REMARKS BY SECRETARY OF COMMERCE MALCOLM BALDRIGE

BEFORE

THE SOCIETY OF MANUFACTURING ENGINEERS

AND

THE NATIONAL MACHINE TOOL BUILDERS ASSOCIATION

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THANK YOU. WHEN JIM GRAY AND BILL HILTY INVITED ME TO SPEAK HERE, THEY SAID TONIGHT'S DINNER WAS TO RECOGNIZE THE PROGRESS MADE IN DEVELOPING MAP, THE MANUFACTURING AUTOMATION PROTOCOL. I AGREE THAT MAP IS SHOWING THE INTERNATIONAL BUSINESS COMMUNITY THAT INTERNATIONAL COMPUTER NETWORK STANDARDS CAN WORK.

I ALSO AGREE THAT MAP AND TOP, THE TECHNICAL AND OFFICE PROTOCOL, WILL HELP CREATE COMPUTER-INTEGRATED INDUSTRIAL ENTERPRISES THAT WILL MAKE AMERICA MORE COMPETITIVE, AT HOME AND ABROAD. I'M PROUD OF THE ROLE MY DEPARTMENT'S NATIONAL BUREAU OF STANDARDS HAS PLAYED WITH GENERAL MOTORS AND BOEING AND I HOPE IT LEADS TO MORE JOINT RESEARCH.

JOINT RESEARCH IS ONE OF THE MANY ROADS WE MUST FOLLOW TO REGAIN OUR WORLD COMPETITIVENESS. WE ARE AT A REAL CROSSROADS IN COMPETITIVENESS, AND AS A COUNTRY WE HAVE TO UNDERSTAND THE PROBLEM AND THE OPPORTUNITY WE FACE.

DURING THE PAST FIVE-PLUS YEARS, I'VE HEARD TOO OFTEN THAT THE FEDERAL GOVERNMENT DOESN'T HAVE THE POLICIES TO ENSURE A GOOD TRADING POSITION FOR OUR COUNTRY. I DISAGREE.

THE PRESIDENT'S TRADE POLICY IS STATED, CLEAR AND WORKING. THE PRESIDENT HAS LAID OUT HIS TRADE STRATEGY. AND THAT STRATEGY FITS THE TIMES, AND OUR NEEDS. IT'S AIMED AT OPENING MARKETS, CURBING UNFAIR TRADING PRACTICES AND PROMOTING WORLDWIDE ECONOMIC GROWTH. IT IS BACKED UP BY THE SPECIFICS AND HAS BEEN FOLLOWED THROUGH WITH ACTION.

BUT ANYONE WHO UNDERSTANDS CORPORATE OPERATIONS KNOWS THAT MOST OF THE VARIABLES AFFECTING BUSINESS PRODUCTIVITY ARE INTERNAL FACTORS THAT ARE WITHIN MANAGEMENT'S CONTROL. AND IN TOO MANY CASES, U.S. MANAGEMENT HAS SLACKED OFF DURING THE LAST COUPLE OF DECADES. AND ONE OF THE MANY FLAWS IN A PROTECTIONIST TRADE STRATEGY IS THAT IT WOULD PERPETUATE INEFFICIENT MANAGEMENT.

AFTER W.W. II, WE WERE THE OVERALL LEADERS IN WORLD MANAGEMENT. WE LIVED OFF THAT LEADERSHIP WHILE THE REST OF THE WORLD WAS REBUILDING.

BUT WE WOUND UP RUNNING IN PLACE, WHILE OTHER COUNTRIES OUTPACED US. NOW, INSTEAD OF FACING COMPETITION FROM THE GERMANYS, GREAT BRITAINS AND CANADAS, WE'RE NOT ONLY CHALLENGED BUT IN SOME CASES BEING BEATEN BY THE JAPANS, KOREAS AND TAIWANS.

