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ABSTRACT

Competitiveness is a function of a nation's resources and how effectively those resources are used relative to that nation's competitors. The people of a nation, with their knowledge, skills, and attitudes, determine how effectively technology, capital, and trade will be used to the nation's competitive advantage. The competitive challenge to the human resources of the United States requires that the nation recognize its strengths and make them stronger, recognize its weaknesses and act together to address them. A crucial weakness that impedes the country's ability to address these and other competitiveness problems is the lack of structures through which the key economic actors in U.S. society--industry, labor, and government--can come together and systematically address the problems shared by all. To confront this systemic problem, the Commission on Industrial Competitiveness recommends that the federal advisory committees affiliated with the Departments of Commerce, Labor, and Treasury, and the Office of the U.S. Trade Representative be evaluated and revised to serve as a possible basis for the development of such consensus-building structures. Three other areas are pivotal to addressing the competitive challenge to U.S. human resources: (1) the quality of human resources must be enhanced; (2) the rapid redeployment of labor in the economy must be made possible; and (3) the most effective use of human resources must be made. (Author/KC)

HUMAN RESOURCES AND COMPETITIVENESS

REPORT OF THE COMMITTEE ON HUMAN RESOURCES

THE PRESIDENT'S COMMISSION ON INDUSTRIAL COMPETITIVENESS

January 1987 RR-87-27

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National Commission for Employment Policy

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PREFACE

At its October 1986 meeting, the National Commission for Employment Policy (NCEP) voted unanimously to reissue the chapter entitled "Human Resources and Competitiveness" from the final report of the President's Commission on Industrial Competitiveness (the President's Commission.) The chapter appeared in Global Competition: The New Reality, originally published in January 1985, shortly after the President's Commission concluded its work. As part of a large report, its distribution to organizations and individuals responsible for human resources development was limited. By its vote to reissue, NCEP gave recognition to the quality — as well as the importance — of the work of the Human Resources Committee of the President's Commission.

NCEP staff have reviewed and updated the information contained in the human resources chapter. Updated data are included in this reissuance to the extent that they significantly change the original text.

The recommendations of the President's Commission have also been reviewed. In those instances in which the NCEP and the President's Commission have both issued recommendations on a specific issue, NCEP recommendations are also included. Issues which the NCEP has not yet addressed are so noted, signifying neither agreement nor disagreement with the President's Commission.

NCEP comments and recommendations appear throughout the text in highlighted blocks. For the sake of brevity, detailed sources of updated data are not included, but are available from the NCEP.

The National Commission for Employment Policy is hopeful that the reissuance of "Human Resources and Competitiveness" and its dissemination to a wide range of organizations and individuals concerned with the education, training and employment of current and potential workers will encourage more effective development and use of America's human resource potential.

MEMBERS OF THE COMMITTEE ON HUMAN RESOURCES

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Nancy R. Kuhn, Staff Director, Human Resources
President's Commission on Industrial
Competitiveness

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*Affiliations at the time the report was first issued.

**Deceased

EXECUTIVE SUMMARY

Competitiveness is a function of a nation's resources and how effectively those resources are used relative to that nation's competitors. While technological innovation, capital investment, and a fair trading environment are all significant determinants of competitveness, it is the people of a nation—their knowledge, their skill, and their will to excel—who determine how effectively technology, capital, and trade will be used to the nation's competitive advantage.

The competitive challenge to our human resources requires that we recognize our strengths and make them stronger, recognize our weaknesses and act together to address them. A crucial weakness that impedes our ability to address these and our other competitiveness problems is the lack of structures through which the key economic actors in our society—industry, labor, and Government—can come together and systematically address the problems shared by all. To confront this systemic problem, the Commission recommends that the Federal advisory committees affiliated with the Departments of Commerce, Labor, and Treasury, and Office of the U.S. Trade Representative be evaluated and revised to serve as a possible basis for the development of such consensus-building structures.

In addition to strengthening the process by which decisions are made, three other areas are pivotal to addressing the competitive challenge to our humna resources: (1) we must enhance the quality of human resources; (2) we must make possible the rapid redeployment of labor in our economy; and (3) we must make the most effective use of our human resources.

To enhance the quality of our human resources, education and training are key tools. Recommendations include:

- Improving the quality and productivity of schooling through educational technology and better software;
- Addressing the dropout problem;
- Strengthening engineering education;
- Strengthening business school education; and
- Encouraging employer investment in training and retraining.

To facilitate the redeployment of labor, workers displaced by structural changes in the economy and rapidly changing technology in the workplace must be aided in obtaining new employment. Recommendations include:

- Encouraging early identification of the displaced;
- Making available comprehensive services;

- Revising the unemployment insurance system to enable the displaced to convert benefits into retraining/reemployment vouchers; and

- Providing incentives for employer responsiblity.

To get maximum use of our human resources requires cooperation in the workplace and the maximum commitment of employees. Recommendations include:

- Supporting the principle of labor-management cooperation as key to improving productivity and quality; and

- Strengthening employee incentives through compensation and equity ownership plans that reinforce the work ethic and give employees a greater stake in the long-term success of the firm.

HUMAN RESOURCES AND COMPETITIVENESS

INTRODUCTION

Human resources must be an integral part of any strategy aimed at improving competitiveness. A skilled, motivated, and secure work force is a prerequisite to realizing the dual goals of productivity and quality so crucial to maintaining competitive advantage. Similarly, astute and well-trained managers are needed if new technologies are to be incorporated into the production process effectively. Without skilled engineers and technical personnel, the technological advances required to develop improved process technologies and superior designs will not be forthcoming. Lastly, without the cooperation of labor and management, maximum use of these resources will be hindered.

But more than a skilled and motivated work force, intelligent management, highly trained technical people, and nonadversarial relations between labor and management are needed if U.S. industry is to be competitive. Beyond these resources and the other factors upon which competitiveness depends (e.g., capital investment, technological innovation, and a neutral trading environment), structures are needed to improve communication among the primary groups that influence competitiveness. Without systematic processes in place to bring together key economic actors and enable them to develop consensus on the nature of major competitiveness problems and their desirable solutions, no competitive strategy will be fully successful. To realize maximum benefit from our human resources advantages and to address our disadvantages effectively, structures are needed that will enable a common perception of the facts to be developed, implicit tradeoffs among policy options to be made explicit, and counterproductive conflict to be minimized.

As a Nation, we clearly enjoy a number of important human resources advantages relative to our competitors. We are a country characterized by considerable social mobility — the product largely of an advanced and accessible public education system. We have a deeply engrained work ethic, which has resulted in a generally disciplined work force, willing to toil for the achievement of a higher standard of living and the better quality of life it promises. Finally, an entrepreneurial spirit has encouraged innovation and fostered a level of economic growth envied by our traditional European trading partners.

Despite these advantages, however, our human resources are experiencing difficulty in meeting the demands placed upon them by changing technologies and heightened international competition. Rather than actively embracing new technologies, management and labor have too often resisted their introduction into the workplace to the detriment of both productivity and quality. While productivity admittedly is a function of numerous inputs — capital, technology, the composition and effort of the work force, and managerial skill — the lagging rate of U.S. productivity growth relative to our major

competitors over the last two decades suggests that relative to these competitors, the performance of our human resources is lagging as well.*

Thus, while the United States enjoys certain inherent human resources advantages, there are weaknesses as well. Although in 1982 an unprecedented 71 percent of the population aged 25 and over had a high school diploma, our elementary and secondary education system continues to fail to achieve excellence in the basics, graduating youth who are ill prepared for either work or further education. Our postsecondary education system, particularly at the postgraduate level, trains too few engineering and scientific personnel to support the rapid advances in technology generated by our economy.

The percentage of the population with high school diplomas is increasing. By the end of 1985, the percentage had increased to about 74 percent. Despite this increase, however, it is important to note the high dropout rates of black and Hispanic youth, especially in light of changing demographics. This issue is discussed later in the text. (Source: Bureau of Labor Statistics, Educational Attainment of Workers, March 1985, unpublished, February 1986.

