

ANNUAL MEETING
MINNESOTA HIGH TECHNOLOGY COUNCIL
FEBRUARY 26, 1997

THANK YOU, ARLYS [STADUM], FOR THE KIND
INTRODUCTION.

I WISH TO THANK RICK KRUEGER FOR INVITING ME TO
JOIN YOU FOR ~~THIS ANNUAL MEETING OF THE HIGH~~^{EVENING}
~~TECHNOLOGY COUNCIL.~~ [YOU PLAY A CRITICAL ROLE IN
MAKING MINNESOTANS MORE AWARE OF WHAT NEEDS TO BE
DONE TO STRENGTHEN OUR STATE'S HIGH-TECH JOBS AND
INDUSTRY.]

I ALSO WISH TO THANK KEN KELLER FOR BEING HERE ^{TONIGHT}
~~THIS EVENING.~~ [A FORMER PRESIDENT OF THE UNIVERSITY
OF MINNESOTA . . . A RECOGNIZED SCHOLAR ON
INTERNATIONAL SCIENCE POLICY . . . AND A SCIENTIST IN HIS
OWN RIGHT.] KEN IS NOW BUILDING AN IMPRESSIVE NEW
PROGRAM IN SCIENCE AND TECHNOLOGY POLICY AT THE
UNIVERSITY'S HUMPHREY INSTITUTE OF PUBLIC AFFAIRS.

We are lucky to have him.

SINCE RETURNING FROM JAPAN, MANY PEOPLE HAVE BEEN ASKING ME WHAT I LEARNED WHILE I WAS THERE.

ONE OF THE MOST IMPORTANT LESSONS I LEARNED IS THAT OUR TWO NATIONS FACE MANY COMMON CHALLENGES AS WE ADVANCE INTO THE NEXT CENTURY AND MILLENNIUM. MANY OF THESE CHALLENGES COME TOGETHER IN THE FIELD OF SCIENCE AND TECHNOLOGY, WHERE SO MUCH OF OUR FUTURE IS TO BE FOUND.

MY YEARS ACROSS THE PACIFIC OCEAN GAVE ME A WONDERFUL FRONT-ROW SEAT TO WATCH SOME OF THE TRENDS IN THAT REGION OF ASTOUNDING ECONOMIC GROWTH.

AMERICA'S TECHNOLOGICAL LEADERSHIP WAS A SUBJECT OF CONSIDERABLE DISCUSSION AT ^{OUR} THE EMBASSY IN TOKYO AS WE REVIEWED THE DIFFERENT STRATEGIES OF OUR TWO NATIONS — ~~WHICH~~, TOGETHER, ACCOUNT FOR ALMOST TWO-THIRDS OF THE WORLD'S TOTAL INVESTMENT IN 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 TAKE 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.

FOR ALL OF JAPAN'S CURRENT PROBLEMS, SHE IS NEITHER DOWN NOR OUT. MANY JAPANESE COMPANIES ARE PROSPERING. WHILE THE PROJECTIONS ON ECONOMIC GROWTH THIS YEAR REMAIN PESSIMISTIC, THE RETURN OF THE VERY CHEAP YEN WILL ALMOST CERTAINLY MEAN ^{Japanese} RISING EXPORTS AND DECLINING IMPORTS ~~FOR JAPAN~~ AND, ONCE AGAIN, A GROWING TRADE IMBALANCE WITH THE U.S.

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 YOU KNOW, THE UNITED STATES IS CONSIDERED THE WORLD'S LEADER IN BASIC RESEARCH AND DEVELOPMENT, WHILE JAPAN IS SEEN AS MORE 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 OTHERS INVENT.

A ROUGH INDICATOR OF THIS DIFFERENCE IS THE NOBEL PRIZE. A TOTAL OF FIVE JAPANESE ARE NOBEL LAUREATES IN THE SCIENCES, COMPARED TO MORE THAN 180 AMERICANS.

BUT, TODAY, THIS REALITY MAY BE CHANGING.

Recently,
~~IN THE PAST FEW YEARS,~~ JAPAN’S 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 — AND THEIR GOAL IS TO BECOME A WORLD LEADER IN SCIENCE AND TECHNOLOGY.

THIS IS A VERY IMPORTANT DECISION FOR JAPAN, ONE THAT WAS REACHED ONLY AFTER MUCH DELIBERATION AND CONSENSUS-BUILDING AMONG KEY SECTORS OF SOCIETY.

THERE CAN BE LITTLE DOUBT ABOUT THEIR SERIOUSNESS.

