

SPEECH DRAFT [2/19/97]
Annual Meeting
Minnesota High Technology Council
February 26, 1997

In the two months since returning from Japan, many people have been asking me what I learned about Japan while I was there.

As it turns out, there is something about living thousands of miles from home that presses a person to think more carefully about his own country. At least, this was true for me. Thus, I had a great opportunity to learn not only about Japan. I learned some important lessons about America, too.

One of the most important of these lessons is that our two nations face many common challenges as we advance into the next century and millennium. A lot of these challenges come together in the field of science and technology — a field which I am convinced holds the key to the future prosperity and well-being of the world's population.

I don't wish to stand here this evening and offer myself as an expert on science and technology. After all, I can hardly get my own VCR to work!

But my past three and half years across the Pacific Ocean gave me a front-row seat on some emerging trends in the global economy — especially in the area of science and technology. Indeed, the question of America's technological leadership was a subject of considerable discussion at the Embassy in Tokyo as we reviewed the different strategies of the United States and Japan. This is pretty important, considering that — together — the United States and Japan account for almost two-thirds of the world's spending on science and technology.

This evening, I would like to share a few thoughts about the direction in which I see Japanese science and technology going — and contrast this with what I see happening in America. Then I will be pleased to answer your questions.

Japan's economic system is under severe pressure right now — with five years of sluggish growth, an ocean of bad debts, a sinking stock market, and growing frustration with an over-regulated economy. As a result, many Japanese voices are now calling for reform to make their system more open.

Given the bad economic news, it might be tempting for Americans to dismiss Japan as no longer a serious economic rival. But Japan has enjoyed astonishing

economic growth over the past several decades — emerging from the devastation of war to become the world's second largest economy. ↗

For all of Japan's current problems, she is neither down nor out. Many Japanese companies — especially exporters like Sony, Toyota, and Canon — are prospering. While the projections on economic growth this year remain pessimistic, the return of the very cheap yen will almost certainly mean rising exports and declining imports for Japan — and a growing trade imbalance with the U.S.

once again,
It would be a great mistake for us to underestimate the resilience of Japan's economy — especially now that Japan has embarked on a very ambitious national strategy to expand her science and technology capabilities as a means of renewing her economy.

As you know, the United States is generally considered a world leader in basic research and development, while Japan is seen as particularly adept at commercializing technologies. America is often described as a "technology pioneer" — talented at inventing and innovating — while Japan is a "technology follower" — skilled at borrowing and perfecting what's already been invented.

Nobel Prize winners

This may well have been true in the past. But today's reality is different — and even more changes may be yet to come.

In the past few years, Japan's political, bureaucratic, corporate, and educational leaders have reached a consensus that their country "must stop being a nation of technology followers and become a nation of technology innovators." As they see it, their nation's future economic well-being is at stake.

easy
This is a very important decision for Japan, one that was reached only after much deliberation and consensus-building among the key sectors of society. It is often observed that Japan's tradition-bound culture ~~does not lend itself to the same~~ ^{is not} openness to change ~~that characterizes America~~ ^{as}. It's probably true that the Japanese system can't turn on a dime. But once the Japanese decide to turn, they know exactly in what direction they're going — and they move ahead with impressive determination.

Money is usually a pretty good measure of determination. Last summer, the Japanese cabinet approved a plan to spend 155 billion dollars — yes, that's billion — on government science and technology programs over the next five years.

As someone once said: A billion here . . . a billion there . . . and pretty soon, we're talking real money! This projected increase in Japan's R&D spending is only a

little bit less than the total of what our government is projected to spend on civilian R&D during the next five years.

This comparative pattern is not entirely new. As a percentage of gross domestic product, Japan's civilian R&D spending has exceeded ours since the mid-1970s. With this new science initiative, it will soon exceed in absolute terms our government spending on both civilian and military R&D. This fact is especially dramatic when you consider that we have twice the population of Japan — and our economy is almost two-thirds larger than theirs.

