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Remarks by
Alan Greenspan
Chairman, Board of Governors of the Federal Reserve System
at the
Martin Luther King Jr. Social Responsibility Seminar

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I am exceptionally pleased to be here today to participate in the observance of Dr. King's birthdate. Regrettably, I never had the opportunity to meet Dr. King, and I am aware that our views on many aspects of economic policy might have differed considerably. But there is no disagreement about the rightness and the critical importance of Dr. King's goals of putting an end to racial discrimination and of extending freedom and equal opportunities to all Americans.

Achieving these objectives undoubtedly will require actions on many fronts, as well as the cooperation of businesses, individuals, and those in the public sector. But I believe that the way will be eased greatly in an economy that is sound, and that is generating challenging jobs and rising standards of living. By focusing this Seminar on our ability to function effectively in a global economy, you have chosen a topic that is central to these concerns.

The issue of international competitiveness, however, did not arise in a vacuum and thus cannot be fully understood without an awareness of the broader trends and key forces that are shaping the economic environment. In my remarks today, I would like to examine some of the complex interactions between knowledge and economic performance, especially with respect to the growing importance of intellectual product.

The intellectual content of economic activity is not easy to measure precisely or even to define. In broad terms, it embodies all the advances in technology and "know how" that have added to our national wealth, either by enabling us to produce a given quantity of

goods and services with lesser amounts of physical inputs or by extending the range and quality of available products.

When we look back over the twentieth century, we can identify numerous advances in knowledge that have resulted in permanent, irreversible gains in the level of our economic well-being. In broad terms, our evolution from an agrarian nation at the turn of the century to a first-rate industrial power was greatly facilitated by the adoption of labor-saving technology in both agriculture and manufacturing, as well as by the application of scientific techniques and new ways of organizing work.

More specifically, we have experienced an increasingly impressive rise in that part of the value of economic output which is conceptual, as distinct from physical. A half century ago, our radios were bulky and activated by large vacuum tubes. Today, the same function is served by pocket-sized transistor packs, with a small fraction of the heft. The insights that developed into modern electronics are, of course, at the base of the dramatic change. We also used to construct office buildings with excess bulk. Advances in engineering, and the use of lighter but stronger materials, now give us the same working space in newer buildings, with a lot less concrete and steel. The development of modern aircraft has sharply improved the speed and convenience of long-distance travel, and medical breakthroughs that have revolutionized the provision of health care are illustrative of the long list of examples underscoring the rise in the ratio of ideas to physical effort and bulk as the source of economic value creation.

At the risk of oversimplifying, let's assume that we can divide the gross national product into a purely physical component, measured in terms of magnitudes like weight or volume, and its conceptual or intellectual component. Once the bushels of grain and the tons of iron ore, coal, and steel were added up, I suspect we would find that the growth in the intellectual component would explain virtually the entire rise in GNP since the turn of the century!

In recent years, the intellectual contribution largely has reflected the explosive growth in information gathering and processing techniques, which have greatly extended our analytical capabilities and had enormous consequences for virtually all facets of our economic lives. These trends almost surely will continue into the twenty-first century; once gained, knowledge is never lost. Moreover, telecommunications and advanced computing will take on an even greater role; by facilitating the transfer of ideas, they create value by changing the location of intellectual property, much like the railroads at the turn of this century created value by transferring physical goods to geographic locations where they were of greater worth.

These technological advances have had a profound impact on our labor markets over the past several decades, contributing to marked shifts in the patterns of employment across industries and regions, as well as to changes in the mix of occupations and in the nature of individual jobs. Moreover, job opportunities have been created that, in conjunction with other social and economic forces, have drawn adult women into the workplace in record numbers.

More generally, we seem to be seeing an acceleration in the longer-run shift away from those jobs that are demanding in terms of physical effort and brute strength, toward those that place greater emphasis on the ability to absorb information and to perform analytical tasks. In part, this trend reflects the rapid growth of employment in the service sector, especially in areas such as business services, which includes computers and data processing, and health care. Since the end of World War II, service payrolls have risen from about 25 million persons to nearly 80 million and now account for three-fourths of all jobs. But that is not the entire story. Manufacturers too are looking for technical skills, and it is difficult to distinguish between a computer programmer working in a manufacturing firm and one working in finance or trade. Also, many workers in services are providing output that will be purchased by industrial firms.

