

Chronological: Issues That Impact Science Policy in the 21st Century, Oklahoma State University Teleconference, 2000-03-02

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**“ISSUES THAT IMPACT SCIENCE POLICY IN THE 21ST CENTURY”
OKLAHOMA STATE UNIVERSITY TELECONFERENCE
MARCH 2, 2000**

I began my pursuit of knowledge 75 years ago. At that time, the only telephone in my neighborhood was in the residence of our landlord. That phone was made available to the tenants in an emergency.

Much has happened since then. From black and white silent movies we have wide screen digitized video with digitally mastered audio. Even the wild and exciting books and movies of Flash Gordon did not predict the availability of computers in nearly every American home. Words and phrases like E-commerce, website, webcasting, .com and URL are now part of our everyday vocabulary.

We are told this is just the beginning. We have just begun to sense the possibility of genetic engineering, of the positive impact of cloning in the field of medicine and health. And there are more exciting scientific developments just around the corner.

But I do have some concerns, and I must confess that I am not able to address these concerns adequately. For example, 75 years ago, life was very simple. The class or social system was divided by race, gender and wealth. This new generation ahead of us will create a new class—the technology class. Will this high technology class of people be responsive to the plight of the less fortunate in our society and in the

world? Will this high technology generation lead us into a world of untold destruction, devastation and death? I hope not.

But, like many, I have watched and observed young men and women who are so obsessed with the high technology devices of this day that they seem oblivious to the gentle works of arts that have made life pleasant and exciting. A few days ago, I read an article where it was suggested that great works of art can be duplicated digitally using the same technique, paint and canvas of old masters to a point where it is difficult to determine which piece is real or a duplicate.

I have watched children immersed obsessively with high tech games to a point where they are not interested in reading great works of literature. Will our libraries become a thing of the past? I pray not.

I have supported government involvement in advancing science through the appropriation of federal funds to carry on research. But each day, I am confronted with pleas for help resulting from our high tech advancements.

For example, recently, I was called upon by an elected county official from Silicon Valley who wanted to know whether federal funds were available to subsidize housing for school teachers. The nature of the problem is that the cost of living is so

high in this area, which is home to a new class of millionaires between the ages of 25 and 35 years. The price of real estate has skyrocketed through the ceiling. A one bedroom, 700 square foot residence is selling for \$400,000. Teachers, police officers, and firemen have found it impossible to find residences and rental units within their financial means. Teachers must be recruited from San Francisco and drive in every day. This city needs social workers, police officers and teachers, but a simple thing like housing is causing the city's leadership unexpected problems.

I hope that as we progress into this exciting age, we are prepared to meet unforeseen challenges that will develop. I call upon you to help us. You are the experts. We are mere politicians.

SENATOR TED STEVENS REMARKS FOR 3/2/00 AT 9:00 AM

- AS WE BEGIN THE 21ST CENTURY WE WILL RE-EXAMINE OUR FEDERAL COMMITMENT TO BASIC RESEARCH, HOW WE MAY MAINTAIN FEDERAL FUNDING AND PUBLIC SUPPORT FOR IT, AND THE NEW CHALLENGES FACED BY BASIC RESEARCH.
- MODERN SCIENCE AND TECHNOLOGY POLICY AS WE KNOW IT TODAY BEGAN AFTER WORLD WAR II.
- FUNDING INCREASED DRAMATICALLY DURING THE SPUTNIK ERA WHEN NATIONAL SECURITY WAS THREATENED.
- FEDERAL SPENDING ON RESEARCH REACHED ITS HIGH POINT AS A PERCENT OF OUR DISCRETIONARY SPENDING IN 1965 DURING THE SPACE RACE, WHEN RESEARCH ACCOUNTED FOR 8.7% OF DISCRETIONARY FEDERAL SPENDING.
- THE FEDERAL GOVERNMENT NOW SPENDS ABOUT 6% OF DISCRETIONARY FUNDS ON CIVILIAN BASIC RESEARCH ACROSS THE AGENCIES OF GOVERNMENT.