A GOOD MEASURE OF THEIR DETERMINATION IS MONEY. LAST SUMMER, THE JAPANESE CABINET APPROVED A PLAN TO SPEND AN ADDITIONAL 155 BILLION DOLLARS — YES, THAT'S BILLION — ON GOVERNMENT SCIENCE AND TECHNOLOGY PROGRAMS OVER THE NEXT FIVE YEARS.

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 TREND IS ESPECIALLY DRAMATIC WHEN YOU CONSIDER THAT WE HAVE TWICE THE POPULATION OF JAPAN — AND OUR ECONOMY IS ALMOST ONE-THIRD LARGER THAN THEIRS.

JAPAN'S TECHNOLOGY STRATEGY INCLUDES FOUR MAJOR ELEMENTS:

- FIRST, A DOUBLING OF GOVERNMENT SPENDING ON SCIENCE AND TECHNOLOGY BY THE YEAR 2004, ESPECIALLY FOR BASIC RESEARCH, WITH MUCH OF THE FUNDING DEDICATED TO UNIVERSITY RESEARCH PROGRAMS;

- SECOND, EDUCATION REFORM, ESPECIALLY ^{THE} ~~IMPROVEMENT OF UNIVERSITY EDUCATION~~ AT THE GRADUATE LEVEL;

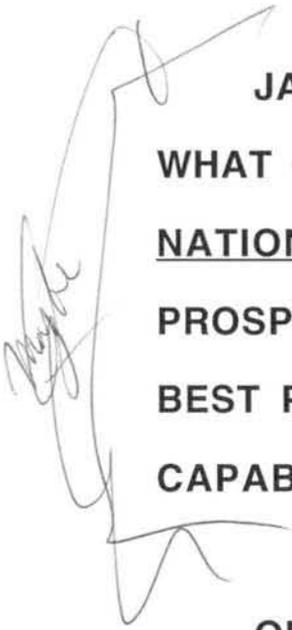
- THIRD, FINANCIAL REFORM TO EXPAND VENTURE CAPITAL; AND

- FOURTH, CONTINUED TARGETING OF SELECTED FOREIGN TECHNOLOGIES FOR DEVELOPMENT BY JAPANESE INDUSTRY.

JAPAN'S PUSH TO EXPAND HER SCIENCE AND TECHNOLOGY CAPABILITIES TO MATCH AND EXCEED OURS IS CONSISTENT WITH THE THEME OF "CATCHING UP WITH THE WEST" — A POWERFUL FORCE IN MODERN JAPAN.

WHEN JAPAN, AT THE TIME OF THE MEIJI RESTORATION IN 1868, TOOK HER FIRST STEPS TO OPEN UP TO THE WORLD AFTER CENTURIES OF ISOLATION, SHE WAS VERY CONSCIOUS OF HER SCIENTIFIC BACKWARDNESS.

JAPAN SET OUT, SYSTEMATICALLY, TO LEARN FROM OTHER COUNTRIES AND TO INDIGENIZE FOREIGN TECHNOLOGY INTO HER OWN ECONOMY.



JAPAN'S PERSISTENT SENSE OF VULNERABILITY DRIVES WHAT ONE SCHOLAR CALLS THE COUNTRY'S "TECHNO-NATIONALISM" — THE CONVICTION THAT JAPAN'S PROSPERITY, NATIONAL SECURITY, AND INDEPENDENCE IS BEST PROTECTED BY BUILDING UP HER TECHNOLOGICAL CAPABILITIES.

OF COURSE, MORE MONEY SPENT ON SCIENCE AND TECHNOLOGY DOES NOT IN ITSELF GUARANTEE RESULTS. THE JAPANESE WILL HAVE TO REFORM MANY KEY SECTORS OF THEIR SOCIETY TO REACH THEIR AMBITIOUS GOALS IN THIS AREA. THEY MUST:

- OPEN UP THEIR PROTECTED MARKETS TO GET THE BENEFITS OF THE DISCIPLINE OF COMPETITION;

- OPEN UP THEIR OVER-REGULATED FINANCIAL INDUSTRY TO OBTAIN THE EFFICIENT USE OF CAPITAL;

- OPEN UP THEIR RIGID BUREAUCRATIC AND CORPORATE STRUCTURES TO FOSTER INNOVATION AND ENCOURAGE WHAT IS NOW A VERY WEAK SYSTEM OF ENTREPRENEURSHIP; AND, PERHAPS THE MOST DIFFICULT,

- OPEN UP THEIR CONFORMIST EDUCATION SYSTEM TO PROMOTE MORE INDEPENDENT AND CREATIVE THINKING AMONG THEIR YOUNG PEOPLE.