AND TOO OFTEN, WE WERE BEATEN BY TECHNOLOGIES THAT WE INVENTED, BUT FAILED TO APPLY AND FOLLOW THROUGH. FOR EXAMPLE:

-- THE UNITED STATES PIONEERED VCR TECHNOLOGY IN THE 1960S, BUT WE GEARED IT ONLY TO MAJOR USERS, LIKE TV STUDIOS.

WE COULDN'T SEE A CONSUMER MARKET FOR SOMETHING WITH AN $8,000 PRICE TAG. JAPAN FOCUSED ON IT, TURNED ON THEIR R&D AND MADE A PRODUCT FOR HOME-USE. TODAY, MORE THAN 50 PERCENT OF ALL VCRs ARE MADE IN JAPAN AND EXPORTED TO US FOR LESS THAN $400. THAT SHOULD HAVE BEEN OUR PRODUCT.

° HIGHSPEED ELECTRONICS -- ALTHOUGH THE CONCEPTS WERE FIRST DEVELOPED IN THE U.S., JAPAN IS MAKING MAJOR CONTRIBUTIONS TO THE FIELD AND IS AIMING AT MARKET ORIENTED PRODUCTS. THE JTECH PANEL, IN A SPECIAL REPORT COMPILED BY LEADING SCIENTISTS AND ENGINEERS FOR THE COMMERCE DEPARTMENT, FOUND JAPAN'S ELECTRONICS INDUSTRY TO BE ON A PAR WITH ITS U.S. COUNTERPARTS, PARTICULARLY IN OPTOELECTRONICS.

° COLOR TELEVISION -- THIS U.S. INDUSTRY PIONEERED THE TECHNOLOGY BUT WAS CONFRONTED WITH STRONG FOREIGN COMPETITION WHICH EMPHASIZED PRODUCTIVITY, RELIABILITY AND QUALITY. IN THE FALLOUT, COMPETITORS LIKE ADMIRAL, MOTOROLA AND WARWICK DID NOT SURVIVE. THE JAPANESE BEAT US THERE BECAUSE OF MORE AGGRESSIVE MANAGEMENT AND SUPERIOR and marketing PRODUCTION TECHNOLOGY.

AND RECENTLY ROBOTICS. THEY WERE DEVELOPED IN THE U.S. WE NOW ARE BEHIND THE JAPANESE IN VOLUME OF SALES AND USAGE BY OUR INDUSTRY.

THESE ARE JUST SOME OF MANY EXAMPLES WHERE THE LOSS CANNOT BE BLAMED ON THE STRENGTH OF THE DOLLAR OR AN UNFAIR TRADING PRACTICE OR CLOSED FOREIGN MARKETS. WE WERE SIMPLY OUTMANAGED IN QUALITY AND COSTS ON THE FACTORY FLOOR AND IN THE MANAGEMENT HIERARCHY.

WHY? BECAUSE WE GREW COMPLACENT -- AND INDEED EVEN LAZY -- LAZY COMPARED TO THE GROWING EFFORTS OF OUR FOREIGN COMPETITORS WHOSE BACK WAS AGAINST THE WALL AND WHO HAD TO EXPORT QUALITY GOODS AT A LOW COST TO SURVIVE.

BACK IN THE 50s AND 60s MANUFACTURERS COULD SHOOT UP PROFITS BY BUILDING ANOTHER PLANT TO MEET RISING SALES. AUTOMAKERS, STEELMAKERS AND OTHER INDUSTRIES DIDN'T SPEND ENOUGH TIME THINKING ABOUT A LONG-RANGE STRATEGY. THEY AIMED ONLY AT THE NEXT QUARTER'S BALANCE SHEET.

WE SMUGLY PRIDED OURSELVES ON BEING THE MOST POWERFUL PRODUCERS IN THE WORLD. AT THE SAME TIME, OUR GERMAN, JAPANESE AND ITALIAN COMPETITORS PICKED UP THEIR MANAGEMENT CAPABILITIES. THEY ACQUIRED AN ABILITY TO GET THINGS DONE. THEY KEPT OVERHEAD LOW AND COSTS DOWN. THEY INNOVATED, INTRODUCED NEW EQUIPMENT AND NEW PRODUCT DESIGNS.

