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Subject: 1998-3-16 remarks to students at Springbrook High School

THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release

March 16, 1998

REMARKS BY THE PRESIDENT TO THE STUDENTS AND TEACHERS

Springbrook High School
Silver Spring, Maryland

1:15 P.M. EST

THE PRESIDENT: Thank you very much. Mr. Durso, thank you for welcoming me here to Springbrook. Secretary Riley, thank you for bringing me along. I want to introduce the Secretary of Education, Dick Riley; the Secretary of Energy, Federico Pena. (Applause.) I thank Governor Glendening and Senator Sarbanes, and Congressman Wynn, and the Maryland State Superintendent Nancy Grasmick; your president of the school board, Nancy King, and all the other people from Maryland who have made us feel so welcome.

The Governor of West Virginia, Governor Underwood; and the Mayor of Los Angeles, Mayor Riordan; and other people who were on our panel over there -- I'd like for all the people who came from all over America to be with us to stand up -- Rudy Crew, the superintendent of New York; many other leaders there. (Applause.) Thank you all very much.

Those people came from all over America today to your school to discuss one very important thing for your future -- how can we improve the learning of American students in math and science on

the edge of a new century and a new millennium, where so much of the public welfare and so much of people's individual lives will be determined by whether they understand and can use and apply math and science. And I think you ought to give them a hand for doing that. (Applause.)

Now, you may know all this, but I want to give you a few facts to try to demonstrate to you why whether you know anything about math and science, no matter what you do with your life, is likely to make a big difference. For example, in 1993, when I became President, and all of you were in an earlier grade -- (laughter) -- in 1993, now, just five years ago, there were only 50 -- 50 sites on the web, on the World Wide Web -- 50, total. Today millions of Americans and millions of organizations have web pages, up from 50 in 1993. The White House has one. Your school newspaper has one. My cat has won -- (laughter) -- 1.5 million new pages are created every day; 65,000 every hour.

Today every one of you is just a click of a mouse away from some of the finest libraries in the world. And someday before long, you'll be able to reach every book, every symphony, every painting ever created through the web.

I know that Bill Nye talked to you about science in ways that were probably infinitely more entertaining than anything I could say, but I'd like to say a couple of serious things to you. Our scientists are on the verge of making dramatic breakthroughs in the treatment of cancer, spinal cord injury, other serious diseases. We have just had a rover on Mars. We're about to put an international space station in the sky the size of three football fields for, in effect, permanent human residence in space.

In the 1980s it took nine years for scientists to identify the gene that causes cystic fibrosis. Last year, because of improvements in genetic research, it took nine days to identify the gene that causes Parkinson's Disease. We're on our way to developing gene chips that will help us prevent illnesses in people even before they happen. A lot of you young people here today, by the time you have your first child and you bring your baby home from the hospital, you will actually be able to have a genetic map which will tell you what your child's genetic strengths are, and weaknesses, what the likely problems your child could have are, what kind of diet your child should follow, what kind of regime you should follow to guarantee your child has the healthiest possible future.

Now, I guess what I'm trying to say is something you doubtless already know, but science and technology and mathematics are profoundly important to the way we live, but they will be even more important to the way you live, you work, you relate to other people, you relate to people all the way around the world.

Now, I know here that preparing for that kind of future

is a priority. You have more computers, more students taking computer science than any other school in the county. Congratulations. I hope more students around the country will follow your lead. (Applause.) I hope more of you will go on to college. And you haven't thought of it, I hope you will decide to do it.

I have worked very hard to make sure that when we start this new century, the first two years of college will be as universal as a high school education has been in the latter half of the 20th century. Why? Because we know from all of our census data that young people who have at least two years of college education are likely to get a good job with a growing income. Young people who don't are likely not to get a good job with a growing income. And we know that more and more people have to be able not just to know facts, but to understand how to use them, how to solve problems, how to think creatively.

That's why we've provided now a HOPE Scholarship, a \$1,500 tax credit, a reduction to help pay for tuition for the first two years of college; and tax credits for the junior year and senior year in graduate school as well. This is important. (Applause.) We've also simplified the student loan program, made interest tax deductible on student loans -- if you're families or you can save money in an IRA and withdraw it to pay for a college education without having to pay any tax on it. We've increased the number of Pell Grants and the number of work-study slots, and provided for more positions in AmeriCorps for people to earn money to go to college by doing community service. All of this is designed not only to help you individually, but to make your country stronger, because we will need higher levels of education among all our young people in the new century.

Every one of you -- and I wanted to be able to look at every young person in America dead in the eye and say, I don't care what your family's income is, I don't care what your racial or ethnic background is, I don't care how many struggles you've had to overcome, you will be able to afford to go to college because we have created a system which makes it possible for you -- (applause).

Now, here's the problem that we face today. Here's why all of these people came here. Not everybody in America has access to the same level of science and math and technology opportunities you do. And not everybody in America -- and I'll bet you not even everybody in this school who should be taking these courses -- is taking them. And that has given us a huge national headache.

Earlier this month we learned that in the Third International Math and Science test, which compares performance of American students with students around the world, that our seniors ranked near the bottom, ahead of only two other countries out of 21, in math and science performance. Now, by contrast, we ranked right at the top in math and science performance at the 4th grade -- right at the top. We ranked second in math and tied for second in science. By the 8th grade we drop to about the middle of the pack. By the 12

grade we're ahead of only two other countries.

This country is still the science and mathematics and technology and research capital of the world. But how long can we go on doing that when we need this knowledge to be more widely shared and we know that only a few people have it? That is the challenge. So I say to you, it's not just important for you to know more math and science personally; it's important for your country and your future that people like you all over this country know more as well.

So what are we going to do about it? Listen to this -- half of all college-bound seniors in America -- forget about the people not going to college -- half of all the people that are going to college have not taken physics or trigonometry. Three-quarters have not taken calculus. Students around the world have to take these courses to get out of high school, in country after country after country.

So I say to you, whether you have to or not, you should take trig, you should take calculus, and you should take physics. No matter what you do for the rest of your life, it will help you and you should take them.

Now, let me also say that we have some things to do. We have to make sure that all of our teachers have the chance to be properly trained. Let's face it -- you know, there are almost 400,000 openings right now in America in computer science. The average entry-level salary is \$48,000 a year. That ought to get you interested in taking them in college. (Laughter.) The average teacher's salary in America for all teachers -- including those that have been teaching 30 years -- the average salary is well below \$48,000 a year, what a 22-year-old or a 23-year-old person can earn coming out of college with this kind of background.

So I want to say something else to you -- you've got a good teacher and you know your teacher is doing this. I've just told you that your teacher could leave, walk out tomorrow and go make \$50,000 doing something else -- you ought to thank your teachers for being here and educating you and supporting you. (Applause.)

And I'll tell you what we're going to try to do. We are going to do our best to make sure that schools and school districts and states have the resources to train teachers properly. We're going to challenge all the states to require that the teachers who are teaching courses have real adequate academic preparation in the courses they're teaching. I'm going to urge more and more states and school districts to require you to take more math and science just to get out of high school in the first place.

But before all that happens -- well, you're seniors, it's too late -- I don't mean we're going to impose something on you. (Applause.) I don't mean you have to stay. But you think about this. You think about this -- if you have a little brother or a little sister in the 9th grade or the 8th grade or the 7th grade or

the 6th grade, wouldn't you like to know that when your brother or sister gets out of high school if they want to go to college, they can? And wouldn't you like to know that everybody who gets out of high school six years from now will be able to compete with everybody else in the world when they get out of high school six years from now? Isn't this something we owe each other, to make every succeeding year better and better and better?

So I say this, even though -- if you're a senior and you think, oh, my goodness, I'm so glad that Bill Clinton didn't come to my school and give this speech five years ago because they might have changed the rules and made me take all these courses -- even if you think, that you should want your brothers and sisters coming up behind you to take all these courses, because it will be better for our country and for your future if we do it. (Applause.)

I've been told that the motto of this school is, "We expect, we believe, we achieve." (Applause.) Well, when I look at you and I think of where we're going in math and science, I expect America to lead the way. I believe in you to be on the forefront of that. It's up to you to achieve.

Thank you, and God bless you. (Applause.)

END

1:30 P.M. EST

Message Sent To:

**PRESIDENT CLINTON:
EXPANDING OUR COMMITMENT TO SCIENCE AND TECHNOLOGY**

February 13, 1998

"Today, at the dawn of the new millennium, we must expand our commitment to science and technology more than ever before. Science and technology are vital to almost every single one of our national goals -- from helping us seize the opportunities of our increasingly global economy to helping us head off the challenge of climate change to helping us expand learning throughout a lifetime. So even as we shrink the size of our government, we must greatly expand our commitment to science and technology. Even as we balance the budget, the balance of human history demands that we make science and technology a priority of the first degree."

President Bill Clinton
February 13, 1998

Today, President Clinton participates in two events that highlight the Administration's support of science, engineering and technology as key elements of our economic progress, environmental and health protection, and global leadership in the 21st century. In the morning, he attends the swearing-in ceremony of Dr. David Satcher as Surgeon General, who will guide our nation on the most important public health issues of our time, from increasing public awareness of how to prevent devastating diseases, to helping free our children from the deadly grip of tobacco. Later in the day, the President meets with members of the American Association for the Advancement of Sciences to set forth his science and technology vision for the 21st century.

The Largest Investment In Civilian Research & Development In History. Because the President is committed to America's continued leadership in science and technology, his balanced budget provides a total of \$78.2 billion for research and development (R&D) investments. The centerpiece of his plan is the proposed 21st Century Research Fund. Among other things, the President's plan supports:

- **National Institutes of Health (NIH).** The budget provides \$14.8 billion to help the NIH support greater research on diabetes, brain disorders, drug demand reduction, genetic medicine, disease prevention strategies, and the development of an AIDS vaccine. Also included is a 10 percent increase in cancer research at NIH, highlighting renewed efforts to prevent, detect, and, ultimately, cure cancer.
- **National Science Foundation (NSF).** The budget increases the NSF's funding by 10%, helping it to promote science and engineering research and education across all fields and disciplines. The \$344 million increase is NSF's largest ever.
- **Climate Change Technology Initiative.** The budget includes a five-year R&D program to reduce the nation's emissions of greenhouse gases.
- **US Global Change Research Program.** The budget helps support research that increases our understanding of climate change and variability, atmospheric chemistry, and ecosystems.
- **Education Research Initiative.** The budget provides \$50 million per year for five years for a partnership between the Education Department and the National Science Foundation to support research focused on the best approaches to raising student achievement through, for example, learning technologies, and innovative approaches to reading and mathematics instruction that

take advantage of the latest research findings in cognitive research, and research on brain development in young children.