- IN FISCAL YEAR 1999, WHICH ENDED IN SEPTEMBER, WE SPENT \$36 BILLION ON CIVILIAN RESEARCH, INCLUDING \$15.8 BILLION FOR THE NATIONAL INSTITUTES OF HEALTH.
- WE SPENT ABOUT \$70 BILLION FOR DEFENSE-RELATED RESEARCH IN FISCAL YEAR 1999.
- THE CHALLENGES WE WILL FACE IN THE COMING YEARS TO CONTINUE TO SUPPORT VITAL BASIC RESEARCH ARE VARIED.
- HISTORICALLY, FEDERAL RESEARCH DOLLARS HAVE GONE MAINLY TO THE NATIONAL LABORATORIES OF THE DEPARTMENT OF ENERGY, THE DEPARTMENT OF DEFENSE, NASA, AND THE NATIONAL INSTITUTES OF HEALTH.
- THAT RESEARCH BEGUN WITH FEDERAL SUPPORT IN THE ENERGY, SPACE AND DEFENSE PROGRAMS NOW SPAWNS APPLICATIONS THAT ARE ENABLING SCIENTISTS TO SEQUENCE THE HUMAN GENOME, TO IDENTIFY AND

REPLICATE HUMAN CELLS. BOTH NORMAL AND DISEASED,
AND TO IMAGE THE BIOLOGICAL BASIS OF DISEASE.

- MANY PEOPLE ARE UNAWARE THAT IT WAS RESEARCH FUNDED BY THE DEPARTMENT OF ENERGY THAT BEGAN THE HUMAN GENOME PROJECT, AND THAT NIH'S INVOLVEMENT CAME ONLY LATER.
- THIS TRANSLATION OF BASIC RESEARCH ACROSS DISCIPLINES AND INTO NEW APPLICATIONS THAT TOUCH THE LIVES OF PEOPLE AND MAKE THEM BETTER IS ONE OF THE KEYS TO BUILDING AND KEEPING PUBLIC SUPPORT FOR FEDERAL FUNDING OF THAT RESEARCH.
- ONE OF THE PROBLEMS WE FACE IN GAINING SUPPORT FOR GOVERNMENT-FUNDED RESEARCH IS TIME - IT OFTEN TAKES 10 OR 20 YEARS OR MORE TO MOVE FROM BASIC RESEARCH TO A PRODUCT OR SERVICE AVAILABLE TO THE PUBLIC.
- WHILE THIS TIME FRAME IS DIMINISHING, IT IS DIFFICULT FOR MANY AMERICANS TO UNDERSTAND THE RELEVANCE OF BASIC RESEARCH TO IMPROVEMENTS IN

THEIR QUALITY OF LIFE.

- YOU, THE SCIENTIFIC COMMUNITY, CAN HELP - HELP US MAKE THE CONNECTION WITH AMERICAN TAXPAYERS THAT BASIC RESEARCH DOES INDEED YIELD TANGIBLE RESULTS THAT BENEFIT OUR PEOPLE.
- ANOTHER CHALLENGE - OR PERHAPS PARADOX - TO RESOLVE IS THAT OFTEN THE SAME GOVERNMENT WHICH PROVIDES FUNDING FOR YOUR RESEARCH THEN CREATES BARRIERS WHICH PREVENT THE FRUITS OF THAT RESEARCH FROM REACHING THE TAXPAYERS WHO FUNDED IT.
- TAXPAYER FUNDED RESEARCH AND DEVELOPMENT, PARTICULARLY IN THE HEALTH AND MEDICAL FIELDS, SHOULD BE AVAILABLE TO THE AMERICAN PEOPLE WITH A MINIMUM OF TAXPAYER FUNDED OBSTRUCTION FROM GOVERNMENT RED TAPE AND BUREAUCRATIC REGULATION.
- THE SUCCESS OF THE COMPUTER AND COMMUNICATIONS TECHNOLOGY INDUSTRY PROVIDES AN EXCELLENT LESSON IN HOW GOVERNMENT AND INDUSTRY CAN COLLABORATE

SUCCESSFULLY.

- OUR NATION DOMINATES THE COMPUTER AND COMMUNICATIONS INDUSTRY.
- IT IS A MODEL OF THE BEST OF THE FREE ENTERPRISE SYSTEM.
- BARRIERS TO ENTRY FOR NEW COMPANIES ARE LOW.
- INDIVIDUALS, FUELED ONLY BY INITIATIVE AND AMBITION, ARE ABLE TO TRANSFORM THE BASIC RESEARCH FUNDED BY THE FEDERAL GOVERNMENT AT OUR UNIVERSITIES AND RESEARCH INSTITUTIONS INTO VIABLE APPLICATIONS WHICH ATTRACT PRIVATE CAPITAL FOR FURTHER DEVELOPMENT.
- IN 1999 ALONE MORE THAN 1,500 COMPANIES ENTERED THE COMPUTER SOFTWARE MARKET.
- UNLIKE THE COMPUTER AND COMMUNICATIONS TECHNOLOGY INDUSTRY, BIOTECHNOLOGY COMPANIES FACE FORMIDABLE

OBSTACLES TO SURVIVE AND SUCCEED TODAY.