MEANWHILE, OUR SUCCESS LED US TO CREATING LARGER MANAGEMENT STAFFS, IGNORING OVERHEAD RATIOS. MIDDLE MANAGEMENT WAS TOO HIGH BY 25 TO 30 PERCENT. MANY OF THESE MANAGERS WERE THE BRIGHTEST MINDS TURNED OUT BY OUR BUSINESS SCHOOLS, BUT THEY HAD NO MANUFACTURING FLOOR EXPERIENCE. THEY WENT STRAIGHT TO THE IVORY TOWERS OF MANAGEMENT AND TO STAFF JOBS WHERE WITH A WHITE SHIRT AND A COMPUTER PRINTOUT YOU COULD MAKE ANY DECISION NECESSARY.

THEY COLLECTED INFORMATION WHICH THEY ANALYZED, INTERPRETED AND PASSED AROUND TO OTHER MANAGERS TO ANALYZE AND INTERPRET MORE. REPORTS BECAME STANDARD BUSINESS PRACTICE. AND THE MIDDLE MANAGERS BEGAN TO DOMINATE THE LINE MANAGERS.

BURIED UNDER THE MIDDLE MANAGERS, THE LINE MANAGERS LOST THEIR ABILITY TO MAKE DECISIONS. INITIATIVE WAS STIFLED. PRODUCTIVITY SUFFERED.

TODAY, FINALLY, THE SMARTER COMPANIES HAVE BEGUN TO CHANGE THAT. MANAGEMENT BLOAT, IN MANY COMPANIES, IS BEING REDUCED. FOR EXAMPLE, APPLE COMPUTER CUT ITS WORKFORCE BY 20 PERCENT. CESSNA AIRCRAFT SHAVED STAFF BY 21 PERCENT. COMBUSTION ENGINEERING BY 20 PERCENT. CATERPILLAR HAS PARED COSTS BY 25 PERCENT AND WE'RE SEEING MULTIBILLION DOLLAR COMPANIES WITH CORPORATE STAFFS OF FEWER THAN 100.

WE ALSO NEED OUR UNIVERSITIES TO HELP. SOME ARE BEGINNING TO. COURSES ARE BEGINNING TO POP UP ON GLOBAL COMPETITIVENESS AND STRATEGIC PLANNING. MANUFACTURING IS STRESSED IN SOME, BUT NOT NEARLY ENOUGH, BUSINESS SCHOOL CURRICULA, GETTING THE EMPHASIS OFF FINANCE AND MARKETING.

THIS WILL HELP. WE DON'T NEED MANAGERS WHO ARE GOING TO ANALYZE AND STUDY A PROBLEM TO DEATH. WE NEED MANAGERS WHO WILL ROLL UP THEIR SLEEVES AND SOLVE THE PROBLEM. YOU CAN ONLY DO THAT IF YOU UNDERSTAND THE BUSINESS FROM THE BOTTOM UP.

CLEARLY, WE ALSO NEED MORE EMPHASIS ON RESEARCH AND DEVELOPMENT. TEN YEARS AGO, THE U.S., WITH ABOUT 5 PERCENT OF THE WORLD'S POPULATION, GENERATED 75 PERCENT OF THE WORLD'S TECHNOLOGY. NOW OUR SHARE IS ABOUT 50 PERCENT.

IT'S NOT SO MUCH A CASE OF US GENERATING LESS, BUT THE REST OF THE WORLD GENERATING MORE.

R&D ACTUALLY DECLINED DURING THE 70s. CAN YOU IMAGINE THIS COUNTRY FALLING BEHIND IN THAT AREA? THAT'S OUR TURF, OUR STRONGEST SUIT. WE HAVE THE BEST EDUCATED PEOPLE IN THE WORLD, THE MOST FREEDOM TO INVENT, YET OUR R&D DECLINED. THE HOMELAND OF EDISON, BELL AND OTHERS FELL BEHIND IN R&D.