**PRESIDENT CLINTON:
BUILDING STRONG SKILLS IN MATH AND SCIENCE
FOR GOOD JOBS AND A PROMISING FUTURE**

March 16, 1998

"We must strengthen math and science education so that a new generation can unlock the opportunities of the 21st century. In my balanced budget, I've proposed a comprehensive strategy to make our schools the best in the world. We must have high, national standards of academic achievement and national tests in fourth grade reading and eighth grade math. And we must strengthen math instruction in our middle schools."

President Bill Clinton
March 16, 1998

Today, President Clinton meets with leaders from the government, business, education and scientific communities to discuss the recent 12th grade Third International Math and Science Study (TIMSS) results. At the meeting the President issues a set of challenges to the nation to improve student achievement and announces new educational on-line resources for parents, students and teachers.

Providing Solutions To Address Our Education Challenges. Recent TIMSS results show that while U.S. 4th graders are near the first in the world in science and above average in math, U.S. 12th graders lag below the international average in both subjects. These results demonstrate the importance of President Clinton's education agenda, including his proposals for:

- national standards and tests in reading and math;
- smaller classes with well-prepared teachers;
- modern school buildings;
- educational Opportunity Zones to end social promotion and fix failing schools;
- technologically advanced schools; and
- "High Hopes" mentoring to encourage students to take tough classes and prepare for college.

Reducing Out-Of-Field Teaching. Today, nearly one out of every five science teachers, more than a quarter of all math teachers, and more than half of all physics teachers have neither majored nor minored in the subjects they teach. President Clinton challenges states and school districts to reduce the percentage of math and science teachers without a major or minor in their subject area.

Testing New Teachers. During the next several years, nearly half our nation's teaching force will be replaced in order to accommodate growing student enrollments and an aging teaching force. Raising standards of teaching now can boost the quality of our schools for decades. President Clinton challenges states to require all new teachers of math and science to pass challenging tests of math or science knowledge and teaching proficiency.

Calling Our Communities To Action: Schools, Students And Parents. Today, only 25% of U.S. students take algebra before high school, and only 25% of U.S. high school students take physics before graduating. President Clinton challenges schools to offer -- and students to take -- tough math and science courses throughout middle school and high school. To help parents have a way of finding out how their children do compared to the international

standards in TIMSS, the President challenges parents to insist that school districts provide ways of showing how children are doing compared to national standards and international benchmarks.



SUNTUM M @ A1
03/06/98 11:18:00 AM

Record Type: Record

To: See the distribution list at the bottom of this message

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Subject: 1998-3-5 remarks at HBO screening

THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release

March 5, 1998

REMARKS BY THE PRESIDENT AT HBO SCREENING

The East Room

8:00 P.M. EST

THE PRESIDENT: Thank you very much, ladies and gentlemen. Welcome to all. Thank you, John Kennedy, for those wonderful remarks. Thank you, Jeff Bewkes, for taking a chance on this project. I know it's a big, big project. I predict it will get a big, big response from the American people. Thank you, Tom Hanks, and thank all of you who were part of this.

I'd also like to thank the people at NASA, with whom you worked -- I'm sure many of them are here -- for the work they do every day. I thank all the astronauts who are here. And we're especially proud of Lt. Colonel Eileen Collins, who will be our first woman mission leader very soon.

There's not much more that needs to be said. But as one of the graduates of the class of 1968, I want to thank all of you for saving 1968 all over again. (Laughter.)

Hillary, today, when we honored Eileen Collins, pointed out that when she was a young girl she wrote off to NASA and asked for information about how to be an astronaut. And she was told that, at the time, women were not welcome in the program. Today, we see that change.

The growth of the space program and the way it's changed and strengthened is in many ways evidence of the growth of America over the last three decades. And I think any of us who had anything to do with it have been profoundly proud of it. Hillary mentioned the Mars mission that seemed, once again, to sort of spark the popular imagination in our nation for the space program with the wonderful Sojourner looking around for red rocks with wonderful names like Scooby-doo. (Laughter.)

You know, the international space station will be up before long. And it will literally be the size of a football field. Now, the vehicle John Glenn went up in over 35 years ago was about the size of a compact car. And when the space station is there it will change forever the way people can relate to the Earth and to the other planets in the solar system.

All of this has happened for a lot of reasons. There are members of Congress here and I thank them for their presence -- Congress continued to support the space station and space program against the kinds of criticisms that are still current today that John so eloquently chronicled from the 1960s.

President Kennedy wanted us to become the world's leading space-faring nation, and we have. I want us to continue that distinction well into the 21st century. It is profoundly important to us. Colonel Collins, for example, will lead us in an effort to launch a telescope that will allow us to peer into the deepest reaches of outer space. The new balanced budget will support 28 more

space missions, to help us decipher more of the mysteries of black holes, of ancient stars, of the Earth itself.

The knowledge we gain from these missions will help us to solve problems here on Earth, from osteoporosis to ovarian cancer. It will help to make our farms more productive. It will help us to deal with the crisis of global warming. And, as the distinguished scientist, Stephen Hawking, who will be in this place tomorrow night, has pointed out, it may well help us uncover the very origins of human life itself.

I hope all of you who are part of this project will be able to look back 10, 20, 30, 40 years from now with immense pride that you have once again sparked the imagination, the dreams, the hopes and the courage of the American people to follow our astronauts into space and to follow our imaginations wherever they lead.

Thank you and God bless you. (Applause.)

There are so many wonderful people here tonight, I hesitate to acknowledge anyone. But someone who helped us all get through that era is here -- Walter Cronkite, thank you very much for

your presence. (Applause.)

And now Hillary and I would like to invite you all into the State Dining Room for a reception, where we will try to stay on both feet on the ground. (Laughter.) Thank you and bless you. Let's go in. (Applause.)

END

8:05 P.M. EST

Message Sent To: _____

HILLARY RODHAM CLINTON
REMARKS FOR WHITE HOUSE MILLENNIUM EVENING
LECTURE BY STEPHEN HAWKING
EAST ROOM
MARCH 6, 1998

I am honored to join the President in welcoming you to the East room of the White House for our second Millennium Evening. I'd like to begin by thanking everyone who has made this event possible, especially our honored speaker, Professor Stephen Hawking; Ellen Lovell, director of the White House Millennium Council; the National Endowment for the Humanities and all the state humanities councils; and our sponsor, Sun Microsystems, which is providing the technology to bring this event via satellite and cybercast to people from across this nation and around the world..

So a special welcome to our listeners and viewers who are joining us from downlinks and -- and who will have the opportunity to send in questions via the Internet to Professor Hawking after his remarks. I also want to mention that among our special guests tonight are students from area colleges and universities who we invited not only because we thought they would be inspired by tonight's lecture, but also to remind all of us of the critical importance of educating our future leaders in the fields of (boosting our education) science, math and technology -- the tools they will need to unlock the extraordinary possibilities of the future.

Tonight's lecture by Stephen Hawking continues a series of gatherings with scholars, scientists, and other creative individuals here at the White House that will commemorate and celebrate America's millennium. Over the next three years, we hope to inspire all Americans to come together to mark this milestone in our history by "honoring the past and imagining the future." It's an exciting opportunity for conversation and collaboration -- a time to take stock of who we are and who we want to be -- and what we want to carry into the next century, not only as individuals and families, but as local communities and as a nation.

A few weeks ago, Professor Bernard Bailyn from Harvard University inaugurated this White House Millennium lecture series with a talk about America's founding ideals of freedom and citizenship.. that sparked our democracy over 200 years ago. Tonight, we leap beyond traditional boundaries of historical time and place, and hear from a man who has expanded the frontiers of science, and revolutionized our understanding of the universe in which we live. His vision looks back not on our birth as a nation, but on the beginning of time itself. And tonight, he will also guide us forward -- to imagine the future of the universe.

Almost 25 years ago, Stephen Hawking was formally inducted into the Royal Academy in London -- one of the most ancient scholarly organizations in the world. As part of that ceremony, he signed his name in a book that bore the signature of Isaac Newton on one of its earliest pages. Stephen Hawking even then, was a legendary figure -- and has since come to viewed, along with Newton and Einstein, as one of the most brilliant physicists of all time.

Even as a young student, Stephen Hawking was drawn to science and the study of physics. "I always wanted to know how everything worked," he once said. He chose the same undergraduate college as my husband -- University College, Oxford University -- and it was there that his extraordinary mind was first recognized. (It should hearten some of the students here tonight that Hawking's "casual study habits" put him on the borderline between first and second class honors -- necessitating an oral exam. Apparently it didn't take long for the examiners to realize that they were talking to someone far more clever than most of them.)

He went to Cambridge University to study cosmology -- and in particular, the area of physics which describes the evolution of the universe. Since then, he has applied his prodigious talents to expanding our understanding of the laws of the cosmos, and seeking answers to such fundamental questions as "where did the universe come from?" and "can we predict the future?" Professor Hawking -- who has received numerous prizes and honors including the Commander of the British Empire in 1982 and twelve honorary degrees -- is a Fellow of the Royal Society and a Member of the U.S. National Academy of Sciences. He's currently the Lucasian Professor of Mathematics at Cambridge University -- a post held, once again, by fellow cosmic explorer -- Sir Isaac Newton. He is head of the General Relativity and Gravity Group in the Department of Applied Mathematics and Theoretical Physics.

Luckily for many of us, in addition to his many scholarly works, Professor Hawking has written a book aimed at a "lay" audience -- in the hopes of educating the general public about recent breakthroughs such as the "big bang" theory of the beginning of time; the notion of an expanding, dynamic universe; and the existence of "black holes." That *A Brief History of Time* has become the best selling science book ever -- 9 million copies around the world, and translated into 300 languages -- testifies to the success of his mission. And I must admit, I've been heartened by some of what I read in that book. "Present evidence suggests," he writes, that "even if the universe is going to recollapse, it won't do so for at least another ten thousand million years." That certainly gives us some time to get things right.

