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Commencement Address

by

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Chairman

Board of Governors of the Federal Reserve System

Harvard University

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President Rudenstine, President Wilson, Harvard alumni, fellow recipients of degrees, your parents and friends: It is a distinct pleasure to join you in celebrating this milestone in American higher education, the 348th Harvard commencement.

We are here to honor the achievements and the promise of the members of the graduating class of 1999. To them, let me say: You are being bequeathed the tools for achieving a material existence that neither my generation nor any that preceded it could have even remotely imagined as we began our life's work. What you must shape for yourselves are those values that will enable you to thrive in a world that is becoming increasingly competitive and frenetic.

To the parents and friends of the graduating class, let me say: I had planned to offer you some useful investment advice but, in the end, was dissuaded. My staff informed me that those of you who in recent years have been paying Harvard tuition or have contributed to the endowment fund, must by now have little left to invest.

But clearly you have already made the best investment there is: education.

The creative abilities of this graduating class and their contemporaries will determine the future state of our cultural, legal, and economic institutions. The ideas these graduates create, and employ, will influence the degree of American prosperity in the twenty-first century.

The quintessential manifestations of America's industrial might earlier this century--large steel mills, auto assembly plants, petrochemical complexes, and skyscrapers--have been replaced by a gross domestic product that has been downsized as ideas have replaced physical bulk and effort as creators of value. Today, economic value is best symbolized by exceedingly complex, miniaturized integrated circuits and the ideas--the software--that utilize them. Most of what we currently perceive as value and wealth is intellectual and impalpable.

The American economy, clearly more than most, is in the grip of what the eminent Harvard professor, Joseph Schumpeter, many years ago called "creative destruction," the continuous process by which emerging technologies push out the old. Standards of living rise when incomes created by the productive facilities employing older, increasingly obsolescent, technologies are marshaled to finance the newly produced capital assets that embody cutting-edge technologies.

This is the process by which wealth is created, incremental step by incremental step. It presupposes a continuous churning of an economy as the new displaces the old. Although this process of productive obsolescence has ancient roots, it appears to have taken on a quickened pace in recent years and changed its character. The remarkable, and partly fortuitous, coming together of the technologies that make up what we label IT--information technologies--has begun to alter, fundamentally, the manner in which we do business and create economic value, often in ways that were not readily foreseeable even a decade ago.

Before the advent of what has become a veritable avalanche of information technology innovation, most twentieth-century business decisionmaking had been hampered by dated and incomplete information about customer preferences in markets and flows of materials through a company's production systems. Relevant information was hours, days, or even weeks old. Accordingly, business managers had to double up on materials and people to protect against the inevitable misjudgments that were part and parcel of production planning. Ample inventory levels were needed to ensure output schedules, and backup teams of people and machines were required to maintain quality control and respond to unanticipated developments.

Of course, large remnants of imprecision still persist, but the remarkable surge in the availability of real-time information in recent years has sharply reduced the degree of uncertainty confronting business management. This has enabled businesses to remove large swaths of now unnecessary inventory, and dispense with much programmed worker and capital redundancies. As a consequence, growth in output per work hour has accelerated, elevating the standards of living of the average American worker.

Intermediate production and distribution processes, so essential when information and quality control were poor, are being bypassed and eventually eliminated. The proliferation of Internet web sites is promising to alter significantly the way large parts of our distribution system are managed. Moreover, technological innovations have spread far beyond the factory floor and retail and wholesale distribution channels. Biotech, for example, is revolutionizing medicine and agriculture, with far reaching consequences for the quality of life not only in the United States but around the world.

The explosion in the variety of products of many different designs and qualities has opened up the potential for the satisfaction of consumer needs not evident even a decade or two ago. The accompanying expansion of incomes and wealth has been truly impressive, though regrettably the gains have not been as widely spread across households as I would like.

How is this remarkable economic machine to be maintained, and how can we better ensure that its benefits reach the greatest number of people?

Certainly, we must foster an environment in which continued advances in technology are encouraged and welcomed. If the graduates of 1999 are going to be able to build on the accomplishments of their forebears, many of them must push forward to expand our knowledge

in science and engineering, and our universities must ready themselves to meet the technical needs of our students yet to come.

But scientific proficiency will not be enough. Skill alone may not be sufficient to move the frontier of technology far enough to meet the many challenges that our nation and educational system will confront in the decades ahead. And technological advances alone will not buttress the democratic institutions, supported by a rule of law, which are so essential to our dynamic and vigorous American economy. Each is merely a tool, which, without the enrichment of human wisdom, is of modest value.

A crucial challenge of education is to transform skills and intelligence into wisdom--into a process of thinking capable of forming truly new insights.

An agile young mind has the facility to solve a complex set of equations. But that mind must be broadened if it is to make effective use of that solution to meet human needs. There is little doubt of the relationship between our ability to think creatively and our productiveness as individual members of society.