WHETHER JAPAN WILL BE SUCCESSFUL IN CARRYING OUT THESE FUNDAMENTAL REFORMS REMAINS TO BE SEEN.

ON BALANCE, WE HAVE GOOD REASON TO WELCOME JAPAN'S NEW EFFORTS.

WE HAVE LONG ENCOURAGED JAPAN TO INVEST MORE IN HER SCIENTIFIC CAPABILITIES AND TO CONTRIBUTE HER FAIR SHARE TO THE WORLD'S KNOWLEDGE BASE.

AS JAPAN'S SCIENTIFIC CAPABILITIES INCREASE, OPPORTUNITIES ALSO INCREASE FOR US TO BENEFIT FROM THEIR RESEARCH — IN MUCH THE SAME WAY THAT JAPAN HAS GAINED FROM OUR OWN RESEARCH.

JAPAN HAS COME A LONG WAY SINCE SHE FIRST BEGAN TO SEEK KNOWLEDGE OF WESTERN SCIENCE. SHE IS NOW DEVELOPING AN INCREASINGLY IMPRESSIVE SCIENTIFIC AND TECHNOLOGICAL CAPACITY.

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.

A RECENT GOVERNMENT STUDY COMPARED OUR TWO NATIONS IN SEVEN CRITICAL TECHNOLOGY CATEGORIES:

ENERGY,

ENVIRONMENTAL QUALITY,

INFORMATION AND COMMUNICATIONS,

LIVING SYSTEMS,

MANUFACTURING,

MATERIALS, AND

TRANSPORTATION.

WE ARE EITHER EVEN OR AHEAD OF JAPAN IN ALL OF THESE FIELDS.

BUT THE STUDY ALSO SHOWED JAPAN MAKING GAINS IN MOST OF THESE AREAS. THIS REFLECTS THE DYNAMISM OF JAPAN'S ECONOMY, THE DILIGENCE AND TRAINING OF THEIR WORK FORCE, THEIR COMMITMENT TO HIGH TECHNOLOGY, AND THEIR ENORMOUS CASH RESERVES.

HOW AMERICA AND JAPAN APPROACH TECHNOLOGY DEVELOPMENT REFLECTS, TO A GREAT EXTENT, OUR VERY DIFFERENT CULTURES.

JAPAN IS GROUP ORIENTED, TRADITIONALLY GOVERNED BY A BUREAUCRATIC MERITOCRACY, WITH AN OVERLY PROTECTED AND REGULATED ECONOMY.

AS A RESULT, TECHNOLOGY DEVELOPMENT IN JAPAN HAS BEEN DEFINED LESS BY BREAKTHROUGH RESEARCH THAN BY HIGHLY-ORGANIZED EFFORTS TO MAKE INCREMENTAL IMPROVEMENTS AND APPLICATIONS FROM EXISTING RESEARCH.

BY CONTRAST, TECHNOLOGICAL DEVELOPMENT IN
AMERICA REFLECTS

- OUR HIGHLY INDIVIDUALISTIC CULTURE;
- OUR LONG-STANDING COMMITMENT TO SUPERB HIGHER EDUCATION AND RESEARCH (BY FAR THE MOST IMPRESSIVE IN THE WORLD);
- OUR BELIEF IN THE POTENTIAL OF INDIVIDUAL GENIUS;
- OUR OPEN AND DYNAMIC ENTREPRENEURIAL SYSTEM; AND
- OUR COMMITMENT TO INTERNATIONAL COMPETITION AND THE EFFICIENCIES IT IMPOSES UPON US.

IN THIS EVER MORE TECHNOLOGICAL WORLD, WITH RAPID CHANGE AND ADAPTATION SO ESSENTIAL TO SUCCESS, IT SEEMS TO ME THAT OUR CULTURE IS ALMOST IDEAL FOR THE WORLD IN WHICH WE NOW FIND OURSELVES. OUR UNPRECEDENTED EFFORTS TO DEREGULATE OUR ECONOMY AND TO PROVIDE THE WORLD'S MOST OPEN AND COMPETITIVE MARKET HAVE RESULTED IN A MUCH MORE PRODUCTIVE NATION.