Over a lifetime of studying and writing about the laws of science, Stephen Hawking has helped millions of people here and around the globe to "imagine" the past and even the possible future of our vast universe. Yet it's his inner courage, in the face of great physical odds -- that is perhaps the even greater inspiration.

As many of you know, Professor Hawking developed Amyotrophic Lateral Sclerosis -- what we commonly call "Lou Gehrig's Disease" -- in his early 20s. It's a progressive motor neuron condition that has limited his control to his left hand. Professor Hawking will communicate with us tonight through a customized computer system which enables him -- by pressing a switch with his hand -- to select words from the bottom of his computer screen, which is located on the arm of his wheel chair. When he's finished a sentence, he sends it to a speech synthesizer -- which, he jokingly complains, has given him an American accent. His slides -- as well as his answers to questions later on the program -- will appear on the screen behind him. As he sits in his wheelchair with us this evening, explaining the evolution of the cosmic world around us, Stephen Hawking exemplifies the enduring spirit of imagination that sees no boundaries -- only possibilities.

Professor Hawking has said: "My goal is simple. It is complete understanding of the Universe." Tonight, we honor his life of study and accomplishment; his extraordinary imagination; his relentless curiosity; his sense of humor, his optimism, and his humanity. With his refusal to allow the study of the universe to remain solely the property of physicists like himself, Professor Hawking is inviting all of us, in some measure, to participate in the wonder and the awe of the cosmos.

It is a true honor and pleasure to introduce to you tonight Professor Stephen Hawking, who will speak to us about "Imagination and Change: Science in the Next Millennium."

2

HILLARY RODHAM CLINTON
REMARKS FOR WHITE HOUSE MILLENNIUM EVENING
LECTURE BY STEPHEN HAWKING
EAST ROOM
MARCH 6, 1998

I am pleased to join the President in welcoming you to the East room of the White House. Tonight, we are honored to have Professor Stephen Hawking deliver our second Millennium Lecture. I'd like to thank everyone who has made this event possible, especially Ellen Lovell, director of the White House Millennium Council; the National Endowment for the Humanities and all the state humanities councils; and Microsystems, which ^{on million Amer r} bringing this event to people ^{in each} around the world. First via satellite, to students at over 180 downlinks in 43 states. And also via the internet. Those wanting to watch this cybercast can click on the White House Web Site -- which is www.whitehouse.gov.

I believe that we now have in this room the largest gathering of American physicists ever assembled at the White House, and I'm particularly pleased to introduce Nobel Laureates here tonight: Dr. William Phillips and Douglas Osheroff [pronounced ...]. Would you please stand. I'm also pleased that a number of our friends from the United Kingdom have joined us -- including the President of Cambridge University, Sir Alex Brower [pronounced..].

This lecture continues a series of Millennium evenings with scholars, scientists, and other creative individuals ^{which we are having} ~~held~~ to commemorate and celebrate America's millennium. Over the next three years, we have an opportunity to take stock of who we are and who we want to be -- not only as individuals and families, but as communities and as a nation. The theme we have chosen is Honor the Past, Imagine the Future. And that is what we are doing here tonight.

A few weeks ago, Professor Bernard Bailyn from Harvard University inaugurated this Millennium conversation with a talk about the ideals that built our nation more than 200 years ago. Tonight, we leap beyond boundaries of historical time and place, and hear from a man who has helped revolutionize ~~our~~ our understanding of the universe, and who tonight will help us "imagine" the future of scientific discovery in the next century.

The ongoing exploration of our planet -- and our cosmos -- reflects humanity's deepest longing for knowledge about ourselves and the world around us. As we enter this new millennium, it is our collective obligation to keep pushing back those frontiers of science and discovery -- not solely to advance our pursuit of knowledge, but to apply what we've learned from the heavens to help improve lives here on earth.

We've invited students from area colleges and universities to join us tonight, not just because we believe this lecture will inspire them -- but also to remind all of us of the critical importance of providing our future leaders the best possible education in the fields of science and math -- the tools they will need to unlock the extraordinary possibilities of the 21st century.

We have with us this evening a man who has spent a lifetime unlocking the mysteries of the universe. Almost 25 years ago, when Stephen Hawking was formally inducted into the Royal Academy in London -- he signed his name in a book that bore the signature of Sir Isaac Newton on one of its earliest pages. He has since come to be recognized, along with Newton and Einstein, as one of the most brilliant physicists of all time.

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HILLARY RODHAM CLINTON
REMARKS FOR WHITE HOUSE MILLENNIUM EVENING
LECTURE BY STEPHEN HAWKING
EAST ROOM
MARCH 6, 1998

I am honored to join the President in welcoming you to the East room of the White House for our second Millennium Evening. I'd like to begin by thanking everyone who has made this event possible, especially our honored speaker, Professor Stephen Hawking; Ellen Lovell, director of the White House Millennium Council; the National Endowment for the Humanities and all the state humanities councils; and our sponsor, Sun Microsystems, which is providing the technology to bring this event via satellite and cybercast to people from across this nation and around the world. So a special welcome to our listeners and viewers who are joining us from 181 downlinks and 43 states and who will have the opportunity to send in questions via the Internet to Professor Hawking after his remarks.

And since I'm promoting the state-of-the-art technology at our disposal here this evening, I wanted to mention that those who want to communicate with us can use the White House e-mail address ~~which is~~ ^{web site} ~~www.whitehouse.gov~~ ^{www.whitehouse.gov}.

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The ongoing exploration of our planet -- and our cosmos -- reflects humanity's deepest longing for knowledge about ourselves and the world around us. As we enter this new millennium, it is our collective obligation to keep pushing back those frontiers of science and discovery -- not solely to advance our pursuit of knowledge, but to use what we've learned from the heavens to help improve lives here on earth.

Among our guests tonight are students from area colleges and universities. We invited them because we hoped tonight's lecture would expand their horizons, but also to remind all of us of the critical importance of educating our future leaders in the fields of science, math and technology -- the tools they will need to unlock the extraordinary possibilities of the 21st

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A.L.S

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HILLARY RODHAM CLINTON
REMARKS FOR WHITE HOUSE MILLENNIUM EVENING
LECTURE BY STEPHEN HAWKING
EAST ROOM
MARCH 6, 1998

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Laura E. Schiller
03/03/98 07:25:53 PM

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To: Christine N. Macy/WHO/EOP
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----- Forwarded by Laura E. Schiller/WHO/EOP on 03/03/98 07:25 PM -----



Laura D. Schwartz

03/03/98 07:06:33 PM

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I believe it is the consenses that HRC will mention the e-mail address in her remarks at the opening of the millenium lecture for those who would like to e-mail --

The address that should appear at the bottom of the screen when hrc mentions it -- should be :

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Michael A. O'Mary/OPD/EOP
Laura E. Schiller/WHO/EOP
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HILLARY RODHAM CLINTON
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LECTURE BY STEPHEN HAWKING
EAST ROOM
MARCH 6, 1998

Lecture?
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The exploration of our planet -- and our cosmos -- reflects humanity's deepest longing for knowledge about ourselves and the world around us. As we enter this new millennium, already exploding with breakthroughs from unravelling the mysteries of our DNA to -- it is our collective obligation to keep pushing back the frontiers of science. And we must do so not solely for the pursuit of knowledge itself, but also as a way of solving some of the most pressing problems facing our world today. *creating*

And knowing
We have among our guests tonight students we've invited from area colleges who expressed a passionate interest in Professor Hawking's lecture. Their presence here this evening is a sharp reminder of the critical importance of educating our future leaders in the fields of science, math and technology -- the tools they will need to unlock the extraordinary possibilities of the future. Just yesterday, I visited a DC high school to highlight the need to invest in math and science education in those earlier years -- particularly in light of a recent international study showing that we must do a better job of preparing America's students to compete in the global economy of the future. *powerful*

powerful
I highlights the need to create involvement in science education in 6 we must prepare --- *this nation*

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whose work ~~has~~ ^{has inspired} many a young scientist to pursue her dreams.

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MILLENNIUM EVENING GUEST LECTURER STEPHEN HAWKING

Stephen Hawking is the Lucasian Professor of Mathematics at Cambridge University. He has been a member of the Department of Applied Mathematics and Theoretical Physics since 1973. The Lucasian chair was founded in 1663 and was also held by Isaac Newton. In his remarks, Professor Hawking will address, "Imagination and Change: Science in the Next Millennium" noting how science and technology will shape and be shaped by human endeavors.

Professor Hawking is a best-selling author of A Brief History of Time which has been translated into 33 languages has sold 9 million copies worldwide. Other publications include Black Holes and Baby Universes and Other Essays, The Large Scale Structure of Spacetime with G.F.R. Ellis; General Relativity: An Einstein Centenary Survey with W. Israel; 300 Years of Gravity with W. Israel; and The Nature of Space and Time with Roger Penrose. He also played the lead role in the six part BBC series, "Stephen Hawking's Universe" which has been broadcast in the United Kingdom and United States.

Stephen Hawking was born on January 8, 1942 in Oxford, England. He did his undergraduate work at University College, Oxford but on graduation moved to Cambridge University to do research in cosmology (the particular area of Theoretical Physics which describes the evolution of the universe). He has been a fellow of Gonville and Caius College, Cambridge since 1965 and was a member of the Institute of Astronomy from 1968 to 1973.

Professor Hawking became a Commander of the British Empire in 1982 and was made a Companion of Honour by the Queen in 1989. He has twelve honorary degrees and is the recipient of many awards, medals and prizes. He is a Fellow of The Royal Society and a Member of the U.S. National Academy of Sciences.

Professor Hawking has conducted research into the fundamental laws which describe our universe. His first major contribution was to develop the idea that a consequence of Einstein's Theory of Relativity was that space and time began with a "Big Bang" and further study led him to believe that they would end in black holes which would eventually evaporate and disappear. He recalls, "I started to think about black holes as I was getting into bed. My disability makes this rather a slow process, so I had plenty of time." He is also known for his 1983 "no boundary proposal" made with Jim Hartle of Santa Barbara.