- ABOUT 1.400 BIOTECHNOLOGY COMPANIES EXIST IN THE UNITED STATES.
- THESE NEW COMPANIES EVOLVED FROM OUR FEDERAL INVESTMENT IN UNIVERSITY AND ACADEMIC RESEARCH.
- SCIENTISTS LEFT THOSE INSTITUTIONS TO TRANSLATE THE IDEAS AND PRODUCTS GENERATED FROM THEIR RESEARCH INTO IMPROVED HEALTH CARE FOR AMERICANS AND OTHER APPLICATIONS TO IMPROVE OUR QUALITY OF LIFE.
- MANY SCIENTISTS BELIEVE THE MAJOR OBSTACLE TO REALIZATION OF BIOTECHNOLOGY'S PROMISE IS LACK OF ADEQUATE FEDERAL FUNDING FOR BASIC MEDICAL RESEARCH.
- BUT IF WE CANNOT ENSURE THAT APPLICATIONS DEVELOPED FROM THESE RESEARCH DOLLARS REACH AMERICANS WITHOUT UNNECESSARY GOVERNMENT-CAUSED DELAYS, THE AMOUNT OF FUNDING WE DIRECT TO RESEARCH IS NOT THE OBSTACLE

TO PROMPT APPLICATION OF THE FRUITS OF MEDICAL RESEARCH.

- REGULATORY AGENCIES LIKE THE FOOD AND DRUG ADMINISTRATION AND THE HEALTH CARE FINANCING ADMINISTRATION, WHICH CONTROLS WHAT NEW TECHNOLOGIES BECOME AVAILABLE TO MEDICARE PATIENTS, PERFORM A NECESSARY FUNCTION.
- BUT BOTH THE FDA AND HCFA HAVE NOT ADOPTED MECHANISMS TO DEAL WITH THE SPEED WITH WHICH NEW TECHNOLOGIES AND PRODUCTS ARE AVAILABLE FOR PRODUCTION.
- WE ARE WORKING WITH THESE AGENCIES AND THE BIOTECHNOLOGY INDUSTRY TO DESIGN WAYS TO MAKE IT POSSIBLE FOR AMERICANS TO BENEFIT AT THE EARLIEST POSSIBLE MOMENT FROM THE RESULTS OF THE RESEARCH THEIR TAX DOLLARS HAVE FUNDED.
- CONGRESS AND THE ACADEMIC COMMUNITY MUST HELP THEM NOW.

- IF WE DO NOT ACCEPT THIS CHALLENGE, THE UNITED STATES RISKS LOSING THE BENEFITS OF THE BIOTECHNOLOGY ERA.
- ANOTHER CHALLENGE CONCERNS THE AMOUNT OF TAXPAYER SUPPORT AVAILABLE TO FUND BASIC RESEARCH OVER THE NEXT SEVERAL YEARS.
- WHILE NO DOUBT YOU ALL HAVE HEARD STORIES ABOUT GROWING FEDERAL BUDGET SURPLUSES, CONGRESS HAS MADE COMMITMENTS TO THE AMERICAN PEOPLE TO MAINTAIN A BALANCED BUDGET AND TO PRESERVE THE SOCIAL SECURITY SURPLUS.
- THIS MEANS THAT CONGRESS WILL HAVE TO MAKE TOUGH CHOICES: WHICH PROGRAMS TO FUND AND HOW MUCH OUR TAXPAYERS WILL MAKE AVAILABLE TO DO SO.
- OUR APPROPRIATIONS COMMITTEE KNOWS THE IMPORTANCE OF INVESTING IN RESEARCH.

- BUT UNLESS WE RETURN TO BUDGET DEFICITS AND HIGHER TAXES THE ABILITY TO PROVIDE THAT INVESTMENT WILL BE LIMITED IN THE NEXT FEW YEARS.
- I URGE YOU TO DEVELOP PARTNERSHIPS WITH PRIVATE INDUSTRY AND FOUNDATIONS TO LEVERAGE OUR FEDERAL INVESTMENT.
- OUR NATION MUST - AND WILL - CONTINUE TO INVEST IN THE BASIC RESEARCH THAT IS DRIVING OUR BOOMING ECONOMY AND IMPROVING THE LIVES OF OUR PEOPLE.