BUT WE MUST BE CAREFUL ABOUT HUBRIS. JIM FALLOWS, IN HIS BOOK MORE LIKE US, ARGUED THAT JAPAN IS NOT LIKE AMERICA . . . AND NEVER CAN BE. MOREOVER, AMERICA IS NOT LIKE JAPAN . . . AND NEVER CAN BE. INSTEAD OF BEING SHAKEN BY JAPAN'S PROGRESS, WE SHOULD CONCENTRATE ON DOING A BETTER JOB IN THOSE AREAS WHERE WE ARE ALREADY STRONG — BUILDING ON OUR OWN RESOURCES AND CULTURAL VALUES.

I BELIEVE THIS IS THE RIGHT APPROACH.

ONE OF AMERICA'S GREATEST STRENGTHS IS OUR DEEP SENSE OF HOPE AND POSSIBILITY AS A SOCIETY, AND OUR FAITH IN HUMAN POTENTIAL AND INDIVIDUAL OPPORTUNITY. THIS HAS BEEN REFLECTED IN OUR COMMITMENT TO EDUCATION.

BUT WE NEED TO DO A MUCH BETTER JOB OF PUBLIC EDUCATION. WE WASTE MILLIONS OF TALENTED YOUNG PEOPLE IN EACH GENERATION. WE ALSO NEED TO BETTER SUPPORT OUR INSTITUTIONS OF HIGHER LEARNING AND RESEARCH. I AM STRUCK BY THE CLOSE RELATIONSHIP BETWEEN THESE INSTITUTIONS IN MINNESOTA AND THE SUCCESS ENJOYED BY SO MANY OF THE COMPANIES REPRESENTED IN THIS ROOM TONIGHT.

WE MUST ALSO CONSTANTLY ADDRESS BARRIERS TO ENTREPRENEURSHIP.

JAPAN'S AWESOME PROPENSITY TO SAVE (ALMOST DOUBLE OUR RATE) — ALSO SEEN IN MANY OTHER ASIAN NATIONS — PROVIDES THEM WITH VAST OPPORTUNITIES TO

ACQUIRE TECHNOLOGY WHEREVER IT MAY BE DEVELOPED.
MUCH OF IT COMES FROM THE UNITED STATES.

A HIGHER SAVINGS RATE IN AMERICA WOULD
CONTRIBUTE TO AN EVEN MORE DYNAMIC CAPITAL MARKET
AND LESS EXPENSIVE CREDIT. MORE OF AMERICA'S WEALTH
WOULD REMAIN AT HOME TO BUILD OUR ECONOMY. IT IS
TRUE, HOWEVER, THAT OUR HIGH LEVELS OF LABOR AND
CAPITAL PRODUCTIVITY OFFSET TO SOME EXTENT OUR
LOWER SAVINGS RATE.

BUT THE DEMANDS OF GLOBALIZATION ALSO REQUIRE
US TO CONSTANTLY PRESS OTHER NATIONS TO OPEN THEIR
MARKETS MORE FULLY TO AMERICAN GOODS AND
INVESTMENT. AND WE MUST INSIST THAT GREATER
PROTECTION BE AFFORDED TO OUR INTELLECTUAL
PROPERTY.

AMERICAN HIGH-TECH CORPORATIONS REPORTED TO
ME THAT THEY OFTEN FOUND IT DIFFICULT IN JAPAN TO
OBTAIN PATENTS; THE PATENTS THAT WERE GRANTED

TENDED TO BE VERY NARROW; AND THERE WAS OFTEN A LENGTHY DELAY IN THE PROCESSING OF PATENT APPLICATIONS (THOUGH NOW THERE IS THE OPTION OF A 36-MONTH ACCELERATED PROCESS).

EMERGING HIGH-TECH COMPANIES ARE AMONG THOSE MOST VULNERABLE TO PROBLEMS WITH INTELLECTUAL PROPERTY PROTECTION.

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.

THESE ARE THE SORT OF PROBLEMS THAT KEEP MANY OF MY FELLOW LAWYERS AT DORSEY & WHITNEY VERY BUSY.

THESE SAME PROMISING HIGH-TECH START-UPS, MOREOVER, REMAIN VERY VULNERABLE AS THEIR CAPITAL NEEDS SPIRAL BEFORE THEY CAN ESTABLISH A SOLID PRODUCTION AND DISTRIBUTION SYSTEM.