Mr. Hawking has Amyotrophic Lateral Sclerosis (ALS – "Lou Gehrig's Disease"), a progressive motor neuron condition, which he first developed in his early twenties. He has succeeded in living far longer than his doctors predicted upon his diagnosis. He jokes that one of the major adjustments he has had to make was to accept that his speech simulator was programmed with an American accent! Mr. Hawking is married to Elaine Hawking and is the father of three children. He is also committed to helping people with disabilities, and to raising awareness of wheelchair access in society as a whole.

CAMBRIDGE UNIVERSITY



DEVELOPMENT OFFICE IN THE UNITED STATES

708 Third Avenue, New York, NY 10017

212-880-2840 Fax: 212-880-2850

VIA TELEFAX

TO Sanjay Gupta
FROM Rachel Cockburn
DATE February 18, 1998
RE Synopsis!!!

Most visions of the future show a society with very advanced science and technology but in an essentially static state with no further developments. I question this picture: at no time in the last ten thousand years has the human race stood still. The rate of change is steadily increasing with many measures of development doubling every 40 years or less. Growth can not continue indefinitely at this ever increasing rate, so what will happen? I argue that we may well reach a steady state in our understanding of the basic laws that govern the universe with the discovery of a complete unified theory in the not too distant future. But there is no limit to the complexity of the applications we can make of these laws. It is in this complexity that I expect the major developments of the next millennium. I foresee biological complexity increasing with genetic engineering and the development of self designing computers with artificial intelligence. The future certainly won't be static.

**PRESIDENT CLINTON:
INVESTING IN SCIENCE AND TECHNOLOGY FOR AMERICA'S FUTURE**

February 3, 1998

"To build on our progress, we must continue to invest in science and technology. That is why I have fought to increase our investments in research and development for five years in a row. And today I am proud to say that our new balanced budget includes the largest investment in science and technology in history."

President Bill Clinton
February 3, 1998

Today, President Clinton visits the Los Alamos National Laboratories in New Mexico to highlight the important role science and technology play in preparing America for the 21st century. The President's balanced budget proposal includes the largest investment in science and technology in history -- funding critically important initiatives in areas ranging from astrophysics to agricultural technology.

Research Fund For America. Because the President is committed to America's continued leadership in science and technology, the balanced budget proposes a \$31 billion Research Fund for America. It includes:

- record increases for the National Institutes of Health;
- higher funding for the National Science Foundation;
- new resources to address global climate change;
- and a wide variety of investments in basic and applied research.

Fiscal Responsibility First. The President's plan for investing in science and technology is fiscally responsible. The Research Fund for America is deficit neutral, and is fully financed through a combination of transfers within the discretionary caps and specific mandatory savings and revenue proposals.

Investments For The Future. These investments are vital. They help America create new knowledge, train more workers, spur new jobs and industries, address our health care challenges, strengthen our understanding of environmental problems, and better educate our children.

Securing America's Future. The investments made through the President's Research Fund also help America maintain a strong national defense. Today, the President announces that his balanced budget proposal includes \$517 million to help the Department of Energy and leading U.S. companies develop the next generation of supercomputer technology. By 2001, these investments will have helped us build supercomputers that can perform more calculations in a single second than a human being with a hand-held calculator could in 30 million years.

By combining past nuclear test data with the high tech simulations produced by such

supercomputers, we can keep America's nuclear arsenal safe, reliable and effective without detonating a single explosion -- an essential safeguard that accompanies the Comprehensive Nuclear Test Ban Treaty that President Clinton is urging the Senate to ratify this year.

Such a exciting time

HILLARY RODHAM CLINTON
REMARKS FOR WHITE HOUSE MILLENNIUM EVENING
LECTURE BY STEPHEN HAWKING
EAST ROOM
MARCH 6, 1998

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MARCH 6, 1998

I am honored to join the President in welcoming you to the East room of the White House for our second Millennium Evening. I'd like to begin by thanking everyone who has made this event possible, especially our honored speaker, Professor Stephen Hawking; Ellen Lovell, director of the White House Millennium Council; the National Endowment for the Humanities and all the state humanities councils; and our sponsor, Sun Microsystems, which is providing the technology to bring this event via satellite and cybercast to people from across this nation and around the world.

So a special welcome to our listeners and viewers who are joining us from downlinks and -- and who will have the opportunity to send in questions via the Internet to Professor Hawking after his remarks. I also want to mention that among our special guests tonight are students from area colleges and universities who we invited not only because we thought they would be inspired by tonight's lecture, but also to remind all of us of the critical importance of educating our future leaders in the fields of science, math and technology -- the tools they will need to unlock the extraordinary possibilities of the future.

Tonight's lecture by Stephen Hawking continues a series of gatherings with scholars, scientists, and other creative individuals here at the White House that will commemorate and celebrate America's millennium. Over the next three years, we hope to inspire all Americans to come together to mark this milestone in our history by "honoring the past and imagining the future." It's an exciting opportunity for conversation and collaboration -- a time to take stock of who we are and who we want to be -- and what we want to carry into the next century, not only as individuals and families, but as local communities and as a nation.

A few weeks ago, Professor Bernard Bailyn from Harvard University inaugurated this Millennium lecture series with a talk about America's founding ideals of freedom and citizenship that sparked the birth of our democracy over 200 years ago. Tonight, we leap beyond traditional boundaries of historical time and place, and hear from a man who has helped revolutionized our understanding of the universe in which we live.

The exploration of our world -- and our cosmos -- reflects humanity's deepest longing for knowledge about ourselves and the world around us. As we enter a new millennium, already exploding with breakthroughs in science, technology, and communications -- it is our collective obligation to keep pushing back the frontiers of science, not solely for the pursuit of knowledge itself, but also as a way of solving some of the most pressing problems facing our world today.

We have with us this evening a many who has welcomed that challenge throughout his lifetime. Almost 25 years ago, when Stephen Hawking was formally inducted into the Royal Academy in London -- he signed his name in a book that bore the signature of Isaac Newton on

I visited the US Congress yesterday to introduce the Violence Against Women Act. Perhaps in light of a recent report showing Americans must learn to live with this.

I visited Wilson H.S. just yesterday -- to highlight the need for Parliament is best of a recent study showing we need to get better grades

massive technological innovation

one of its earliest pages. Already a legend then, he has since come to be viewed, along with Newton and Einstein, as one of the most brilliant physicists of all time.

Even as a young student, Stephen Hawking was drawn to science. "I always wanted to know how everything worked," he once said. He chose the same undergraduate college as my husband -- University College, Oxford University -- and then went to Cambridge University to study cosmology -- in particular, the evolution of the universe. Since then, he has applied his prodigious talents to expanding our understanding of the laws of the cosmos, and seeking answers to such fundamental questions as "where did the universe come from?" and "can we predict the future?"

Professor Hawking -- who has received numerous prizes and honors including the Commander of the British Empire in 1982 and twelve honorary degrees -- is a Fellow of the Royal Society and a Member of the U.S. National Academy of Sciences. He's currently the Lucasian Professor of Mathematics at Cambridge University -- a post held, once again, by fellow cosmic explorer -- Sir Isaac Newton. He is head of the General Relativity and Gravity Group in the Department of Applied Mathematics and Theoretical Physics.

Luckily for many of us, in addition to his many scholarly works, Professor Hawking has written a book aimed at a "lay" audience -- in the hopes of educating the general public about recent scientific breakthroughs such as the "big bang" theory of the beginning of time and the notion of an expanding, dynamic universe. That *A Brief History of Time* has become the best selling science book ever -- 9 million copies around the world, and translated into 300 languages -- testifies to the success of his mission. And I admit I've been heartened by some of what I read in that book. "Present evidence suggests," he writes, that "even if the universe is going to recollapse, it won't do so for at least another ten thousand million years." That certainly gives us some time to get things right.

Over a lifetime of studying and writing, Stephen Hawking has helped millions of people here and around the globe to "imagine" the origins and even the possible future of our vast universe. Yet it's his inner courage, in the face of great physical odds -- that is perhaps the greater inspiration.

As many of you know, Professor Hawking developed Amyotrophic Lateral Sclerosis -- what we commonly call "Lou Gehrig's Disease" -- in his early 20s. It's a progressive motor neuron condition that now limits his control to his left hand. Professor Hawking will communicate with us tonight through a customized computer system which enables him -- by pressing a switch with his hand -- to select words from the bottom of his computer screen, which is located on the arm of his wheel chair. When he's finished a sentence, he sends it to a speech synthesizer -- which, he jokingly complains, has given him an American accent. As he speaks to us this evening from his wheelchair, Stephen Hawking embodies the enduring spirit of imagination that sees no boundaries -- only possibilities.

Professor Hawking has said: "My goal is simple. It is complete understanding of the Universe." Tonight, we celebrate his life of study and accomplishment; his extraordinary

imagination; his relentless curiosity; his wit; his optimism, and his humanity. With his refusal to allow the study of the universe to remain solely the domain of physicists like himself, Professor Hawking is inviting all of us to participate in the wonder and the awe of the cosmos.

It is a true honor and pleasure to introduce to you tonight Professor Stephen Hawking, who will speak to us about "Imagination and Change: Science in the Next Millennium."

Poor academic showing hurts U.S. high schoolers

OUR VIEW Boosting skills allows young Americans to compete better in the high-tech global economy.

How's this for a depressing high school send-off? American seniors rank among the world's worst in math and science.

And the news is just as bad for elite students taking advanced courses. They finished dead last in physics and second from the bottom in high-level math.

Within hours of Tuesday's release of the international rankings, Education Secretary Richard Riley held a news conference to declare them "unacceptable."

He's right. They raise serious questions about the way U.S. schools teach math and science. And they don't bode well for this year's crop of high school graduates who will be competing for jobs in an increasingly global economy.

The rankings come from the Third International Mathematics and Science Study, a 40-country comparison of students in grades 4, 8 and 12. Unfortunately for Americans, the data show our international performance drops in direct proportion to the number of years spent in school.

While U.S. elementary students lead the world, by high school they're ranked last with Lithuania, Cyprus and South Africa.