THAT'S BEGINNING TO CHANGE NOW. I SAW A SURVEY RECENTLY THAT SHOWS R&D EXPENDITURES WERE 3.1 PERCENT OF SALES IN 1985. THAT'S A LOT BETTER THAN IN THE 70s WHEN THE AVERAGE WAS STUCK AT 2 PERCENT.

LAST YEAR, INDUSTRIAL R&D HIT AN ALL-TIME HIGH AS A PERCENTAGE OF OUR GNP, ABOUT 1.3 PERCENT. AND THERE ARE OTHER GOOD SIGNS: INDUSTRY IS INCREASING FUNDING OF UNIVERSITY RESEARCH AIMED AT NEW PRODUCTS. IN AUSTIN, TEXAS THERE IS A LAB (MICRO-ELECTRONICS AND COMPUTER TECHNOLOGY CORPORATION) WITH A $65 MILLION BUDGET AND A STAFF OF 480. YALE'S BEEN WORKING ON CANCER RESEARCH WITH MONEY FROM BRISTOL-MYERS.

ALL THAT'S GOOD. BUT OUR COMPETITORS ARE NOT STANDING STILL. FUNDING AND SUPPORT OF R&D IS INCREASING AROUND THE WORLD. EUROPE'S NEW EUREKA AND ESPRIT PROJECTS WILL FUNNEL $2 BILLION INTO RESEARCH FOR FACTORY AUTOMATION, ROBOTICS AND OTHER AREAS IN THE NEXT TWO YEARS.

THE GOVERNMENT, FOR ITS PART, IS PROPOSING CHANGES IN LAW TO GIVE FEDERAL LABS GREATER AUTHORITY TO ENTER JOINT RESEARCH AGREEMENTS WITH PRIVATE PARTIES. THIS WOULD OPEN FEDERAL LABS FOR PRIVATE USE TO SPEED UP TECHNOLOGY TRANSFER. THE ACT HAS PASSED THE HOUSE AND IS PENDING IN THE SENATE.

BUT EVEN WHILE THAT IS HAPPENING, THERE IS AN R&D VENTURE AMONG ARGONNE NATIONAL LABORATORIES AND THE USX, ARMCO, BETHLEHEM, LTV AND NATIONAL STEEL CORPORATIONS. STEEL COMPANY ENGINEERS AND SCIENTISTS WILL WORK WITH FEDERAL LAB RESEARCHERS TO DEVELOP ADVANCED TECHNOLOGIES TO REPLACE OBSOLETE COKE OVENS AND BLAST FURNACES.

THEY'LL TRY TO DEVELOP A LEAPFROG TECHNOLOGY TO REGAIN MARKET POSITION AND PUT THEM AHEAD OF WORLD COMPETITION.

CLEARLY, A MAJOR WEAKNESS IN OUR OVERALL COMPETITIVE CAPABILITY HAS BEEN MANUFACTURING TECHNOLOGY. WE'LL KEEP LOSING GROUND NO MATTER HOW MANY STATE-OF-THE-ART PRODUCTS WE DEVELOP, IF OUR FOREIGN COMPETITORS CAN THEN MAKE THOSE PRODUCTS FASTER, BETTER AND CHEAPER.

THE UNITED STATES DEVELOPED ROBOTICS. THE UNITED STATES DEVELOPED AUTOMATION. AND, THE UNITED STATES DEVELOPED STATISTICAL QUALITY CONTROL TECHNIQUES. BUT WE'VE BEEN TOO SLOW IN APPLYING THEM.

JAPAN, SWEDEN AND OTHERS HAVE BEEN MUCH MORE AGGRESSIVE IN APPLYING PROCESS TECHNOLOGY, RESULTING IN LOWER COSTS AND HIGHER QUALITY.

