the people, talking to them and working with them. Our management has got to get into that style of management; they've got to get in there, involved, knowing the people and committed to them and caring about them. That's what really is the bottom line.

MR. RUBINSTEIN: Can I ask you for one more elaboration? What is the role of the union at Westinghouse in this program?

UNION/MANAGEMENT
ROLE IN QC CIRCLES

MR. BARRA: In this particular program, the role of management came first, and that was management was to only offer the program to the people and not own it. And it was pretty hard for some of our managers to buy that. We told them that that's the only way we wanted to get this program going, was you offer it to your people and they have to volunteer to try it out. We went to the union and told them it's the same role for you; you can certainly watch and see and let the people own it. We didn't want the union to get into a direction mode or to try to feed problems or to censor problems, the way management was not allowed either. We told management they could not tell the circles what problems to work on. We told the unions the same thing; you can tell them what problems not to work on.

If it turns out that the circle, after being given elaborate instructions--we instruct them during the training that they are to stay away from all kinds of collective bargaining issues, it's off limits. It's off limits for the circle to work on salary, to work on vacation or those kinds of normal, personnel relations or public relations or that kind of stuff; industrial relations issues.

What we want the circle to work on is problems that they're expert at, their own work. You know, the problems that are work-related within their own entity. If you're a bunch of milling machine operators, you work on problems associated with the milling machine; the flow of materials, the training that's required, the lighting that's required, the environment, so that you can be productive. And they do fantastic things when they stay within their own field of expertise and don't deviate.

So the union role is, as the management role should be, one of watching but not involvement in a sense of direction or trying to manage the program.

MR. RUBINSTEIN: But you had to report back to management. Were the union leaders there as well?

MR. BARRA: Oh, yes. The union leaders are invited to certainly, in fact, give status reports. Minutes of the meetings are kept and they're supplied to the management so the progress of the problem solving is actually reported to management and the union, and if it turns out that a collective bargaining issue does come in, that's when the personnel relations and the union get together outside of the circle to try to iron it out and then possibly go to the circle and steer them back off the wrong track if they went down the wrong track.

DR. DEMING: Ralph, you have made such a wonderful point. You can't dump 1000 people and then hire 1000 people six months later and have anything like this happen. You made the point. I don't know why I'm making it again, but that sure is important. And when Dr. Baranson asked his question I didn't have sense enough to think. There's no level in Japan. Anybody is as good as anybody else. And management, anybody, is out there working in the plant, learning about the problems there. I have been with them, I know.

You made the point. I don't know why I reiterated it, but they're important.

MANAGERS WORKING
ON THE LINE

MR. NAGATA: If I may add just one more thing to what Ralph has said. From my past experience, I've been working in the factory with the people. On some occasions I have had 400 or 500

people working for me. The most difficult thing was the communications, naturally. However, as Ralph pointed out, if you're a plant manager or a vice president or president of the company, what I used to do was in the morning at 8:00 o'clock I'd come into the factory, had a cup of coffee, then five minutes later, I was on the floor. Eight hours a day, taking my jacket and tie off, and I was on the floor with the people.

What I eventually did was basically removed my office from the company headquarters to the floor, next to the conveyors. And that's what really makes a company and people work together. I believe that probably one of the very successful stories that the Japanese company in Japan has, is all people working together regardless if you're an engineer, the plant manager or simply on the floor. They work together. That makes it.

DR. DEMING: My wife put it in a very good way, I think, Mr. Nagata. Democracy in the workplace in Japan goes far beyond what we in America can believe or feel. It is totally different. There are no levels in Japan. Anybody can talk to the president; he is just one of us. Now, I don't mean that anybody would call on the president on New Year's Day, no. But in the plant, there's no level.

MR. FRITTS: But, Dr. Deming, don't you feel that the Westinghouse experience that Ralph has just explained demonstrates that the same general kind of relationships can be cultivated here in America?

DR. DEMING: I think so. I think we can do it and maybe overtake them, but it will surely take some new learning by management, and on a mass basis.

MR. USILANER: Are there many business schools that you know of that have required courses of this type for people who are potential managers?

FEW SCHOOLS TEACH
QC CIRCLE PRINCIPLES

DR. DEMING: No, but there are schools where you can learn statistical techniques. One is given by Professor David S. Chambers at the University of Tennessee, Knoxville. There were such courses at Rutgers; I don't know about the present. I was talking to a chap not long ago who seemed to know quite a lot about statistical techniques, and I said, where did you learn them? University of Akron. I hadn't known about it. There's a lot that I don't know!

MR. RUBINSTEIN: There are quite a few schools that are teaching courses in statistics and quality.

DR. DEMING: I am sure glad to know, Sidney.

MR. USILANER: Yes, but the point I'm making is it is not a required course for a manager going through a program. He might take some "statistics" but not from the standpoint of putting it in the framework that this is statistical quality control; it's an important tool; and this is how it's applied.

MR. RUBINSTEIN: And they tend not to be management courses, but engineering courses. Rutgers has a Master's degree in applied statistics mostly for statisticians and engineers. And Tennessee has the same thing. So it's not that you develop a manager's understanding of applied statistics, but an engineer's. That's one of the main problems.

MR. USILANER: And isn't this, Dr. Deming, the point you were making that the managers are going to have to get their feet wet in this?

DR. DEMING: They have to get their feet wet, yes. And they are under a handicap.

A woman called me up in April, I'd better not mention the name of the university but it is one of the biggest in the West and isn't very far from Chicago, taking a course in plant management. She had to write a term paper, and somebody had mentioned at supper the night before something about quality control, and she asked a little bit and somehow got my name. She called me up; could I send some papers? I said well, did you learn about this and did you learn about that? No, no. The answer is always no, never heard of anything that has a thing to do with the management of a plant, and yet, the course was management of a plant.

Somebody gave the course who I think had never been in a plant.

MR. CUNNINGHAM: I'd like to ask a question of Ralph. The quality circle program that you have apparently is primarily for the manufacturing part of the business. You didn't talk to--

MR. BARRA: I didn't talk to the other portion.

QC CIRCLES ARE NOT BEING APPLIED TO DESIGN AND ENGINEERING

MR. CUNNINGHAM: One of the other big important areas is the design, development and engineering, proper testing of the product before they ever put it into manufacture. For the poorly-designed product I don't care what you do, you're going to end up with a bad product. And that's a harder area to attack than manufacturing.

MR. BARRA: Yes. It's a hot area, and the Japanese in general have avoided it. Their circles are not operating, in

most companies in Japan, in the engineering design function. However, I think Hitachi--

DR. DEMING: Some are.

MR. BARRA: Yes, some are. Hitachi, for example does have circles in engineering design, and there are a few other large companies in Japan that do have them in engineering.

But what we did was to develop the materials first for manufacturing, one reason being that for the longest period of time in our organization and I'm sure it's true of many others, the blue collar worker had always been a second class citizen. He's always gotten secondhand stuff and never gotten the training or anything. Here's our first opportunity to actually give the blue collar worker the firsthand treatment; treat him as a first class citizen before the engineer. And we did it purposely.

We are now training the engineers to form circles in engineering and purchasing; our drafting technicians, the secretaries, accounting, sales, marketing are all forming circles. And it's a seed. We're planting seeds in all these various departments and finding out that everyone wants to have a little more dignity, wants more respect and they want more communication and they want a chance to voice their opinions, no matter what their job is. And it's working.

AMERICAN EDUCATION: A SYSTEM OF SPECIALISTS, NOT COOPERATION AND RESPECT

MR. NAGATA: Ralph, don't you think that the American educational system has to do a 180 degree. I went through school and worked in American companies; and getting a Master's degree, for instance, or a Ph.D. in engineering, you have pride and sometimes you work, you have to work, with the technicians. Technicians come out of a two-year school and even though the guy working probably four or five years longer than you, because of the educational prestige you say, who are you telling me to do this? And in Japan, Dr. Deming knows quite well, that no hierarchy is built into the company. Don't you think so?

MR. BARRA: Yes. We talked about it at lunch. Some of the biggest problems we've seen is when an engineer coming out of college and joins our company, gets into the laboratory environment and starts having to work with the technician who's been at the job for 20 years or 30 years. And he thinks because of his diploma he can go to a technician and say, here is the way I designed the circuit; build it my way and that's it. And the technician's first voice will be--But, I worked with another engineer last year or two years ago and we found out we can improve the circuit by changing this component and doing it this way. The engineer says I don't care what you did with this other guy; I want

it done this way. What happens is that the technician is shut off and says to himself, screw him, I'll do it his way; I know there's a better way but if he wants to sabotage it and do it the lousy way, I'll do whatever he tells me and that's it. And you've got a turned-off technician. And that's just an example that we have happening in many, many places.