What's more, the study busts one of the nation's cherished myths — that the U.S. doesn't measure up on international tests only because other countries weed out low performers at an early age.

By comparing our top students to those in other countries, the study documents that even the best and brightest U.S. students simply aren't world-class.

This embarrassing showing has already set off finger-pointing over who's to blame. But the best explanation for students' failings are contained in the study itself.

It shows that among the world's top-per-

How they scored worldwide

Here's how advanced high school seniors compared in 1995-1996 international test of math and science skills. Among 16 countries, the USA ranked last (423) in physics and next to last (442) in math. The top ten physics scores:

Country	Mean Achievement
1. Norway	581
2. Sweden	573
3. Russia	545
4. Denmark	534
5. Slovenia	523
6. Germany	522
7. Australia	518
8. Cyprus	494
9. Latvia	488
10. Greece	486

Source: Third International Mathematics and Science Study (TIMSS)

forming countries, math and science are required courses throughout high school. Yet by senior year half of all U.S. students drop science and a third forgo math.

What's more, many countries require students to cap off high school by passing rigorous exams. So they're at the top of their academic game just as U.S. students are easing up to enjoy a senior slump.

But low expectations only partially explain the glaring performance differences. Researchers also found that advanced courses are taught differently outside the U.S. Teachers require more reasoning and problem-solving from their elite students.

Those are the same skills the nation's high-tech employers complain are in such short supply that thousands of high-paying jobs now go begging.

Beefing up course requirements and re-vamping teaching techniques should go a long way toward bringing U.S. students up to speed.

And it will give students the competitive edge they now lack when they leave school to enter a global economy.

Comparisons mean little

OPPOSING VIEW If our high schools are so bad, why do Asians and Europeans flock to our colleges?

By Gerald Bracey

What are the consequences of our public school system's performance? Let's first note that in the crucial area of reading, the system performs much better than people think. The book *How in the World Do Students Read* found U.S. students second among 31 nations. In the First International Adult Literacy Survey, only Sweden had a higher proportion of citizens reading at the highest levels.

The economic competitiveness consequences are nil. In 1983, the *Nation at Risk* report promulgated the absurd argument that schools control our global competitiveness, a notion that attained great popularity when the country later slid into a recession. But the economy roared back. The World Economic Forum ranked the U.S. economy the world's most competitive. Meanwhile, Europe and Japan lie mired in deep recessions; many Asian economies are in free fall. So much for the utility of their high test scores.

Schools also reflect the larger culture. The American vision of teen-agerdom in-

cludes dating, malls, cars, jobs and extra-curricular activities. Japan's students endure "exam hell" to enter the "right" high school and then the "right" college. At that point many enter intellectual hibernation. Most European and Asian students have to get it in high school or they don't get it. U.S. students, by contrast, are expected to kick into high gear in our colleges — colleges flocked to by European and Asian students. This raises a question: if high schools are so awful, how can our colleges be so good?

The TIMSS scores are a puzzle. Cyprus and Greece finished near the bottom of the 41 countries which participated at the 8th grade, yet score among the top countries at the 12th. This is not credible. Average scores also mask extreme variability. An earlier international study of mathematics found the top third of U.S. schools scoring as high as the top two countries, Taiwan and Korea. The bottom third, though, scored below the lowest country, Jordan.

We must improve the performance of that lower third. In an economy generating mostly low-paying service-sector jobs, these students cannot compete for the few good jobs that exist. That is the real consequence of our public school system's performance.

Gerald Bracey is an educational researcher and writer based in Alexandria, Va.

A capricious storm

Speaking scientifically and quoting from the literature, a tornado is a "violent cyclonic storm." But can that be right? The cluster of tornadoes that ripped across eastern Florida Monday acted more like violent *psychotic* storms. The same winds that killed at least 39 in three counties were also gentle enough to deposit a toddler unharmed in the branches of an oak tree. The same vortex that killed seven on a single street in Kissimmee left antique crystal vases unharmed in the wreckage.

The Florida storms barely crack the top 10 for overall mayhem. In 1973, the Super Outbreak of 148 tornadoes killed 315 from Mississippi to the Great Lakes. The 1925 Tri-State Outbreak, during which one monster tornado cut a swath 219 miles from Missouri to Indiana, killed 740. Still, the Kissimmee Outbreak serves as a compelling reminder that the power of nature is nowhere more awesome and arbitrary than in a tornado — the original psycho-storm.

Does that invest too much in a highly-localized low-pressure system? Maybe, but

it's a tradition of weather survival. We find it easier to absorb the blows of weather if we assign it human qualities. That's why we name hurricanes. In this case, the furies that formed over Florida were produced by storms dragged far south by the jet stream, which itself has been pushed off course by a vast fever of water in the middle Pacific — a periodic phenomenon called El Nino.

Of course, it's impossible to be perfectly safe from Nature's greatest rages. Florida knows this better than most. The tornadoes there — and disastrous rainfall on the West Coast — may prompt some peripheral safety debates. Was the warning system adequate? Do the building codes and zoning laws invite disaster? Who should pay for reconstruction? When the weather turns fair, these questions are always asked.

But Florida today presents the opportunity to contemplate a different sort of reality check, and it is this: When a blind-mad vortex comes howling down your street, you need good luck and good grace to survive. So says the *nino* in the tree.



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THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release
February 13, 1998

REMARKS BY THE PRESIDENT TO THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Philadelphia Marriott
Philadelphia, Pennsylvania

12:45 P.M. EST

THE PRESIDENT: Thank you very much. Ladies and gentlemen, all the young people in the audience, I thank you all for that warm welcome. Thank you, Dr. Dresselhaus, for making me feel so welcome; Dr. MRC Greenwood, Dr. Jane Lubchenco, and over 5,000 members of the AAAS. I'd like to recognize the presence here of Congressman Chaka Fattah, of Philadelphia -- my friend and Congressman from Philadelphia -- thank you for being here. (Applause.) General Barry McCaffrey, the head of the Office of National Drug Control Policy. (Applause.) Dr. Neal Lane, the Director of the National Science Foundation. (Applause.) Dr. Harold Varmus, the Director of the National Institutes of Health. (Applause.)

There are very many other people in this audience and I hesitate to mention any of them for fear of omitting some who have helped this administration in some way or another to

advance the cause of science and technology. But I would be remiss if I did not acknowledge, because of their unique support for us in the last five years, Dr. David Hambury and Dr. John Holdren. Thank you especially for what you have done for us and for our country. (Applause.)

I want to thank Jack Gibbons for that wonderful introduction. You know, just as there are laws of science, there are laws of politics. That introduction reflects Clinton's fourth law of politics -- whenever possible be introduced by someone you have appointed to high office. (Laughter.)

I had to -- you may find this hard to believe, but I actually had to fight the highest people in my family, both my family and my larger family, to get to give this speech. The First Lady wanted to give this speech. (Laughter.) She said, look, it was my idea to create this research fund for the 21st century and have this idea that we should celebrate the new

millennium by imagining the future and preserving our past treasures, like the Star-Spangled Banner and the Declaration of Independence and the Constitution and the Bill of Rights.

And the Vice President, he really wanted to give this speech. (Laughter.) This is all he ever thinks about, you know. (Laughter.) This is a guy who goes absolutely rhapsodic when contemplating the Spallation Neutron Source. (Laughter.) We had this huge fight, but I won it fair and square. I pulled rank. (Laughter.)

You should know, on a more serious note, that the Vice President did have one honor that I am not given by the Constitution. Today he got to swear in a world-renowned public health leader and a great doctor, Dr. David Satcher, as America's new Surgeon General. (Applause.)

Before I get into my remarks, I'd like to make another couple of announcements about important changes in our science and technology team. First of all, with great regret I have accepted the resignation of Dr. Jack Gibbons as my Science Advisor. His ability to build bipartisan coalitions on contentious issues from nuclear testing to cloning to climate change has strengthened our nation immeasurably. And I thank him for those contributions, as well as for his work in our Initiative on Race. I know this afternoon he will chair a panel discussion on the ways we can diversify the science and technology community. I hope you will join me in expressing our appreciation to Jack Gibbons for his service to the United States. (Applause.)

To replace him and ensure that our work goes forward without a hitch, I intend to nominate a fellow of the AAAS, the Director of the National Science Foundation, Dr. Neal Lane, to be

the new Presidential Science Advisor. Neal, please stand up. (Applause.)

Neal has placed the National Science Foundation at the center of our science and technology policy in many ways. And to maintain that momentum I intend to nominate as his replacement, Dr. Rita Colwell, the first life scientist chosen to head this organization. Rita, stand up. (Applause.)

I also want to salute your board of directors, which yesterday approved a resolution urging the Senate to provide its advice and consent as soon as possible for the ratification of the Comprehensive Test Ban Treaty. Thank you very, very much for that. (Applause.)

Today, at the edge of a new century, the dawn of a new millennium, at a sunlit moment of prosperity for our people, we see before us an era of unparalleled possibilities. Our restless quest for knowledge, which has been one of America's defining traits since we got started right here in Philadelphia,

will quicken. And more than ever before, the strength of our economy, the health of our environment, the length and quality of our lives -- in short, the success of our continuing pursuit of happiness -- will be driven by the pursuit of knowledge.

We must seize this moment to strengthen our nation for the new century by expanding our commitment to discovery -- increasing our support for science, pressing our progress in the war against cancer and other diseases, protecting our children from public health dangers, most especially from the deadly addiction of tobacco.

We've come a long way in the last half of the 20th century. Fifty years ago, when President Truman addressed your 100th anniversary meeting, Bardeen, Brattain and Shockley had just created the first transistor; Mauchly and Eckert had recently powered up the seminal ENIAC computer right here in Philadelphia. Pauling and Franklin were developing techniques that would help to unravel the mystery of our DNA.

Things are moving much more quickly now. Today, the store of human knowledge doubles every five years. Soon, every child will be able to stretch a hand across a computer keyboard and reach every book ever written, every painting ever painted, every symphony ever composed. We'll be able to carry all the phone calls on Mother's Day on a single strand of fiber the width of human hair.

Now, where will be 50 years from now? By the year 2048, when a future President of the United States addresses your bicentennial meeting, fusion and solar power may yield abundant energy. In any case, I am absolutely convinced that by then we

will have discovered how to grow the economy by restoring, not depleting, our planet. (Applause.)