The roots and nature of how the human mind innovates, however, have always been subject to controversy. Yet, even without indisputable evidence, there has been a remarkable and pervasive assumption that the ability to think abstractly is fostered through exposure to philosophy, literature, music, art, and languages. A liberal education was presumed in years past to produce a greater understanding of all aspects of living--an essential ingredient for broadening one's world view. I believe it still does.

Viewing a great painting or listening to a profoundly moving piano concerto produces a sense of intellectual joy that is satisfying in and of itself. But, arguably, it also enhances and reinforces the conceptual processes so essential to innovation.

Specifically, the broadening of one's world view that is acquired through a liberal education almost surely contributes to an understanding of the interrelationships of different fields of endeavor. Important new knowledge is very often the result of such interdisciplinary observation. The broader the context that an inquiring mind brings to a problem, the greater will be the potential for creative insights that, in the end, contribute to a more productive economy.

But learning and knowledge--and even wisdom--are not enough. National well-being, including material prosperity, rests to a substantial extent on the personal qualities of the people who inhabit a nation.

At the risk of sounding a bit uncool, I say to the graduating class of 1999 that your success in life, and the success of our country, is going to depend on the integrity and other qualities of character that you and your contemporaries will continue to develop and demonstrate over the years ahead. A generation from now, as you watch your children graduate, you will want to be able to say that whatever success you achieved was the result of honest and productive work, and that you dealt with people the way you would want them to deal with you.

Civilization, our civilization, rests on that premise. It presupposes the productive interaction of people engaged in the division of labor, driven--I cannot resist the jargon--by economic comparative advantage. This implies mutual exchange to mutual advantage among free people. Coercive societies and coercive relationships among people rarely enhance the state of what we call civilization.

I presume that I could offer all kinds of advice to today's graduates from my half-century in private business and government. I could urge you all to work hard, save, and prosper. And I do. But transcending all else is being principled in how you go about doing those things.

It is decidedly not true that "nice guys finish last," as that highly original American baseball philosopher, Leo Durocher, was once alleged to have said.

I do not deny that many appear to have succeeded in a material way by cutting corners and manipulating associates, both in their professional and in their personal lives. But material success is possible in this world and far more satisfying when it comes without exploiting others. The true measure of a career is to be able to be content, even proud, that you succeeded through your own endeavors without leaving a trail of casualties in your wake.

I cannot speak for others whose psyches I may not be able to comprehend, but, in my working life, I have found no greater satisfaction than achieving success through honest dealings and strict adherence to the view that for you to gain, those you deal with should gain as well. Human relations--be they personal or professional--should not be zero sum games.

And beyond the personal sense of satisfaction, having a reputation for fair dealing is a profoundly practical virtue. We call it "good will" in business and add it to our balance sheets.

Trust is at the root of any economic system based on mutually beneficial exchange. In virtually all transactions, we rely on the word of those with whom we do business. Were this not the case, exchange of goods and services could not take place on any reasonable scale. Our commercial codes and contract law presume that only a tiny fraction of contracts, at most, need be adjudicated. If a significant number of businesspeople violated the trust upon which our interactions are based, our court system and our economy would be swamped into immobility.

It is not by chance that in nineteenth century America, many bankers could effectively issue uncollateralized currency because they were able to develop a reputation that their word was their bond. For these institutions to succeed and prosper, people had to trust their promise of redemption in specie. Now, as then, a contractor with a reputation for shoddy work will not prosper long.

In today's world, where ideas are increasingly displacing the physical in the production of economic value, competition for reputation becomes a significant driving force, propelling our economy forward. Manufactured goods often can be evaluated before the completion of a transaction. Service providers, on the other hand, usually can offer only their reputations.

The extraordinarily complex machine that we call the economy of the United States is, in the end, made up of human beings struggling to improve their lives. The individual values of those Americans will continue to influence the structure of the institutions that support market transactions, as they have throughout our history. Without mutual trust, and market participants abiding by a rule of law, no economy can prosper.

Our system works fundamentally on individual fair dealing. We need only look around today's world to realize how rare and valuable this is.

While we have achieved much in this regard, more remains to be done. Considerable progress, for example, has been evident in recent decades in the reduction of racial and other forms of discrimination. But this job is still far from completion.

A free market capitalist system cannot operate fully effectively unless all participants in the economy are given opportunities to achieve their best. If we succeed in opening up opportunities to everyone, our national affluence will almost surely become more widespread.

Of even greater import is that all Americans believe that they are part of a system they perceive as fair and worthy of support.

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Our forefathers bestowed upon us a system of government, and a culture of enterprise, that has propelled the United States to the greatest prosperity the world has ever experienced.

Today's graduates from Harvard and other schools are being passed the standard to carry forward our traditions. I know you will improve upon this inheritance in ways that we have yet to imagine.

I offer you all my congratulations and wish you success in your chosen careers.

You honor me by listening to the musings of an old, idealistic, central banker. Thank you.