NONETHELESS, WE MUST REMEMBER THAT AMERICA REMAINS THE MOST PRODUCTIVE AND ADAPTIVE NATION ON EARTH — AND BY QUITE A MARGIN. WITHOUT A DOUBT, AMERICA'S SCIENTIFIC AND TECHNOLOGICAL PROWESS, COUPLED WITH OUR OPEN AND DYNAMIC ENTREPRENEURIAL SYSTEM, CONTINUES TO BE OUR GREATEST COMPETITIVE ADVANTAGE IN THE GLOBAL ECONOMY.

WE KNOW THIS VERY WELL IN MINNESOTA. EVERYONE IN THIS ROOM APPRECIATES HOW MUCH THERE IS TO GAIN FROM A STRONG TECHNOLOGY BASE.

BUT TO THE EXTENT OUR NATION NEGLECTS SCIENCE AND TECHNOLOGY, WE PERMIT 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.

ACCORDING TO THE CURRENT BUDGET PLANS, NON-MILITARY R&D SPENDING WILL DECLINE AT LEAST ANOTHER 25 PERCENT IN REAL TERMS BY THE YEAR 2002.

A NOBEL LAUREATE IN THE MEDICAL FIELD TOLD ME THAT THESE FIGURES ACTUALLY UNDERSTATE THE PROBLEM. HE SAYS WE SHOULD MEASURE OUR SUPPORT FOR SCIENCE NOT JUST BY THE ABSOLUTE DOLLARS WE SPEND. INSTEAD, WE MUST ALSO LOOK AT THE GROWING GAP BETWEEN THE RAPIDLY-EXPANDING NEW POTENTIAL FOR SCIENTIFIC PROGRESS AND THE FUNDS THAT ARE NEEDED TO EXPLOIT THIS GROWING POTENTIAL.

AS IMPORTANT AS IT IS TO GET OUR NATION'S FISCAL HOUSE IN ORDER, REDUCING SUPPORT FOR SCIENCE AND TECHNOLOGY IS LIKE TAKING STONES FROM THE FOUNDATION TO REPAIR THE ROOF.

THE TRUTH IS THAT R&D SPENDING REPRESENTS AN INVESTMENT IN THE FUTURE. AMERICA'S UNIVERSITY RESEARCH SYSTEM IS AN ECONOMIC ENGINE FOR OUR ENTIRE COUNTRY — CREATING NEW TECHNOLOGIES THAT LEAD TO NEW INDUSTRIES AND GOOD NEW JOBS. REDUCED SUPPORT FOR OUR RESEARCH INSTITUTIONS UNDERCUTS OUR TECHNOLOGICAL AND ECONOMIC LEADERSHIP ABROAD AND DIMINISHES OPPORTUNITIES FOR AMERICANS AT HOME.

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.

I AM TOLD THAT FEWER AMERICAN COMPANIES ARE WILLING TO WORK ON RESEARCH PROBLEMS WITH A TIME HORIZON OF MORE THAN THREE YEARS, ESPECIALLY WHEN THEY BELIEVE THEIR COMPETITORS MIGHT ALSO BENEFIT. EVEN MANY VENTURE CAPITALISTS MAY HAVE BECOME MORE SHORT-TERM AND RISK-AVERSE IN THEIR INVESTMENTS.

SO, AS THE JAPANESE PREPARE FOR A MAJOR EXPANSION OF THEIR SCIENCE AND TECHNOLOGY EFFORTS, THE UNITED STATES RISKS HEADING IN THE OPPOSITE DIRECTION.

THUS, I THINK WE SHOULD WELCOME JAPAN'S NEW INITIATIVES. THEIR CHALLENGE CAN AWAKEN US TO OUR OWN RESPONSIBILITIES — AND INSPIRE US TO MAKE THE COMMITMENTS NEEDED TO MAINTAIN AND STRENGTHEN OUR TECHNOLOGICAL ADVANTAGES.

WE CERTAINLY CAN DO IT, IF WE WISH TO. WE HAVE MUCH GOING FOR US.

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.”

He SAYS,

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 . . . BUT WE STILL MUST GUARD AGAINST COMPLACENCY.

EVEN WITH OUR STRENGTHS, WE MUST REALIZE THAT WE DO NOT MONOPOLIZE THE SCIENTIFIC WORLD. MANY OTHERS ARE NOW MAKING IMPRESSIVE PROGRESS.