RESULTS:
HIGH DEFECT RATES AND POOR
CUSTOMER RELATIONS

MR. CUNNINGHAM: And then you find that problem in customer returns.

MR. BARRA: You find it in customer returns, you find it even before then. You find it in 10% defect rates and all kinds of other problems because--

MR. CUNNINGHAM: Yes, but you're committed then, you've got to keep going, it's too late.

MR. BARRA: You've got to keep going, right. The customer wants 1000 of these items a week or whatever it is and you keep sending them to him.

That's the essence of it. I think what we're finding out is that with the circle, even the engineers are learning to respect the worker and the technician. Managers and foremen are learning to respect the employee who has been on that job for 30 years and to listen to him, without any repercussions or embarrassment.

MIDDLE MANAGEMENT IS
PART OF THE PROBLEM

One of the problems I think we all face is that middle management is in the middle of a lot of the cause of this particular problem of relationships. For the longest time, middle management has said to the foreman, I'm paying you to solve the problems and to tell those workers what to do. And the foreman has assumed the responsibility for problem-solving all on his own shoulders because he felt that's what he was getting paid to do.

Now, what we do with quality circles is to tell the foreman we're giving you an out. You knew that that was wrong probably in the first place. Now we're telling you that with the circle we, middle management, are ready to let you involve your people in solving the problems that we're paying you to solve. And this gives the foreman a chance to save face and to actually have the people tell him what the solutions should be to these problems and in many cases these problems have been around 10 years. The only reason they haven't been solved is that the foreman didn't listen to them in the first place--didn't listen to the

people in the first place; there wasn't a mechanism, and middle management was not demanding those recommendations and solutions from the first-level supervisor.

NEED TO IMPROVE THE AMERICAN EDUCATION SYSTEM

DR. NUGENT: I might mention that there might be one problem in applying the Japanese example to the United States completely and successfully, and it might be shown if the White House would release a report which it was given by the National Academy of Sciences and the Department of Education or old HEW, which analyzed the state of the average high school and college education in terms of basic mathematics, basic sciences and statistics and technology. Advance reports leaked out by the National Academy of Sciences which wants the report released indicates that the average American, both with a high school diploma and a college diploma, has at least three to five years less technical education than a German, a Japanese, a Britain or a Frenchman.

So we might have a problem in fully applying this quality circle question to the United States than we had in Japan or in Europe simply because the average American is so poorly educated that the great spurt has completely dissipated. And I think anybody who has taught a course on a college campus recently can attest to the abysmal ignorance among most Americans of any kind of technical or economic issue, much less any kind of applied statistics which is beyond the ken of anyone with a BA degree.

MR. BARRA: There are two responses I have to that. First, yes, I do feel that the education system has really been falling down and providing industry with less than we we really could use. We take workers and we then have to educate them ourselves. So the first several years of employment of those people out of high school or college are spent on teaching them what they didn't learn in the first place; first the basics and then the specialities that they're getting into.

THE STRENGTHS OF EXPERIENCE: LIFETIME EMPLOYMENT U.S. STYLE

But when you take a look at the quality circle, you're talking about th. people who have been on the job for 15 or 20 years, and their education came from experience, the practical side. And there we have strength. As a nation, we have strength in that particular area. We have employees who have been with us their entire careers--you talk about lifetime employment. I know at Westinghouse we have thousands of employees who have been with Westinghouse for 25 years. I'm sure Texas Instruments and General Motors and other corporations have people who have really stuck with the company. It's very hard for someone to leave their company after 7 or 8 years' investment, and statistics show that.

It's sort of a turning point. Most of the mobility is in the first 10 years. But after that, you've got lifetime employment in most companies.

And those people have a wealth of knowledge and experience that can be brought to bear on solving quality problems, productivity problems, whatever they might be, on the job. And it's really divorced from what they learned in high school 20 years ago or 30 years ago. But what you're saying is true. It's an obstacle we have to overcome. We've got to get our educational institutions up so that the quality level of people coming into the company is pretty high to begin with, and then we can build from that to a higher level, rather than starting from the bottom and trying to fill that gap first and then go up.

AMERICAN INDUSTRY IS STILL NOT READY FOR STATISTICAL QUALITY CONTROL

MR. FRITTS: I would like to address another question to Dr. Deming. Most of us here have read articles by you, and recognizing that you are internationally known as a leader in statistical control of quality; but I guess the first time many of us actually saw you was when you appeared on the NBC Special a month or so ago. 1/ I'm curious as to American industry's reaction, how many inquiries you've received from that program, and whether you consider their response as an indication that industry is just peripherally interested in statistical quality control, or whether there is some dedication and new awareness of this important area of management. Would you comment on that?

DR. DEMING: Well, there's lots of interest. People ask me to come and talk to them one day. We, too, would like to be saved. They have no idea what it takes.

MR. FRITTS: But in terms of numbers, you don't see--I guess what you're saying is there's a recognition that they want to be saved but don't know how and they're not willing to learn how.

DR. DEMING: I have to tell them that there is just no point in trying to work with people that think the job is simple. There is nothing that anybody can do for people that suppose that a little talk along with a few ideas will solve their problems. Quality control must take root with simple statistical techniques that management and everyone in the company must learn. By these techniques, people begin to understand the different kinds of variation. Then quality control must grow with statistical theory and further experience. All this learning must be guided by a master. Remarkable results may come quick, but one has no right to expect results in a hurry. The learning period never ends.

1/NBC News Special entitled, "If Japan Can--Why Can't We?"

The statistical control of quality is not for the timid and the halfhearted. There is no way to learn except to learn it and do it. You can read about swimming, but you might drown if you had to learn it that way!

THE JAPANESE DIFFERENCE IS DEDICATION

MR. FRITTS: So then the distinguishing difference would be the level of dedication of the Japanese versus, perhaps, a typical American manager.

DR. DEMING: Yes. Well, the Japanese went off in 1950 totally dedicated. I mean, I told them that quality control begins tomorrow morning, and we can't have anything but companywide, nationwide, learning. And I told them that within five years they would invade the markets of the world with quality. They couldn't understand how I was so confident, but I had seen their management at work and their workers, and I knew that they could do it. They beat my prediction. In four years, people were screaming all over the world for protection.

COMPETITION PRESSURE ON AMERICANS WILL FORCE CHANGE

MR. CUNNINGHAM: Let me make a comment. I think to learn these things and to make them happen takes a desire on the part of management and the people involved. And I'm not a psychologist, but I guess I think American people will do what they have to do when they have to do it and not any sooner. And I think that many companies are now beginning to understand and get that desire to go do what they have to do to compete with the Japanese. And I think the Japanese competition is probably the best thing that could ever happen to us. And competition is a desire to stay in business and is going to bring a revolution in American towards better quality and higher productivity and all the things it takes. I think it's going to happen.

The thing we've got to be careful of is that we get on top of it before we're wiped out of business.

MR. FRITTS: So you would support the old cliche that the greatest motivation for success is fear of failure.

MR. CUNNINGHAM: You're darned right. It's a wonderful motivator.

JAPANESE INDUSTRY--NOT GOVERNMENT--TOOK THE LEAD

MR. VORHES: May I ask Dr. Deming a question? You made the point that the Japanese businessmen asked you to come over to Japan in 1950; they didn't go to their government to ask you or seek help. They came to you.

DR. DEMING: No, they did not go to the government. I have just made my 19th trip, and every time that they invite me, they enclose a ticket and a check.

MR. VORHES: I understand. Based on what we need to accomplish, what, if any, do you see as the role of the United States government in this?

DR. DEMING: It might be great, but I don't know how. I'd be the worst one in this room, in the country maybe, to try to say how the government could help. In Japan, the government stayed out. But in Japan, there was the Federated Economic Societies, which is powerful. Mr. Ishikawa sent telegrams to 45 men in top management to come and hear Dr. Deming. This was in July 1950. They asked for more conferences, so we had more. It may be that the government can do something here. I don't know what it could be.

SHORTAGE OF STATISTICIANS

Another thing that worries me is that the number of experts in use of statistical theory is pitifully small. I think that the great bottleneck will be a shortage of statisticians. Where would you find the statisticians even if 2% of management were in earnest and wished to go ahead? What would they do? I don't know. I have no answers.

IS THERE A GOVERNMENT ROLE?

DR. TSURUMI: I have not so much a comment as a regrouping thought. As I've listened to all these arguments, I've been trying to come up with some specific points about what the government can do in terms of legislation and others. Only a few of what we have discussed as conducive to productivity as well as to quality can be legislated or encouraged by some kind of government action.