OUR MANUFACTURING PROCESSES SHOULD BE A STRATEGIC ADVANTAGE. THEY CERTAINLY USED TO BE. SOUND MANAGEMENT COUPLED WITH AUTOMATION CAN WORK WONDERS. WE CAN RE-LEARN THAT FROM OUR COMPETITORS IF WE HAVE TO -- THEY LEARNED IT FROM US IN THE FIRST PLACE.

I WON'T STAND HERE AND PRETEND THAT THE ADMINISTRATION HAS SOLVED ALL THE PROBLEMS WE HAVE. BUT I ALSO WON'T STAND HERE WHILE SOME POINT AT THE FEDERAL GOVERNMENT AS THE PROBLEM. WHY?

WELL, THE ECONOMY HAS BEEN GROWING FOR 45 STRAIGHT MONTHS. SLUGGISH NOW, BUT STILL GROWING AND IN NO DANGER OF RECESSION. TAXES HAVE BEEN CUT. INFLATION -- WHICH EVERYONE FIVE YEARS AGO THOUGHT WOULD BE EVER-ESCALATING -- IS WAY, WAY DOWN. REGULATORY REQUIREMENTS HAVE BEEN REDUCED.

IT WOULD TAKE ME THREE HOURS TO LIST ALL THE ADVANCES WE'VE MADE IN TRADE, BUT I'LL LIST A FEW: THE DOLLAR IS WAY DOWN. WE'VE GOT A PLAN TO EASE THE DEBT BURDEN OF THE DEVELOPING COUNTRIES TO TRY TO GET THEM BACK TO WHERE THEY CAN BUY PRODUCTS. WE'VE ENFORCED OUR FAIR TRADE LAWS FAR MORE VIGOROUSLY THAN ANY ADMINISTRATION AND WILL CONTINUE TO DO SO.

IN FACT, THERE'S BEEN A 200 PERCENT INCREASE IN INITIATING ANTIDUMPING AND COUNTERVAILING DUTY CASES BETWEEN 1980 AND 1985.

WE'VE GOT AGREEMENTS ON STEEL WHERE FOREIGNERS WERE SUBSIDIZING. WE'RE WORKING ON AN AGREEMENT ON MACHINE TOOLS. WE'VE GOT TALKS GOING ON TELECOMMNICATIONS IN EUROPE WHERE MARKETS ARE CLOSED.

WE'VE DEALT WITH JAPAN ON SEMICONDUCTORS WHERE THEY WERE DUMPING. WE'VE DEALT WITH BRAZIL ON INFORMATICS WHERE MARKETS ARE CLOSED. WE'RE WORKING AROUND THE GLOBE ON INTELLECTUAL PROPERTY RIGHTS WHERE WE'VE BEEN TAKEN ADVANTAGE OF TO THE TUNE OF BILLIONS OF DOLLARS.

FLEXIBLE MANUFACTURING SYSTEMS, FEATURING ADVANCED TECHNOLOGIES SUCH AS CAD/CAM, ROBOTICS AND AUTOMATED MANUFACTURING CELLS UNDER THE INTEGRATED CONTROL OF A COMPUTER, ARE BECOMING MORE COMMON. BUT NOT COMMON ENOUGH. WE NEED SUCCESS STORIES. SUCCESS STORIES SUCH AS:

-- ALAN-BRADLEY, AT ITS $15 MILLION MILWAUKEE ELECTRICAL CONTRACTOR FACILITY, HAS INCORPORATED A FLEXIBLE MANUFACTURING SYSTEM OF 50 MACHINES WHICH CAN PRODUCE MOTOR STARTERS IN 125 DIFFERENT CONFIGURATIONS AT THE RATE OF 600 AN HOUR.

IT IS ALSO MAKING 4.5 TIMES AS MANY CONTROLLER MODULES TODAY AS IT DID IN 1982 -- IN THE SAME SPACE.