In the workplace, barriers hinder the efforts of employers and individuals who seek to upgrade individual skills and keep pace with changing production requirements. Those sectors of our labor force dislocated by changing technologies and international competition are not being redeployed rapidly enough. Too often, management fails to make maximum use of its human capital; incentive systems inadequately reward performance. Labor-management relations are characterized by unnecessary antagonism, which reduces productivity and lowers product quality.

From this assessment of our strengths and weaknesses emerges a strategy, the elements of which can and should be pursued by both the public and private sectors. First, however, we should pledge to "do no harm" to those advantages that we currently enjoy and face the competitive challenge in the context of America's values and strengths. This challenge can be framed as four questions:

- How can we improve the quality of our human resources?
- How can we encourage the rapid redeployment of labor among sectors of the economy?
- How can we maximize the effective use of our human resources?

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*According to the Bureau of Labor Statistics, between 1960 and 1983, U.S. manufacturing increased its output per hour by 2.7 percent per year, while Japanese manufacturing productivity grew by nearly 9 percent per year; manufacturing productivity in Germany and France grew by roughly 5 to 6 percent annually during this period. Thus, while U.S. manufacturing remains the most productive in the world, the strong relative performance of these competitors resulted in a narrowing of the U.S. lead between 1960 and 1983.

- How can we strengthen the policymaking process designed to address these issues through more effective communication among Government, industry, and labor?

ENHANCING THE QUALITY OF HUMAN RESOURCES

Two factors — education and training — play key roles in the Nation's ability to possess a skilled labor force, a talented cadre of engineers and scientists, and innovative management. With respect to education, the Commission focused on strengthening the elementary and secondary education system in selected areas, improving the quality and quantity of engineering graduates whose skills are crucial to our continued technological development, and strengthening business school curriculums to better reflect the new realities of global competition. On the topic of training, the Commission concentrated on those public policy changes needed to maximize employer investment in upgrading the skills of their employers.

IMPROVING EDUCATIONAL QUALITY

Education is central to enhancing the quality of human resources, for it supplies the tools for learning that are basic to the process of adapting to change. The changing workplace will require employees to use a broader mix of skills as work becomes increasingly knowledge-based. To adapt to these evolving skill requirements, workers will need a solid grounding in basic skills — particularly reading, writing, computation, and problem solving. Our public education system, which has primary responsibility for transmitting these skills, must be upgraded to instill renewed rigor and quality in the basic education of all citizens. Through curriculum reforms, improved teacher quality, and the use of new teaching methods, such as education technology, this goal can become a reality.

> NCEP has long stressed the importance of basic skills. NCEP also stresses the need for imparting employability skills, such as strong work attitudes and flexibility. For example, in its Fifth Annual Report to the President and the Congress, Expanding Employment Opportunities for Disadvantaged Youth, Report No.9, December 1979, the NCEP recommended: "The major objective of federal education, training, and employment programs for youth should be to improve the long-term employability of those youth; that is, their basic education, work habits, ability to absorb new skills on the job, and other competences which will permit successful integration into the work force." The NCEP further recommended in the report that "Remedying the educational deficiences of disadvantaged youth must be high on the nation's agenda. Without basic literacy skills, youth are unable to take advantage of further education or training and will be permanently cosigned to the bottom of the economic and social ladder." More recently, in Computers in the Workplace: Selected Issues, Report No. 19, March 1986, the NCEP recommended: "a solid grounding in English comprehension and communication, mathematics, and problem solving — the basic skills — will continue to be critical for all workers, whether they are now preparing to enter the workforce or are already a part of it."

To assure the continued technological development that underlies much of our competitive edge, our elementary and secondary education system must also produce students who are accomplished in mathematics and the sciences, and who possess higher level reasoning and analytical skills. Improving the quality of teachers in these areas and addressing the teacher shortage are crucial to upgrading the quality of this schooling and to producing adequate numbers of youngsters capable of advancing to higher technical education.

The National Commission on Excellence in Education, the Education Commission of the States, and others have done an excellent job of identifying actions needed by the States and the Federal Government to strengthen the quality of our elementary and secondary educational system in these areas. As a consequence of their recommendations, a number of initiatives are under way at the State and Federal levels, as well as in the private sector, to address these concerns.

Rather than duplicate these efforts in the area of elementary and secondary education, we note their pivotal role in assuring the long-term competitiveness of the Nation and focus on two areas that complement them -- upgrading educational software to maximize the effective use of educational technology and addressing the problem of school dropouts.

Educational Technology

Without quality educational software and teachers trained in its use, the potential of educational technology to improve the quality and productivity of education will go unrealized. Study results show that at all levels of education, computer-aided instruction produces significant improvements in performance, more positive attitudes toward subject matter, and as much as a one-third reduction in time-on-task. Despite the fact that elementary and secondary schools are purchasing computer hardware at ever-increasing rates (with an estimated 325,000 computers in place in 1983), the availability of quality software continues to be a problem.

> In its report, Computers in the Workplace: Selected Issues, National Commission for Employment Policy, Report No. 19, March 1986, the NCEP recommended that: "The potential effectiveness of computers in the schools can be realized only when there is adequate advance planning for their use, adequate training of the teachers and other staff who will use them, and high quality software." The number of computers in elementary and secondary schools had increased to about 1.1 million by the end of 1985. (Source: Ibid.) Between 1981 and 1984, the proportion of schools with at least one microcomputer increased from 18 to 85 percent. (Source: The Condition of Education 1985 Edition, U. S. Department of Education, NCES, Chart 1.14, p. 45.)

Although studies conducted for the U.S. Department of Education indicate that a sizable number of commercially produced educational software programs are available, important omissions exist. Most software is designed for a single topic within a subject area, rather than providing comprehensive coverage of a curriculum. In addition, the large majority of software

consists of routine drill and practice programs, with less than 5 percent of it making full use of the computer's innovative teaching capabilities. Not surprisingly, surveys of schools owning microcomputers indicate that drill and practice and programming ("computer literacy") are the most frequent uses of computer technology in schools.

> The NCEP recommends that: "Education and training systems and programs should offer their students the full range of skills workers needed to qualify for jobs, and recognize that knowledge of computers is only a small (or at least one) part of the needed (re)training effort..." NCEP report, Computers in the Workplace, recommended that schools give priority to providing education in the basic skills — including employability skills... Very few occupations require in-depth knowledge of computer technology, while virtually all occupations require mastery of the basic and "life" skills. As stated in the report,

To move beyond these limited applications and realize the educational opportunities presented by computers, software must be developed that uses the potential of the computer's artificial intelligence in interacting with the learner. The reasons why more sophisticated, comprehensive software has not been forthcoming in the education field are multiple. The education market, with 16,000 school districts and more than 110,000 public and private schools, is diverse and fragmented. Teachers, who typically provide the impetus for computer purchases, are largely untrained in the new technology and are ill equipped to act as informed consumers demanding quality products. Additionally, the education market with its 325,000-plus computers is substantially smaller than the 5-million-computer home consumer market.

The development costs of comprehensive software are high and development time is lengthy. Because the technology changes so rapidly, software obsolesces quickly. An added factor exacerbating the situation is software "piracy" (copying), which reportedly is common in schools and has the effect of raising the price of individual packages as developers are able to sell fewer copies.

Officials in industry and Government alike agree that to develop quality, comprehensive software that fully uses computers' interactive capabilities requires extensive additional research. Such research should focus on (1) developing prototype instructional systems using our knowledge of the learning processes involved in skilled reading, writing, mathematics, and science; and (2) furthering our basic knowledge of these areas through basic cognitive research. The Federal Government has been and should continue to be an important catalyst, supporting research as a means of stimulating the use of these technologies in the education field. By providing support for the costly research underlying software development and identifying those approaches that promise the most effective results, Government can remove a major barrier to the development of quality software by industry. Although the National Science Foundation (NSF) and the Department of Education are currently supporting some activities in this regard, particularly in the area of science and mathematics, NSF funding has been inconsistent over recent years and Department of Education funding has been limited.