By then, telephones may translate foreign languages in real time. We may well have a permanent space station on the surface of Mars. And some of the greatest victories in the next 50 years doubtless will be in the ancient battle against human disease -- its prevention, its detection, its treatment, and its cure. Sophisticated new AIDS therapies already have given HIV-positive men and women a new lease on life. And if this progress continues, I believe we'll have an effective vaccine within a decade.

New treatments are slowing the development of Alzheimer's and lifting people up from the dark depths of depression. Researchers have begun to regenerate nerve cells, raising the prospect that victims of spinal cord injuries will be able to rise up and walk again.

Within a few years the Human Genome Project will have traced the very blueprint of human life. And I think it is important to remember, as Americans tend to focus on the health miracles that can come from scientific progress, that advances in health research and prevention and treatment depend upon the entire scientific enterprise, including engineering efforts.

For example, the MRI, a diagnostic tool that has benefited many of us in this audience today, originally came from research in nuclear physics. Space research today has vast implications for human health, which is one of the reasons I am so excited about Senator John Glenn going back into space. (Applause.)

If we act now, we can catalyze the process of discovery and create even more dramatic progress. I have submitted the first balanced budget in 30 years. (Applause.) It is the result of five years of efforts based on a governmental philosophy that says we have to have fiscal discipline and greater investment in our people and our future by a government that is both smaller and more progressive.

We, I believe, have now established beyond doubt that we can have a smaller government, larger investment, and a stronger nation. We have worked hard to increase investments in education, to open the doors of college to all and, increasingly, to increase the quality of education at the elementary and secondary levels.

I take it that hardly anyone in this room would disagree with the proposition that we have the finest system of higher education in the world. It is America's great blessing. And my passion for the last five years, with more Pell Grant

scholarships and hundreds of thousands of work-study positions, and education IRAs, and cheaper student loans that are easier to repay, and a \$1,500 tax credit for the first two years of college, and tax credits for the junior and senior year and graduate school, my passion has been to be able to say with a straight face to every American family, if your child works hard, money will not keep your child out of a first-class college education. (Applause.)

Now we must prove that we can have the best elementary and secondary education in the world. (Applause.) And we're working on a lot of fronts -- more technology, better teacher training, smaller class sizes, more classrooms, higher standards, and greater accountability. (Applause.) But one of the most promising approaches that we have embraced that is also a part of our balanced budget is the one first brought to me by the Congressman from Philadelphia who is here with us today, Chaka Fattah.

Under our approach, which is part of this balanced budget, we want to have colleges go in and start working with children as early as the 7th grade, to be able to say to them and their parents, if you will stay in school, if you will learn, if you will perform, if you will be held accountable, we can tell you in the 7th grade how much college aid you can get when you get out. You can know right now you can go to college. You can know how much you can get. And we're going to help you for six years to make sure you are ready to succeed in the 21st century. And we thank you, Congressman, for your leadership. (Applause.)

But there is probably no better example of this new approach, this so-called third way, than the proposal we have in the balanced budget for a 21st Century Research Fund, part of our gift to America in the millennium -- providing for the first time a strong, stable, multiyear source of funding for research that will enable you to engage in long-term planning as never before. (Applause.)

This commitment represents the largest funding increase in history for the National Science Foundation and the National Institutes of Health. (Applause.) It will provide substantial budget increases for basic and applied research at NASA, the Department of Energy and the Department of Agriculture. It will spur technological innovations that will help us to combat global climate change, a growing threat that the journal, Science warned us about more than 30 years ago now.

Perhaps most important to American citizens in the moment, the 21st Century Research Fund will give us the means to win the war on cancer. For the first time cancer death rates have begun to fall. The 21st Century Research Fund will build on this progress, with new classes of smart drugs that target specific molecules found in cancer cells. It will help those of you in this field to discover within a decade every single gene

and protein that contributes to the conversion of a normal cell to a cancer cell. It will create new opportunities for prevent, new technologies for earlier and more accurate diagnosis.

Today we can cure 80 percent of the patients with certain kinds of cancer; let us work to ensure that within the next generation we will cure 80 percent of the patients with all forms of cancer. Thank you, Dr. Varmus, for your work in this

regard. We appreciate it. (Applause.)

But let me say this. As I was reminded today when we swore in Dr. David Satcher, the public health responsibility must be more broadly shared among our people. It cannot be the sole province of medical researchers and medical doctors. The rest of us have a job to do, too -- on our own lives, the lives of our friends and neighbors and, most importantly, the lives of our children.

We can take one major leap forward right away. We have an historic opportunity to curtail the deadly epidemic of teen smoking. More than three decades ago, responsible peer review journals, including science, presented our society with a stark conclusion: smoking causes cancer. We now know it is also linked in a deadly chain with emphysema, heart disease and stroke. For years, our efforts to reduce smoking have been outmatched by billion-dollar industry ad campaigns targeted at our children. Now we have the opportunity to save millions of those children from a life of addiction and a premature and very preventable death.

I have asked the Congress to enact comprehensive legislation to raise the price of cigarettes by up to \$1.50 a pack over the next 10 years, to give the FDA full authority to regulate tobacco products, to change forever the way tobacco companies do business, to further public health research and to protect tobacco farmers and their communities in the transition which will come.

Now, just today, the Treasury Department will release an analysis of the probable effects of this comprehensive approach. The analysis projects that the price increase and other measures we have proposed will cut teen smoking by almost half over the next five years. (Applause.)

Now, let me tell you what that means in real people. In Washington, in a different way we sometimes maybe do what you do -- we get into talking statistics and numbers and things that don't often grab people. Let me tell you what that means. That means if we act this year -- instead of having a year-long political debate and doing nothing -- if we act this year, by the year 2003 we can stop almost 3 million young people from smoking and save almost 1 million lives as a result. We ought to save

those lives and you should demand that we save those lives.
(Applause.)

On Wednesday, Senator Kent Conrad from North Dakota introduced a strong bill in Congress that meets all the objectives I just mentioned. I look forward to working with him and with other members to enact comprehensive and bipartisan legislation. But I ask for your support, as well. The scientific community can speak with a very loud voice. Speak loudly for our children. Tell people you're going to do all this research. Tell people we're going to do unbelievable things. Tell people there will be miracles they can't imagine in the 21st century. But tell people in the 21st century, parents will still have to take responsibility for their children and people will still have to take responsibility for doing sensible things if we want a healthy, strong America. Help us lead the way in this fight. (Applause.)

Let me say on one other point, the extraordinary promise of science and technology carries with it, as all of you know, extraordinary responsibilities for those who seek to advance the promise. It is incumbent upon both scientists and public servants to ensure that science serves humanity always, and never the other way around.

Last month, like most Americans, I learned the troubling news that a member of the scientific community claims to be laying plans to clone a human being. Now, human cloning raises deep ethical concern. There is virtually unanimous

consensus in the scientific and medical community that attempting to use known cloning techniques to actually create a human being is untested, unsafe and morally unacceptable.

Two days ago, the Senate voted to take the time necessary to carefully craft a bill that will ban the cloning of human beings while preserving our ability to use cloning technology for morally acceptable and medically important purposes. Already, you have given us the scientific foundation for this debate. I thank you for that, and I urge you to continue to play an important role as the Senate, and then the House, considers this very significant issue in the coming year.

You know, in spite of the pitfalls and the perils, our nation has always believed that what you do in the end would always transform our world for the better. Benjamin Franklin, the father of our scientific revolution, once wrote -- and I quote: "The progress of human knowledge will be rapid and discoveries made of which we at present have no conception. I begin to be almost sorry I was born so soon since I cannot have the happiness of knowing what will be known in years hence."

I have been so struck by the contrast between Ben

Franklin's vision and the depiction of the future now we see in so many books and on television and in these Road Warrior movies and other things that are made. The world is so often portrayed in the future as a terribly frightening, primitive, brutal place -- a world where science has run amok or where the community and government have withered away, where people have to wear a gas mask to talk around and the entire Earth has been completely devastated by craven greed; where life is once again, as Thomas Hobbes once said, it was in the state of nature, nasty, brutish, and short.

I don't think you believe that's what it's going to be like. And I think it's important that we all accept the responsibility to imagine and invent a very different kind of future, and then to tell our fellow Americans that that is the future we are working toward. We need never run away from the dangers of our work run amok. We need never run away from our innate fear of the abuse of power, whether political or scientific. Indeed the whole genius of our creation here in Philadelphia was the understanding that human nature is a mix of elements and all of them must be restrained. But we must never for a moment be afraid of the future. Instead, we must envision the future we intend to create.

Your bicentennial meeting can convene in a world where climatic disruption has been halted; where wars on cancer and AIDS have long since been won; where humanity is safe from

the destructive force of chemical and biological weapons, wielded by rogue states or conscienceless terrorists and drug runners; where our noble career of science is pursued and then advanced by children of every race and background and where the benefits of science are broadly shared in countries both rich and poor. That is what I pray it will be like, 50 years from now, when my successors stand here before your successors and assesses how well we did with our time. (Applause.)

Let me say, I believe in what you do. And I believe in the people who do it. Most important, I believe in the promise of America, in the idea that we must always marry our newest advances and knowledge with our oldest values, and that when we do that, it's worked out pretty well. That is what we owe our children; that is what we must bring to the new century.

Thank you and God bless you.

END

1:13 P.M. EST

Message Sent To:

U.S. to Train Workers for Tech Jobs

Initiative Seeks to Reduce Shortage of Skilled Employees; 1 in 10 Positions Now Unfilled

By Rajiv Chandrasekaran
Washington Post Staff Writer

A1

The Clinton administration will announce today a broad and unique federal effort to help train more computer programmers, responding to concerns from economists and business leaders that U.S. companies have a critical shortage of skilled technology workers.

The administration's initiatives, which include millions of dollars in grants to fund educational programs, the creation of a nationwide job bank on the Internet and a campaign to glamorize computer-related professions, come as a new survey shows that 1 in every 10 information technology jobs in the United States is unfilled.