It is difficult to assess how these developments have affected the overall "quality" of jobs. Many of the new jobs are low-paying and offer relatively little potential for skill acquisition and career advancement; workers at fast-food establishments are only one example. But there also has been considerable growth in occupations that offer above-average incomes and attract individuals with high levels of education and technical or managerial skills. Economy-wide, the number of jobs that the Labor Department classifies in its broad "managerial and professional" category has risen more than 60 percent since the early 1970s, roughly twice the pace of overall employment growth, and now accounts for roughly one-fourth of total jobs. At the same time,

the number of jobs that offer relatively high pay for primarily physical work has been shrinking, not only as a share of employment but in absolute terms as well.

The implications of rapidly growing technology and knowledge, of course, stretch far beyond the labor market. Moreover, they are not limited to strictly high-technology industries like electronics, communications, and aircraft, or industries such as chemicals which are actively involved in basic research; these industries are relatively small in terms of employment or even as a share of overall GNP. The critical factor is the speed and effectiveness with which developments in these areas are transferred to other parts of the economy. In the automobile industry, for example, R&D budgets are extremely large, and today's cars incorporate the latest advances in metallurgy and electronics. Also, both the design and production of automobiles rely heavily on the extensive use of sophisticated computer techniques.

The growth of technology has both coincided with, and facilitated, the increased linkage of international markets and intensified foreign competition. The ease and speed of technology transfer, across national boundaries as well as domestic industries, has been a key factor. Producers in other industrialized countries, by maintaining rapid rates of capital formation and having the flexibility to innovate quickly, have been able to capitalize on knowledge developed by themselves and others. As a result, they now compete successfully with U.S. firms in high-technology products. And among the developing countries, advances in automation have allowed producers to equip their low-wage work forces

with modern machinery and to become highly competitive in many areas, including consumer electronics, steel, and textiles.

In this environment, our competitiveness in world markets--as well as prospects for economic growth in general--will depend strongly on our ability to develop and apply technology. At best, the record has been mixed. On the one hand, our basic research in many areas is unrivalled, and the climate for new entrepreneurial ventures remains favorable. But we have not been able to capitalize fully on these advantages.

Admittedly, it has become more difficult to retain control over new ideas and products because of the rapid international diffusion of technology, and more research and development activities now are being conducted abroad. But we also have been slow to convert many of our scientific and technological breakthroughs and our new ideas into commercially viable products. Notable examples include the transistor radio, color television, and most recently the VCR. The initial development work on all of these products was performed here, but it was the Japanese who made the necessary improvements and adaptations to introduce them on the mass market. Moreover, many argue that the quality of American goods frequently has been inferior, reflecting defects in design as well as poor workmanship.

The competitive difficulties of American firms undoubtedly have been exacerbated by the sharp appreciation of the U.S. dollar in the early 1980s, and its effects are still being felt. Many foreign firms have established extensive distribution and service networks here, and American consumers have developed loyalties to foreign brands; at the

same time, it will be costly for our manufacturers to recapture lost markets abroad.

Nearly three years after the peak in the dollar, the trade deficit remains huge. The resultant frustration is all too evident in the renewed calls for protectionist measures. But such actions would merely raise prices to American consumers and lead to an atrophy of our competitive ability. Our economic prospects will be enhanced not by resorting to protectionism, but by working to keep markets open and trade flowing. A side benefit will be the continued exposure to the increasingly valuable ideas and knowledge, as well as the products, that are being developed abroad. In earlier years, when U.S. firms enjoyed unchallenged global leadership, the loss of intellectual contact might have seemed relatively unimportant; in 1988, that is no longer true.

In broad terms, prospects for improved economic performance hinge on our ability to overcome our problems with productivity and with product quality, and to maintain our technological lead. This will depend on the continued development and application of new technologies. It also will require an understanding of the power of knowledge and ideas, as well as an openness to changes in the way we do business and a willingness to take bold actions.