The government can be the disseminator of needed information. When good techniques tend to be privatized and internalized by the successful company, nobody is going to really teach his competitors, free of charge, just how they might be able to come back and beat him.

But when the techniques involved are so generic that they are standard--even statistics and the other things we're talking about, when techniques and information involve mostly generic stuff, the government would be able to disseminate successful examples for many more firms to adopt. The government's role as the disseminator of useful information can be facilitated by cooperation of government, business and labor.

The information can also be disseminated by industry associations as well as by government, but what it takes here is credibility of the one who disseminates, and unfortunately perhaps in the state of the United States with perceived adversarial relationships between business and government, the information that is promoted by the quasi or whatever government entity, might not be accepted so readily.

Therefore, we need just more private leadership. I teach in business schools and I feel very much remiss in terms of being able to turn out those managers who possess management ethos and skills conducive to productivity. But some industry associations, with the help of government perhaps, can be disseminating the importance of this management reorientation from short-term interests to long-term, et cetera, and why the job security of rank-and-file employees and professional staff should be management's responsibility.

Only in the area of financial incentives can I see some areas of government's actions. For example, we talked about depreciation which obviously requires government legislation. And we already know about the need for reduction of capital gains taxes, of accelerated depreciation of incentives to save, of the avoidance of double taxation of corporate dividends and the like. But unless they are targeted to growth industry--unless they are targeted to reinvestment in the productive facilities rather than in sugar futures speculation--they're not useful. Unless you tie the targeting of financial incentives to a certain behavior of firms--either job security, product quality, export or growth--I don't think we can promote productivity.

The other area we are discussing as an area where the government can be and should be involved in is antitrust policies. Suppose when companies succeed, on their own, in internal growth as Texas Instruments has been trying to do, all sorts of anti-monopoly or antitrust conventions will tend to put the successful companies in a straightjacket, like a magic less than 50% market share, what have you. There, obviously, the government has to abandon the old notion of the domestic definition of market concentration that is totally obsolete. Even if there are just two giants in the world, they should not be restrained as long as they are batting at each other. Obviously, that is one area that the government can do something about.

PRIVATE SECTOR'S ROLE--
STOP THE SHORT-TERM
ORIENTATION

The rest are about management ethos. The only thing we can do here is to have a body like this (conference) or a government agency, or better yet, the captains of the industry, come and tell all of us related to business school education that the kind of desired image of management we have been teaching for the last 25 years is completely wrong. And the same

message should be given to the industry financial analysts. After all, they are the ones who tend to push managers into this quarterly short-term orientation, because that is their qualitative and quantitative criteria of judging a good company. It's a very past-oriented, short-term oriented, earnings per share kind of thinking, rather than looking at what they are doing in terms of research and development and in terms of training and all those implications the results of which can only come to fruition in five or six years. No analyst in this country that I know of would pay attention to those things when they write about some company or industry. Even the Fortune 500 firms, to me, present a totally irrelevant study. They simply line up companies, 500 of them, according to their past and present quarterly achievements. For what? They may not survive tomorrow or next week.

Yet, these methods are all the evaluative criteria and the feelings that creep into the mass media and the business schools and others. This is how we have developed the pervasive criteria of looking at American companies. Here again, I believe industry associations and government can do quite a bit to really change this type of orientation.

AGRICULTURAL EXTENSION SERVICE AS THE U.S. MODEL FOR PRODUCTIVITY

MR. BARRA: I'd like to toss something out. I think we have an excellent model right now in the United States that the government can emulate in the area of productivity, and that is the model that we have in agriculture. With the agricultural extension service and the tie-ins with universities in the United States in the agriculture, we become the most productive nation in the world and we can feed the world almost with our productivity. Why can't we use that model or a modification of it to spread technology transfer and education in the area of quality and productivity across the United States, too? I pose that as a question.

MR. FRITTS: That's a very good point.

DR. TSURUMI: And export orientation of agriculture.

MR. FRITTS: This has been a most stimulating session. I'm sure we've kept Dr. Deming much longer than he expected to stay and we are very appreciative, Dr. Deming, thank you very much. I think perhaps we'll take a short break and do a little summarization following that. Sid Rubinstein has another tape that is a different version or a different set of conditions than you saw in Ralph Barra's Westinghouse experience that we'll see when we come back. But let's take about 10 minutes.

(A short recess was taken.)

MANAGEMENT/LABOR RELATIONS REQUIRES COMMITMENT AND CONTINUITY

MR. FRITTS: We're about to see a videotape which Mr. Rubinstein has brought with him of a different set of circumstances involving union-management relationships. It addresses some of the difficulties faced by managers and workers when a plant is facing closure, and shows that labor-management cooperation is achievable. Can we just run the tape, Sid, and then have discussion?

MR. RUBINSTEIN: Perhaps a few introductory remarks. My hope would be that as we explore this, we study both what's happening in Japan and the history of our own experience in the United States over the last 20 years. I come out of a shop experience of six years as a machinist, and tool and diemaker, and a 4-year enginering experience, while working at Rutgers to get a Master's degree in applied mathematical statistics. After doing all of that, I walked into a shop as a consultant 20 years ago, and if I had to solve some problems I had to go to the workers. But when I had worked as an engineer just three years earlier, my boss told me, "stay out of the shop, don't ask the workers, you'll lose your credibility as an engineer if you ever ask your workers anything." This is my personal history.

The first group we organized 20 years ago was very effective. They learned applied statistics, could solve problems, and they were able to solve problems very rapidly. But when the consultant left, there was no program there. We didn't know how to do this on an ongoing basis, so then we built a system to do this, and the Japanese also built a system and that was great.

When you walk in with a system, you can continue something, except for one new phenomenon which took place in the latter part of the sixties. As soon as management changed, the program went down. We had a lot of excellent programs that were discontinued just because management changed, or a new president wanted his own program. And then, downturns in the economy would destroy the program, or union-management conflict would.

A very fundamental breakthrough took place in the early seventies. I came back from Japan and was invited by General Motors to speak to their management. And at that point they said, "it would be great to involve workers in solving quality problems, but the union wouldn't support it, wouldn't let it happen, and without union support, we're not going to be successful." So I said I'd go to the unions and talk to them. And I met with the United Auto Workers and I sat around and discussed the same idea and their response was, "it's a great idea to involve workers in solving problems, but management won't let it happen." This was the posture of 1972; everybody was pointing in the other direction.

Well, 1972 was a watershed. General Motors and the UAW signed the first letter of agreement which said, let us explore ways of changing our relationship, and they called it the Quality of Work Life.

Well, their first objective was to change the relationship between the union and management, but that very quickly led to changing the relationship in terms of really allowing people to participate. They asked me to come into the assembly plant in Tarrytown, New York, to initiate a program. I referred to a number of not so successful experiences in Europe where I learned that if you don't bring the interested parties in, you're not going to have continuity. I said, "let's take the concept of a joint committee at a national level and put it on a local level."

So in 1974, the first joint union-management committee in a plant environment was created. From that point on we continued to learn how to do this, so that you can train union leadership and management and the workers themselves not only to solve problems, but to continue the process, to be able to explore those unanswered questions about job security and other issues. And this process has now begun to grow.

That's the background to the film we have here. This particular plant in Waterbury, Connecticut, is the last brass mill that exists there. It doesn't have the resources of General Motors or Texas Instruments or Westinghouse. It is a small firm, trying to survive in an industry where everybody else has already left the community. And the UAW and the state have attempted to assist; and the UAW, the union, took the initiative in saying let's change our relationship; let's try to create a joint way in which we can begin to solve problems. And that's the setting we have.

(A short film was shown.)

MR. RUBINSTEIN: It was the vice president of the local who said he files the grievances. Their grievances went down 80% during this time; and at Tarrytown in General Motors, they went from 2000 to 30 grievances being processed at any one time. So the impact was considerable.

It's interesting also that the Tarrytown experience brought that assembly plant from a very low position in the quality ranking among plants to a very high position, and therefore qualified them to get the K car; and they're now one of the plants working overtime while a good many other plants have problems.

MR. VORHES: X-cars. K car is Chrysler.

(Laughter.)

MR. RUBINSTEIN: X-car. I've got Bob on my mind.

QUALITY OF WORK VS.
QUALITY OF WORK LIFE

MR. STAATS: Is there anything to the point that "quality of work life" tends to throw people off as against the "quality of the work" in the shop?

MR. RUBINSTEIN: There's some confusion in the term. They think it's the quality of the work. But I think in the long run that's good because they are very much related. The ability of the worker to have direct impact on the quality of his or her work is probably the single most important quality of work life aspect of the job. So I think more education on this relationship is needed. But initially, it is confusing. People see the issue of product quality and you have to explain the broader implications of the quality of work life.