+ Energetic

JAPAN HAS A BROAD EFFORT TO LEARN FROM OTHER COUNTRIES, MOST NOTABLY THE UNITED STATES, BY:

- LICENSING TECHNOLOGY;

- PURCHASING AMERICAN HIGH-TECH FIRMS;
- PARTICIPATING IN TECHNOLOGY EXCHANGES
- SENDING THEIR ENGINEERS AND RESEARCHERS ABROAD;
- HIRING CONSULTANTS; AND
- BY CLOSELY MONITORING SCIENTIFIC PUBLICATIONS, CONFERENCES, AND OTHER TECHNOLOGICAL DEVELOPMENTS.

WE IN AMERICA MUST BECOME MORE ALERT TO LEARNING FROM OTHERS. WE STILL HAVE A “NOT INVENTED HERE” PSYCHOLOGY THAT DENIES US MANY OPPORTUNITIES.

ONE WAY TO IMPROVE THAT SITUATION WOULD BE TO FOSTER A GREATER PRESENCE OF OUR STUDENTS, RESEARCHERS, AND INDUSTRIES IN JAPAN — SO THEY CAN

BENEFIT FROM JAPANESE RESEARCH PROGRESS. IN FACT, THERE ARE SOME GOOD PROGRAMS PROMOTING THIS KIND OF EXCHANGE, BUT WE'VE HAD A DIFFICULT TIME FINDING AMERICANS TO FILL THE SLOTS.

ALTHOUGH GREAT CARE IS NEEDED, I ALSO WISH THAT WE COULD SHAPE BETTER WAYS TO WORK WITH JAPANESE COMPANIES. FUJITSU AND MOTOROLA, FOR EXAMPLE HAVE LEARNED HOW TO PRODUCE COMPLEX COMPUTER CHIPS TO THE BENEFIT OF BOTH OF THEIR COMPANIES.

THERE HAS BEEN RELATIVELY LITTLE PRESENCE OF JAPANESE COMPANIES IN MINNESOTA. I WOULD LIKE TO SEE MORE EFFORTS BY OUR COMPANIES NOT ONLY TO PENETRATE JAPAN'S MARKETS, BUT ALSO TO SHAPE PRODUCTIVE PARTNERSHIPS WITH JAPANESE COMPANIES. IN MANY AREAS — SOFTWARE, MEDICAL TECHNOLOGY, AND OTHERS — MINNESOTA COMPANIES LEAD THE WORLD. WE SHOULD SEEK OPPORTUNITIES TO ENGAGE LEADERS FROM THE WORLD'S SECOND LARGEST ECONOMY IN SOME OF OUR EFFORTS HERE.

I THANK YOU FOR INVITING ME TO BE WITH YOU
TONIGHT.

WHAT YOU ARE DOING HAS MUCH TO DO WITH THE
FUTURE OF OUR STATE AND OUR PEOPLE.

I WISH YOU WELL.

SPEECH
Annual Meeting
Minnesota High Technology Council
February 26, 1997

[You will be introduced by Ms. Arlys Stadum of US West, who is the current chairperson of the Minnesota High Technology Council.]

Thank you, Arlys, for the kind introduction. I also wish to thank Rick Krueger for inviting me to join you for this Annual Meeting of the High Technology Council. You play a critical role in making Minnesotans more aware of what needs to be done to strengthen our state's high-tech jobs and industry. There is no doubt: Our future as an economy depends on our investment in high tech.

A I also wish to thank Ken Keller for being here this evening. He is, of course, ~~the~~ former president of the University of Minnesota, a recognized scholar on international science policy as well as a scientist in his own right. He is now building an impressive new program in science and technology policy at the University's Humphrey Institute of Public Affairs.

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.

One of the most important lessons I learned is that our two nations face many common challenges as we advance into the next century and millennium. Many of these challenges come together in the field of science and technology, where so much of our future is to be found.

I'm not an expert on science and technology — I can hardly get my own VCR to work. But my years across the Pacific Ocean gave me a front-row seat on some of the emerging trends in the global economy. *Wonderful To write*

less Nations Indeed, America's technological leadership was a subject of considerable discussion at the Embassy in Tokyo as we reviewed the different strategies of our two nations. It is important to remember that the ~~United States and Japan~~, together, *are* account for almost two-thirds of the world's investment in 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 take 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 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, once again, a growing trade imbalance with the U.S.

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 you know, the United States is considered the world's leader in basic research and development, while Japan is seen as more 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 others invent. A rough indicator of this difference is the Nobel Prize. A total of five Japanese are Nobel laureates in the sciences, compared to more than 180 Americans.

But, today, this reality may be changing.

In the past few years, Japan's 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 — and their goal is to become a world leader in science and technology.