Japan's push to increase her R&D spending to match, and exceed, ours is consistent with the theme of "catching up with the West," which has been a powerful force throughout much of modern Japanese history. This anxiety about the West's presumed superiority drives what one scholar calls Japan's "technonationalism" — the conviction that Japan's national security, broadly understood, depends on building up her technological capabilities. *is best protected by independence and*

Ninety-five percent of the Japanese government's R&D budget is dedicated to civilian technologies. The Japanese government is focusing its new strategy on basic and applied R&D for commercial applications. With product life cycles getting shorter, Japan believes it can no longer depend on its traditional strategy as a "technology follower" to stay competitive. Instead, it must improve its own capability to conduct innovative research by transforming itself into a technology pioneer. *with close cooperation between business + govt,*

The Japanese government has decided that it must become a world leader in basic research, because this is where R&D breakthroughs often occur. The largest budget increases are targeted at programs to improve Japan's basic research infrastructure and to develop "frontier technologies" which Japan believes are critical to its economic future.

Japan's technology strategy includes four major elements:

- a doubling of government spending on science and technology by the year 2004, especially for basic research;
- education reform, especially of university education at the graduate level;
- financial reform to expand venture capital; and
- continued targeting of selected foreign technologies for development by Japanese industry.

On balance, we have good reason to welcome Japan's new efforts. We have long encouraged Japan to invest more in her scientific capabilities. This nation has much to offer the world — especially in areas like health, energy, the environment, and disaster prevention. As Japan's scientific capabilities increase, opportunities also increase for us to benefit from Japanese research — in much the same way that Japan has gained from our ~~own scientific and technological progress~~ research.

There are also reasons for us to worry, however.

One issue is intellectual property protection. Just as the global regime of free trade depends on all nations opening their markets to fair competition, a global system of scientific and technological progress requires that all nations abide by fair rules of intellectual property protection.

Increasingly, as you well know, the most valuable resource of many companies is knowledge and ideas — especially as they are embodied in technology. For America to stay ahead in the high technology race, our companies need to be able to protect their intellectual property. Unfortunately, many nations have weak systems of protection. I think we have all heard horror stories about what can happen — everything from sophisticated patent flooding to outright piracy.

The U.S. Patent Office recently issued its list of top ten patent recipients from last year. Number one on the list was IBM; number three was Motorola. The other eight were all Japanese corporations. This reflects the dynamism of Japan's economy, their commitment to high technology, and their enormous cash reserves.

Our patent system is wide open and readily available to protect the legitimate commercial interests of any corporation, foreign or domestic. But American companies often don't enjoy the same protection in other countries.

In Japan, for example, foreign corporations often find it difficult to obtain patents; the patents that are granted tend to be very narrow; and there is often a lengthy delay in the processing of patent applications (though now there is the option of a 36-month accelerated process). We have asked Japan to change.

Emerging high-tech companies are among those most vulnerable to these intellectual property problems. These companies have the ideas and the technology. They must work with investors, partners, suppliers, and customers — who, in turn, are apt to become knowledgeable about the product — and perhaps assume they have a right to it.

The process of commercial technology development and transfer needs to proceed in a fair and honest way. Japanese firms are adept at acquiring our commercial technology, but we do not always enjoy a reciprocal technology flow

with Japan. One way to improve this situation is to foster a greater presence of our students, researchers and industries in Japan — so they can benefit from Japanese research progress.

As important as intellectual property protection is, it is not the most serious problem we face from Japan's technological challenge.

In fact, the most alarming threats are entirely of our own making.

While Japan is taking ^{giant} ~~the necessary~~ steps to address its relative weakness in basic research, the United States is ^{stumbling} on a path that will diminish our own lead in science and technology. The economic consequences are potentially catastrophic.

The threats to American science include:

- a decrease in federal support for R&D, especially basic research,
- a deterioration in the quality of our K-12 education system,
- the growing unwillingness and inability of our government and corporations to invest in long-range research projects, and
- a declining interest by many of our brightest young people in pursuing scientific careers.

I am sure that you know better than I do the dangers for our economy — and our society — if these trends are allowed to continue.

Without a doubt, our scientific and technological prowess, coupled with our open entrepreneurial system, continues to be America's greatest competitive advantage in the global economy. To the extent we neglect science and technology, we allow the very basis of our wealth to disintegrate.

A new analysis by the National Academy of Sciences finds that the overall federal science and technology budget — excluding the military — has fallen in real terms by five percent since 1994. If we exclude spending by the Institutes of Health, the decline is closer to 10 percent. That's in just a three-year period.

Because of these reductions, a larger percentage of total American spending on R&D is coming from private industry instead of the federal government. Twenty years ago, the federal government supported 50 percent of all R&D

performed in the nation. Ten years ago, the figure was 45 percent. Today, it is less than 35 percent.