Software development is one of the most rapidly expanding industries in this country and abroad. Educational programs are a major part of this market, with a wide range of products for both the individual (tutorial) and the educational institutions. The market incentives for these products have increased the quality and reduced the price. Government support to this area should be skillfully used to complement the market forces and not degradate them. In general, the NCEP supports the need for Government support for the exploration of new ways and means of using computer software to further the goals of education and training. In this regard, NCEP notes that NSF funding for this work has stabilized over the last few years, while the Department of Education funding in this area is still limited. (Source: National Science Foundation, Division of Materials Development, Research and Informal Science Education.) (Source: U. S. Department of Education, Office of Educational Research and Improvement)

In addition to the need for research, another factor accounting for the inadequacy of available software is that so many teachers lack the technical sophistication needed to recognize and demand quality. States should undertake systematic efforts to provide inservice training in the use of computers for teachers in all fields, stressing the integration of computer-assisted instruction in the school curriculum and aiding teachers in adapting the technology to their own needs.

Recommendations. To encourage the development of quality, comprehensive software, the Commission recommends that:

- The Federal Government provide sustained support for a program of basic and prototype research for applications of cognitive and computer science to instruction; and
- States increase their teacher training efforts to increase the sophistication of school systems in demanding quality from producers.

The NCEP is initiating a study of the use of computer-based equipment in Job Training Partnership Act programs. The study will examine the ways in which advanced technologies are being used in program management as well as in service delivery, and will identify those approaches that seem to be most effective. The Congressional Office of Technology Assessment is currently working on a study of the cost effectiveness of educational technology, with a final report due in 1988. Both drill-and-practice and approaches which try to develop thinking and problem-solving skills are to be assessed.

Addressing the Dropout Problem

The high dropout rate in our secondary schools is contributing to the development of a growing, permanent underclass in our society. Twenty-six percent of students enrolled in school drop out. At this rate, our Nation is

producing in excess of 1 million dropouts annually. The dropout rate among minorities is substantially higher — estimated by the Census Bureau in 1981 to be as high as 40 percent among blacks and 43 percent among Hispanics. This situation occurs at a time when the work force is undergoing substantial demographic change. By 1995, reduced birthrates following the postwar "baby boom" are expected to result in an absolute decline in the number of young workers (aged 16 to 24) by 3 million. However, an exception to this trend is found among minorities, as past high fertility rates and immigration result in a growing minority population. While the total number of 16- to 24-year-olds will decline, the percentage of minorities in the labor force is expected to increase from 12.7 percent to 14.3 percent. It is this fastest growing segment of the young worker population that is most likely to drop out of school and enter the work force without critical basic skills. Clearly, the competitive ss of U.S. industry is threatened when many of its young workers lack the ba : skills to be productive employees.

New approaches are required to address the problem of school dropouts and stem this loss of human resources. National attention must be focused on the severity of the problem, its causes, and its consequences. The Nation must act decisively to reduce the dropout rate dramatically or it will suffer more than a decline in competitive ability. If the dropout rate continues to accelerate, part of an entire generation could be lost to the productive process and to society. The quality of life for the Nation as a whole is at risk when large numbers of our youth fall by the wayside.

Recommendations. The Commission recommends that:

o A national partnership be established between the Federal Government and the private sector to address the dropout problem. The purpose of this partnership would be to provide coordinated social services in the school setting to give intensive help to those students most at risk of dropping out.

In accordance with this recommendation, steps have been taken to establish a partnership involving the Department of Justice and National Cities in Schools. Private funds will be used to match Federal dollars to focus national attention on the dropout problem, provide technical assistance to local schools seeking to reach these high-risk students, and establish a training institute to train local staff in developing coordinated services programs.

Cities in Schools has entered into interagency agreements with the Departments of Justice, Labor, Health and Human Services, and Education. The Departments provide either funding or in-kind services. Corporations and individuals also provide funding. There are Cities in Schools programs in a number of cities; national evaluations of the programs are still in the planning stages. (Source: Cities in Schools, Washington, D. C.)

The Boston Compact began in 1982 as an effort of the city of Boston, educational institutions, unions and employers to reduce dropout rates. Incentives to stay in school include summer jobs, employment after high school graduation, or assistance with

tuition for post-secondary education. In 1986, the U. S. Departments of Labor and Health and Human Services agreed to joint funding of replication efforts in the cities of Albuquerque, Cincinnati, Indianapolis, Louisville, Memphis, San Diego and Seattle, which are coordinated by the National Alliance of Business. Federal leadership and technical assistance for local implementation of effective partnership models seems a workable way to achieve the Competitiveness Commission's goals.

Improving Engineering Education

To sustain our technological leadership, the quality of engineering instruction must be improved and greater emphasis given to engineering practice as it relates to the needs of industry. After World War II, our engineering schools tended to shift away from engineering practice and toward engineering science. This shift coincided with the availability of large sums of Federal funds for basic engineering research and a simultaneous reduction in university-industry relationships. Thus, the best of our faculty and students became far more interested in the science underlying engineering than in working on practical applications of the scientific results. Much has been written to suggest that the recent decline in American quality and productivity is related to the decline in engineering practice at our colleges and universities.

Many engineering schools have started to reverse this trend, bringing renewed balance to the educational process. Some have invested heavily in computer-aided design technologies; others have undertaken efforts in manufacturing engineering, quality control, and the application of microelectronics. Despite these efforts, much remains to be done.

There may be little economic incentive for engineers to go beyond the bachelor's level — engineering remains one of the few occupations in which a bachelor's degree commands a good starting salary. In July 1986, the average annual starting salary for bachelor level engineers was $28,368. (Source: Engineering Manpower Commission.) Another problem, alluded to earlier, is the shortage of engineers in selected fields (electronics, computers) and the insufficient number of students pursuing postgraduate engineering study generally. The result is an insufficient pool of talent to fuel our technological development. In 1983, the American Electronics Association projected a nationwide demand for electrical engineers and computer scientists to be approximately 200,000 over the 5-year period ending in 1987. American colleges and universities will graduate less than one-half that number. The full extent of this problem can be seen when one compares the number of engineering graduates produced by the United States with that of our chief technological competitor, Japan. Between 1955 and 1982, the number of bachelor's degrees awarded in engineering in Japan rose from 9,613 to 73,600, while the number of comparable degrees awarded in the United States increased from 22, 589 to 67,400. Even more critically for our technological base, the number of doctoral engineering degrees awarded in the United States dropped from 3,800 to 2,900 between 1972 and 1982. During that period, the ratio of master's to bachelor's degrees decreased from 0.39 to 0.28; and the absolute number of doctoral degrees granted declined by 25 percent—a number that does not tell the whole story because the number of U.S. citizens among graduate students in this country has declined much more rapidly than the total.

A more meaningful comparison, according to the Engineering Manpower Commission, would be the numbers of doctoral degrees in engineering awarded in 1975 and 1985: In 1975, 3,138 were conferred; the low point was in 1978, when 2,573 were awarded. In 1985, the number rose to 3,383. In 1970, 86 percent of doctoral degrees in engineering were awarded to U. S. nationals; in 1985, the figure was 58.6.

The shortage of students pursuing postgraduate study has ramifications as well for the shortage of engineering faculty now plaguing many institutions. The best estimates indicate that there are 1,400 vacancies out of a total of 18,000 engineering faculty positions in the United States (1982 data). This number has been fairly constant over the past several years and stems from larger engineering enrollments, the declining number of Ph.D. graduates, and the need for faculty to devote increasing amounts of time to research. Unless this shortage is alleviated, our colleges and universities will face increasing difficulty in meeting the demand for engineering training.

Another reason for the current faculty shortage is that the engineering laboratories at our universities are generally much less well equipped than those in industry. As a result, many researchers believe that they cannot make the most significant contributions while on university faculties and therefore choose a career in industry. Thus, increased emphasis must be given to engineering research and to the acquisition of equipment needed to support that research.

Traditionally, most of the basic and some of the applied engineering research in this country has been conducted in our universities and has been supported by the Federal Government. Despite a recent trend toward more support by American industry, this support is not expected to account for more then about 20 percent of the total.

Much of the Government support has been in the areas of engineering sciences rather than engineering practice. Equally important, the level of engineering support has not taken into account the fact that most research today is becoming "big research" and that much of it can no longer be done by individual investigators, but must be done by teams of investigators.