WRAP-UP SESSION

MR. FRITTS: I think we're going to have to start wrapping up; time has just about run out on us. Fred Tarpley will begin the wrap-up session.

DR. TARPLEY: When we got the initial request from the Ways and Means Committee, they were interested in what we could learn from the Japanese that could be possibly transferred to the U.S., that would allow our products to maintain high quality and, in many cases, develop competitiveness in the world marketplace.

Today, we have looked at a number of points starting with macro-policy and looking at things which happen within the organization related to marketing strategy, relating to the ethos of U.S. management to various types of societal values which affect both the Japanese and the U.S. experience.

In the hour that's remaining, I'd like for the panel to address the question of what can we as a society do, but more particularly, what the relative roles for government, industry and labor are; what kinds of changes in the relationship as to how they do business with one another are needed if we are to improve the quality component of productivity in the United States, and therefore, our international competitiveness.

I would like to simply go around the table and give everybody a chance to summarize their approach. Try to focus in on specific approaches that we could take to develop an outline of appropriate roles and responses, especially those that have something to do with government policy.

WHAT CAN BE DONE?

Dale, can we start with you?

DEFINE THE PROBLEM

MR. CUNNINGHAM: I guess right off the top of my head, I think that the role of government and industry and labor has got to be one of cooperation, and I guess I think that the place that government can probably help the most would be to really sort out the problem. I think each industry may have a certain degree of different problems and a different way to attack the solutions. But from a total United States of America point of view, we need to understand the total problem to the country, and then help to evolve what the right solutions would be. Because I think again, everybody can jump to a conclusion or jump to a solution that will help them, but might not be the right ultimate solution for industry in general. And I'm not smart enough to sit here and say what the solution ought to be. I don't really know.

MORE PUBLIC/PRIVATE SECTOR DISCUSSIONS

But I think maybe through more panels like this and more organized, ongoing kinds of activity a plan could be put together and the proper solutions determined. I guess I'm encouraged just by the fact that there's a group starting to talk about it. I believe those are all my comments.

PROMOTE COMPETITION

DR. TSURUMI: Well, we have learned that what government should do is to promote competition at home and abroad, and that the worst possible thing government can do is to curb competition by promoting dying industries. It's easier said than done, but unless you have that kind of policy commitment I don't think anything else will fall out of it.

TARGET INCENTIVES

Now, when we talk about targeting certain financial incentives, such as accelerated depreciation or what have you, then we need to identify the kind of, say, three or four specific behavioral firms which also happen to coincide with the benefits for the country as a whole. Now, what happens to be good for the country has to be good for private firms. You're trying to target the reward of accelerated depreciation to those behaviors of firms that are also good for the industrial growth of the country.

ENCOURAGE EXPERT PERFORMANCE

For example, when you're going to manage the growth under scarcity in the United States for the first time in history, just like Japan, there has to be emphasis on export performance. By targeting any financial and other rewards to some company's export

performance--it doesn't matter which industry--then I believe you'll begin to bring what is good for a private firm closer to what is good for the whole country.

BROADEN THE DEFINITION OF RESEARCH AND DEVELOPMENT TO INCLUDE TRAINING AND RETRAINING

The next thing is research and development activities, plus in-company training. Here we need to redefine research and training a bit more broadly when you talk about expansion. We should include retraining the workers as part of the companies' R&D activities. Without that, you don't have any benefit of bringing the results of research and development into production processes and then, out of the firm into the market. Somehow, the company has to be rewarded for plowing their revenues back into research and development and training of their personnel. That is matching the private benefits with the public benefits.

ENHANCE EMPLOYMENT STABILITY

The third one is the stability of employment, which also has a very good implication for the nation, as well as for the incentives to management so that they won't be able to shift their mistakes to the person who can least afford to bear it. When you talk about targeting anything, accelerated depreciation, for example, my personal recommendation is to simply come up with the criteria by which any company can have access to these goodies so long as they meet these criteria. For the sake of argument, I have thrown in three areas which public benefits happen to coincide with the private benefits.

ENCOURAGE SAVINGS AND CAPITAL INVESTMENT

The next question is how are you going to generate the investment funds needed? There perhaps, some things that Japan and Germany have been doing would be very useful, which is trying to encourage savings--personal savings or group or corporate savings, especially personal savings--by exempting some kind of dividends up to a certain level, or interest earnings, what have you, from income taxes, or helping the company develop employee's pension plan, which can be used to, again, promote stability of employment while at the same time generating the funds and simply exempt those investment earnings from income taxes or deferring them from income taxes. Through this approach, you again have what I call congruence of matching private and public goals.

MR. RUBINSTEIN: I hope that this is the beginning of a process and not seen as consensus-building at the end of the process. Because it seems to me there's an awful lot that still hasn't been said or hasn't been explored.

AVOID CONFLICTING GOALS

I'm particularly concerned with conflicting policies, where we set up one set of goals that are in conflict with another. My sense is that there are some conflicting policies that are unexamined. For example, I'll give you two illustrations from Japan in 1978. I met with Mr. Shioji, who is the head of the auto workers in Japan. I reviewed a paper he wrote in 1969 in which he clearly states that a transition had to take place in the relationship between labor and management from the mid-fifties until the sixties, when all the productivity efforts and the quality efforts could be successfully launched; that that relationship did not exist in the fifties, and there was a very conscious process of change.

DEVELOP CONSCIOUS PROCESS OF CHANGE

That conscious process of change is taking place here right now, but there isn't sufficient attention being paid to that process, and there isn't sufficient assistance being given to labor and management to facilitate that change. While some legislation has been passed, funding is slow, and other measures keep relationships in a pretty traditional format.

So if Congress looks at that relationship, it must look at the long-term relationship between labor and management. It should take steps that will allow for a joint effort to solve many of the problems that can't be solved unless there is a joint labor-management effort to do so.

DEMOCRACY IN THE WORK PLACE

Another area of conflict that I'm concerned with is our lack of appreciation of the fact that we are moving into a new period in which everyone feels that his or her expectations have a right to be increased, both in terms of demands on society and the respect that one will have from all peers. The idea of democracy in the workplace is something that would bring us to this point even if Japan didn't exist. We are here because there's great competition; we are also here because there's great turmoil. People want a different type of life experience, they want to have a different relationship at work. And that must be recognized. And I think we have to address the question of what stops that, what are the kinds of conflict that exist in our society.

KNOWLEDGE SHOULD BE SHARED

And certainly, the idea of knowledge being in some way invested in someone who gets a degree in a particular subject matter, or has a particular position, is an antiquated philosophy. The key difference about applied statistics between Japan and the

United States is that applied statistics in the United States is taught to a very small group of people in a very narrow format. In Japan, it's a popular thing, where you turn on the television in the morning and you learn applied statistics in a way that everybody can understand. So we're talking about broad popularization, and applied statistics is only one of the bodies of knowledge.

CHANGE UNION ROLES TOWARD MORE LEADERSHIP

I think we have to look at some changing roles. My opinion is that trade unions must change their role. They must become more willing to participate in providing leadership in an organization. I mean they have to become aware and skilled to be able to deal more effectively with such questions as quality. I think there is a leadership role that's going to have to be played by the trade unions in quality. And for a very simple reason; because in many firms their members are the ones who have the seniority and leadership. If you go plant by plant, the average seniority of the manager is two or three years, and the average seniority of the trade union member is 15 or 20 years. If that difference in leadership isn't utilized, then we're losing a tremendous social advantage that is possible in our society, and we're not going to change rapidly the way we manage. We're not going to see managers become less interested in mobility and more committed to that organization and have all of the built-in conditions that will promote that very quickly.

We are, at the moment, in a society where there is high mobility in management, but you don't have high mobility in labor. If labor and the leadership of labor learns how to offer effective joint leadership with management, we have a tremendous asset that we should take advantage of.

In order to do this, we're going to have to deal with work stability. We're going to have to come to grips with the problem of cyclical layoffs; to come to grips with the insecurity that exists in that area. The president of the auto workers of Nissan in 1978 spent a day with me the day after I met with management. The management took me through the plant and showed me the great improvement in productivity, 10% a year each year for the last 10 years. So the first question I asked the president of the union was, aren't you concerned about that productivity improvement? He said, of course not. The jobs of my people are not jeopardized. It allows us to have increased opportunity in terms of our benefits and salaries, et cetera. So there is a built-in security that fuels this whole effort; effort toward increasing productivity and quality.

GOVERNMENT CAN EDUCATE AND DISSEMINATE

I believe the government can do a lot in promoting education and dissemination, in providing the kinds of support that

would allow good labor-management relations to develop, in providing support to test some of these concepts. The question of economics and job maintenance could be tested. It's not difficult to set up programs that will actually test what would happen if a part of the workforce would spend time during a non-production period, in education and problem solving. We could measure the impact of such programs, both in terms of the problems that would be solved and on total economic costs--unemployment insurance, subpayments, rehiring, retraining and all these other factors.