First, we must maintain a high level of business investment, in order to equip our production facilities with the most up-to-date technology and machinery. Prospects for investment in coming years will depend on a number of factors, but undoubtedly will be improved by the adoption of sound macroeconomic and structural government policies. In

particular, meaningful reductions in the budget deficit will raise the amount of domestic saving available for capital formation. We also will benefit greatly from a well-functioning infrastructure.

In addition to modernizing the physical capital stock, we must also concentrate on broadening and deepening our "human capital". The key here, of course, lies in improving the American educational system. Our students are not being prepared adequately to meet the demands of an increasingly sophisticated economy. Test scores and survey results alike point to a deterioration over time in the quality of American education. Moreover, the performance of our secondary school students falls far short of the norms for other advanced countries, especially in technical subjects like mathematics and the sciences. In the past few years, we have appointed several commissions to evaluate our schools. Although their conclusions and recommendations have varied, they agreed on the need for substantial improvements, with respect both to the strengthening of basic skills like reading, writing, and mathematics and to the development of higher analytical and technical capabilities. These findings are pointing in the right direction.

American businesses also are realizing the growing importance of education. In a recent survey, the Conference Board asked large corporations to identify their major area of community involvement; nearly two-thirds of the respondents cited their participation in primary and secondary education, up from about 40 percent two years ago. Education also was expected to be the most pressing community issue over the next two to five years.

In urging the development of skills, I am referring not only to those that are specific to particular jobs and thus can quickly become obsolete. Rather, I want to stress the need to acquire broad analytical and problem-solving capabilities that will facilitate the processing of information and enhance one's ability to adapt to the demands of a complex, dynamic economy. This is especially important for those individuals who have not had access to the best in education and training; it is vital that they be assisted in developing viable skills and offered opportunities in which those skills can be put to work.

In the past, there were ample opportunities for well-paying careers in jobs that involved mainly physical effort, but those options are drying up. The steelworker, who began his career in a low-skill slot and then was able to move up through the grades on the basis of seniority and on-the-job training, no longer is the relevant model for many of our young people. Virtually all well-paying jobs now require a substantial amount of intellectual input and analytical skill.

Not all the news is worrisome, however. The intense foreign competition of recent years has spurred many American manufacturing firms to embark on ambitious cost-cutting and modernization programs, which have had substantial payoffs in terms of improved efficiency and productivity. In part, the gains were achieved by revamping production facilities to take advantage of the most modern equipment. But there also have been significant changes in the ways that businesses operate, in services as well as in manufacturing. For example, new data-processing and communications systems have revolutionized the

control of inventories and reorganized the flow of work. Also, management and labor have begun to work together to improve efficiency through changes in work rules, greater flexibility in job assignments, and the adoption of some less traditional compensation arrangements.

Even so, the potential for further gains in efficiency is immense. In part, it will require building on those adjustments that already have been put in place. But we also must take a broader view and begin to make adjustments that will allow more scope in the workplace for individual initiative and enterprise. And it is time to consider alternative approaches to management and the organization of work.

In closing, let me reemphasize that the problem of international competitiveness cannot be separated from that of expanding and incorporating knowledge. Our international performance will depend critically on our ability to adjust to the demands and potential of the "Information Age". It is vital that we ensure that each person is given the opportunity to realize his or her full intellectual potential. Individuals on all rungs of the economic ladder must come to recognize the substantial payoffs from their own intellectual efforts, not just those among the so-called intellectual "elite". The benefits of these efforts, of course, will accrue to the particular individual, through the advancement to more satisfying and better-paying work. But substantial benefits also will flow to society overall, in the form of better productivity performance and higher standards of living. Moreover, even those who, despite our best efforts, fail to achieve the required analytical skills, will benefit from higher standards of living

for the nation as a whole. The economic value put on all human effort, whether intellectual or physical, is enhanced in such an environment. In this setting, I believe we will be making significant progress in moving toward Dr. King's goal of freedom and creating opportunities that are truly equal.