With respect to engineering equipment, the traditional view that the equipment used in engineering education should be no older than the students who are using it no longer holds true. The equipment used today has three things in common: It is highly complex; it is difficult to maintain; and it becomes obsolete quickly, often in 3 to 5 years.

Undergraduate engineering education today requires easy access to computers and computer-aided design laboratories, to laboratory practice in the application of microprocessors, to all sorts of laboratory instrumentation that is driven by computers, and to the analysis of laboratory results with sophisticated computational capabilities. It is not unusual to have an investment of several millions of dollars (in hardware and software) in an undergraduate computer graphics laboratory, with annual operating expenses on the order of $1 million.

At the graduate level, as pointed out earlier, much of the resear h is becoming "big research." This means that research equipment is becoming enormously expensive. At the same time, much of the laboratory space at our universities is outdated and cannot provide the proper environment for today's sensitive instrumentation (such as clean rooms and vibration isolation). Thus, there is a need to continually upgrade the equipment and instrumentation used in undergraduate and graduate teaching, as well as that used in research.

Recommendations. To address these problems, the Commission recommends that:

- The Federal Government make available adequate stipends to encourage our best students to pursue graduate engineering study;

- The existing Presidential Young Investigator's Award program emphasize areas of engineering that are experiencing faculty shortages and that it be directed at outstanding Ph.D.'s who are about to complete, or have recently completed, their graduate studies;

  NCEP has found that fully half of the awards go to engineering fields, with special attention to areas experiencing pronounced faculty shortages. (Source: National Science Foundation, Presidential Young Investigator's Award Program.)

- The Administration's 22 percent increase in NSF funding for engineering research in fiscal year 1985 be applauded, and that emphasis on this area be continued in the future;

  The NCEP notes that the actual budget for FY 85 ($143.2 million) represented a 16.8 percent increase over FY 84; FY 86 saw an additional increase of 2.1 percent to $146.2 million; the estimate for FY is a 13.9 percent increase over FY 86, for a total budget of $163 million. (Source: National Science Foundation Budget Office.)

- The current emphasis on equipment and instrumentation be continued, with more attention given to providing adequate support for the operation and maintenance of modern instrumentation; and

- NSF's new program of cross-disciplinary research centers be expanded in future years to allow up to 25 centers to be established and to provide the funding needed to enable these centers to address problems of systems synthesis now confronting industry.

  The number of these engineering research centers has risen from 6 in FY 85 to 11 in FY86 and is estimated to rise to 14 or 15 in FY 87. Funding for these centers was $10 million in FY 85, $22 million in FY 86, and is estimated to rise to $30 million in FY 87. (Source: National Science Foundation Budget Office.)

Business School Education

Business school education must also be strengthened to reflect the economic realities of global competition faced by American industry. Changes in the marketplace require a rethinking of the nature of the firm, concepts of capital, and the management function. An international economy characterized by rapidly changing products and processes demands new management skills that place a premium on the management of information and resources. This internationalization of the economy is changing business practices, regulations, and the cultural context in which business functions—necessitating a corresponding internationalization of the curriculum, including renewed emphasis on foreign language proficiency. Management education must retreat from its overemphasis on finance and marketing to restore concern for achieving profitability through greater innovation in the production function and entrepreneurship. Managers must be taught how to manage emerging technologies to strengthen the production process and enhance quality assurance. Business schools should be challenged to step to the forefront in the search for new methods and strategies to adapt to this changing technological and economic environment.

Recommendations. The Commission recommends that:

- Business schools undertake a systematic and comprehensive academic response to the changing economic realities that confront American business and industry. To support their efforts, the Commission endorses the ongoing work of the Business-Higher Education Forum in articulating the role that business schools can play in responding to the competitiveness challenge.

An NCEP-sponsored case study of a high-tech industry calls for business and engineering schools to develop and establish technology management programs. (Kan Chen and Frank P. Stafford, The Employment Effects of High-Technology: A Case Study of Machine Vision, NCEP, Research Report 86-19, May 1986.)

EMPLOYEE TRAINING

A primary means of maintaining a productive and competitive work force is employee training. Training is the chief vehicle for upgrading the skills of the work force in response to changing technologies and product demand. While much emphasis has been placed on the modernization of plant and equipment to enhance productivity, these efforts must be accompanied by a similar upgrading in human resources capabilities if long-term productivity gains are to be realized.

Need for Training

Technology, international competition, and changing demand for resources are creating structural shifts in the economy and changing the competencies required of the work force within occupations. According to Bureau of Labor Statistics (BLS) projections, the long-term growth trend in the service sector

will continue through 1995, with that sector projected to account for nearly 75 percent of all new jobs during the period 1982-95. The manufacturing sector is projected during the same period to create one in six new jobs. Despite this projected growth, employment in several major manufacturing industries (including steel and automobiles) is not expected to reach prior peak levels, and manufacturing employment will make up roughly 18 percent of total employment by 1995. Finally, high technology occupations are expected to account for approximately 8 to 17 percent of all new jobs between 1982 and 1995.

More recent BLS data project that the service sector will account for 81.4 percent of the increase in total employment between 1984 and 1995. Over this same period, the growth in jobs in manufacturing will account for 8.4 percent of the increase in total employment. These data also project that manufacturing employment will make up 18.5 percent of total employment by 1995. (Source: Valerie Personick, "A Second Look at Industry Output and Employment Trends to 1995," Monthly Labor Review, U. S. Department of Labor, Bureau of Labor Statistics, Vol. 108, November 1985, pp. 26-41, Table 7.)

Perhaps more important than these structural trends is the fact that technology and changing product demand are altering the skills required in traditional occupations. The introduction of new technologies is changing the nature of work in occupations as diverse as secretary, engineer, and machine operative. The Office of Technology Assessment (OTA), in its recent study of computerized manufacturing automation, suggested some of the implications of this technology on employment and training. Noting that one impact will be a broadening of the skills required by employees at all levels and a shift from manual to mental work, OTA cited the development of multiple skills and the cross-training of workers to perform a variety of tasks as key training needs. While aggregate use of such technologies is currently limited, their introduction into manufacturing operations is accelerating. For example, in 1983, the United States was estimated to have 9,400 operating robot installations; by 1992, that number could increase to more than 133,000. Technology is permeating the service sector as well. In 1978, an estimated 500,000 word processors were in use in the United States. By 1990, that figure is expected to increase to 2.5 million. How these trends will affect the nature of work across occupations remains to be seen. What is certain is that organizations and individuals will have to be increasingly adaptable.

An NCEP-funded study recently examined how to most effectively implement advanced manufacturing technology. Among the factors found to aid implementation are a skilled and adaptable workforce and a flexible and less-hierachical mangagement structure. (Source: National Academy of Science, Committee on the Effective Implementation of Advanced Manufacturing Technology, 1986.)

Coupled with these changes are demographic trends in the labor force that compound the need for retraining. Roughly 75 percent of those who will be working in the year 2000 are in the labor force today. As a result of the aging of the baby boom population, the 25- to 44-year-old age group will make up roughly 32 percent of the population in 1990, compared to 28 percent in 1980 and 24 percent in 1970. At the same time this population is growing, the number of potential new entrants to the labor force (aged 18 to 24) will decline, from 13.3 percent of the population in 1980 to 10.3 percent in 1990. This overall aging of the work force and the declining growth of new entrants have major ramifications for education and training policies, as an increasing proportion of the population becomes concentrated in the workplace. Investments in human resources, previously focused on basic preparation of new entrants through the elementary and secondary school system, must increasingly shift to address the needs of the adult population.

> More precisely, the number of youth age 18 to 24 will decline until 1995. At the same time, the "baby boom" generation will be in their prime working years — age 25-44. It is important to note, however, that the number of black and Hispanic youth will be increasing over the same period, a trend which increases the urgency of reducing the dropout rates of these minority groups in particular. (Source: 8th Annual Report: The Work Revolution, National Commission for Employment Policy, Report No. 15, December 1982.)