REDEFINE THE ROLES OF DISCIPLINES AND SPECIALISTS

Finally, I think a major national effort is needed to redefine the role of the disciplines and specialists, and we should bring into this effort our institutions of learning, the Academy of Sciences and Academy of Engineers. The major differences between the Union of Japanese Scientists and Engineers and the technical societies we have here are twofold. One, they have the direct support of organizations so they have an effective budget. Second, their membership includes many disciplines. Here, our professional societies are separated, and we need to have a change in the relations among disciplines to lay the foundation for sharing of knowledge, for popularizing the kinds of technical knowledge that people need to solve problems effectively.

We're working with a number of the technical societies now--including the American Society for Quality Control and the American Society for Training and Development. I've just circulated a concept statement on this subject to help the technical societies review this. And I would like to thank you for inviting me to this seminar.

MR. VORHES: I'm sensitive about trying to give any suggestions in areas that I really am not expert in, like many of you around the table are. Having said that, I'll go ahead and say what's on my mind anyway.

(Laughter.)

GOVERNMENT CAN BE LEADER IN IDENTIFYING NATIONAL ISSUES

As far as the government is concerned, it could take a leadership role in identifying productivity increases as a national issue, to help the country, business, government, all areas recognize that productivity is what built the industrial might of this country. We've had it described very accurately that that gap is closing and closing. At the rate that it has been closing we will not continue to be the leaders in productivity, and if we aren't as a country competing in the world market, we won't continue to

be a producer of goods. I guess that's a simple economic point. We will be a country that will be successful hopefully in providing services and other things, but we won't be manufacturing or producing goods. Period.

GOVERNMENT CAN BRING
COALITION FOR PRIORITIZING
ISSUES AND ACTIONS

So a very important role is to realize the seriousness of that from the national point of view, and to then bring together whatever coalition is needed to deal with that priority. And in dealing with that from the government's point of view on productivity, a big part of it is going to be investment. So do those things that encourage investment, and review everything else that you do to make sure you're not doing things that discourage investment.

And I suppose priorities, national priorities, would be an important part of that.

GOVERNMENT CANNOT
LEGISLATE QUALITY

As far as quality is concerned, I don't know that I feel the government would have a great role to play in quality. You cannot legislate it, you cannot regulate it, you can't demand it. There's only one regulator when it comes to product quality, and that's the customer who buys it. So other than encouraging quality or recognizing it as an important part of what needs to be done, I really don't know. Not that there isn't anything, but I can't see government playing a direct role in improving quality.

You've heard some questions across the table as to what the relative positions of productivity and quality are. I feel that, as I said, if we all get the productivity job done, our quality objectives will be easier to accomplish.

THE EDUCATIONAL SYSTEM
NEEDS A LONG-TERM
ORIENTATION

The educational system has been mentioned a few times, and while that may not help us in the short term, we may not be dealing with a short-term problem here. And I think that really needs to be looked at, and there, the government very possibly could have another good strong role of leadership and participation through grants or other encouragement, looking at two areas: the high technology areas of the universities, and engineering and scientific universities. And with apologies to any of the lawyers that may be in the room, we should be careful about the relative number of lawyers that we're generating in this country with our university system versus the number of engineers and scientists.

BETTER BALANCE NEEDED
IN DISCIPLINES GRADUATED

I've had some of my Japanese business friends tell me that the hardest thing to learn about coming to the United States to do business is how to do business with our legal system in this country. Just make sure that in the area of higher education, engineering universities are getting support relative to the kind of support that flows to the law schools and to the liberal arts schools. Is their support in line with the needs of this country in the area that we're talking about.

NEED FOR MORE AND BETTER
VOCATION TRAINING

And then associated with that is the vocational aspect of this country. People in this country must learn to take better care of their things--kids' toys, people's cars, their homes and everything else. When I to go Tokyo or Frankfort, Germany, I hardly ever see unrepaired collision damage on an automobile. Hardly ever. I think almost every car in Tokyo has got one or two feather dusters in it, and it's not at all unusual just to be stopped for a traffic signal and see people out dusting their cars off. They get a lot more for their buck's worth for whatever they buy by simply taking care of them. We've been a country that's been blessed with unlimited natural resources and so on and we've got to learn to do a better job on that. And part of that is going to have to be a much stronger vocational educational system so that we supply the people trained at the vocational levels to take care of the things that really keep America moving. At both the high end of technical education and on the low end, I think there's an important job to be done.

NEED FOR BETTER INDUSTRY/
LABOR COOPERATION

Industry and labor have to continue to develop what I feel is their increasing ability to sit down with each other and recognize that they're both in the same boat, and you just can't sink one end of that ship. And increasingly, they'll solve those problems of productivity and product quality and everything else that needs to be solved to compete in the marketplace, or they'll both be in a lot of trouble. And we'll all face the challenge, as our business in this country is better in the next few months, to find out if we've got that same commitment and dedication when business is very, very good and we're working overtime to keep up with the market, as we are when we're concerned because we've got a few plants shut down. We have a few plants shut down in this country today not because of a Japanese threat to the automobile business or anything else, but because of a tough recessionary situation right in this county. But we'll be tested to see if we're just as eager to solve these problems when times are good as when times are bad.

NEED FOR MORE CONFIDENCE
IN THE FREE MARKET SYSTEM

And finally, all three elements--government, business and labor--have to have faith in the marketplace. It has worked terrifically up until this time in this country. It doesn't really need a lot of tampering or tinkering with, and the more confidence we have in it, the better it will respond to our needs. I appreciate the chance to be here.

RECOGNITION OF DEEP
STRUCTURAL CHANGES

DR. BARANSON: Let me say first that the problem we're dealing with, I think, is of a deep structural nature, and there are very profound changes that are going on in the world economy, including the Japanese challenge today, which wasn't the case in 1950, and some very deep changes that have occurred with our own economy. And it's the relativity of our own industrial position today and our competitiveness in the world economy that I think is the center or the focus of our problem.

We assume that all problems are posable and that they lend themselves to solutions. We also go for the quick fix. You can see this, anyone who lives and works in Washington. You find people on congressional committees or someone in the President's office and when they discuss productivity, they don't want to go into deep structural problems and the deep changes needed in the world and what we need to think about now. They want to know what is "the" problem and what can we do about it tomorrow. I'm afraid that we're dealing not with a simple cold. We're dealing with industrial cancer. And I think the Chrysler syndrome points to that.

NEED TO BETTER UNDERSTAND
MULTIVARIABLES AND CAUSE
AND EFFECT RELATIONSHIPS

Quality control and work methods and so on, I think we run into great danger if we don't think of those as part of the subset of the general productivity problem, and the general problem of maintaining our competitiveness in world markets.

One thing that is happening in this regard is that companies are surviving. The General Motors and the RCA's are finding ways to adjust commercially, but part of precisely that is creating different problems. I won't mention GM too much because they're here today, but RCA's solution to the Japanese challenge in the sixties was first to begin to phase out production in this country and to move abroad, to begin to sell off its technology; as financial control to more and more control of the company, you find that they were thinking about diversifying into Hertz cars and to carpet making, and the idea of investing in the videotape recorder. The next generation of quality control in the color television sets became more and more repugnant to the corporate management.

Now all of this is by way of saying that we have some deep economic adjustment problems, and to divorce the commercial corporate response from society's concerns and the basic economic adjustment of maintaining competitiveness in the world economy can be disastrous. We have to begin to think about finding ways to begin to think about this problem in an integrated way and to try to find solutions that deal with the basic difficulties, rather than trying to resort to expediency and finding some quick way out that we can justify to our labor constituencies or to our boards of directors and so on, glossing all the way.

NEED TO RECOGNIZE AND DEAL WITH INTERNATIONAL INTERDEPENCENCE

The marketplace--I think this is part of our problem--that our great strength in the past and certainly well into the fifties, was this very multiplicity of purpose and intitiative of companies and government. I'm afraid this is running out on us. We now face challenges in the rest of the world where government, industry, labor and financial organizations are very well integrated, and Japan certainly is a case study of this. We need to find consensus in this country. And at the first level, I think you see the difficulty in this by looking at what happened to Chrysler.

NEED TO BE ABLE TO DIAGNOSE SYMPTOMS

We don't have even the beginnings of a diagnostic, let alone consensus, as to what our policy options are, let alone consensus as to what to do about it. This is a woefully deficient way to tackle the problem of what has gone wrong with our productivity as an element of competitiveness in the world and what we do about it. We've got to find some process whereby the results are credible.