This is a very important decision for Japan, one that was reached only after much deliberation and consensus-building among key sectors of society. There can be little doubt about their seriousness.

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

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 trend is especially dramatic when you consider that we have twice the population of Japan — and our economy is almost one-third larger than theirs.

Japan's technology strategy includes four major elements:

- first, a doubling of government spending on science and technology by the year 2004, especially for basic research, with much of the funding dedicated to university research programs;
- second, education reform, especially improving university education at the graduate level (this includes internationalizing the faculties, which tend to be very insular);
- third, financial reform to expand venture capital; and
- finally, continued targeting of selected foreign technologies for development by Japanese industry.

Japan's push to expand her science and technology capabilities to match and exceed ours is consistent with the theme of "catching up with the West." This has been a powerful force in modern Japanese history.

When Japan, at the time of the Meiji restoration in 1869, took her first steps to open up to the world after centuries of isolation, she was very conscious of her scientific backwardness. Japan set out, systematically, to learn from other countries and to indigenize foreign technology into her own economy.

Japan's persistent sense of vulnerability drives what one scholar calls the country's "techno-nationalism" — the conviction that Japan's prosperity, national security, and independence is best protected by building up her technological capabilities.

Of course, more money spent on science and technology does not in itself guarantee results. The Japanese will have to reform many key sectors of their society to reach their ambitious goals in this area. They must:

- open up their protected markets to get the benefits of the discipline of competition;

- open up their over-regulated financial industry to obtain the efficiencies of capital ^{use} that a dynamic economy needs;

- open up their rigid bureaucratic and corporate structures to foster innovation and encourage what is now a very weak system of entrepreneurship; and, perhaps the most difficult;

- open up their conformist education system to promote more independent and creative thinking among their young people.

Whether Japan will be successful in carrying out these fundamental reforms remains to be seen.

On balance, we have good reason to welcome Japan's new efforts. We have long encouraged Japan to invest more in her scientific capabilities and to contribute her fair share to the world's knowledge base. Japan 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 research.

Japan has come a long way since she first began ^{SHE} to seek knowledge of Western science. While the United States remains ahead, Japan is developing an increasingly impressive scientific and technological capacity.

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.

A recent government study looked at trends in seven critical technologies — comparing the U.S. and Japan in energy, environmental quality, information and communications, living systems, manufacturing, materials, and transportation. The study found that we are either even or ahead of Japan in all of these fields. But the study also found that the Japanese are making gains in most of these areas. This reflects the dynamism of Japan's economy, the diligence and training of their work force, their commitment to high technology, and their enormous cash reserves.

How America and Japan approach technology development reflects, to a great extent, our very different cultures.

Japan is group oriented, traditionally governed by a bureaucratic meritocracy, with an overly protected and regulated economy. As a result, technology development in Japan has been defined less by breakthrough research than by highly-organized efforts to make incremental improvements and applications from existing research.

By contrast, technological development in America reflects our highly individualistic culture; our long-standing commitment to superb higher education and research (by far the most impressive in the world); our belief in the potential of individual genius; our open and dynamic entrepreneurial system; and our commitment to international competition and the efficiencies it imposes upon us.

In this ever more technologically-driven world, with rapid change and adaptation so essential to success, it seems to me that our culture is almost ideal for the world in which we now find ourselves. Our unprecedented efforts to deregulate our economy and to provide the world's most open and competitive market have resulted in a much more productive nation.

But we must be careful about hubris. Jim Fallows, in his book More Like Us, argued that Japan is not like America and never can be. Conversely, America is not like Japan and never can be. Instead of being shaken by Japan's progress, we should concentrate on doing a much better job in those areas where we are already strong — building on our ~~native~~^{OWN} strengths and cultural values.

I believe this is the right approach. One of America's greatest strengths is our deep sense of hope and possibility as a society, as well as our faith in human potential and individual opportunity. This has been reflected in our commitment to education. To meet the challenges ahead, we need to build on this strength and do a much better job of public education. We waste millions of talented young people of every generation. We also need to better support our institutions of higher learning and research. I am struck by the close relationship between the University of Minnesota and the success enjoyed by so many of the companies represented in this room tonight.

We must constantly address barriers to entrepreneurship. Japan's awesome propensity to save (almost double our rate), also seen in many other Asian nations, provides them with vast opportunities to acquire technology wherever it may have been developed — and much of it comes from the United States. A higher savings rate in America would contribute to an even more dynamic capital market and less expensive credit. More of America's wealth would remain at home to build our economy. It is true, however, that our high levels of labor and capital productivity offset to some extent our lower savings rate.