Employer-Based Training

Employers, currently the largest source of job-related training, are the most appropriate locus of these training and retraining efforts. As the most sensitive barometer of change in the economy, the workplace is a leading indicator of changing demand for skills, leaving employers well positioned to anticipate training needs for their employees. Although we lack standardized approaches for counting training costs, "best guess" estimates by the American Society for Training and Development are that industry expenditures on formal employee training range between $30 and $40 billion annually. Other estimates of formal training expenditures by industry vary as widely as $10 to $100 billion. One reason that estimates of employee training differ so much is that training typically is not viewed by employers as a definitive and significant corporate function, analogous to other areas such as research and development, marketing, or sales. Training costs frequently are buried within production budgets, making it difficult for employers to assess their total training expenditutes.

The formal training function is largely reactive. When the economy is slow, employers have little incentive to invest in the development of their human resources, tending instead to invest in labor-saving (not necessarily productivity-enhancing) equipment. The mobility of employees, which results in lost investment when a trained employee is hired away by another firm, also discourages investment in training. For smaller firms that lack in-house training staff, the inability of local vocational schools or community colleges to provide training responsive to their specific needs acts as an additional impediment to training their employees.

While there are numerous outstanding examples of industry-education collaboration in which individual educational institutions are actively responding to the training needs of their local industries, barriers exist to maximizing the effectiveness of those outside institutions. Too often, vocational and community colleges lack sufficient information about changing skill requirements to be able to anticipate and respond quickly to industry's requests for customized training. Second, because the generation of State funding for vocational education typically is based on full-time enrollment formulas that do not sufficiently account for part-time enrollments at the postsecondary level, there are often insufficient funds to attract technically qualified instructors and operate state-of-the-art postsecondary programs. According to the National Center for Education Statistics, in 1979-80, 39 percent of all students in vocational education were enrolled in postsecondary programs and 51 percent of occupation-specific trainees attended postsecondary programs. However, in 1981, on average only 19 percent of Federal vocational education funds were spent by States to serve the postsecondary population. Lastly, while basic facilities may be adequate, equipment is frequently inadequate to the task of quality training. While some training can be offered using the employer's equipment at the employment site, this will not usually suffice, necessitating that schools themselves be currently equipped. An estimated $500 million is needed annually to update outmoded equipment at 2-year technical and community colleges.

The NCEP notes that there are no reliable data for updating the 1979-80 vocational education figures. A new data system is being designed, but is not yet in place. Post secondary vocational education is given increased emphasis in current legislation over the share of funding reported for 1981. (Source: Center for Education Statistics, U. S. Department of Education)

Employees also confront disincentives to their own investment in training and retraining. The tax treatment of retraining discourages individual investment in occupational mobility. Traditionally, because the benefits of training and education inure to the individual in the form of increased wages (or at least increased earning capacity), the Internal Revenue Service has deemed the cost of such training to be a personal expense to the individual that is neither deductible nor excludable from income. An exception to this treatment is available for "job-related" training, which maintains or improves the skills used in an existing trade or business or is required by the individual's employer as a condition of continued employment. Training expenses that meet this job-related test are deductible from income (Treasury Regulation 1.162-5). However, if the training satisfies the job-related test but also qualifies the individual for a new trade or business, it is nondeductible.

Because of an inordinate amount of confusion and litigation arising from enforcement of Regulation 1.162-5, in 1978 Congress added section 127 to the Internal Revenue Code. Section 127 excludes from employees' gross income educational aid provided by an employer under a qualified educational assistance plan, without regard to whether such assistance meets the 1.162-5 job-related test. Eligible educational aid includes the cost of tuition,

fees, books, supplies, and other necessary equipment financed by the employer. Section 127 was allowed to lapse in December 1983, creating chaos for employers faced with decisions on whether to withhold tax from paychecks of employees receiving tuition aid. In the closing hours of the 98th Congress, the section was reauthorized through December 1985.

Recommendations. The Commission recommends that employers be encouraged to train and retrain their employees through public policies designed to:

- o Maintain economic growth. Reduced unemployment and expanding demand are primary incentives to employer investment in training.

- o Achieve balanced tax treatment of employer investments in physical and human capital. Proposals for tax restructuring should be evaluated with respect to their impact on creating incentives or disincentives for employer investment in training.

- o Strengthen the capacity of vocational institutes and community colleges to deliver training, particularly for smaller employers who lack in-house training staff. This requires adequate information concerning employers' training needs, adequate funding to attract high-quality instructors in technical fields, and up-to-date instructional equipment. To aid them in obtaining information, the Commission endorses the establishment of technical committees, as provided in the recently reenacted Federal Vocational Education Act. To increase available funding, the post-secondary vocational programs set-aside in the Act should be increased. Lastly, to alleviate the shortage of equipment, States should be encouraged to establish equipment pools allowing institutions to share equipment.

- o Remove tax disincentives for individuals being trained through employer-financed tuition aid programs. Congress should act to permanently extend section 127 of the Internal Revenue Code.

The NCEP notes that under the Tax Reform Act of 1986:

a) The exclusion of firm-provided educational assistance from employee taxable income (Section 127(d) of the tax code) is extended until December 31, 1987.

b) The Targeted Jobs Tax Credit is extended until December 31, 1988, but may be claimed on only the first year of wages, compared to two years under the former provisions.

The Commission also recommends that:

- o Employers approach their training activities more systematically and treat them as they would any other major business activity. In so doing, it is likely that employer-provided training will become less reactive and more fully integrated into the ongoing planning and operation of the firm.

FACILITATING THE RAPID REDEPLOYMENT OF LABOR

Labor adjustment is a normal occurrence in a dynamic economy. Shifting demand for products, changing production technologies, plant relocations, and cyclical economic swings all necessitate adjustment to changing skills demand and labor requirements. Most adjustment necessitated by these forces can be absorbed by the economy and the individuals in the work force. However, when long-term, structural shifts in the economy result in the permanent displacement of workers, policies must be devised that will remove barriers to adjustment and ease the transition from noncompetitive to competitive sectors of the economy.

THE DISPLACED WORKER PROBLEM

Driven by the convergence of rapidly changing technology, increased international competition, and a rapid rise in the cost of energy, the economy experienced intensified structural change during the 1970's and early 1980's. While basic manufacturing industries such as automobiles, steel, metals, and textiles experienced decline, high-technology and service industries expanded rapidly. In the declining industries in 1982 alone, a Bureau of National Affairs survey estimated that 215,000 workers lost their jobs as a direct consequence of plant closings. Despite subsequent expected growth in these industries during the remainder of this decade, the Bureau of Labor Statistics projects that many will not return to their 1979 employment levels. Thus, many of the workers losing jobs in these basic industries during the recent recessions have been permanently displaced; economic recovery will not result in their return to former employment.

Although in absolute terms this loss of jobs in the basic industries is being partially offset by the simultaneous creation of new jobs in the high-technology and service sectors, these new jobs have had little immediate impact in alleviating the displaced worker problem. The reason is simple; the skill requirements, compensation levels, and geographic location of the jobs being created differ from those being lost.

Displaced workers are individuals who, because of structural changes in the economy, have been permanently separated from their jobs and face substantial difficulties in being reemployed. Unlike the cyclically unemployed, whose joblessness ends when economic recovery occurs, the displaced worker remains unemployed after the economy recovers from its cyclical downturn.

Workers most likely to be displaced are blue-collar, semiskilled employees in traditional manufacturing industries located in the North and Midwest. Displaced workers typically are experienced workers with considerable job tenure and successful earnings history. Frequently, they are older workers who, because of seniority, have avoided layoff until the actual closing of a plant. They also may have less formal education than their younger counterparts, having acquired most of their skills on the job.

While analysts' estimates suggest that relatively few of the unemployed (5 to 10 percent) can be characterized as displaced, the displaced worker nonetheless represents an important competitiveness issue that should be of concern to both the public and private sectors. First, as noted previously,

displacement is a normal consequence of structural change in a dynamic economy--change that frequently benefits society through increased productivity, competitiveness, and an enhanced standard of living. Workers who are displaced as a result of these changes should not be required to bear the entire burden of events that are ultimately beneficial to society at large. Second, failure to aid these workers in adjusting to the changes thrust upon them may well impede industry's ability to respond to changing competitiveness requirements. For U.S. industry to remain competitive, it is critical that resources be rapidly redeployed. The responsibility for easing this redeployment of labor rests with both the public and private sectors, as well as with the individual worker.