NEED FOR PROGRESS TO PRESCRIBE CURES

You know, even in the area of smoking and what it does to you, the Surgeon General report has a limited credibility. The one paper that says this is the pathology and this is the prognosis, and if we do something about it this is what will happen; if we don't do something about it we will end up in a very serious and intractable position--we don't have that. We don't have this kind of process. I think that's the first order of business--how do we find the mechanism. And I agree, this type of discussion is a first step. But all of you have attended these sessions, where you always end up with these kind of encounters--these are good and we ought to have more of them. It will take more than that.

NEED FOR
CREDIBLE FORUMS

It's going to take people like Congressman Vanik and responsible people from industry, General Motors and others, really to have a forum in which they really go to a diagnostic in the sense that if you or I had a pathology of the kidney we'd go to the Mayo Clinic and get a reading on it. We wouldn't have lawyers and PR representatives preparing briefs, which are the basis on which decisions are made in this town.

Then, there is the question of the legal processes in this country. I run a small, profitmaking policy research corporation, and we do mostly studies in the public interest. We got $25,000 for our last study, and I know at least three cases where at least $200,000 a piece was given to a law firm to prepare a brief. And I assure you that the $600,000 is going to have, not only for the money itself, much more weight in the public discussions of what we do, for example, on this question of the consumer electronics industry. And that is a fact of life. The lawyer thing you mentioned.

This town has more lawyers in it than in all of Japan. There are 25,000 lawyers in the District of Columbia; I think there's something like 16,000 or 17,000 in all of Japan. The litigious nature of this society and the fact that it comes to a matter of social pathology -- and I wouldn't call it anything less than that. The Chrysler situation is symptomatic of an industrial pathology. And yet we don't have a means for getting a clinical reading on what's wrong as a first step toward advising the patient, look, you're going to have to take some tough medicine now, these are some things you're going to have to do.

Dr. Deming's discussion--I had a feeling we would have to resort back to values that existed in this country at the turn of the century; the kind of work ethic, the kind of cooperative thing in the village I think passed out of this country about 1910 or thereabouts. And the idea that we can somehow again force the quick fix on a society that is unreceptive to it and doesn't have the mechanism for thinking responsibly about what's wrong with it and doing something about it. I think that's the thing, unless we do something about it. That's fundamental.

I mentioned before, and this is the last thing I'll say, I feel that insofar as what can be done within the existing social framework that we have today--the capital markets-- the financial structures are critical. I think we have problems, the Chrysler syndrome, problems of what to do with the patient with incipient heart failure. We have this problem where we have a sick patient and he's chronically sick. What do we do about him? We need the kind of resources there that are responsibly applied. In cases like Chrysler's I think the marketplace is no good anymore. Chrysler's making these decisions and coming to the government

and asking for capital refunding without a responsible process where some hardheaded bankers, like a Sumatomo looking at a Toyokogyo; we don't have anything like that. We don't have people in government who know enough about the automotive industry to make sensible decisions about the industry. These are simple facts. The automotive industry is something I've worked on over the years and I know a little about it. We just don't have the expertise and knowledge in government to make these decisions, and we don't have any kind of banking institution that have reconstruction money of this kind that can make responsible judgments. Management is pretty much using political terror of the consequences of not doing something rather than having a responsible decision making process. I think that's what's lacking.

NEED TO CHANNEL CAPITAL
INTO GROWTH AREAS

I think certainly if the Japanese experience teaches us nothing else, it's the use of the mobilization of capital resources in the country and channeling them into growth areas, and making sure that those have plenty of water and fertilizer to grow. We have capital markets where the money goes, where the quick return is. What happened to the RCA's in going into the more certain quick returns, and where money is going into real estate, and into areas where the stockholder sees a quick, rapid return; that's inadequate. The marketplace is inadequate there, and we need some new mechansims to channel capital resources into growth areas.

Thank you.

GOVERNMENT HAS BEEN
AND CONTINUES TO BE
INVOLVED IN MARKETS

MR. FEUILLAN: I'll try and make it short since we are beginning to run out of time. What fasciniated me in the discussion of turning markets loose is the fact that the government has been sort of intertwined in those markets for so long and all of us were beginning to try to recognize that, I think, in some of the discussion. The fact is that the government has provided so much of the infrastructure, ranging from the highway system to a lot of government insurance programs, tariff programs, protection programs and so forth, and it's not as if this is the first time government and business and labor have come together in this room to sort of discuss where it is that we ought to be going.

BUT ITS INVOLVEMENT
HAS BEEN UNCOORDINATED

And I think that that interwining is going to inevitably continue. But what we're beginning to realize is that it's been done in a very unproductive and uncoordinated way. I think that Dr. Baranson is absolutely right; there is no agency of government

now that either has the authority or the competence or access to the information to do adequate sectoral analyses. And I don't know whether it's a Joint Economics Committee, the Council of Economic Advisors, or who, who ought to be able to do that, but it's clearly a major lack.

Right now, we have a major problem that exists not only in the private sector with regard to over-segmentation with regard to over-specialization, but we have it at the government level as well. The Council of Economic Advisors, for example, has its own set of economic projections; it does not have access to the ones that are done by the Federal Reserve Board, which are supposedly better, but those are private property.

We have similar kinds of things. A situation that was pointed out to me earlier today where the Department of Transportation refused to share information it had on potential plant closings in the auto industry with the Department of Labor because it viewed those as being proprietary information. We have this problem of a tremendous number of different, disparate elements, all of which are acting in a very inflexible and uncoordinated way. And I think we see that in the private sector with regard to the over-specialization of job categories, with the distinctions that have been pointed out with regard to the use of credentials to create status, often very fictitious status in terms of competence.

NEED TO REVIEW INVESTMENT MECHANISMS TOWARD LONGER-TERM RATIONALE

We do, indeed, need to look at our whole set of investment mechanisms. There do appear to be major problems with regard to the obtaining and granting of long-term access to capital. The markets do appear to be much more inclined to put money into short-term payoff situations, and there is a critical lack of funds for high technology, for new high risk ventures. What kinds of mechanisms should be developed to deal with that, I don't know that we've really discussed this in any detail yet. But those two problems have been identified repeatedly as problems so they do need to be addressed.

I really have nothing more to say than that.

DR. TARPLEY: Well, the IE's [Industrial Engineers] are always the problem-solvers. Mr. Kehlbeck?

MR. KEHLBECK: I don't know that we're able to solve this particular problem, but let me say that first of all I appreciate being here today and representing the American Institute of Industrial Engineers. As I've listened to many of the comments made, we certainly support the comments of Sid and Jack and everyone else here. There's no question that we do have a need to address these issues on a national scale in the United States and address them very rapidly.

IMPROVING PRODUCTIVITY AND QUALITY WILL GENERATE JOBS

I would like to make a couple of comments. First of all, I think there is a common thread in the United States that we're all very much aware of, and that is jobs, and jobs have an influence on government, labor and industry. This common thread of generating jobs, when you look at the numbers of jobs that could be brought back to the United States, would solve many of our problems. Improving productivity and quality will generate jobs. I keep talking productivity and quality and I really should talk quality first and then productivity. Maybe what we ought to do is coin a phrase "qualitivity" and bring the two of them together, because you cannot be generating productivity without quality and vice versa.

GOVERNMENT COULD BE THE FOCAL POINT FOR PRODUCTIVITY

I think we need to address this, and as far as some of the comments made today, we've been very successful in some sectors of our country in the effort of improving productivity and quality. In other areas we have not, and what we need to do is to address those areas where we have not and look at what can be done. I think this is where government can play an important part; in supporting something similar to the National Center for Productivity, an organization such as this could be the focal point to identify where in our different sectors we are having problems competing with worldwide acceptable quality and productivity levels, or where the threat is going to be five years out, and making people aware of it. And when I say people, that's everybody, the union and management, of those companies that will be affected so that corrective actions can be taken.

NEED TO IMPROVE PROCESS TECHNOLOGY

And certainly, in support of the comments here by the gentleman on my left, there is no question that we need to address the area of process technology. This is a shortcoming or limitation that I think has the biggest single impact on quality and productivity. Of course, the people aspect of the problem is also preventing us from gaining back this leadership role that we had a few years ago. In summary, I think if we address the issue of improving process technology and the environment in which we work in our factories, we certainly can move ahead and take the leadership role. Some U.S. companies presently are the worldwide leaders.

MR. NAGATA: Those gentlemen have said a lot. I don't have any comment except to inject a couple points on those gentlemen's comments.