When adjusted for inflation and economic growth, even private industry's R&D spending has been relatively flat in recent years. With basic research in particular, there are real limits to how much we can expect industry to contribute. Basic research accounts for only about 16 percent of our nation's total R&D spending, private and public. But government funding is critical — picking up about two-thirds of the total bill — and more than half of this basic research is conducted at universities.

Unfortunately, efforts to balance the budget and reduce the size of government create great uncertainty about the future of federal support for science and technology.

Back in 1984, while running for President, I did my best (or worst) to draw public attention to America's burgeoning deficit. But I now fear that we are sacrificing ourselves to the dream of a balanced budget, even as our deficit is shrinking. According to the budget plans from Congress and the White House, nonmilitary R&D spending will decline nearly 25 percent in real terms by the year 2002. If Congress insists on balancing the budget while also giving away a hundred billion dollars in tax cuts, they will have to cut total spending on ~~all discretionary programs~~ by 30 to 40 percent. *discretionary*

As important as it is to get our nation's fiscal house in order, this is like taking stones from the foundation to repair the roof.

More fundamental than a balanced budget is the need to reorient our national priorities toward investment rather than consumption. R&D spending represents an investment in the future, not a form of short-term consumption. *America's* ~~Our~~ university research system, for example, is an economic engine for our entire country — creating new technologies that lead to new industries and good new jobs. Reduced funding for our research institutions undercuts our technological and economic leadership abroad and diminishes opportunities for Americans at home.

Federal investments in science and technology are responsible for countless advances in agriculture, aerospace, ~~biotech~~, computers, telecommunications, and a host of other areas. Everyone is talking these days about the Internet; well, there would be no Internet at all if it weren't for the federal investments that brought it into existence. *Even I use the Internet - which is a scientific miracle in itself*

It's amazing:
In the private sector, too, we must be careful not to squander our technological leadership. The Japanese are noted for their patience in long-term

development of markets and technology. Unfortunately, our corporate practices often favor short-term financial gain — and we lose sight of the long road ahead.

So, as the Japanese prepare for a major expansion of their science and technology efforts, the United States is headed in the opposite direction. We are following this course not because of any deliberate decision or thoughtful strategy, but simply as a byproduct of budget politics that give low (or no) priority to science and technology.

Thus, I think we should welcome Japan's new initiatives in this area. Just possibly, their challenge will awaken us to our own responsibilities — and inspire us make the commitments needed to maintain and strengthen our technological advantages.

I believe we can do it. We have a lot of things going for us in America. In many ways, we are uniquely positioned to meet — and thrive on — the challenges of this global economy.

In fact, in a recent New York Times column, Tom Friedman attributes much of the stock market's sustained rise to something he calls a "globalization premium" which America enjoys:

✧ We have, he says, "the world's most diverse and efficient capital markets, which reward, and even celebrate, risk-taking. Anyone with an invention and a garage can hope to raise millions overnight."

✧ We have "a multicultural population that speaks the language of the Internet, a constantly renewing flow of immigrants, a transparent legal and regulatory environment, and a flexible federal political system. //

✧ We have "a job market that enables workers to move easily from one hot industrial zone to another, and a corporate sector that has, unlike Europe's or Japan's, already gone through the downsizing and restructuring needed for global competitiveness."

There is, he concludes, a sense among global investors that somehow the whole mix of America — our society, our culture, our technology, our business environment, even our geography — "meshes more naturally with globalization than either Europe or Japan."

I think Tom is right about this. But we still must guard against complacency — and I'm afraid that science and technology is one area where we run this risk.

While Japan can learn many things from us, we can also learn many things from her. Make no mistake: Japan has already learned a great deal from our example in science and technology. They understand how critical these have been to the productivity, ~~dynamism~~, and strength of our nation.

But when it comes to a broad-based commitment to science and technology for the future, I believe it is now our turn to learn something from Japan's example.



MINNESOTA HISTORICAL SOCIETY

Copyright in the Walter F. Mondale Papers belongs to the Minnesota Historical Society and its content may not be copied without the copyright holder's express written permission. Users may print, download, link to, or email content, however, for individual use.

To request permission for commercial or educational use, please contact the Minnesota Historical Society.



www.mnhs.org