The study, conducted for an industry group by Virginia Tech and scheduled to be released today, estimated that 346,000 computer programmer and systems analyst jobs are vacant in U.S. companies with more than 100 employees.

Although rapidly growing computer firms increasingly have had difficulties finding enough workers with cutting-edge skills, the Virginia Tech report indicates that the shortage has spread to many non-technology firms, including banks, hospitals and retailers that depend on programmers to design and operate large systems. The widening scope of the issue has prompted the administration to take the unusual step of intervening in a worker-training issue.

The federal government programs will form the central part of a campaign among industry and educational institutions to chip away at the shortage. The efforts will be unveiled formally at a meeting of government and industry leaders today in Berkeley, Calif., including Commerce Secretary Wil-

See TECHNOLOGY, A7, Col. 4

TECHNOLOGY, From A1

liam Daley and Education Secretary Richard W. Riley.

"The shortage is a fundamental threat to the economic growth of the United States," said Harris N. Miller, president of the Information Technology Association of America, an Arlington-based industry group that is organizing the meeting.

"It's not just hurting the ability of classic computer companies to grow. It's hurting the ability of the entire economy to grow through the productivity increases you get if you can install the latest technology products," Miller said.

The Virginia Tech study confirms similar findings made last year and shows the industry has made no progress in reducing the shortage of technology workers.

Though many statistical measures indicate the U.S. economy is at one of its strongest points in recent history, economists say much of the recent growth has come through technology: both the growth of the nation's tech industry and cost savings from the use of computers.

"Right now, technology represents 50 percent of the nation's economic growth," said Kelly H. Carnes, deputy assistant secretary for technology policy at the Commerce Department. "It is the most important enabling industry."

In the Washington area, for example, Labor Department surveys indicate that nearly one-quarter of the 40,000 net new jobs added over the past year were in technology-based occupations. At the same time, industry groups estimate that 25,000 technology jobs are going unfilled in the area, a deficit that econo-

mists said is costing the region more than \$1 billion a year in lost wages.

Both locally and nationally, current projections show no letup in the demand for technology workers.

According to the Labor Department, from now to 2005 an average of 95,000 new computer scientists, systems analysts and programmers will be needed every year. In 1994, however, only 24,553 U.S. students earned bachelor's degrees in computer or information sciences fields, the department said.

To create more technology workers, government officials and industry leaders are focusing on urging more young people to pursue computer-related careers and on retraining older workers.

The Labor Department today plans to announce a \$3 million grant program to fund efforts by schools, businesses and local governments that will provide computer skills to laid-off workers in other industries, an administration official said. The department also will commit to spending \$8 million to create a large Internet site where employers can post job openings and workers can post their resumes, the official said.

The Commerce Department plans to announce that it will spend \$17 million on services to bring technology resources, including training, to poor people. The department also will promise to hold four town meetings around the country this year to discuss the issue.

Administration officials said funding for the programs will come from existing agency budgets. One senior official acknowledged that the current financial commitment is modest, but he said the Commerce, Education and Labor departments intend to request additional funding in next year's budget.

The information technology industry today also will commit to paying for more training and forming local partnerships between schools and businesses.

Industry leaders acknowledge that one of their foremost challenges is to remove the "nerd" stigma that has been attached to the computer profession. To that end, the Commerce Department plans several activities aimed at highlighting past winners of the National Medal of Technology.

The industry plans to distribute to high schools and colleges a video starring actor Jimmy Smits that promotes computer-related jobs. The information technology association plans to distribute several thousand copies of the video, which was produced by Microsoft Corp.

"It's going to show that it's a hip line of work," Miller said. "It's going to say that you don't have to wear a pocket protector or a propeller-head beanie or have an 800 on your SATs to work with computers."

Critics, however, have suggested that the industry has inflated its shortage estimates, both to justify its call for Congress and the Clinton administration to relax immigration restrictions on temporary technology workers and to compel the government to pick up the tab for training programs. Those skeptics contend that technology companies aren't doing enough to attract and train workers with basic computer skills.

But government officials maintain the seriousness of the problem warrants their attention. "This is of enormous importance," Daley said in an interview. "We believe that government has a role here in ensuring that our economy stays strong."

The Washington Post

MONDAY, JANUARY 12, 1998

A Senator's Class Struggles

By Al Kamen
Washington Post Staff Writer

Sen. Frank R. Lautenberg (D-N.J.) was uneasy as he boarded a plane in fogbound Newark last week bound for National Airport. No one likes to fly in uncharted territory, and Lautenberg, armed with a coach ticket, knew he was in danger of actually sitting in that section.

His first-class reservation, as he explained to every flight attendant whose attention he could get, somehow had been canceled and he wanted to be up front as originally intended.

But the flight was packed, and Lautenberg ended up not only in coach, but tucked between two other men, in a middle row of the airplane. The silver-haired senator quickly demonstrated how foreign the coach section was to him. He struggled to put his own suit jacket in the overhead bin, allowing loose papers and eyeglasses to remain in the jacket pockets.

Predictably, the items tumbled out of the jacket when the jacket fell from the bin. "Your government at work," he quipped, as he blocked the aisle and other passengers, picking up the remains and searching for his glasses. "I think I just lost nine votes."

Lautenberg finally settled into the standard-issue seat with the common people but continued to make his request known to attendants. Shortly before the flight took off, they moved him to the front of the plane.

"Are you going up to first class?" someone asked the senator as he climbed out of his seat. "If first class is going to Washington, I'm going," he joked as he retreated up front.

It was all the same in the end, though, when the plane arrived in Washington two hours behind schedule because of fog.

HUD's New Hire

■ B.J. Thornberry, former chief of staff to Colorado Gov. Roy Romer and deputy chief of staff of the Interior Department and more recently chief of staff at the Democratic National Committee, is coming in to be chief of staff to Dwight Robinson, deputy secretary of housing and urban development.

Thornberry replaces Al Miller, who retired, in a job that oversees field assignments—an important post because folks out in the field are the ones letting many of the big HUD contracts. Thornberry, no doubt extra-skilled at downsizing from her last job, is going to help run the management reform process.

But there's a small problem. It's not clear who her boss is going to be. Word at HUD is that Robinson, who used to be a top official in state housing finance in Michigan and Georgia, is going private sector, probably to investment banking.

One Gutsy Activist

■ A Montana activist was sentenced Wednesday to two years of probation for throwing bison guts at Agriculture Secretary Dan Glickman and other officials last March.

Delyla Wilson, co-founder of the Bison Action

Group of Bozeman, was protesting the slaughter of nearly 1,100 bison that wandered out of Yellowstone National Park.

In October, a federal jury convicted her of congressional assault at a public meeting in Gardiner. In addition to the probation, she must perform 100 hours of community service, the Associated Press reported.

Wilson, 33, never denied dumping a five-gallon bucket of entrails on a table in front of Glickman and Sen. Conrad Burns (R-Mont.), but she said she had not intended to splatter the men.

Unclear if entrails stains come out easily.

Quitting Time?

■ Thomas F. "Mack" McLarty, President Clinton's boyhood pal and first chief of staff and more recently a counselor focusing on Latin American trade and other issues, is said to be leaving after the April summit of Latin American leaders in Santiago, Chile. Figure him to be gone probably by June.

And Washington lawyer Victoria Radd, who had been White House deputy director of communications, then COS-COS or chief of staff to Chief of Staff Erskine B. Bowles, and then moved over to help run the failed "fast track" trade legislation war room, is also said to be looking private sector.

One source said Radd is fixing to cut the White House umbilical cord soon after the State of the Union speech and not be like other senior staffers who say they're leaving but just can't seem to make the break to real jobs.

Talking Baseball

■ Meanwhile, a Boston Globe column last week by baseball analyst Peter Gammons touts White House domestic policy chief Bruce Reed as "the perfect candidate" to be the next baseball commissioner. Gammons says, "Reed is brilliant, he is purposeful, he knows people, and he proposed to his future wife with a note stashed in a peanut shell at Three Rivers Stadium." What more could anyone want?

Reed, however, has shown no desire to leave his day job. Maybe that's why one White House type thinks he spotted Reed lunching with football/baseball star Deion Sanders to see about doing both jobs?

Derailed

■ When last we checked on Glen L. Bower, the Railroad Retirement Board chairman was being criticized for using pension trust funds for a trip to a railroad association meeting in Maui in June.

Seems some retirees thought a change was needed in the chairmanship. In fact, the White House got lots of cards and letters—more than 4,000 by one count—saying Bower, a former Illinois state lawmaker, should be bounced. Turns out his term expired in August, but no one had been picked to replace him. The White House told him to pack it up and he resigned last month.

His successor is most likely to be Chicago lawyer Cheryl Thomas, commissioner of buildings for the city and former deputy chief of staff to Mayor Richard M. Daley.

The Washington Post

Monday, January 12, 1998



The President greeted supporters at a rally yesterday in Albuquerque, N.M., where he talked up the budget he submitted to Congress.

In New Mexico, President Extols Work of Nuclear Scientists

By JOHN M. BRODER

ALBUQUERQUE, N.M., Feb. 3 — President Clinton changed the subject from depositions to detonations today, visiting the Los Alamos National Laboratory to pay tribute to the custodians of the nation's nuclear stockpile and issuing a plea to the Senate to ratify the Comprehensive Test Ban Treaty.

On a day when a former high-ranking White House aide testified before a Federal grand jury in Washington about Mr. Clinton's relationship with a former White House intern, the President witnessed a demonstration of some of the country's most advanced computing power at Los Alamos, one of the three national laboratories responsible for designing nuclear weapons and insuring the reliability of the arsenal.

Mr. Clinton did not speak to reporters and ignored shouted questions about accusations that he had a sexual affair with the former intern, Monica S. Lewinsky, and then asked her to lie about it.

An audience of several hundred

Los Alamos laboratory employees watching the computer demonstration on closed circuit television laughed when a television correspondent shouted, "Mr. President, when are you going to answer questions about Monica Lewinsky?"

And they gave him a sustained ovation when he arrived to speak to them a few minutes later.

He told the weapons technicians that adherence to the test ban treaty depended on weapons scientists' ability to use computers to predict the performance of bombs in storage bunkers and atop missiles.