NEED FOR SOLUTION-
ORIENTED CONFERENCES

A committee like this is certainly of tremendous value, not only for us but also for American industry for the future. In other words, what we are trying to do here is defining the problem more clearly. That is a major step; an approach toward problem solution. Most of the time in industry, what we face is we cannot define the problem exactly, let alone have solutions. No tools to solve the problem. And what we have to do is continue and endeavor to define the problem by means of committees and gatherings like this.

NEED FOR MORE
ACTIVE SOCIETIES

I hope we can continue, one way or another, this kind of panel to keep going. If we determine the nature of the problem, then we have to work; and government, I am very certain, can help private industry by means like, in Japan, the union of scientific engineers. I think it's very vital that the United States has certain engineering societies. We do have existing and we might be able to utilize them in such a way that quality control--the educational system builds in the system so that the industry people can learn; not only the people in industry, but also government people can be exposed to the system so we can get the information when we need it.

Unfortunately, we don't have it here in the States yet, but I certainly would like to see that in the near future certain organizations, where we people can reach and get better quality control and productivity studies.

Thank you.

UNIONS NEED TO BE AWARE
AND BECOME INVOLVED IN
QUALITY ISSUES

MR. JENSEN: I have a few short comments. First of all, I found the discussion very interesting but I feel somewhat like a fish out of water here discussing world economics. I think it's really new--as the unions get into this question of quality, I think it's a route we have to go. We saw that one videotape presentation; we are going that route but probably not as fast as we should be. I can't add to what the rest of you have said. The only thing I would be concerned about is I think government has to play a supportive role, but here again, I agree with the gentleman from General Motors, we can't legislate. That's bad news. It's a turnoff.

GOVERNMENT SHOULD PLAY
A SUPPORTIVE ROLE

I think government has to play a supportive role. What type of supportive role I don't know. You've got to get the message across to the worker somehow that the sales of his product are responsible for his job. I think when you work for an outfit like Chrysler, like I have for all these years, you work for this company and you just think that check is going to come in every week and you don't really connect it with that car out there that has to be sold. It's just a thing you see going down an assembly line.

WORKERS NEED TO RELATE
WHAT THEY DO TO HOW WELL
THE COMPANY IS DOING

Somehow we have to get the message to the American public that as workers in this country, we've got to put more into it and do better and be more competitive. We're not an island unto ourselves any longer.

MR. BARRA: I think what we're addressing is what shall we do after today, because I think today so much was crammed into this six or seven hours and we've had to digest what a lot of us have heard. And I'm looking forward to getting the minutes of this meeting so we can study just what we did say.

(Laughter.)

CONTINUING AND CLOSER
RELATIONS NEEDED BETWEEN
INDUSTRY, LABOR, GOVERNMENT,
AND ACADEMIA

But what I'd like to see happen, and in fact I was convinced of this before I even came to this meeting; is that this not be the end. I think this should be the beginning of a closer relationship between industry, labor, government and the academic community. We need it. I think one of the things we've been seeing with quality circles as an example is that we communicate more effectively with the workers and we listen to them, and good things happen. I think we need that kind of a relationship between industry and the government and the union and labor. We've got to improve our communications. This is one way to do it. There are many other mechanisms that we ought to be employing, too.

I feel that this adversary relationship, whether it's real or just perceived by business and government, has got to be dealt with. It's a problem that we can't ignore before we can really be in a cooperative mode. Just the way the management-labor problem, that adversary relationship, had to be dealt with in General Motors before the quality of work life program could really get moving.

NEED TO SEE SOME NATIONAL PRIORITIES

I'd like to see more emphasis placed on setting some national priorities. I'd like to see the Congress be more active in this area. One of the greatest strengths of this nation is when we do have a crisis where we all join together, and I think we do have a crisis right now but we haven't recognized it as much as we could, and that is the energy situation. I don't think we want to live with economic blackmail from the oil producing nations and with hostages in Iran. I think we've got to recognize that that's just a symptom of a bigger problem, and that is where we're not independent of some of these other forces that are external to the United States.

NEED FOR LONG-RANGE PLANNING

Long-range planning. I think we definitely have got to get on with it. Just as the Japanese model has shown us, through effective long-range planning they instituted in the late fifties, early sixties, they have now made substantial gains in the international marketplace.

Now, the long-range planning doesn't have to be connected with just quality alone, it could be in other areas, too, but certainly, quality is a good place to start, and productivity being a motivator. For us to be interested in quality as being a way to get productivity, and a way to beat inflation and unemployment. I think we now have forces in the United States that we didn't have before. Double digit inflation and unemployment at the same time, plus a competitive situation that is all happening at the same time. So we've got a crisis situation that the government can take advantage of in order to get this nation on its feet and get people really working together.

THE EDUCATION SYSTEM SHOULD BE ALIGNED TO NATIONAL NEEDS

The educational system, a very important area where I feel that the government has a leadership role that it can assume to allocate resources in those technologies where, if we do establish a national policy of being able to have growth in certain industries we've got to then dedicate our educational system to training the future scientists and engineers and the computer analysis, the programmers, the solid state experts, so that we can meet the need of industry and of the United States in order to establish our growth and maintain a competitive position in those new industries; microprocessors, solid state technology.

I think there was an excellent article written recently, "The Re-Industrialization of the United States."1/ Everyone should read that. There are some tremendous ideas in there that we can certainly learn from and grasp hold of.

CALL FOR ANOTHER PANEL MEETING

I'd like to recommend that we give some serious thought to having this kind of a forum again within three months or so, or six months, so that each of us can either come ourselves or send someone else that we feel might even be more qualified representative of some of these subjects, and see what we can do to continue this dialogue. I think it's such an important dialogue it should not be limited by the time limitation we have on this particular meeting. And I'd also recommend that we might even seriously consider some of the lessons we've learned from the quality circle concept, the problem solving technique that you don't jump to solutions without first defining the problem appropriately and then going through a very systematic data collection and problem analysis before we then start looking at options we might have as companies and as a nation to improve productivity and quality. And possibly using that as a model, a forum like this might even be more effective.

Looking back, I think that we probably could have been more productive in our meeting today had we stuck to some of the principles of creative problem solving and starting with the problem definition right in the beginning and then starting to look at all the probable causes before jumping to all the solutions. Even though it certainly is healthy to jump into solutions first because sometimes you find out okay, you know what the solution is and now let's go back and figure out what the problem was and--

(Laughter.)

--and the most probable causes so that you can get to that solution.

AS A NATION, WE NEED TO BE WORKING TOWARD IDENTIFIED GOALS

So I think we know what our solution is, we want to improve the productivity of the nation. Maybe we haven't quantified it; maybe we should set a goal nationally of improving productivity by some 10% or 20%, the way the Japanese have done, and then once doing that, figure out ways to achieve that objective as a nation with some long-range planning, whether it be 5 or 10 years and the

---

1/Business Week, June 30, 1980, "The Reindustrialization of America."

proper allocation of resources and our talents in order to achieve those objectives. And then measure those objectives jointly, periodically, to see if we're on target, and if we're not, why, and take corrective action as a nation jointly, whether it be in the area of resource allocation or education or tax incentives or other things, in order to meet those goals.

COMPANIES NEED TO CREATE AN ATMOSPHERE TO ENHANCE MOTIVATION, MORALE, AND PRODUCTIVITY

MR. WADA: When we were coming to America, we thought it would be a great place to do business. You hire people when you want to, lay them off when you don't want them. But that's not what we did in San Diego. We have never laid off anyone. We all wear the same working clothes and work for Sony. We eat in the same cafeteria. When some assembly line has a great thing, we celebrate together. What I'm trying to say is that we're on the level with the workers in the shop like one family.

We recognize them as a people. I think what's very important is that both management and workers should be proud of whatever they are doing together. It's been missing, the ethics on the part of management. Once you hire, you have responsibility. You hired the people. If someone is hiring or laying off, certainly the union has to protect them. But if the ethics on the part of the management is, once we hire them we live together, good. Workers will respond to that kind of determination on the part of management.

Sony in 1973, bad time; we never laid off anyone. We kept the manufacturing people; we couldn't fill any more warehouses. So we started cleaning and painting, and cleaning machines. We never laid off. They responded. Further, I go to San Diego from time to time and one day I was shocked because my management people were telling our 1600 workers what the problem with our sales was. This would be good for our competitors. I thought we should keep all this a secret. But we tell them--I'm shocked.

NEED FOR WIDE RANGE OF TRAINING IN COMPANIES

But this establishes good bond ge between the management and the workers. We're in the same boat. Further, education is important and we explain what television is. We are not teaching them how to put together a few things; no, we teach them everything. I think that's very important. I think that education and school can help a lot on that aspect.