Public/Private Sector Responsibilities

The private sector's responsibility can be framed in terms of (1) a commitment to avoiding displacement through concern for employment security and (2) active assistance to workers who must be terminated. Employers having employment security as a goal refrain from utilizing layoffs as a first resort when heightened competition necessitates adjustments in production. Approaches include "no layoff" policies (such as that of IBM, Hewlett-Packard, and others); contractual stipulations providing for interplant transfers as an alternative to termination (included in roughly 35 percent of major collective bargaining agreements); and work-sharing arrangements, in which all employees work a reduced workweek to prevent layoffs of some of their coworkers. Regardless of the approach, the result is diminished displacement and adaptation to changing conditions through the efficient and effective use of the employer's existing work force.

In addition to preventing displacement in the first place, employers can play a significant role in easing the burden of displacement by providing early notification of plant closings and prelayoff assistance. Through activities such as counseling, job search assistance, retraining, and outplacement, employers (typically in cooperation with unions) can provide early support to the reemployment effort, thus speeding the adjustment process and reducing reliance on public resources.

Several forms of public adjustment assistance are currently available to aid the dislocated, including training and job search services funded under Title III of the Job Training Partnership Act (JTPA), income maintenance available through the unemployment insurance system, and labor market information and job search assistance provided through the U.S. Employment Service.

JTPA (authorized at $3.6 billion) is the successor to the Comprehensive Employment and Training Act; it provides a variety of training and employment services to both disadvantaged and displaced workers. The Title III Dislocated Workers Program provides funds to States on a formula basis for job search assistance, job development, training in job skills for which demand exceeds supply, prelayoff assistance, counseling, and relocation assistance. While stipends are not available for individuals undergoing training, trainees may continue to receive unemployment benefits (which may be used by the States to satisfy up to 50 percent of the State match). Key to the program is the States' flexibility to award funds to a variety of grantees including

companies, unions, local governments, private industry councils, and vocational schools. Approximately $0.4 billion annually is expected to be available from both Federal and State sources under Title III. Whether this level of funding is adequate to meet the need is a matter of some controversy.

> JTPA appropriations for the program year FY 86 were $3.3 billion. The $0.4 billion annual Title III figure was for PY 84. New worker adjustment assistance legislation introduced in the 100th Congress to expand Title III type programs has a proposed funding level of just under $1 billion, which NCEP believes may be too much for the system to absorb in a single increment.
>
> The NCEP recommended to the President and the Congress that demonstration programs be undertaken to test the effects of alternate methods of compensation on displaced workers' willingness and ability to find new jobs. The NCEP also recommended tht employment and training policies should be both preventative and remedial. A program such as Trade Adjustment Assistance is a reaction to the effects of reduced U.S. competitiveness. Research funded by NCEP and by other groups also emphasizes the need to focus resources "up front" — to enhance the adaptability of American workers and their employers before a crisis emerges. (Source: NCEP Policy Statement, March 1987)

Unemployment insurance benefits are another form of assistance available to aid displaced workers. Financed by Federal and State payroll taxes levied on employers, the system covers roughly 97 percent of all wage and salary workers with benefits ranging from 40 to 50 percent of previous gross earnings. In addition to those benefits provided under the regular 26-week coverage and extended 13-week programs in qualifying States, benefits are available through the federally financed Federal Supplemental Compensation (FSC) program for 8 to 16 more weeks, depending upon the State's average insured unemployment rate. Beyond the reduction in earnings suffered by the unemployment insurance beneficiary, there are no incentives in the program to encourage the unemployed worker to seek reemployment or skill upgrading. The structure of the tax system in some States is also problematic. While all States, to some extent, base an employer's payroll tax rate on the number of its employees drawing benefits, the proportion of benefits subject to the experience tax has declined over time. Arguably, in an insurance system, it is appropriate that risk be pooled (particularly in the case of firms in cyclically sensitive industries). However, employers' use of the system and implicitly their propensity to lay off workers will clearly be more considered where their tax rate is closely correlated with their experience rating.

> Federal Supplemental Compensation ended in 1985, and the "extended 13-week programs" are operating in only a few jurisdictions. Due in part to these changes, the proportion of unemployed workers receiving unemployment insurance at any given time has fallen to about one in three. For a more detailed

discussion of the experience rating issue, see Wayne Vroman, "Innovative Developments in Unemployment Insurance," National Commission for Employment Policy, Research Report 85-02, February 1985. Vroman concludes that improved experience rating should lead to some reduction in the incidence of unemployment.

Lastly, the U.S. Employment Service is the primary public system providing job search assistance and labor market information to displaced and other unemployed individuals. This federally funded, State-administered system comprises approximately 2,000 offices and 20,000 employees. Over time it has acquired a plethora of administrative and enforcement duties, which have seriously diluted its ability to conduct its labor exchange activities adequately. Traditionally, the Employment Service has been underused by employers having job vacancies, with less than 36 percent of all vacancies being listed. Additionally, the Service has a reputation for serving primarily low-skilled applicants, which discourages employers in listing higher paid jobs.

A fourth type of assistance, available to workers displaced because of import competition, is Trade Adjustment Assistance (TAA.) A recent NCEP monograph discusses the TAA program and concludes that it has primarily provided income support, while only a small percentage of participants were retrained or relocated: See, Stephen E. Baldwin, "Trade Adjustment Assistance: Part of the Solution or Part of the Problem?" National Commission for Employment Policy Monograph Series, February 1987.

Recommendations. To improve the mobility of the work force and address the problems of displaced workers, the Commission recommends a comprehensive policy characterized by:

- Early identification of workers to be displaced. Employers are encouraged to provide early notification of plant closings. Prelayoff assistance provided through the joint efforts of employers and public agencies (such as that authorized by JTPA) should be emphasized.

- Comprehensive services. Job search, counseling, training, and limited relocation assistance should be provided to displaced workers with Federal assistance. Additionally, to aid job search efforts, the labor exchange functions of the U.S. Employment Service should be strengthened.

- Reemployment and retraining. Incentives should be provided to employers to hire and retain displaced workers. Training is most useful when conducted in the context of a job. Thus, the current unemployment insurance system should be revised to enable displaced workers to convert benefits to a voucher that can be used as a wage subsidy to encourage employment.

- Encouraging employer responsibility. Employers are urged to strengthen their commitment to employment security as an important means of avoiding displacement. Additionally, State restructuring of the unemployment insurance tax is needed to increase the proportion of benefits subject to the experience-rated tax, thus discouraging overuse of the system by employers.

- Economic development. Programs for displaced workers must be linked with economic development efforts at the State and local levels to assure that jobs are available for these workers.

In NCEP's 11th Annual Report, Goals for the Workplace and Implications for Policy, the Commission found that displaced workers' problems are deserving of continuing Federal attention and recommended "that assistance to displaced workers continue as a national priorty, with adequate funding for programs under Title III of JTPA."

MAXIMIZING THE EFFECTIVE USE OF HUMAN RESOURCES

The quality of human resources is but one factor influencing the productivity of labor. Beyond the principal component—technological innovation—the climate of labor-management relations, employee motivation, and the incentives used by management to reinforce that motivation are pivotal to realizing the most effective use of our human resources.

LABOR-MANAGEMENT COOPERATION

Enhanced cooperation between organized labor and management is key to achieving increased productivity, improved quality, and, ultimately, greater competitiveness. Through the recognition of mutual interests, joint problem solving, and increased worker participation in the decisionmaking process, cooperation between labor and management strengthens employment security and contributes to the economic success of the individual firm.

The relationship between labor and management has implications for virtually all facets of the firm. With cooperation, employee participation influences the manner in which jobs are defined and performed, the introduction of technology into the workplace, the retraining of employees to upgrade skills, and the assistance given to workers faced with displacement. In short, labor-management cooperation can improve the ongoing functioning of the firm and facilitate the redeployment of resources to avoid or mitigate the burden of displacement.