"By combining past nuclear data with the high-tech simulations that computers like those here at Los Alamos make possible, we are keeping the arsenals safe, reliable and effective," Mr. Clinton said. "And we're doing it without detonating a single explosion."

The United States halted nuclear explosions in 1992, after the collapse of the Soviet Union. In 1996, the United States joined 156 nations in signing the global test ban treaty; 10 countries have ratified it.

Computer simulations have replaced weapons tests, using linked supercomputers capable of performing 1.6 trillion operations a second. The computers are also used for civilian purposes, including weather forecasting and transportation system design.

Mr. Clinton called on the Senate to ratify the treaty this year as an example to other nations, and he noted that current and former military leaders had endorsed it.

A day of praise and a plea at the Los Alamos laboratory.

"The test ban treaty will hold other nations to the same standard we already observe — that is its importance," Mr. Clinton said. "Its ban on all nuclear explosions will constrain the nuclear powers from developing more advanced and more dangerous weapons, making a costly arms build-up less likely."

And, he said, the treaty will deter non-nuclear states from building weapons, because they will not be able to test the weapons.

Mr. Clinton used the occasion of his visit to congratulate himself for proposing on Monday the first balanced budget in 30 years — the first since the Beatles released "Hey, Jude," in 1969, he said.

He said that the \$1.73 trillion budget preserved military and civilian research and development programs, from astrophysics to agricultural technology.

The budget includes \$78.2 billion for research, including significant increases for the National Institutes of Health, the National Science Foundation, the Department of Energy and the National Aeronautics and Space Administration.

This evening, Mr. Clinton spoke at a rally in downtown Albuquerque, repeating much of what he had said earlier in the day on the budget. He emphasized the Administration's support for environmental programs that are popular in the West.

Reaction among the crowd of several thousand mirrored the findings of national public opinion surveys since the Lewinsky accusations became public. Local residents seem to believe that Mr. Clinton is doing a creditable job as President and are reluctant to make judgments about his personal behavior.

One sign in the crowd said, "If Hillary doesn't care, neither do we."

Mike Sanchez, 32, suggested that the accusations against Mr. Clinton could be politically motivated "propaganda" from Republicans.

"It's anyone's guess," said Mr. Sanchez. "The President is the only one who really knows. People jumped the gun and started making charges without knowing the evidence."

Michelle A. Skrupskis, who brought her two young children to the event, praised Mr. Clinton for a "superb" job in office, but said that she would be troubled if any illegal activity was proved.

"The verdict is still out," said Ms. Skrupskis, 42, a researcher for the New Mexico Department of Transportation. "If there was any obstruction of justice, that's a major issue. But I personally think that's his personal life and hers. Whatever occurred, that's their business."

The New York Times

WEDNESDAY, FEBRUARY 4, 1998

Citadel of Russia's Wasteful Health System

A

By MICHAEL SPECTER

TOMSK, Russia — Tucked carefully into a pine forest, bathed in the sparkling Siberian air and filled with enough amenities to make a country club look Spartan, the Pediatric Tuberculosis Center here seems to sit on the cutting edge of Russian medicine.

In a nation whose Government has concluded that half of the hospitals are too dilapidated to function, the center is in the midst of a robust development program. It has a dozen buildings, a school for patients and a staff of 134.

What the 500-bed hospital does not have, in this country where President Boris N. Yeltsin has called health care "our No. 1 national security crisis," are patients. Last year there were never more than 20 children here at a time. This month there are 13.

That is because the Tomsk hospital system is a citadel of waste. There are 88 hospitals in this city of 500,000, more than in Boston. Twelve of them treat TB patients alone. There is a major clinical center with 21 departments and four surgical branches, and a university medical center duplicates almost exactly what is offered in the municipal center.

The hospitals have enormous heating costs, fleets of cars, large, poorly trained staffs and patient services that overlap.

"If it was just one hospital burning money, then we could live with that," said Tatyana Grishina, a tuberculosis expert at the Russian Academy of Medical Sciences who has been to Tomsk to study the system here. "But it is not one hospital. And it is not just tuberculosis. It is the whole story of Russian medicine.

"People talk about reform all the

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time in Russia. But nobody wants it. Reform is one of the dirtiest words in the country."

Health officials here, and throughout Russia, still dole out scarce money based almost solely on the number of beds in each hospital, without regard to whether they are needed or how they are used.

As a result, the Pediatric Center will receive nearly \$1 million in regional funds this year. With that money it will subject its 13 children to a needlessly expensive, anachronistic treatment regimen that the World Health Organization has long considered worse than useless.

There may be no better way to understand the immense obstacles that reforms face in the Russian provinces — where they are needed most — than to look at how a place like Tomsk deals with health care.

Compared with other cities in Russia it is neither backward nor unique. One of Siberia's oldest cities, filled with stately wooden houses that have withstood a century of snow, Tomsk used to live on an allowance dispensed from Moscow. All that has changed.

Industry has atrophied. The nearly free transportation system, essential in such a remote place, has virtually disappeared. Without it, half of the region has lost its access to decent medical treatment.

The money from Moscow may be gone, but the network designed by the Soviet Government — grand, cumbersome, repetitive and blind to the perverse and often baffling economics of medicine — lives on.

"This is more than a medical system," said Sergei Banin, Tomsk's No. 2 health official. "It is a social system. We are feeding the poor. We are providing thousands of jobs. We want an evolution here, not a revolution."

But there has been nothing gradual about the decline in the health of the Russian people.

Tomsk, like the rest of Russia, reels under a remarkable surge in infectious and parasitic diseases, and constant growth in cases of deadly heart disease, alcohol poisoning and cancer. Last year more people in Russia died from tuberculosis, which is entirely curable, than got the disease in the United States.

The Government now predicts that the Russian population will shrink by at least one million people each year for at least a decade. That has happened only a few times in history — and until now always in countries engulfed by war, plague or famine.

Many people say national officials simply need to spend more on their citizens' health. Money would help, of course. Last year Russia spent only about \$70 a person on health care, the United States spent nearly \$4,000.

But increasingly, experts cite another statistic that may be more telling: Russia has 130 hospital beds

for every 10,000 people, a figure matched in no major country on earth. The United States has fewer than 40 beds per 10,000 people.

"You could not invent a more ridiculous health care system than the one we now have," said Igor Linok, the chief administrator of the Tomsk regional health insurance fund.

Dr. Linok is a physician and an economist. It is his job to try to find a rational way to spread money across the Tomsk region, which has one million people in an area about the size of England.

"Everyone always says there is not enough money," he said. "We are poor, of course. But I don't even agree that there is not enough money. Look at the waste in this place."

Most countries no longer have TB hospitals. Tomsk has 12. With a rate of 80 cases per 100,000 residents here, the incidence has more than doubled in a decade. But hospitals do not help. The World Health Organization has long argued that tuberculosis can be treated better and less expensively with drugs at home.

Merlin, the British relief agency, has created a pilot program to supply drugs and the expertise to use them properly. It has had some success, but there has been a fight every step of the way.

"There are cultural expectations here that are almost impossible to overcome," said Gini Gleissberg, the Merlin coordinator in Tomsk. "Patients expect this long period of hospitalization. Lots of times a few months in a hospital beats being at home without work or money."

Three-quarters of the \$4 million spent on tuberculosis treatment and testing here is wasted, Merlin says. Health department officials do not disagree. In 1990 a total of 532 children were discharged from various TB hospitals in Tomsk after average stays of a little more than three months. Tuberculosis had been diagnosed in only 23. The rest were there because their parents had the disease, or because they were suspected of being infected.

The New York Public Health Research Institute, with money from

the financier and philanthropist George Soros, has offered to help Tomsk shift its health priorities.

The Soros plan, as it is called here, is simple. "Let's spend money on what works," Dr. Alex Goldfarb, who has been the plan's chief salesman, said in a recent interview. "And let's help people make that transition to a new way of life. But if there is no switch, there should be no funds. To get the money, people here need to get rid of those hospital beds."

That kind of talk drives many leaders in Russian medicine — already sick of being told how to do their jobs by outsiders — to open revolt.

"I thought humanitarian aid came without strings attached," said Aleksei Primyak, who runs the largest national tuberculosis center in Moscow and is seen as the official voice of the conservative medical establishment. "Who are these people to tell us how to treat our citizens?"

But the desperate competition for money has turned the medical system into a major political issue. And the problems are by no means limited to TB. "The hospital system," said Governor Viktor Kress, a reformer who is nonetheless wary of moving too fast, "is one of the greatest lobbies left in the land."

That is clear in Tomsk. The city has two large heart centers that can serve 1,000 patients each. They have similar equipment. The one operated by the national Government has better staff, but it is open to patients only five days a week.

"Don't have a heart attack on the weekend," said Vladimir Mashukov, the chief doctor at the Tomsk Institute of Cardiology, the national center. He says his budget "has been irregular and chaotic."

"We are hostages to the past," he said.

There are also four cancer centers here. And Tomsk, a university town with a branch of the Russian Academy of Medical Sciences, is considered progressive by most outsiders.

The Children's Sanitarium is exhibit A in any attempt to explain why health care in the provinces seems stuck in another era. "For the money we are spending on that place we could move all those children and their families to Israel and let them live by the Dead Sea," said Dr. Linok, the health economist.

The center is the perfect symbol for the failings of hospitals from one end of the country to the other. There are too many people on staff, but no alternative jobs for them. There are not enough patients, because patients — or in this case, their parents — do not want to report their illnesses for fear they will be locked in a sanitarium for months. The hospital duplicates services offered less than two miles away at the city's central TB clinic.

Of course, that is not the way they see it at the sanitarium.

"I am not a diplomat," said Anatoly M. Shatokhin, the affable chief doctor at the Pediatric Center. "I am a doctor. And I have to tell you that your system may work best for you, but ours works best for us. Children need to be nurtured. They need a setting in which to recover."

That means in a hospital, he says. Keeping people in a hospital for routine tuberculosis treatment, still normal here, is rare in the West. The cost of such treatment, an average here of \$1,134 per cure, is more than five times the cost of using drugs on outpatients, according to the W.H.O.

"If you look at the numbers, the logic is obvious," said Olga Shara-burova, the chief tuberculosis doctor for the region. "But logic has never been used here yet. So you can understand why people wonder about it now."