NEED FOR BOTH SHORT AND LONG-RANGE PLANNING BY GOVERNMENT

I think what government can do is to plan for long range and short range. For short range, I want capital formation by helping with a tax break on interest and dividends and so forth. You educate people on one hand and help get needed capital on the other. There have to be short range and long range plans.

NEED TO KNOW GOOD QUALITY

Productivity can be increased by quality control through statistical analysis and so forth. That does not achieve superiority of a product, the design, the precision of the design. Take the German camera. It's a beautiful camera. That's more than productivity. You have to know what is good quality. Only when you know good quality can you build good quality. If you don't know a good quality steak, you don't know what is good steak.

(Laughter.)

I've walked down Fifth Avenue in New York and I see the stores with Bali shoes, Hermes, and so forth. I see that quality is what people more and more like. I think that is awfully important for people to like good things, to recognize something beautiful, because only then will people like to produce equally good things. Maybe this is long-range education, but that's very important.

I think people should like something beautiful, something of precision, in addition to being productive because productivity alone will not win the market. You have to catch the top market. Then people like it. Because if you catch the bottom market, that's it. But people like to have something great. Here, (holding up a portable cassette-recorder), this is beautiful; it's not a Sony or Sanyo, but still it's a good design and has a good many features.

(Laughter.)

That's important, awfully important. It all has to be done through long-range education.

Speaking of capital formation and depreciation--10-5-3, I was looking at the Japanese depreciation rates. Some is 12, some is 14, and these are for equipment. So, 10-5-3 across the board is ridiculous. I think it was early this year when Secretary Bergland [of Agriculture] was asking $6.1 billion. He said unless he got these funds, 20 million people would run out of Food-Stamps. I think of the 1960's and 1970's as when we extended liberalism. Now maybe we should discipline and control ourselves so that American automobiles can be better than Mercedes; American

cameras will be better than German or Japanese cameras. I think we have to shift our focus and emphasis. Thank you.

DR. TARPLEY: Jim, Phil, is there anything you have to say before we go?

DR. NUGENT: Well, usually I don't say anything at the end of things like this, but my boss has made so many speeches on this issue I think I can feel free to do so.

ACTIONS THAT CONGRESS COULD TAKE/A NATIONAL CENTER

I think there are six things the Congress can do. One, it can enact a bill to establish a national center for productivity with meaningful funding. The fact that the old Center went out of existence is a scandal, and the fact that we do not have a national center is even more of a scandal.

LABOR/MANAGEMENT COMMITTEE

I think, too, the federal government should provide more assistance, and Jim can talk about this a lot better than I, to help create labor-management committees throughout this country, both on the plant level and on the county level, city level, et cetera.

TAX POLICY

Number three, I think Congress should consider some targeted tax policy. The gentleman said 10-5-3 is ridiculous. We should target tax incentives to firms involved in research and development, and the small business which provide the overwhelming majority of new jobs.

PATENT POLICIES

Number four, the patent policies of this country are ridiculous. There has to be some fundamental reform, such as allowing firms to have access to patents that they've developed while under federal contracts.

TECHNOLOGY INNOVATION CENTERS

Number five, there should be national technology innovation centers modeled on the Agriculture Extension Service. These would be cooperative efforts by federal government, business and academia to disseminate technology information, just as is done in Japan and Germany.

EXPORT-TRADING
COMPANIES

Number six is a somewhat related item which might be the creation of export trading companies. This was only mentioned once in passing today, but I think that the Japanese government was brilliant in allowing export trading companies to flourish because they provided the way for small and medium sized businesses to get involved in exporting. Small and medium size businesses tend to be very productive, and I think that allowing the creation of U.S. export trading companies would be an ideal solution.

NEED FOR FORMALIZED
ENTITY TO DEFINE PROBLEMS
AND SOLUTIONS THROUGH
CONTINUING DIALOGUE

MR. COSTELLO: I'll make one comment. It strikes me, I hate to say, very much because like Tim, I think we look at it through tinted glasses, but it does strike me that there is a common thread to a number of the wrap-up comments that came. Mr. Cunningham mentioned that government and industry together have to decide what the real problems are in a number of sectors where we have major problems. Dr. Tsurumi mentioned that we have to target financial incentives, whatever those incentives are, particularly tax policies, to those industries that have the greatest potential for growth, the greatest potential for productivity increases.

Dr. Baranson takes a more global look and says that it's part of a large structural problem and that we don't even have a method for having a diagnosis of what's gone wrong, and I think most persuasively, Mr. Barra talks about the need to have more of this dialogue.

It strikes me, and again, my boss like Mr. LaFalce, has been very much compatible with this way of thinking, but it strikes me that we do need somebody, some formalized entity, that is going to be responsible for perpetuating that dialogue and for making sure that we do have business and labor and industry coming together and searching for the problem itself, what the nature of the problem is, and then talking about what the solutions should be. We don't need a long list of hearings. You can go back and look at the records of the temporary National Economic Commission in the late thirties, and I don't know what good it will do you to read all that.

I think we need a dialogue that is more focused towards the solutions, and as Dr. Baranson said I think earlier in the day and very persuasivley, a consensus; a consensus among a number of relevant actors about solutions which we can take.

BE WARY OF TOO MUCH
GOVERNMENT INVOLVMENT

MR. STEIN: I guess I'm always interested to hear businessmen who want more government involvement in the economy. We've got quite a bit of it right now. For instance, there are suggestions that we need to use our capital in a targeted way, and I don't think that that's something that doesn't exist now. Government has seen that Chrysler Corporation got a billion and a half dollars; we bailed out the Hunt Brothers; and we bailed out the Philadelphia National Bank. That's all in one year, and that was an awfully lot of money by anybody's standards.

Now, if you all want more of that--I don't know if you do. It seems to me we're talking about a problem; we're talking about quality. I don't know that it's the government's fault. We've talked about companies here today that do very well in America with the same tax structure that other companies do very poorly with, and with generally the same government policy. So I have to say that I go along with the people who say that quality is the business of labor and business, and I really don't know how far any government involvement is going to get you.

MR. FRITTS: Mr. Staats, do you have further comments?

MR. STAATS: First, I'd just like to say thank you to all of you who have come here today. As has been indicated, it's been a sharp course and maybe it ought to be repeated from time to time in this forum or some other one. I think it's been very, very useful and I'm sorry I had to miss this morning's session.

NEED FOR A GOVERNMENT
FOCAL POINT

You've heard a six-point program which I would share in. We had a ten-point program which included your six and four more! But particularly, I would like to stress the need to have some focal point in government that's going to take the leadership in this field. We've got 20-some different agencies of government who have programs bearing directly or indirectly upon the subject of productivity. We don't have any place now where those can be brought together in a forum which can involve labor, management and government in wrestling with these problems. Legislation has been introduced in the Congress, both houses, which would set up a statutory body which I think from our perspective would be a very, very good beginning. The structure that we have in the Executive Branch today is quite weak; it's almost non-existent. But until we get a focal point of that type established in government, it's going to be very difficult to begin to rationalize what needs to be done. In fields like tax policy, you mentioned sectoral analysis which we don't have, where regulations impinge on productivity, which hasn't been stressed here today but we think is important and so on.

Obviously, the Commerce Department plays an important part, the Labor Department plays a very important part, the Science Foundation and so on. You can go down the list. But we think it's the first order of business to get a focal point of what type set up. One of the reasons we stress the statutory body is that it involves the Congress as well as the Executive Branch, and I think this is terribly important, because so much of what we're talking about here as far as the government side is concerned, is going to require some congressional action either in terms of appropriations or in terms of legislation.

We recently testified on this before the House. Bill Usery testified alongside of us, and I was going to suggest if you haven't done so, that you might want to distribute and send to the people here today a copy of both those statements. Bill Usery made a particularly good statement, I thought, and I think you'd find that useful. And anything you could do to help empasize the need for such a center in government I think would be all to the good. Thank you all very much.

MR. KEHLBECK: Elmer, is there someone we should write to in an effect to support this effort, particularly?

MR. STAATS: I think the principal deterrant at the moment is that the Executive Branch got themselves committed some time ago to the idea of an Executive Branch-established body, and that's why the National Center when down the drain. I think there's some indication that maybe they now would be willing to change their minds. Congressman Lundine, Congressman LaFalce in the House particularly, and Senator Bentsen in the Senate are three key people that I think are involved. The Chairman of the House Committee on Science and Technology, Congressman Brown from California who's also on that committee. These are some of the key people who are interested in this problem.

MR. FRITTS: Gentlemen, thank you very, very much. It's been a very fruitful day although a rather busy one. And we will take to heart your suggestions about reconvening another forum or several other forums, because this is the beginning, certainly, and not the end. So thank you very much.

(Whereupon, at 5:00 p.m., the meeting was adjourned.)

(910319)