Human Resource Practices for Implementing Advanced Manufacturing Technology, prepared for NCEP by the Manufacturing Studies Board of the National Academy of Sciences, includes guidance to firms on methods of fostering labor-management cooperation as new technologies are brought into the workplace. These include the following: (a) Managers should begin working to improve their

relationships with unions before introducing new technology; (b) Management should notify the union as early as possible and be willing to involve the union in implementing the new technology; and (c) to deal intelligently with issues that arise from the introduction on new technology, managers and union officials at the industry and plant levels need to keep up-to-date on developments in advanced manufacturing technology and their implications for labor relations.

The challenges of international competition, slow growth, and technological change are producing pressures on both labor and management to alter traditional adversarial relationships in favor of more cooperative approaches. However, despite increased cooperation over the past decade, the cooperative model of labor-management relations remains the exception rather than the rule. The historic suspicion between management and labor has provided a difficult environment in which to cultivate a climate of cooperation. For this climate to change, the development of trust between the parties is imperative. Management and labor alike must foster the development of leaders who are open to change, willing to cooperate, and committed to cooperation as a better and more effective way to work.

Neither management nor labor can, by merely asking the other for trust, actually create such a climate. Trust cannot be mandated or supplicated. It must be earned. Trust can be created in the following ways:

- o Performance, reflecting a commitment to equity, fairness, and sensitivity to one another's assumptions, values, and problems; demonstration of consistent reliability; and willingness to share prosperity as well as austerity;

- o Disclosure of relevant information—including plans, opportunities, and challenges. Candor replaces surprise and openness replaces manipulation and gamesmanship;

- o Risk taking, daring to face jeopardy for mutual gain and for the sake of building trust and mutuality;

- o Self-fulfilling prophecy, trusting the other side and demonstrating conviction that the parties can produce mutual trust; and

- o A commitment to the long-term relationship and refusal to take advantage, especially in the face of opportunities to do so presented by vulnerabilty or outside pressure.

These changes in attitudes and actions are imperative if American industry is to make full use of its human resources. It falls to the parties themselves to demonstrate their understanding of the need to cooperate and to build the trust that makes cooperation possible. In this undertaking, they can be aided by governmental recognition of the importance of cooperation to competitiveness and by actions to focus the attention of industry and labor on the changes needed.

Recommendations. The Commission recommends that:

- Labor-management cooperation be seen as crucial to improving the productivity of industry, and that American labor and management continue to move forward in establishing new collaborative relationships characterized by trust, communication, and worker participation.

- The President support these efforts by recognizing the important steps taken thus far to implement these principles.

EMPLOYEE INCENTIVES

To achieve increased productivity and improved quality, firms need the maximum commitment of their employees. Such commitment cannot be exacted; rather, it is the consequence of employment security, the cooperation achieved between labor and management, and positive incentives to employees that serve to reinforce individual excellence.

Despite a strong cultural tradition that has viewed work as an inherently worthy pursuit, in recent years the popular notion has developed that Americans are not working as hard as they used to and that the "work ethic" is in decline. In numerous surveys, the public and Government and business leaders have expressed the view that a loss of motivation and commitment to work is a primary cause of America's competitive problems.

However, recent research by Daniel Yankelovich and the Public Agenda Foundation (Putting the Work Ethic to Work, 1983) found that while work behavior may well have deteriorated, this is not the consequence of a weakening of the traditional work ethic. Based on their own surveys and those of others (the U.S. Chamber of Commerce and Connecticut Mutual Insurance Company), the Public Agenda Foundation's research concluded that the work ethic enjoys broad support among workers in contemporary America, with a majority of the work force interviewed professing a need to "do the best job I can, regardless of pay." Despite this avowed belief in the value of work, however, less than one-quarter of the workers believe they are working at their full potential, according to the survey. One explanation is that an astounding three-quarters of the surveyed employees believe there is little connection between their level of pay and the quality of their performance. Additionally, a Chamber of Commerce survey found that only 9 percent of the employees interviewed believe they would benefit from improvement in the productivity of their firms, while a similar survey found that 93 percent of Japanese workers believe they would benefit from such improvements.

These findings suggest that the perceived decline in work effort is attributable not to a changing value system and loss of the American work ethic, but rather to incentive systems that fail to reinforce that work ethic. This in turn suggests that managers, in cooperation with labor, can strongly influence the degree of employee commitment through systematic changes in the way employees are compensated and rewarded.

To elicit greater commitment of employees to their jobs, employers must put in place incentive systems that reinforce the work ethic and give employees a greater stake in the outcome of the enterprise. Reward systems that tie financial outcomes with the success of the firm and reinforce

individual excellence (such as gain-sharing) are important institutional tools that can directly influence individual productivity. Similarly, employee ownership, accomplished through such methods as Incentive Stock Options (ISO's) and Employee Stock Ownership Plans (ESOP's) can be powerful levers for increasing individual commitment to the long-term performance of the firm. Recent legislation has seriously diluted the motivational impact of Incentive Stock Options; these disincentives should be removed to encourage equity ownership.

Recommendations. The Commission recommends that:

- American management, in cooperation with labor, make use of the full array of compensation plans and equity ownership programs to strengthen the linkage between pay and performance and enhance the employee's stake in the long-term success of the firm.

- Legislative changes augment the usefulness of Incentive Stock Options as an incentive tool. These changes include (1) eliminating, as a tax preference item, the spread between exercise price and fair market value at the time ISO's are exercised; (2) removing the $100,000 annual ceiling on ISO's; and (3) abolishing the requirement that ISO's be exercised in sequential order. The Commission also urges management to apply these incentives with sensitivity to their impact on the motivation and morale of all employees.

INCREASING EFFECTIVE DIALOGUE AMONG GOVERNMENT, INDUSTRY, AND LABOR

One of the principal handicaps faced by the United States in striving to address our human resources and other competitiveness problems is the absence of effective mechanisms for dialogue among the key economic actors who are affected by and who influence competitiveness. Action by political decisionmakers to address the problems of displaced workers, shortages of technical personnel, and the myriad issues of trade and technology is frustrated by dysfunctional conflict among the very sectors whose cooperation is necessary if the problems are to be resolved. Ultimately, the quality of the political decisions made to address these problems is contingent upon access to reliable information by policymakers and the ability of adversarial factions within industry, and between industry and other sectors, to engage in sustained dialogue to develop consensus on the issues affecting them.

THE NEED FOR CONSENSUS-BUILDING MECHANISMS

In each 2-year session, the U.S. Congress entertains approximately 10,000 bills. Of these, roughly 5.5 percent are enacted (excluding private bills). It can be argued that many of the 10,000 bills are widely known in Congress to be unimportant—introduced to placate a special interest group, but have no hope of passage, or are bills of a technical nature requiring no congressional debate—so that the actual number of major policy-related bills is much smaller. Arguably, when an issue is truly important, major interest groups coalesce to promote it and the executive and legislative branches move to address it. More persuasive, however, is the implication that the system producing such a massive number of legislative initiatives, yet reaching final agreement on so few, is overloaded with the problems of individual companies, unions, and special interest groups with inadequate means of resolving these competing claims for action and resources.

The economic policy alternatives that face any Congress and President are a function of (1) Government's ability to gather and consolidate accurate, objective data upon which to make decisions; and (2) the effectiveness of the underlying structures available to key economic actors to arrive at consensus. Within each industry, there are continuing needs for changes in regulatory policy, administrative practice, and law. The responsibility for making these changes lies with the elected and appointed officials of Government, but these officials must in turn rely upon information available to them through the Government's own data collection efforts and from industry experts. While extensive sectoral information is collected form industry throughout the executive branch, there is currently no systematic means of verifying and consolidating disparate agency data bases for use in strategic, Government-wide economic decisionmaking. As a result, Government is limited in its ability to weigh the validity of, and the tradeoffs implicit in, conflicting industry claims. For Government decisions to be credible, a centrally located factfinding capacity is needed that would be capable of independently identifying and verifying the key facts that influence major economic decisions.