-- DIABLO CORPORATION, A XEROX SUBSIDIARY IN FREMONT, CALIFORNIA, HAS AUTOMATED ITS PRINTER MANUFACTURING FACTORY, AND ACHIEVED A 60 PERCENT REDUCTION IN DIRECT LABOR CONTENT IN ITS PRINTERS AS A RESULT.

-- A SMALL NEW YORK SWEATER MANUFACTURER REPORTS THAT IT HAS CUT LEAD TIMES FROM 6 MONTHS TO 2 MONTHS, TO CREATE A NEW DESIGN AND GET IT TO MARKET. THAT'S THEIR ANSWER TO TEXTILE IMPORTS FROM LOW WAGE COUNTRIES. USING CAD AND COMPUTERIZED MANUFACTURING SYSTEMS, THE COMPANY RESPONDS QUICKLY TO CONSUMER DEMAND.

THESE ARE SOME OF THE SUCCESS STORIES. BUT TOO MANY OTHER COMPANIES ARE WAITING ON THE SIDELINE, POINTING AT THE GOVERNMENT AS THE PROBLEM.

WELL, WE HAVE A PRESIDENT IN WASHINGTON WHO IS MOST SENSITIVE TO THE NEEDS OF BUSINESS AND WHO KNOWS THAT THE SAVIOR OF THIS COUNTRY IS THE PRIVATE SECTOR, NOT THE FEDERAL GOVERNMENT.

SO, IT'S TOO EASY TO BLAME ALL THE PROBLEMS ON THE GOVERNMENT AND LAY BACK WHEN IT COMES TO YOUR OWN COMPANY OR YOUR OWN WORKPLACE AND HOW YOU ARE GOING TO OUTCOMPETE YOUR RIVALS ABROAD.

YES, GOVERNMENT'S GOT MORE TO DO. WE'VE GOT TO GET A HANDLE ON OUR BUDGET DEFICIT, BUT THE PRESIDENT IS TRYING TO CONVINCE CONGRESS TO DO THAT. WE'VE GOT TO MAKE SURE WE HAVE A TAX SYSTEM CONDUCIVE TO ECONOMIC GROWTH. AND YOU'RE ABOUT TO SEE THAT HAPPEN.

BUT INDUSTRY CANNOT HOLD BACK. YOU'VE GOT TO MAKE THE COMMITMENT TO ADVANCED MANUFACTURING TECHNOLOGIES AND OVERRIDE THE HUMAN RELUCTANCE TO CHANGE.

REMEMBER, IT WAS ONLY A FEW YEARS AGO THAT MANY CALLED AUTOMATION AN UNSTOPPABLE FORCE THAT WOULD LEAD TO MASSIVE UNDEREMPLOYMENT.

WELL, TODAY, THIS COUNTRY IS MORE AUTOMATED THAN EVER BEFORE, AND MORE PEOPLE ARE EMPLOYED TODAY THAN AT ANY OTHER TIME IN HISTORY BOTH BY NUMBERS AND AS A PERCENTAGE OF THE POPULATION.

WE SHOULD NOT FEAR AUTOMATION WHERE COSTS CAN BE LOWERED. OVER HALF OF ALL JOBS THAT EXISTED 100 YEARS AGO HAVE BEEN ELIMINATED, BUT THREE TIMES AS MANY PEOPLE ARE WORKING.

OUR HISTORY HAS BEEN ONE OF CONSTANT CHANGE. AMERICANS HAVE BEEN THE WORLD'S BEST AT ADAPTING TO CHANGE, AND LEADING CHANGE.

WE'VE GOT TO KEEP DOING THAT, BUT WE'VE GOT TO DO IT FASTER THAN EVER BEFORE AND ON A PLANNED, LONG TERM BASIS, BECAUSE IF AMERICAN BUSINESS HESITATES, IT WILL BE LEFT AT THE DOCK WATCHING FAR-SIGHTED COMPETITORS PULL AWAY. I SEE TOO MANY COMPANIES CHANGING TODAY NOT TO BE OPTIMISTIC.

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