But the demands of globalization also require us to constantly press other nations to open their markets more fully to American goods and investment. And we must insist that greater protection be afforded to our intellectual property.

American high-tech corporations reported to me that they often found it difficult in Japan 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).

Emerging high-tech companies are among those most vulnerable to problems with intellectual property protection. 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. These are the sort of problems that keep many of my fellow lawyers at Dorsey & Whitney very busy. These same promising high-tech start-ups, moreover, remain very vulnerable as their capital needs spiral before they can establish a solid production and distribution system.

Nonetheless, we must remember that America remains the most productive and adaptive nation on earth — and by quite a margin. Without a doubt, America's scientific and technological prowess, coupled with our open and dynamic entrepreneurial system, continues to be our greatest competitive advantage in the global economy.

We know this very well in Minnesota. Everyone in this room appreciates how much there is to gain from a strong technology base.

America's science and technology are responsible for countless advances in agriculture, aerospace, health care, computers, telecommunications, and a host of other areas. These happen to be exactly the industries where the U.S. leads the world. Everyone is talking these days about the Internet. Well, that's an American invention — and there would be no Internet at all if it weren't for the federal investments that paid for its development.

But To the extent our nation neglects science and technology, we permit the very basis of our wealth to disintegrate. Unfortunately, efforts to balance the federal budget and reduce the size of government threaten our strong base in science and technology.

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. According to the budget plans from Congress and

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the White House, nonmilitary R&D spending will decline at least another 25 percent in real terms by the year 2002.

A Nobel Laureate in the medical field told me that these figures actually understate the problem. He says we should measure our support for science not just by the absolute dollars we spend. Instead, we must also look at the growing gap between the rapidly-expanding new potential for scientific progress and the funds that are needed to exploit this growing potential.

As important as it is to get our nation's fiscal house in order, reducing support for science and technology is like taking stones from the foundation to repair the roof.

R&D spending represents an investment in the future, not a form of short-term consumption. America's university research system is an economic engine for our entire country — creating new technologies that lead to new industries and good new jobs. Reduced support for our research institutions undercuts our technological and economic leadership abroad and diminishes opportunities for Americans at home.

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.

I am told that fewer American companies are willing to work on research problems with a time horizon of more than three years, especially when they believe their competitors might also benefit. Even many venture capitalists may have become more short-term and risk-averse in their investments.

Government-industry cooperation in R&D is where the Japanese excel. They jump at the opportunity to aid their companies in harvesting the fruits of research to develop commercial products. They don't consider this "corporate welfare." They do it to compete in the global economy which they do very well.

So, as the Japanese prepare for a major expansion of their science and technology efforts, the United States risks heading in the opposite direction. We are following this course not because of any deliberate decision or thoughtful strategy, but simply out of neglect.

Thus, I think we should welcome Japan's new initiatives. Their challenge should awaken us to our own responsibilities — and inspire us to make the commitments needed to maintain and strengthen our technological advantages.

Certainly if we ~~don't~~ ^{work it}
I believe we can do it. We have a ~~lot of things~~ ^{MUCH} 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. We need to recognize our strengths as a society and take the actions necessary to maintain those strengths.

Despite our strengths, we must realize that we no longer monopolize the scientific world. Many others are now making impressive progress. Japan has a broad effort to learn from other countries, most notably the U.S. — by licensing technology; purchasing American firms; participating in technology exchanges; sending their engineers and researchers abroad; hiring consultants; and by closely monitoring scientific publications, conferences, and other technological developments.

We in America must become more alert to learning from others. We still have a "not invented here" psychology that denies us many opportunities. One way to improve that situation would be to foster a greater presence of our students,

researchers and industries in Japan — so they can benefit from Japanese research progress. In fact, there are some good programs for this kind of exchange, but we've had a difficult time finding Americans to fill the slots.

Although great care is needed, I also wish that we could shape better ways to work with Japanese companies. Fujitsu and Motorola, for example have learned how to produce complex computer chips to the benefit of both of their companies.

There has been relatively little presence of Japanese companies in Minnesota. I would like to see more efforts by our companies not only to penetrate Japan's markets, but also to shape productive partnerships with Japanese companies. In many areas — software, medical technology, and others — Minnesota companies lead the world. We should seek opportunities to engage leaders from the world's second largest economy in some of our efforts here.

I thank you for inviting me to be with you tonight. What you are doing has much to do with the future of our state and our people. I wish you well.



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