Additionally, the ability of major participants in the private sector to arrive at consensus on issues of importance to their industry influences Government's ability to act effectively. If the advice offered by industry experts represents a broad consensus of those within the industry who will be affected by new policy and of those beyond the industry who may suffer higher costs or benefit by lower costs, then the change in policy may well be implemented expeditiously. If, however, the advice comes from only a segment of the industry or if it seems likely to help the focal industry at the expense of other business groups, labor, or consumers, then the policymaking process will stall. If business constituencies are incapable of sustained dialogue on complex policy matters, then Government officials are incapable of implementing a policy that requires broad dialogue and consensus in the business community.

The competitiveness issues confronting the United States today are not new, yet they remain unresolved. Since 1960, the rate of U.S. productivity growth has trailed that of West Germany. France, the United Kingdom, Italy, Sweden, and Japan. In 24 years, national attention has yet to be focused effectively on this problem. Since 1963, the fraction of U.S. gross national product (GNP) allocated to all research and development has steadily declined, while the corresponding ratios among our prime industrial competitors has risen just as steadily. The percentage of U.S. GNP allocated to capital formation has similarly declined since the late 1960's. These macroeconomic problems have been intractable, largely because any solution to them will necessarily result in a reallocation of wealth, in which some interested parties will gain while others will lose. Faced with a choice between the national interest and self-interest, most will choose the latter. By so choosing, however, useless conflict occurs, impeding both the overall performance of the economy and the ability of individual actors to improve their relative economic positions.

Consensus-building mechanisms can minimize this counterproductive conflict by focusing on factfinding and the development of a shared understanding of the problem before policy options are considered. By emphasizing factfinding and limiting the dialogue to concerns that the parties have in common, these

consensus structures can contribute greatly to the resolution of issues, moderating extreme positions and focusing on issues on which consensus can be reached. Such structures necessarily supplement, rather than supplant, the existing political decisionmaking processes, to which are reserved the resolution of zero-sum conflicts not amenable to consensus among the interested parties.

The Nation has in place an extensive array of advisory groups intended to create just such a dialogue among business, Government, and other sectors of the economy. The evidence, however, suggests that this dialogue is not occurring and that consensus within the business community, as well as among business and the other key sectors, rarely occurs. As a result, the Federal Government faces demands to resolve not only major policy issues, but a myriad of more specialized issues that the business community has thrust upon it. It is this middle range of issues that can be handled with greater speed and effectiveness if the institutional dialogue can be improved. These issues—dealing with human and financial resources, research and development, manufacturing, trade, and international marketing policies—together can make the difference in the competitiveness of U.S. industry.

THE EXISTING APPARATUS OF BUSINESS-GOVERNMENT DIALOGUE

During fiscal year 1983, 884 citizen advisory committees, comprising 17,980 individual members, operated with the purpose of sustaining a dialogue with various branches of the Federal Government. All operated under the Federal Advisory Committees Act (FACA) of 1972, which both defines and regulates these committees. The total cost of administering these committees (most members serve without pay) was $75 million in 1983. Of the 884 committees, 115 were affiliated with the four agencies having the most immediate bearing on issues of industrial competitiveness—the Departments of Commerce, Labor, and Treasury, and the Office of the U.S. Trade Representative.

Many of these 115 committees are technical in nature, while approximately 60 have a general policy orientation. An analysis by William Ouchi and the firm of Booz, Allen & Hamilton of a selected subset of the policy committees found general agreement among committee members and agency staff that the committees have little effect on the agencies, the Congress, or anyone else. They meet infrequently, often hearing of important policy issues after decisions have been implemented by the relevant agency, and rarely communicate with Members of Congress or their staffs.

The FACA committees are often deemed ineffective because they are of short duration, operate for narrowly political purposes, or are overburdened with members whose appointment is primarily repayment for political loyalty. The Ouchi analysis found neither undue political influence nor instability in committee tenure or membership.

A look at the composition of the committees' membership, however, is revealing. The committees reviewed included several major advisory committees whose charges span big business, small business, labor, and civic and consumer groups—the Management-Labor Textile Advisory Council, the President's Export Council, and the Federal Advisory Council on Unemployment

Insurance, among others. Of the 281 members active in 1982 (the most recent year for which data are available), 53 percent were executives of business firms, 16 percent were Government officials, 9 percent represented industry trade associations, 9 percent represented labor unions, 8 percent were independent professionals (primarily attorneys), 3 percent were academics, 2 percent represented public interest groups, and 1 percent were retired persons.

For these advisory committees to have true impact on policy, they must be broadly representative of the sectors affectd by the issues within their domain. For example, if an advisory committee does not bring together the many disparate factions within the financial services industry, but instead represents only the largest banks or securities firms, it will have little impact on the staff of the Department of the Treasury, who knows that a broader consensus is necessary to implement policy. As a practical matter, this broader consensus can often be accomplished only if the industry has active trade associations and labor unions represented on the committees that can generate a broad-based dialogue among their members.

As currently constituted, the advisory committees are ill suited to their task of bringing together the disparate segments of the business community and other interested sectors (labor, academia, citizens groups) to discuss and resolve their policy differences. The committees' effectiveness is also impeded by a legal framework that discourages open discussion among interested (and often competing) private parties. Among the major statutes governing committee activities are the Federal Advisory Committees Act, Government in Sunshine Act, Freedom of Information Act, conflict-of-interest statutes, and antitrust laws.

Broadly speaking, these statutes operate to assure that committee meetings are open to the public, with interested persons given an opportunity to participate; that there is public access to documents generated in the course of the committee's work; that conflict of interest by members is avoided; and that the use of the committee forum as a vehicle for anticompetitive behavior is prevented. Exemptions from the open meeting or document disclosure requirements are available if they satisfy one of nine narrowly drawn exceptions. The two exemptions most applicable to business advisory committeess are (1) trade secrets and privileged or confidential commercial or financial information and (2) information relative to an agency responsible for the regulation or supervision of financial institutions. At present, it is not clear just when these exemptions apply. As a result, organizations that provide data to an advisory committee may find that those records will be available for public inspection.

The antitrust statutes are concerned with the preservation and promotion of competition in the marketplace. Because of the potential for collusive and possibly anticompetitive behavior whenever competitors meet, private sector members of advisory groups must be made aware that discussions of certain subjects pose substantial antitrust dangers and are, under present law, to be avoided. In general terms, discussions among business competitors are prohibited which tend to (1) raise, lower, or stabilize prices or fees; (2) regulate production levels or schedules; (3) affect the availability of products or services; (4) affect allocation of markets, territories, or customers; (5) encourage boycotts of products or services; (6) foster unfair

practices involving advertising, merchandising, standardization, certification, or accreditation; (7) encourage anyone to refrain from competing; (8) limit anyone from manufacture, sale, or practice; (9) result in illegal brokerage or rebates; or (10) effect improper reciprocity in dealing.

Some exemptions from the Federal antitrust statutes do exist. The reach of the antitrust laws has been blunted when they confict with the First Amendment right to petition the Government for redress of grievances. Efforts to influence public officials to act in their legislative, judicial, or regulatory roles (e.g., request to enact new legislation or enforce existing rules) are generally immune from the antitrust laws due to this First Amendment right, even though restricted competition may be the result. This so-called "Noerr-Pennington" immunity does not offer protection, however, if the lobbying or other efforts are a mere sham, undertaken to harass a competitor.

Recommendations. To provide a basis for the development of consensus-building processes that can bring government, industry, labor, and other key sectors together to address human resources and other competitiveness issues, the Commission recommends that:

- The existing advisory committees affiliated with the Departments of Commerce, Labor, Treasury, and the Office of the U.S. Trade Representative be reviewed as a possible basis for the development of consensus-building structures. The Commission urges the President to direct the heads of those agencies to review the committee charters and membership and to recommend means of enhancing their effectiveness to address competitiveness issues. Similarly, Congress should undertake a systematic review of the charters of those committees that are statutorily based.

- Consideration be given to expanding the role of trade associations, labor representatives, representatives of academia, and other interested parties in the membership of the citizen advisory committees to make them more representative.

- A review of the statutory and case law governing the committees be undertaken with the goal of recommending means of protecting public access to them, while permitting some private meetings to encourage candid discussion.

- A position be established in the Executive Office of the President for the purpose of providing reliable, independent data and analysis to the President on competitiveness issues.

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